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# DECONTAMINATION AND DISMANTLEMENT ENGINEERING PERFORMANC SPECIFICATIONS - (WAS ATTACHED TO COMMENT RESPONSE DOCUMEN FOR INTEGRATED REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN)

03/07/97

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SPECS

# DECONTAMINATION AND DISMANTLEMENT ENGINEERING PERFORMANCE SPECIFICATIONS

ENGINEERING SPECIFICATIONS 2503-TS-0002

FLUOR DANIEL FERNALD

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FLUOR DANIEL FERNALD
P. O. BOX 538704
CINCINNATI, OH 45253-8704

CONTROL NUMBER: _____
ENGINEERING SPECIFICATIONS 2503-TS-0002

# DECONTAMINATION AND DISMANTLEMENT ENGINEERING PERFORMANCE SPECIFICATIONS

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FDP PROJECT ENGINEER (SUBJECT EXPERT): Louie Miller 2/14/97
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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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# DECONTAMINATION AND DISMANTLEMENT ENGINEERING PERFORMANCE SPECIFICATIONS

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000004

# SECTION 01010

# GENERAL REQUIREMENTS

## PART I GENERAL

### 1.1 SCOPE

A. The intent of these specifications is to provide technical direction for work required and necessary to support the Decontamination and Dismantling (D&D) efforts at the FEMP.

B. These general requirements form a part of any technical specifications submitted to subcontractor for Decontamination and Dismantling (D&D) services at the Fernald Environmental Management Project (FEMP).

B. In all cases where the terms "Vendor" or "Seller" or "Manufacturer" or similar terms appear in these specifications or in the appendices to these specifications, they shall be understood to refer to an individual or firm(s) providing materials, equipment or services, as noted, under a contract to Fluor Daniel Fernald (FDF).

C. In all cases where the term "subcontractor" appears in these specifications, it shall be understood to refer to the Construction Contractor or Subcontractor and their subtier subcontractors who are performing the D&D services at the FEMP.

D. In all cases where the words "Contractor" or "Construction Manager" appear, they shall be understood to refer to FDF.

#### 1.1.1 Testing

A. The Subcontractor shall provide written procedures for FDF's review and approval of all tests to be performed as identified in the drawings and specifications. These procedures shall provide the detailed step-by-step operations with sign-off columns and date columns and shall be submitted and approved prior to testing.

B. The Subcontractor shall not deviate from construction acceptance tests as reviewed and approved by FDF.

C. All field test instruments shall have been calibrated within 12 months prior to use on this contract or at intervals as recommended by vendor, by a calibration laboratory whose calibration equipment and instruments are fully traceable to National Institute of Standards and Technology (NIST) standards. The Subcontractor shall provide individual certification of calibration and NIST standards traceability for all field test instruments used on this contract.

## SECTION 01010

### 1.2 GOVERNING CODES

All work shall be accomplished in accordance with the following code requirements:

A. Ohio Basic Building Code (OBBC) 1994.

B. Uniform Building Code (UBC) 1994.

C. Life Safety Code 101 - 1994.

D. All other National Fire Protection Association (NFPA) Codes - All inclusive, including 1995 revisions.

E. 29 CFR 1910 - Occupational Safety and Health Administration - Department of Labor.

F. 29 CFR 1926 - Occupational Safety and Health Administration (OSHA).

G. 40 CFR - United States Environmental Protection Agency (US EPA).

H. DOE Order 441.1 - Radiological Protection for DOE Activities

I. DOE Order 5400.5 - Radiation Protection of the Public and the Environment and 10 CFR 835 - Occupational Radiation Protection.

References to specific codes, regulations, standards, or other criteria documents in these specifications are indicated as the latest edition of revision of each document, as of the date when these specifications were prepared.

### 1.3 OPERATING MANUALS AND SPARE PARTS LISTS

A. If required, provide twelve (12) copies of a recommended spare parts list which shall be submitted at least sixty (60) days prior to the shipment of any item of equipment.

B. An Installation, Operation, and Maintenance (IOM) Manual shall be prepared so as to provide optimum operation and maintenance of the equipment and systems being furnished.

C. The cover of the IOM Manual shall include the following information:

1. Project Title -_____.
2. Subcontractor.
3. Construction Manager - FDF.
4. Subcontractor (name of subcontractor, if any).

D. The IOM Manuals shall be bound into one or more volumes for ease of handling, and shall have an index. The manual shall include descriptive literature, drawings, performance curves and rating data, test reports, and spare parts lists. The maintenance section shall divide maintenance procedures into two categories, "Preventive Maintenance" and "Corrective Maintenance," and a subsection for "Safety Precaution." Preventive maintenance shall include cleaning and adjustment instructions. Corrective maintenance shall include instructions and data arranged in the normal sequence of corrective maintenance (i.e., troubleshooting, logical effect to cause), then repair and replacement of parts, then the parts list. Safety Precautions shall comprise a list of safety precautions and instructions to be followed before, during, and after making repairs, adjustments, or routine maintenance.

E. If required, provide twelve (12) copies of complete sets of final, approved manuals at least sixty (60) days prior to the shipment of the equipment or system.

## 1.4 SPECIFICATION EXPLANATION

A. General: The technical specifications are of the abbreviated, simplified, or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the contractor shall,' "in conformity therewith," "shall be," "as noted on the drawings," "according to the plans," "a," "the," and "all" are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the drawings.

For convenience of reference and to facilitate the letting of contracts, the specifications may be separated into titled divisions. The following defines the separations referred to in the specifications:

| | | |
|---|---|---|
| 1. | Division: | Separate numbered division of specifications (e.g., Div. 16) |
| 2. | Section: | Separate numbered section of a division (e.g.,Sec. 16020) |
| 3. | Article: | Separate numbered article of a subsection (e.g., Article 2.1) |

B. Definitions: Certain terms and words as used throughout the specifications shall be defined as follows, unless otherwise particularly specified:

| | | |
|---|---|---|
| 1. | "Provide": | Furnish and install, complete, in place. |
| 2. | "Indicated": | As shown on the drawings and/or specified. |
| 3. | "Directed," "Authorized," "Permitted": | Shall be as directed, authorized, or permitted by FDF. |
| 4. | "Selected": | Shall be as selected by the Subcontractor or FDF. |

5. "Satisfactory," "Acceptable": Satisfactory or acceptable to FDF.

6. "Necessary," "Required," "Suitable": As necessary, required, or suitable for the intended purpose as determined by FDF.

7. "Submit": Submit to FDF unless otherwise specified.

8. "Above-grade": Refers to second, third, etc. stories of a facility. "At- & Below-Grade": Refers to facility slab and/or basement.

In all cases where the words "or equal" appear in these specifications, they shall be understood it to mean "or approved equal."

## 1.5 ABBREVIATIONS FOR REFERENCED STANDARDS AND SPECIFICATIONS

A. The following list denotes abbreviations used in the technical portions of these specifications:

B. Invoking all or any part of these standards are to be accomplished in accordance with normal industry practices.

C. Standards listed in this section can be used in their entirety or applicable sections depending on their application to the services being rendered by the Subcontractor.

| Abbreviation | Authority |
|---|---|
| AASHTO | American Association of State Highway Transportation Officials |
| ACGIH | American Conference of Governmental Industrial Hygienists |
| ACI | American Concrete Institute |
| ACRI | Air Conditioning and Refrigeration Institute |
| ADC | Air Diffusion Council |
| AGC | Associated General Contractors of America |
| AISC | American Institute of Steel Construction |
| AISI | American Iron and Steel Institute |

**SECTION 01010**

| Abbreviation | Authority |
|---|---|
| AMCAAir | Movement and Control Association |
| ANSI | American National Standards Institute |
| APA | American Plywood Association |
| API | American Petroleum Institute |
| ASCE | American Society of Civil Engineers |
| ASHRAE | American Society of Heating, Refrigerating, and Air Conditioning Engineers |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing and Materials |
| AWS | American Welding Society |
| AWWA | American Water Works Association |
| CFR | Code for Federal Regulations |
| DHI | Door and Hardware Institute |
| ERDA | Energy Research and Development Administration |
| FGMA | Flat Glass Marketing Association |
| FM | Factory Mutual System |
| GA | Gypsum Association |
| ICBO | International Conference of Building Officials |
| IEEE | Institute of Electrical and Electronics Engineers |
| IFB | Invitation to Bid |
| IMIAC | International Masonry Industry All-Weather Council |
| MBMA | Metal Building Manufacturers Association |

**SECTION 01010**

| Abbreviation | Authority |
|---|---|
| NAAMM | National Association of Architectural Metal Manufacturers Association |
| NCMA | National Concrete Masonry Association |
| NEC | National Electric Code |
| NEMA | National Electrical Manufacturers Association |
| NETA | National Electrical Testing Association |
| NFPA | National Fire Protection Association |
| NIST | National Institute of Standards and Technology |
| ODOH | Ohio Department of Health |
| ODOT | Ohio Department of Transportation Occupational Safety and Health Administration |
| OSHA | Occupational Safety and Health Administration |
| PCA | Portland Cement Association |
| PCI | Prestressed Concrete Institute |
| PS | United States Department of Commerce, Voluntary Products Standards |
| RFP | Request for Proposal |
| SDI | Steel Door Institute |
| SIGMA | Sealed Insulating Glass Manufacturers Association |
| SJI | Steel Joist Institute |
| SMACNA | Sheet Metal and Air Conditioning Contractors National Association |

## SECTION 01010

| Abbreviation | Authority |
|---|---|
| SSPC | Steel Structures Painting Council |
| UL | Underwriters Laboratories, Inc. |

**END OF SECTION**

# SECTION 01120

# DEBRIS/WASTE HANDLING CRITERIA

## PART I GENERAL

### 1.1 SCOPE

A. This section provides the requirements for handling and containerization of debris/waste generated during the dismantlement of processing and support facilities. Debris/waste will be segregated into established categories and containerized accordingly. This includes, but is not limited to, the following:

1. Segregation of debris/waste.
2. Containerization of debris/waste.
3. Movement of containers within the construction zone.
4. Weighing and tagging containers.

### 1.2 RELATED SECTIONS

A. Section 01515 - Mobilization and Demobilization.

B. Section 01516 - Asbestos Abatement.

C. Section 01517 - Removing/Fixing Radiological Contamination.

D. Section 01519 - Measures to Prevent Contamination and Requirements for Decontamination of Subcontractor Provided Tools, Equipment, and Material.

E. Section 03315 - Concrete Removal.

F. Section 04225 - Masonry Removal.

G. Section 05126 - Structural Steel Dismantlement.

H. Section 07415 - Transite Removal.

I. Section 15065 - Equipment Dismantlement

J. Section 15066 - Interior Dismantlement.

K. Section 15067 - Ventilation and Containment.

## 1.3 REFERENCE MATERIALS

A. See Invitation for Bid/Request for Proposal (IFB/RFP) for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.

B. See IFB/RFP for the following:

1. Waste Management Plan, which includes the Material Segregation and Containerization Criteria (MSCC) form. The MSCC form identifies anticipated waste streams to be generated and their respective waste categories. In addition, the MSCC identifies preferred containers (where applicable) for the waste streams, size criteria, and special waste handling criteria.

## 1.4 REFERENCES, CODES AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. United States Department of Energy

| | | |
|---|---|---|
| 1. | DOE Order 460.1 | Packaging and Transportation Safety. |
| 2. | 10 CFR 835 | Occupational Radiation Protection |

## 1.5 SUBMITTALS

A. The Subcontractor shall submit the following for approval by Fluor Daniel Fernald (FDF).

1. Prior to mobilization, the Subcontractor shall submit a detailed debris/waste handling work plan in accordance with IFB/RFP, Subcontractor Work Plan Format Requirements, for approval by FDF. The work plan shall include equipment for loading and handling containers, and verifying that the weight capacity of container is not exceeded.

2. Information on method for weighing containers, including:

   a. Catalog cut sheets or drawings.
   b. Calibration and maintenance schedule.

3. The work plan shall include the Subcontractor's:

   a. method for control of wash water runoff.
   b. method for loading containers.
   c. location of the satellite accumulation area (SAA).

## 1.6 PROJECT CONDITIONS

A. FDF will produce categories of debris/waste as indicated in Part 6 of the IFB/RFP, Waste Management Plan, "Material Segregation and Containerization Criteria (MSCC)."

B. Generation of additional debris/waste shall be minimized by unpacking equipment and material prior to entering the Controlled Area whenever possible. The Subcontractor shall not bring any hazardous material to the construction zone unless prior approval is received from FDF . Alternatives to hazardous materials shall be used whenever possible.

# PART II PRODUCTS

## 2.1 EQUIPMENT

A. The Subcontractor shall supply all equipment required to move containers, except ISO containers, between and within the container queuing area and construction zone, as well as all equipment to load containers. FDF will move all ISO containers.

## 2.2 MATERIALS

A. FDF will provide appropriate containers, except as specified in the IFB/RFP, for debris/waste categories as identified on the Material Segregation and Containerization Criteria (MSCC), except liquid storage tanks as noted in Section 01517 of this specification package. These containers include, but are not limited to, the following:

| Container Designation | Nominal Exterior Dimensions (HxWxL) | Maximum Gross Weight (lbs) |
|---|---|---|
| Large white metal box (LMB) (top load) | 8'x8'x20' | 42,000 |
| ISO container (top load) | 8'x8'x20' | 42,000 |
| ISO container (end load) | 8'x8'x20' | 42,000 |
| Small metal box | 3'x4'x6' | 9,000 |
| 55-gallon drum with lid | — | 882 |
| Roll-off boxes (ROB) | 6'x8'x22' | 42,000 |

B. The Subcontractor shall supply fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6-mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite or equal.

C. FDF will deliver empty ("prepped" if required) containers, pallets (possibly radiologically contaminated), and miscellaneous materials, as required, to the container queuing area.

D. The Subcontractor shall furnish 8 ½" x 11" weatherproof removable tags.

E. FDF will furnish the pallets and dunnage as required in Section 3.2.B for movement of equipment or material. The Subcontractor shall furnish the fiber-reinforced sheeting.

## PART III EXECUTION

### 3.1 PREPARATION

A. The Subcontractor shall establish a container queuing area in the location indicated on reference site drawings and provide a physical boundary to define this area. The queuing area shall be used as a temporary storage area for empty and full debris/waste containers.

B. The Subcontractor shall identify a satellite accumulation area. Areas shall be secured to prevent unauthorized entry. Size and location of the accumulation area shall be coordinated with FDF.

C. The Subcontractor shall provide labor and equipment required to handle small metal boxes, roll-off boxes, and large metal boxes as follows:

1. Remove lid or tarp and place in designated location to prevent damage.

2. Remove any freestanding water.

3. Replace lid or tarp on the box and secure with clamping devices, pins, or other FDF approved method.

D. Request for containers shall be made, at least 24 hours in advance of need, to FDF.

### 3.2 APPLICATION

A. The Subcontractor shall be responsible for retrieving empty containers from the queuing area, except ISO containers, for containerization; segregating debris/waste; loading, weighing, securing containers; tagging for on-site movement; and moving containers back to the queuing area. The Subcontractor will use the MSCC as the basis of all containerizing activities and will be responsible for minimizing debris/waste generation

by limiting the amount of material brought on site.

B. Equipment or material requiring movement outside the enclosed building to be containerized or palletized, must meet the requirements of Section 01517 of this specification package. If the requirements cannot be attained, the material may be encapsulated or wrapped in fiber-reinforced sheeting and sealed prior to movement to prevent the migration of radioactive contamination during movement.

Pallets shall be managed by the Subcontractor as follows:

1. Place fiber-reinforced sheeting over pallet, position material on pallet, and wrap the sheeting over material.

2. Secure fiber-reinforced sheeting over material to prevent migration of contamination.

3. Secure material to pallet with vinyl or metal bonding material.

C. Structural steel will be stored in place on the slab, unless otherwise indicated in Part 6 of the IFB/RFP Package.

## 3.3 LOADING OF CONTAINERS

A. The Subcontractor shall:

1. Provide a debris/waste handling supervisor to supervise operations. The supervisor will be required to complete (FDF conducted) NVO-325 training.

2. Ensure that personnel handle debris/waste for containerization in accordance with this specification.

3. Segregate and containerize all debris/waste according to the categories defined in the MSCC. Should a debris/waste stream be discovered that is not on the MSCC, then work on the handling of this debris/waste will stop. Contact FDF for further direction.

4. Upon receipt of containers, the Subcontractor shall perform a visual inspection to ensure the containers do not hold freestanding water (FDF will remove water if any is found). If freestanding water accumulates in the containers after the Subcontractor accepts the containers, the Subcontractor shall be responsible for removing the water by either draining the container or using absorbent material. After movement of appropriate containers to the loading area, remove the container lid and place in a designated location to prevent damage.

5. Fill containers, boxes, and drums such that the interior volume is as efficiently and compactly loaded as practical up to the maximum gross weight limit of the

container. When applicable, FDF or the D&D Subcontractor will use batt insulation to fill void space in shipping containers. Any container exceeding maximum allowable gross weight shall have contents removed, as required, to lower the weight to an acceptable range. Contents shall be prepared for containerization so as to minimize load shifting or damage during movement.

6. Ensure that debris/waste to be containerized is not on the following "Prohibited Materials List." This list shall be displayed in the containerization area or on each container. Notify FDF if any of the prohibited materials are identified for further material handling directions.

**PROHIBITED MATERIALS LIST**

a. Compressed gases (e.g., unpunctured aerosol cans).

b. Explosives.

c. Free liquids.

d. Fine particulates (respirable fines).

e. Hazardous waste.

f. Corrosive materials.

g. Etiologic agents.

7. Notify FDF at least 24 hours in advance of loading containers.

8. Visually check debris/waste for free liquid prior to loading. If free liquid is present, notify FDF. The Subcontractor will be required to take appropriate action to remove or absorb free liquid.

9. The Subcontractor shall provide and install weatherproof removable tags on each debris/waste container prior to moving to the queuing area. Tags shall identify container contents by debris/waste category specified in the MSCC and the debris/waste's building of origin. For Category J, an exact description of the contents is required.

10. Thorium contaminated debris/waste shall be containerized separately from non-thorium contaminated debris/waste.

## 3.4 SECURITY AND MOVEMENT OF CONTAINERS

A. The Subcontractor shall:

1. Move containers to the specific task location from the queuing area.

2. Ensure that the lid, doors, or tarps on unfilled debris/waste containers are secured when no containerization is in progress to prevent addition of unknown materials and release of container contents. Containers must be weather protected when lid is not secured, to prevent entry of snow and rain and release of container contents.

3. Secure full containers.

   a. End-loading ISO containers will be secured as follows using FDF-supplied material:

      1) Close and latch doors, ensuring that all latching mechanisms are engaged.

   b. Drums will be secured as follows:

      1) Place lid on drum, ensuring that gasket is seated to maintain a tight seal.

      2) Install bolt-type lock ring on lid and torque to 45 $\pm$ 5 foot-pounds.

      3) Drums shall be strapped together on pallets.

   c. Top-Loading Metal boxes (large and small) will be secured as follows:

      1) Inspect gasket for damage and repair, if required.

      2) Place gasket and lid on the box and secure with clamping device or pins.

   d. Roll-Off Boxes (ROBs)

      1) Cover ROB with tarp or steel lid.

      2) Secure tarp (with straps) or steel lid (with clamping device or pins).

      3) Secure all gate chains.

   e. Ensure that containers have not been damaged during loading.

f. Return full, secured containers (except ISO containers) to the queuing area.

4. Secure ACM-filled containers as follows:

a. Label all containers prior to on-site movement. These labels shall identify that ACM is present and the labels shall be placed as specified by FDF.

b. Inspect all containers, double bagged materials, drums, boxes, or double wrapped components for exterior contamination and damage before removing them from the work area.

c. Prior to securing lid or doors on ACM containers, fold fiber-reinforced sheeting over ACM and seal with tape.

d. Return full, secured container to the queuing area.

B. FDF will perform the final securing and disposition of full containers placed in the queuing area by the Subcontractor.

C. When applicable, Roll-Off Boxes that contain bulk storable debris/waste will be emptied by FDF at a bulk storage location(s) and returned to the queuing area for reuse.

D. The Subcontractor shall decontaminate waste containers, equipment, tools, etc., prior to exiting the construction zone or queuing area as necessary in accordance with Section 01519.

E. Multi-Level Floor Demolition Debris Movement: If the Subcontractor chooses to stage any demolished material on a floor other than the ground floor of a multi-floored structure or an equipment platform, an engineering analysis shall be required. It shall be the Subcontractor's responsibility to perform the analysis to verify the loading capacity of said floor and submit the analysis to FDF signed and stamped by a professional engineer (PE) to ensure that the load capacity is not exceeded.

## 3.5 BULK STAGING OF DEBRIS/WASTE

A. Some debris will be bulk-staged to permit the most effective handling of these media. In cases where bulk staging is desired, the debris will be managed to assure minimization of airborne emissions, and staging will occur to assure control of runoff. Refer to Specification Sections 01515 and 03315 for control of run-off. This debris will be staged in a manner to minimize double handling, minimize costs by optimizing container use, and minimize labor associated with maintenance. Debris categories considered for bulk staging within the work zone include Category A, accessible metals.

SECTION 01120

## 3.6 FIELD QUALITY ASSURANCE

A. The Subcontractor and FDF shall inspect filled containers upon their return to the queuing area to verify that no damage has occurred during the filling of the container.

END OF SECTION

# SECTION 01515

# MOBILIZATION, DEMOBILIZATION AND GENERAL SITE REQUIREMENTS

## PART I GENERAL

### 1.1 SCOPE

A. This section consists of the work related to Subcontractor mobilization and demobilization. The principal items included in this section are:

1. Site access.
2. Patching building slab.
3. Construction utilities.
4. Signs and barriers.
5. Potential use of existing overhead bridge cranes.
6. Gravel pads for access and queuing areas.
7. Establishing lay down, cutting, storage and queuing areas.
8. Protecting adjacent facilities and components.
9. Debris chutes.
10. Remediation equipment.
11. Ventilation and containment.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 03315 - Concrete Removal.

C. Section 05126 - Structural Steel Dismantlement.

D. Section 07415 - Transite Removal.

E. Section 15065 - Equipment Dismantlement.

F. Section 15066 - Interior Dismantlement.

G. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid Package/Request for Proposal (IFB/RFP) for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawing.

## SECTION 01515

### 1.4 REFERENCES, CODES AND STANDARDS

The entire work under this section shall be in compliance with the provisions of the following:

A. American Society of Testing and Materials (ASTM):

| | | |
|---|---|---|
| 1. | ASTM A36/A36M-94 | Standard Specification for Carbon Structural Steel. |
| 2. | ASTM C109-93 | Standard Test Method for Compressive Strength of Hydraulic Cement Mortars. |
| 3. | ASTM C136-93 | Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates (AASHTO T27). |
| 4. | ASTM D698-91 | Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft.). |
| 5. | ASTM C1042-91 | Standard Test Method for Bond Strength of Latex Systems Used with Concrete by Slant Shear. |

B. National Fire Protection Association (NFPA)

| | | |
|---|---|---|
| 1. | NFPA 70 | National Electrical Code, 1996 Edition. |
| 2. | NFPA 101-94 | Code for Life from Fire in Buildings and Structures. |

C. American National Standards Institute (ANSI)

| | | |
|---|---|---|
| 1. | ANSI C2-93 | National Electrical Safety Code. |
| 2. | ANSI C135.1-79 | Galvanized Steel Bolts and Nuts for Overhead Line Construction. |
| 3. | ANSI 05.1-92 | Wood Poles Specifications and Dimensions. |

D. American Wood-Preservers Association (AWPA)

| | | |
|---|---|---|
| 1. | AWPA C4-95 | Poles, Pressure Treatment |

E. National Electrical Manufacturers Association (NEMA)

| | | |
|---|---|---|
| 1. | NEMA LA 1-92 | Surge Arresters. |
| 2. | NEMA WC 7088 | Cross-Linked-Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy. |

F. Underwriters Laboratories (UL)

1. UL 96-94 UL Standard for Safety Lightning Protection Components.

2. UL Electrical Directories, 1995 Construction Materials.

G. United States Department of Agriculture, Soil Conservation Service

1. Water Management and Sediment Control in Urbanizing Areas.

H. Code of Federal Regulations (CFR)

1. 29 CFR 1926 Occupational Safety and Health Administration, Dept. of Labor (as applicable).

2. 29 CFR 1910 Occupational Safety and Health Administration, Dept. of Labor (as applicable).

## 1.5 SUBMITTALS

A. The Subcontractor shall submit the following for approval by Fluor Daniel Fernald (FDF):

1. Drawings and Data

a. Provide detail and layout drawings showing locations of any additional barriers and/or fencing the Subcontractor will use for construction zone and radiological control boundaries as well as for protection of adjacent structures..

b. Layout of temporary access and roadways required during mobilization of major equipment components (i.e., cranes, field offices, tool and equipment storage, lay down areas, chutes within the stated limits of the construction zone).

c. Layout, details and applicable equipment, or plans the Subcontractor will employ to control storm water runoff, migration of wash water, and erosion control.

d. Provide detail and layout drawings that show lay down areas, building vestibule sizes and locations, cutting areas, and container queuing areas.

e. Provide shop drawings for all debris chutes to be used.

1. Provide manufacturer's data or calculations to verify that the chute, its support system and the existing structure (if the debris chute is attached) can withstand all dynamic impact loads they will be subjected to during dismantlement operations.

2. Debris Chute drawings and calculations submitted must bear the stamp of a Registered Professional Engineer.

2. Safe Work Plan for providing temporary utilities (such as; water, steam, electric power) from the point source location identified on the reference site drawings in Part 7 of the IFB/RFP.

3. Verification that the patching grout compressive and bond strengths are in accordance with ASTM C109 and ASTM C1042, respectively.

4. Results of the Engineering Survey per 29 CFR 1926.850. (If any building or if part of a building to be dismantled is identified in the Subcontractor's engineering survey as being structurally deficient, the Subcontractor shall submit a Safe Work Plan to shore the structure so that safety of the workers is maintained.)

5. Methods and materials to be utilized for control of fugitive emissions.

6. Means of controlling migration of liquids, if used.

7. Written statement of acceptability of utilities isolation.

B. Submittals shall include temporary structures, office building, trailers, size reduction facilities and interior/exterior contamination zones. See Part 6 of the IFB/RFP for traffic flow for deliveries and access to the building within the construction boundary by FDF.

## PART II PRODUCTS

### 2.1 MATERIALS

A. Patching Grout: Non-shrink type, premixed compound consisting of non-metallic aggregate; cement; water reducing and plasticizing agent; capable of developing minimum compressive strength of 5,000 psi in 28 days; capable of developing a bond strength of 1,200 psi in 28 days; conforming to ASTM C 109 and ASTM C827.

1. Acceptable products and suppliers (or equal):

   a. Masterflow 713, by Masters Builders.
   b. SikaGrout 212, by Sika Corp.
   c. Sealtight 588, by W. R. Meadows.

2. The "or equal" products will be approved by FDF prior to use on the FEMP.

B. Construction Zone Fencing: Shall be red or orange plastic construction fencing. Gates shall be plastic yellow chain fixed to stanchions. Stanchions shall be located on grade.

C. Ensure that clean granular fill is used to fill large openings in the base slab, including pits, large sumps, etc. This material will be supplied by the Subcontractor. Use of fine aggregate shall be

natural river sand, bank sand or sand manufactured from stone or air-cooled blast furnace slag; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; within the following limits:

| Sieve Size | Percent Passing |
|---|---|
| No. 4 | 100 |
| No. 50 | 10 - 40 |
| No. 200 | 0 - 5 |

D. Wood Poles

1. Use 45' Class 2 wood poles.

2. ANSI 05.1; treated southern pine poles.

3. Select poles for straightness, minimum sweeps and short crooks. FDF shall be notified of any sweeps or crooks prior to installation for determination of acceptance.

4. Preservative: ANSI 05.1 and AWPA C4, Pentachlorophenol.

5. Apply preservative to AWPA C4 with minimum net retention of 12 lbs/ft$^3$ (285 kg/m$^3$). Obtain complete sapwood penetration.

E. Pole Hardware

1. Miscellaneous Pole Hardware: Hot dipped galvanized after fabrication.

2. Bolts and Nuts: ANSI C135.1.

3. Butt Plate: Copper.

4. Guy Strand: High strength, seven strand steel cable galvanized to ASTM A475, Class A or B.

5. Guy Termination: Three-bolt clamp type.

6. Guy Guards: 8 foot (2 m) long plastic, colored yellow.

7. Ground Wire: Soft drawn copper conductors, 6 AWG minimum size.

8. Air Terminal: UL 96; 18 inch copper air terminal.

9. Guy Adapter: Twin Eye.

F. Line Conductors

1. Secondary Conductors: Copper, triplex (three) cable with 600 volt cross-linked polyethylene insulation for phase conductors. Use bars, extra high strength copper messenger for ground.

G. Arresters

1. Surge Arresters: NEMA LA 1; valve type, arranged for pole mounting, and rated 3 kv.

2. Mechanical Connectors: Bronze.

3. Wire: Stranded copper.

a. Grounding Conductor: Size to meet NFPA 70 requirements.

H. Anchors

1. Helical Screw Anchors: Galvanized steel, ASTM A36/36M.

I. Gravel Pads for Access and Queuing Areas

1. The aggregate shall be crushed carbonate stone, crushed gravel, crushed air-cooled slag, granulated slag, a mixture of crushed and granulated slags.

## PART III EXECUTION

### 3.1 EXAMINATION

A. The Subcontractor shall perform an Engineering Survey in accordance with the requirements of OSHA 29 CFR 1926.850, approved by FDF prior to the Subcontractor proceeding with any work activities beyond mobilization.

### 3.2 PREPARATION

A. Site Access

1. Vehicle, equipment and pedestrian access/egress shall be directed through the designated radiological control points.

2. Have provisions in place for emergency vehicles to enter the construction zone at all times.

## SECTION 01515

B. Patching Building Slab

1. Patching Grout:

   a. To ensure proper bond to concrete, all grease, oil, dirt and other deleterious materials shall be completely removed and handled in accordance with Section 01120 of this specification package.

   b. Roughen the surfaces to assure bond to the existing concrete. Loose or broken concrete shall be removed and handled in accordance with Section 01120 of this specification package.

2. Remove all slab penetrations to grade level. Conduit and piping shall then be plugged and covered with grout to grade level.

3. Follow all manufacturer's recommendations for the application of patching grout.

   a. Fill in damaged areas of base slab and small openings including drains, chases, small sumps, etc., with a patching grout to create a surface level with surrounding slab. Maximum allowable depression not requiring repair is 1 inch in depth.

4. Ensure that large openings in the base slab including pits, large sumps, etc. are free of water and loose debris prior to filling with granular fill material to within 2 inches of grade and topped off with grout.

C. Construction Utilities

1. Utilities: All electric, gas, water, steam, sewer, and/or other service lines to the building have been disconnected and/or capped. Prior to performing any D&D work, the Subcontractor shall conduct a survey to verify that all utilities are capped and/or controlled to the Subcontractor's satisfaction, and notify FDF in writing of the acceptability of the utilities isolation.

2. FDF will provide electrical power and water to the locations indicated on reference site drawing listed in Part 7 of the IFB/RFP. Capacities for water and power provisions are listed in Part 6 of the IFB/RFP. The Subcontractor shall determine if the capacities that can be provided by FDF are adequate for their needs; if not, the Subcontractor shall supply any additional capacities required. All penetrations made through transite for temporary power lines shall be accomplished in accordance with Section 07415 of this specification package.

3. The Subcontractor shall remove all grounding conductors to grade level.

4. The Subcontractor shall extend the power from the point source location or provide portable generators.

## SECTION 01515

5. All electrical appurtenances required for temporary power shall be in accordance with the National Electric Code.

6. Temporary heating or cooling, if needed, shall be provided by the Subcontractor. All portable heaters shall be Underwriters Laboratories (UL) listed or American Gas Association (AGA) certified for their intended use, and are not modified for other applications. Ventilation for fuel-fired heaters and adequate clearance to combustible materials, surfaces, and furnishings shall be provided according to manufacturer's recommendations. Use of LPG gas-fired heaters shall be approved by the Fire Protection group. All portable Continuous running of gas fired heating systems require 24 hour coverage by the Subcontractor.

D. Signs and Barriers - The Subcontractor shall:

1. Protect manholes, catch basins, valve pits, underground utilities, post indicator valves, pipe racks and drains, adjacent structures, and groundwater monitoring wells from damage during the work.

2. Protect all existing exterior benchmarks and survey monuments during the course of the work. If displaced or lost, the Subcontractor shall reinstall at no additional cost to FDF.

3. Remove all existing chain link fencing as noted on the reference drawings and install construction zone fencing outlining construction boundary except as noted in Section 3.2.D.7 below.

4. The Subcontractor shall supply and post construction safety signs, such as "Hard Hat Area" and "Danger-Demolition Ongoing," and construction barriers as necessary to protect the operations and adjacent structures. Signs shall be placed approximatley every 25 feet around the defined construction area.

5. The Subcontractor shall install and maintain throughout the performance period of this subcontract, barriers (minimum - orange snow fence) around the construction area to control access.

6. FDF shall supply signs, barriers, fencing, and tape indicating radiological control zones.

7. Install Radiological fencing as follows:

   a. Yellow snow fence shall be installed around radiological areas in outdoor areas to designate the following boundaries:

      - Contamination Area/Controlled Area
      - High Contamination Area
      - Adjacent Contamination Areas controlled to different isotopes

b. When the requirements for orange construction boundary fence and yellow radiological fence overlap, the yellow radiological fence may serve as the sole boundary.

c. When yellow fence requirements coincide with an existing barrier such as chain link fence or a building wall, the existing physical barrier may serve as the boundary.

d. Fencing for short-term work may be supported with portable stanchions. Fencing for long-term activities must be supported by posts driven into the ground. Posts of stanchions shall be no more than six feet apart. Entry points shall be established such that they may be easily opened and can be held closed. These points shall be metal gates with metal posts driven into the ground and large enough to support traffic and/or movement of waste containers. For situations where personnel access is the only need, the subcontractor may utilize building doors or overlapping yellow fence that can be tied back and supported by the remaining fence while open (i.e. will not lie on the ground).

E. Potential Use of Existing Overhead Bridge Cranes

a. Use of permanent facilities shall be in accordance with the requirements of Section 5 of Temporary Facilities and Utilities of Part 6 of the IFB/RFP.

F. Gravel Pads for Access and Queuing Areas

a. Grading of site shall prevent ponding of water. Use a minimum slope of 1 percent. All grading will direct water toward the site's storm drainage system.

G. Protecting Adjacent Facilities and Components

a. The Subcontractor is responsible for avoiding damage to adjacent structures, material and equipment including underground utilities during decontamination and dismantlement activities.

H. Debris Chutes

1. The Subcontractor shall ensure that catch platforms, chutes and other means of handling debris are properly isolated by gates or barriers designed and constructed to eliminate impact hazards and to control the flow of material to its final destination.

2. Debris chutes shall meet the requirements of 29 CFR 1926.852.

3. Debris chutes shall be fully enclosed, dust-tight and ventilated.

4. FDF may prohibit the use of a debris chute if the radiological contamination levels could result in the uncontrolled generation of airborne radioactivity.

## SECTION 01515

I. Remediation Equipment

1. Identify any special requirements for storing material or equipment.

2. To minimize the generation of waste products by the Subcontractor, all equipment requiring periodic oil and filter changes shall have this maintenance performed just prior to arrival on site.

3. Additional requirements for mobilization and demobilization of remediation equipment are listed in the IFB/RFP in the Project Radiological Requirements Plan.

J. Ventilation and Containment

1. Install a vestibule on the entry/exit of the building access to prevent the escape of airborne contamination when applicable. If a vestibule is used, its material of construction and performance characteristics shall be in compliance with Section 15067 of this specification package.

2. Ensure that all holes, gaps, openings are sealed with duct tape, fiber-reinforced sheeting, plywood or foam material (including where doors or windows are missing) in accordance with Specification Section 15067.

### 3.4 FINAL PROJECT SITE ACCEPTANCE

A. Final project site acceptance shall be conducted by FDF in accordance with Site Procedures, and will consist of verification of completion of all work activities relating to the work scope.

**END OF SECTION**

# SECTION 01516

# ASBESTOS ABATEMENT

## PART I GENERAL

### 1.1 SCOPE

This section specifies the requirements for an asbestos hygiene program, and methods to be used for removal, movement, and disposition of asbestos-containing material (ACM) and other materials contaminated with asbestos. This section does not cover transite.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01517 - Removing/Fixing Radiological Contamination.

C. Section 15067 - Ventilation and Containment.

D. Section 07415 - Transite Removal.

### 1.3 REFERENCE MATERIALS

A. See the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Air Cleaning Device (ACD) Procurement Specification.
5. Air Cleaning Filter Procurement Specification.
6. Subcontractor Work Plan Format Requirements.
7. HEPA Vacuum Cleaner Requirement.
8. HEPA Air Filtration Device Requirement.

B. For ACM information on the project, refer to Diagnostic Engineering, Inc. (DEI) Report and additional information on ACM in Part 6 of the IFB/RFP Package.

### 1.4 REFERENCES, CODE AND STANDARDS

All work shall be accomplished in accordance with the following reference, code and standard requirements:

A. 29 CFR 1910 Occupational Safety and Health Administration - Department of Labor (as applicable).

B. 29 CFR 1926 Occupational Safety and Health Administration - Department of Labor (as applicable).

C. Ohio Department of Health Asbestos Hazards Abatement Rules Chapter 3701 - 34, OAC (Ohio Department of Health).

D. Ohio Environmental Protection Agency Chapter 3745-20, OAC.

E. United States Environmental Protection Agency (US EPA) 40 CFR 61, Subpart M, (NESHAPS).

## 1.5 SUBMITTALS

A. The Subcontractor shall submit the following for approval:

1. An asbestos abatement work plan as described in the IFB/RFP Part 8, Safety and Health and Training Requirements.

2. Prior to initiation of ACM work, the Subcontractor shall submit the following items to Fluor Daniel Fernald (FDF):

a. Ohio Department of Health/OSHA-required documentation for Asbestos Removal Contractors:

1) Documentation of training.
2) Medical surveillances.
3) Respirator fit-test.
4) Employee exposure assessments.

b. State of Ohio certificates and licenses for the Subcontractor.

c. State of Ohio certification for all personnel as required by law.

3. Prior to submittal of notification to government agencies, the Subcontractor shall provide a copy of the notification to FDF for concurrence.

4. Product Data: The Subcontractor shall submit manufacturer's technical information including application instructions for each material proposed for use.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. The subcontractor shall take precautions to prevent creation of friable ACM during handling.

B. Materials shall be in original, new, and unopened containers bearing manufacturer's name, label, and the following information:

a. Name or title of material.
b. Manufacturer's stock number and date of manufacture.
c. Manufacturer's name.
d. Thinning instructions.
e. Application instructions.

## PART II PRODUCTS

### 2.1 MATERIAL

A. Polyethylene sheeting shall be a minimum of 6 mils thick as manufactured by Blueridge Films Inc. or equal.

1. Fire retardant polyethylene shall be used.

2. All outside containments shall be constructed of reinforced polyethylene.

B. Surfactants (wetting agents), encapsulants, and lockdowns shall be mixed in a proportion specified by the manufacturer.

1. Surfactants:

a. Childers CP-225 CHIL-SORB.
b. Certech.
c. Expert Environmental Products.
d. International Protective coatings Corp.

2. Encapsulants:

a. Certane 2050 Certified Technologies.
b. Expert Environmental Products - Eppco #1.
c. International Protection Coatings Corp. - Serpiloc.

3. Lockdowns:

a. 1050 - Clearcoat by Certane.
b. Fiber-Seal by Eppert.
c. International Protection Coatings Corp.-Serpiloc.

4. Equivalent or better products may be acceptable and shall be approved by FDF.

## SECTION 01516

### 2.2 EQUIPMENT

A. Negative pressure Air Filtration Device (AFD) equipped with HEPA filtration and operated in accordance with the requirements of 29 CFR 1926.1101 (See Part 7 of the IFB/RFP).

B. All ventilation inside containments used for asbestos abatement operations shall be capable of maintaining a minimum of 0.02 inches water gauge (w.g.) of negative pressure within the containment, as recorded by manometric measurements. The ventilation system for this type of operation shall provide a minimum of four air changes per hour.

C. For mini-enclosures and glovebags, a HEPA filtered vacuum system may be substituted to provide negative air pressure. Ensure that the HEPA filtered vacuum system meets the four air changes per hour capacity required for mini-containments. See Part 7 of the IFB/RFP for requirements for HEPA vacuum systems acceptable to FDF.

D. HEPA filtered vacuum system used of asbestos abatement cleanup.

E. The Subcontractor shall supply a Portable Asbestos Hygiene Facility (See Attached Asbestos Hygiene Facility drawing). The size of this facility shall be large enough to handle the asbestos workers during peak manpower periods. The facility shall meet the requirements for a hygiene facility specified by OSHA 29 CFR 1926.1101, DOE and site radiological control requirements. When exiting a radiological controlled area, radiological control requires whole body monitoring prior to showering. The requirements of the hygiene facility compliance with radiological control requirements, are as follows:

1. The asbestos hygiene facility shall be located adjacent to the radiological contamination area. The size of this facility is based on the number of employees that will be using the facility; this determines the number of showers required. The minimum number of showers required (based on number of workers) is located in 29 CFR 1910.141, Sanitation. It is recommended that the Subcontractor provide more showers than are legally required so the workers can exit the work area in a timely manner.

2. The doffing room (dirty change area) of the asbestos hygiene facility shall be maintained under negative pressure in relation to the rest of the hygiene facility. The air in the dirty change area shall be exhausted through a HEPA filtered air filtration device to assist in cleaning the air in the change area. The air change requirement in the dirty changes area is 4 air changes per hour at a minimum of -0.02 of water pressure differential, relative to outside pressure. The dirty change area shall be large enough to accommodate four containers for segregation of asbestos contaminated waste and personal protective equipment, and an Air Filtering Device. The dirty change area should have hooks or shelves for storage of hardhats and toolbelts.

3. A buffer area must be placed between the doffing room and the shower area (with room for a PCM) by dividing the doffing area into two areas using fire-retardant material. The first area of the doffing room will be considered a radiological contaminated area (this area will be maintained under negative pressure to the rest of the facility). A step-off pad will be established in the airlock/doorway separating the radiological contaminated area from the radiological controlled area creating a boundary for control of asbestos contaminated items and radiological contamination. The second area in the doffing room (buffer area) will be a radiologically controlled area which should be maintained free of any asbestos or radiological contamination. The Subcontractor shall ensure that an electrical outlet exists for the PCM. The minimum power requirements for the PCM are 120 volts AC and 1 amp. The PCM minimally requires an area of 5.5 feet by 4 feet. The buffer area shall also contain a sink for the rinsing of respirators prior to removal.

4. The clean room shall contain benches, lockers for storage of workers' personal clothing, and shelves for storage of personal protective equipment.

## PART III EXECUTION

### 3.1 PREPARATION

A. The Subcontractor shall notify the Ohio Department of Health (ODOH), and FDF shall notify the EPAs and all other applicable governmental agencies before start of work.

B. The Subcontractor shall be responsible for:

1. Adherence to and compliance with work practices and procedures set forth in all applicable Federal, State, and local codes, regulations, and standards.

2. Obtaining certifications and licenses.

C. To prepare work for removal:

1. Isolate the work area.
2. Establish hygiene facility/equipment room.
3. Install primary containment barriers.
4. Cover the floor with two layers of 6 mil polyethylene sheeting.
5. Size plastic to minimize seams.
6. Cover walls and any contained work area with 6 mil polyethylene sheeting.
7. Provide load out facility and emergency exits.
8. Post the required asbestos hazard warning signs.

### 3.2 APPLICATION

## SECTION 01516

A. Use the following removal procedures:

1. Wet all ACM to be removed from the component with an amended water solution.

2. Saturated ACM shall be removed in manageable sections and maintained wet until placed into disposal containers or sealed in plastic.

3. Material removed from building structures or components shall not be dropped or thrown to the floor or into disposal containers.

4. Large components removed intact may be wrapped in two layers of 6-mil polyethylene sheeting, secured with tape and properly labeled.

5. Asbestos-containing material with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) which will tear the polyethylene bags and sheeting shall be placed into Subcontractor-supplied, properly labeled containers, and subsequently bagged for disposal.

6. After completion of all stripping work, surfaces from which ACM has been removed shall be wetbrushed and sponged or cleaned by some equivalent method to remove all visible ACM residue.

B. Use the following cleanup procedures:

1. Remove and containerize all visible accumulations of ACM and asbestos-contaminated material.

2. Wet clean all surfaces in the work area.

3. After cleaning the work area, wait at least 24 hours to allow fibers to settle, and HEPA vacuum and wet clean objects and surfaces in the work area again.

4. Inspect the work area for visible residue.

5. The work area shall be cleaned until visual inspection reveals no evidence of any AMC as determined by FDF.

6. Apply lockdown to all surfaces in the work area.

7. Aggressive clearance testing shall be performed by FDF and the acceptable limit $<0.01$ f/cc by PCM.

8. Upon successful completion of aggressive clearance testing by FDF, the Subcontractor shall remove containment and dispose of it as ACM waste per Part 6 of the IFB/RFP.

9. Wastewater associated with asbestos abatement shall be handled in accordance with Section 01517 of this Specification package.

C. ACM Insulated Piping:

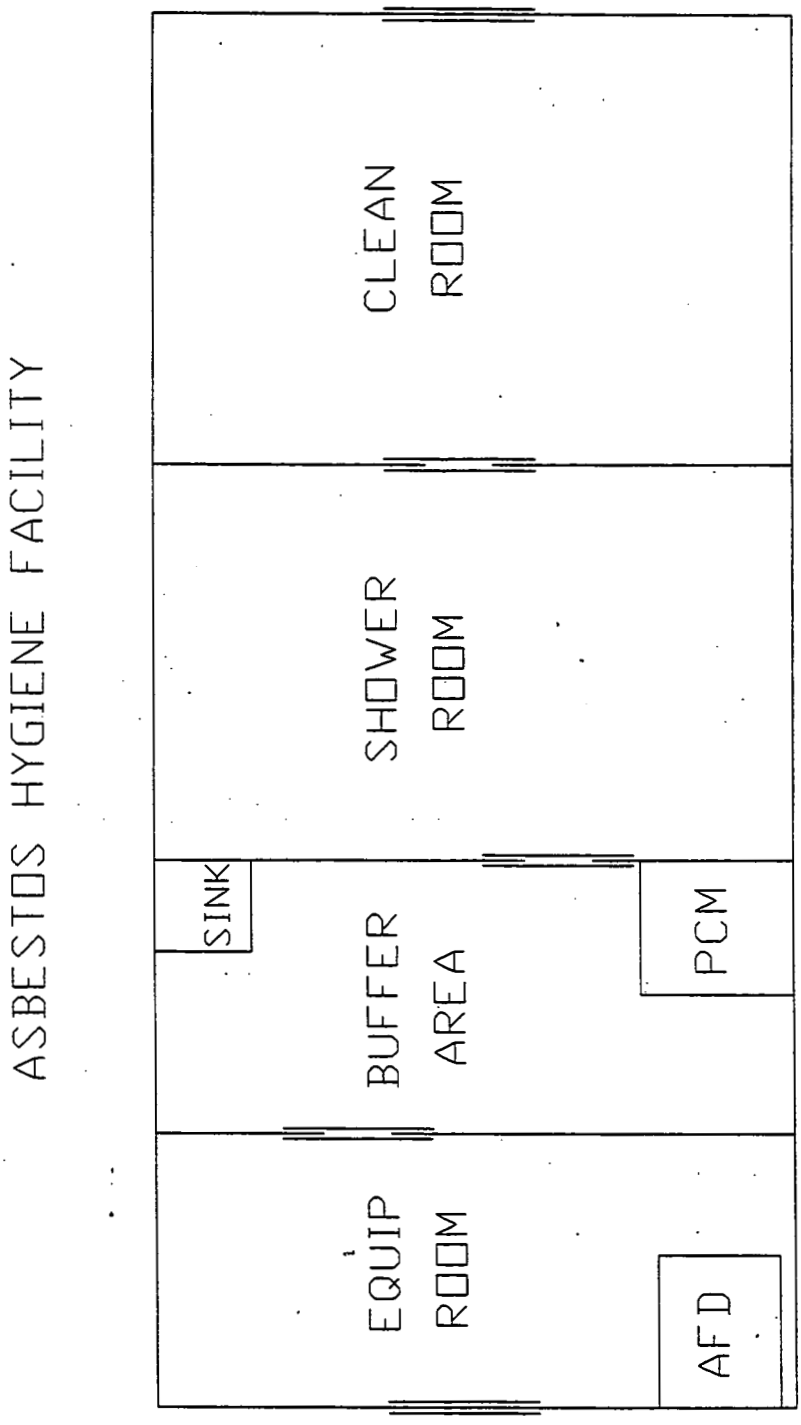
1. All piping (less than 12 inches in diameter) insulated with ACM may be removed with ACM in place. Wrap the piping with 6 mil polyethylene sheeting. Remove ACM from area of cut utilizing glovebags as containment. Exposed ACM ends shall be capped and the pipe shall be wrapped in 6-mil polyethylene sheeting. Containerize according to the Waste Management Plan, located in Part 6 of the IFB/RFP.

D. Asbestos Removal:

1. Wet methods and state of the art engineering controls/containment shall be utilized throughout abatement activities to prevent employee exposure as well as the release of visible asbestos emissions to the environment.

2. The Subcontractor shall remove non-friable asbestos such as floor tile, mastic and gaskets in accordance with government, state, and local asbestos abatement regulations.

**END OF SECTION**


ASBESTOS HYGIENE FACILITY
CLEAN ROOM
SHOWER ROOM
SINK
BUFFER AREA
PCM
EQUIP ROOM
AFD

# SECTION 01517

# REMOVING/FIXING RADIOLOGICAL CONTAMINATION

## PART I GENERAL

### 1.1 SCOPE

A. Decontamination of dismantled equipment or structural debris to a level that permits removal of the equipment from a local containment, enclosure or permits opening the building to the environment. This section includes, but is not limited to:

1. Decontaminating low-level uranium and thorium contaminated equipment, materials, structural members, and/or buildings.

2. Decontaminating enriched uranium contaminated equipment and materials.

3. Decontaminating RCRA contaminated equipment and materials.

4. Controlling and moving effluent produced during the removal and/or fixing of contamination.

5. Fixing of contamination.

#### 1.1.1 Project Conditions

A. The Subcontractor shall establish an inspection area to allow Fluor Daniel Fernald (FDF) to inspect waste materials and perform radiological surveying.

1. The inspection area shall be arranged such that routine access is prevented by means of fencing and/or barrier tape with appropriate posting to identify that the items contained are being held for survey and the area is off limits to individuals other than FDF/Subcontractor radiological survey personnel.

2. Only those items which meet the requirements for leaving the local containment or building should enter the inspection area. The requirements for items to leave local containment or a building enclosure are given in Section 3.2.C of this specification.

B. If by visual inspection, hold-up material is found (solid or liquid), FDF shall be notified immediately. If the volume is estimated to be less than 1 quart, the D&D Subcontractor will be responsible for removing and containerizing the hold-up in accordance with the Waste Management Plan, located in Part 6 of the IFB/RFP. If the material found is estimated to be greater than 1 quart by volume, activities will cease on that piece of demolition debris.

### 1.2 RELATED SECTIONS

All work shall be accomplished in accordance with the following code requirements:

A. Section 01120 - Waste Handling Criteria.

SECTION 01517

B. Section 03315 - Concrete Removal

C. Section 04225 - Masonry Removal.

D. Section 05126 - Structural Steel Dismantlement.

E. Section 07415 - Transite Removal.

F. Section 15065 - Equipment Dismantlement.

G. Section 15066 - Interior Dismantlement.

H. Section 15067 - Ventilation and Containment.

## 1.3 REFERENCE MATERIALS

A. See Part 7 of the IFB/RFP Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.

## 1.4 REFERENCES, CODES, AND STANDARDS

A. United States Department of Energy (DOE):

| | | |
|---|---|---|
| 1. | DOE Order 5400.5 | Radiation Protection of the Public and the Environment. |
| 2. | DOE/EH-0256T | Radiological Control Manual, April 1994. |
| 3. | DOE/EM-0142P | Decommissioning Handbook, Chapter. 9, Mar. 1994. |

B. 10CFR835 Occupation Radiation Protection

## 1.5 SUBMITTALS

A. Before start of decontamination work, the Subcontractor shall submit for approval a work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, describing the system design for removing and/or fixing contamination, including the methods and equipment for: removing contamination; fixing contamination; and controlling, filtering, and transporting effluent produced during removal and/or fixing activities.

B. Product Data: The Subcontractor shall submit manufacturer's technical information including the material to be used, its intended use, and its application instructions.

SECTION 01517

## PART 2 PRODUCTS

### 2.1 SUBCONTRACTOR'S EQUIPMENT

A. The Subcontractor shall supply all equipment required to remove and/or fix contamination.

B. The Subcontractor shall collect all waste and effluent generated while removing and/or fixing contamination. Effluent and sludge shall be containerized in accordance with the requirements listed in Sections 3.2.E and 3.2.F of this specification. The Subcontractor shall supply all equipment required to control, filter, and move effluent produced during removal and/or fixation of contaminants.

1. The filter system shall consist of a 20 micron pre-filter and a 5 micron filter to remove entrained particulate prior to effluent discharge to tankage.

2. The Subcontractor shall supply all effluent containment vessels and associated secondary containment systems as specified in Sections 3.2.E and 3.2.F of this specification.

3. The Subcontractor shall supply a drum scale for determining compliance with limits for drum contents. The drumming requirement are listed in Section 3.2.F.

### 2.2 MATERIALS

A. If stabilizer coatings are employed, they shall be Carboline D3358 or approved equal. Manufacturers may include, but are not limited to: Tnemec Series 6 - Tnemec-Cryl, Sherwin-Williams, or International Protective Coatings.

B. If non-strippable coatings are employed, they may include, but are not limited to: Polymeric Barrier System (Bartlett), or an approved equal.

## PART 3 EXECUTION

### 3.1 APPLICATION

A. To remove equipment or debris out of a local containment or enclosure or prior to loading into containers, or to containerize outside of an enclosure, or prior to moving to the inspection area, all surfaces shall be free of visible process residues and dry as determined by FDF. The definition of visible process residues (green salt, yellow cake, etc.) is material on the interior or exterior surfaces of debris that is obvious and that if rubbed, would be easily removed. If an item fails visual inspection, the items shall be deemed a Category C (Process-Related Metals) item and shall either be encapsulated or wrapped in accordance with Section 01120 of this specification package and containerized as stated in the Waste Management Plan located in Part 6 of the IFB/RFP. Dirt, oil, stains, rust, corrosion, and flaking do NOT qualify as visible process material. Dirt, oil, stains, rust, corrosion, and flaking will be considered for contamination control purposes. All equipment, material, and debris are still considered to be radiologically contaminated.

## SECTION 01517

B. Requirements common to both Equipment Decontamination and Structure Decontamination:

1. Acceptable methods for removing contamination include, but are not limited to: Hydro-blasting or steam-cleaning with a minimum of 1,000 psi, sponge blasting, and HEPA vacuuming.

2. Fixing of contaminants is required, if contamination levels have not been met and decontamination has been attempted at least once. Acceptable methods for fixing contamination, which is not readily removed by the above identified methods include, but are not limited to: Stabilizer coatings and Non-strippable coatings.

3. If stabilizer or non-strippable coatings are used as fixatives, they will meet the requirements of this specification (see Section 2.2).

4. The Subcontractor shall take precautions to prevent the breaching of stabilizer coatings applied to equipment or structure. If a stabilizer coating is breached after application, during activities leading up to but not including structural demolition, the Subcontractor must take action to reseal the breached areas.

C. Requirements specific to equipment decontamination and removal from a building enclosure or local containment:

1. The Subcontractor shall remove contamination on equipment, materials, or debris in accordance with this Specification Section and move equipment to an inspection area.

2. Thorium-contaminated items cannot be released from the building enclosure or local containment areas unless surveyed for thorium-specific release limits (as referenced in Part 8 of the IFB/RFP). Items taken from these areas shall be either decontaminated, wrapped and brought directly to containers labeled as containing thorium-contaminated items (not for re-packaging), or containerized prior to removal from the enclosure as determined by the Subcontractor.

3. Hazardous Waste Management Unit (HWMU) equipment shall be rinsed or otherwise decontaminated to clean, as determined by visual inspection as defined in Section 3.2.C.5 of this specification.

4. Equipment identified by FDF as being contaminated with uranium with an enrichment over 2 percent will be removed and containerized by the Subcontractor for disposition as contaminated material without decontamination.

D. Requirements specific to Structure Decontamination:

1. Prior to opening a building to the environment by removing the exterior siding or demolishing a building, the Subcontractor shall remove and/or fix radiological contamination on all

structural surfaces within the facility until the detected radioactivity levels are below the criteria as defined in Part 8 of the IFB/RFP.

FDF may perform a radiological release survey to ensure the radioactivity criteria are met.

2. Down posting of thorium contaminated areas requires that contamination levels meet the thorium -specific release limits.

3. If hydro-blasting or steam cleaning is employed, the Subcontractor shall:

   a. Seal floor cracks/seams and building cracks using sealants to protect the environment from migration of contaminants through slabs.

   b. Contain effluents to the building interior and subsequently to collection systems.

4. The Subcontractor may utilize any existing building floor sumps for effluent collection, as long as system capacity for sludge and/or liquid does not exceed limitations determined from enriched material levels.

5. The Subcontractor shall take precautions to prevent the spread of contamination from other more-contaminated areas of the facility.

6. For Hazardous Waste Management Units (HWMUs), the slab surface of the HWMU shall be rinsed with a water spray, or other approved gross decontamination methods, at least one time.

E. Rinseate/Effluent Handling:

1. All effluents and sludges shall be collected in separate containers from other effluents and sludges until after sampling and analysis. FDF will perform all effluent and sludge sampling and analysis. Approval to commingle the effluents and sludges must be provided by FDF. The collection containers will meet the requirements defined in the following subsections.

2. For the washing of equipment/material or a structure containing uranium and/or thorium contamination, the Subcontractor shall supply effluent storage tanks with a minimum storage capacity to allow 30 calendar days storage without impacting operations. Effluent tanks require secondary containment with a minimum of 10 percent of the overall effluent tank capacity housed and not less than the volume of one full tank, whichever is greater.

3. In addition to effluent tanks, the washing of enriched equipment/material, as listed in Part 8 of the IFB/RFP, requires the use of smaller tanks to permit safe quantities to be maintained (for nuclear criticality safety purposes). There are no mass restrictions for rinsates or sludges with a U-235 enrichment less than 1 percent.

   a. For enrichments greater than 1 percent and less than or equal to 1.25 percent, the Subcontractor shall supply effluent storage tanks of no greater than 175 gallon

capacity, in numbers sufficient to permit 15 calendar days storage without impact to Subcontractor operations.

b. For enrichments greater than 1.25 percent and less than or equal to 2 percent (no equipment/material over 2 percent enrichment is to be decontaminated, see Section 3.2.C.4), the Subcontractor shall supply effluent storage tanks no greater than 30 gallon capacity, in numbers sufficient to permit 15 calendar days storage without impact to Subcontractor operations.

c. The Subcontractor shall store sludge, resulting from enriched equipment/material washing, in 55 gallon drums (supplied by FDF). Filled drums may be stored no closer than 2 feet apart. A storage area will be posted and designated by FDF.

d. Equipment/material washing operations and effluents shall be maintained separate, based on enrichment and type, by the following: uranium less than or equal to 1 percent enrichment, uranium greater to 1 percent enrichment but less than or equal to 1.25 percent enrichment, uranium greater than 1.25 percent enrichment but less than or equal to 2 percent enrichment, and thorium. Wash systems can be maintained separate by campaign or by physically separate systems.

e. Approval to transfer effluents to large effluent tanks is required from FDF.

4. Upon approval from FDF, the Subcontractor shall empty the contents of the effluent storage tanks and transport the effluent to the FEMP Advanced Wastewater Treatment Facility.

F. Sludge Drumming

Sludge limits for individual drums from enriched washing operations are restricted to the weight listed below. (Note: The weight is limited due to Department of Transportation and/or the maximum allowable weight of the drum.)

1. 104 grams of U-235 per 55 gallon drum.

## 3.2 QUALITY ASSURANCE

A. All QA activities to be provided by the Subcontractor will be stated in Part 3, "General Terms and Conditions", and Part 9 of the IFB/RFP.

## 3.3 QUALITY CONTROL

A. The Subcontractor is to perform or witness inspections and test of procured material, equipment and items, work in progress and completed items within the bounds of the contract.

SECTION 01517

## 3.4 DELIVERY, STORAGE, AND HANDLING

A. The Subcontractor shall deliver materials in original, new and unopened containers bearing the manufacturer's name, label, and the following information:

1. Name or title of material.
2. Manufacturer's stock number and date of manufacture.
3. Manufacturer's Name.
4. Application instructions.
5. Material Safety Data Sheets.

B. All possible shipping and packing materials will be removed upon receipt at the site prior to entering the controlled area to minimize contaminated waste generation.

END OF SECTION

# SECTION 01518

# SURFACE REMOVAL OF CONCRETE

## PART I GENERAL

### 1.1 SCOPE

A. This section defines the work related to the removal of a surface layer from the existing concrete pads utilizing surface removal technologies. Principals included in the section are:

1. Removing surface layer.
2. Controlling and transporting waste produced during the removal of concrete.
3. Controlling the spread of radiological contamination in the operating area.
4. Equipment types and usage.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01517 - Removing/Fixing Radiological Contamination.

B. Section 15067 - Ventilation and Containment.

C. Section 01519 - Measures to Prevent Contamination and Requirements for Decontamination of Subcontractor Provided Tools, Equipment, and Materials.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.

B. See Part 8 of the IFB/RFP Package for the Radiological Requirements.

### 1.4 REFERENCES, CODES, AND STANDARDS

A. See General Section 01010 for these references, codes and Standards.

### 1.5 SUBMITTALS

A. Before start of concrete removal work, the Subcontractor shall submit for approval a work plan describing the system design for removing concrete. The work plan shall describe methods and equipment for removing concrete, including equipment used for controlling, filtering, and transporting waste generated during removal activities. The work plan shall also describe methods and equipment used to control the generation and spread of contamination.

B. Product Data: The Subcontractor shall submit manufacturer's technical information on all materials to be used, including their intended use and application instructions.

C. See Part 6 of the IFB/RFP for additional submittal requirements.

## 1.6 QUALITY ASSURANCE

A. Prior to commencement of work, the Subcontractor shall demonstrate the methods for removing concrete on a sample area of a concrete floor selected by FDF.

## 1.7 PROJECT CONDITIONS

A. Radiological contamination has been detected on concrete pads, as shown on referenced drawings. The Subcontractor is to remove surface layers of concrete in the locations and to the depth specified in the IFB/RFP. This may require concrete removal adjacent to curbs and foundations.

B. See referenced drawings in Part 7 of the IFB/RFP for work area and local underground utilities.

# PART II PRODUCTS

## 2.1 MANUFACTURERS/EQUIPMENT

A. The Subcontractor shall supply a system with all equipment required to remove concrete, including equipment to control, filter, and transport waste produced during concrete removal.

B. The concrete removal system (equipment) shall include, but not be limited to, the following features:

1. Integral vacuum system with pre- and HEPA filters.

2. Controlled, dustless process with personnel exposure below DAC limits as defined in Part 8 of the IFB/RFP.

3. Simultaneous collection of waste in 55-gallon drums.

4. No use of water where technetium-99 contamination is of concern.

5. Equipment shall be portable.

6. Consideration shall be used to select equipment that can be easily decontaminated for free release after use. For details on releasing tools and equipment, refer to Specification Section 01519.

7. Equipment shall implement waste management technology that minimizes secondary waste.

8. Vacuum design shall allow operator to fill, seal, remove, and replace the waste drum under negative pressure vacuum conditions/enclosures.

C. Acceptable equipment vendors are identified below. The listing of this typical equipment below in no way precludes alternate suppliers. Subcontractor is encouraged to investigate all alternatives to determine Best Available Technology. Alternate technologies may be proposed, provided they meet the requirements of this specification.

1. Typical equipment:

Pentek Moose, Squirrel and Corner-Cutter scabblers
Pentek Inc.
Decontamination Products Division
1026 Fourth Avenue
Coraopolis, PA 15108

D. FDF will provide standard 55-gallon drums for collection of waste. The Contractor shall provide all replacement filters.

E. Vendor shall provide method(s) for concrete removal adjacent to areas such as curbs and around foundations.

F. Erection of any necessary local containment shall be defined by the vendor in accordance with the requirements of Section 15067.

## PART III EXECUTION

### 3.1 APPLICATION

A. All concrete removal activities shall be performed in accordance with 10 CFR 835.

B. All work is to be performed according to FDF's health and safety requirements. Personnel in the controlled area shall be required to wear personal protective equipment as detailed in the health and safety matrix.

C. The Subcontractor shall control dust and debris generated while removing concrete. FDF shall monitor the area for airborne contamination. Subcontractor shall be required to make changes to operating methods and equipment if unacceptable levels of airborne contamination are found in the operating area.

D. The Subcontractor shall collect all waste generated while removing concrete. Waste and effluent shall be packaged in accordance with the requirements in the Waste Management Plan, located in Part 6 of the IFB/RFP.

E. Once the concrete has been removed, the Subcontractor shall take precautions to prevent the further spread of radiological contamination to the area.

SECTION 01518

## 3.2 FIELD QUALITY ASSURANCE

A. Removal depths indicated in Part 6 of the IFB/RFP are the minimum requirements for concrete removal. Acceptable performance is achieved when the minimum removal has occurred over the work area specified.

END OF SECTION

# SECTION 01519

# DECONTAMINATION OF SUBCONTRACTOR PROVIDED TOOLS, EQUIPMENT, AND MATERIAL

## PART I GENERAL

## 1.1 SCOPE

A. Preventative measures for and decontamination of Subcontractor provided tools, equipment (including vehicles), and material to a level that permits removal from an enclosure/work zone, restricted reuse, or unrestricted release. This section includes, but is not limited to:

- Preventative measures/waste minimization.
- Decontamination area requirements.
- Methods of decontamination activities.
- Control of effluent and waste management activities.
- Relocation, reuse, and release activities for tools, equipment, and material.

### 1.1.1 Project Conditions and Requirements

A. All facilities, unless expressly noted in Part 6 of the IFB/RFP, shall be considered contaminated with radioactive material.

B. The Subcontractor shall establish a holding area to allow Fluor Daniel Fernald (FDF) to perform tool and equipment radiological surveying.

1. The holding area shall be arranged such that routine access is prevented by means of fencing and/or barrier tape with appropriate posting to identify that the items contained are being held for survey and the area is off limits to individuals other than FDF/Subcontractor radiological survey personnel.

2. Only those items which meet the requirements (as described in this Specification Section) for leaving the work zone should enter the inspection area.

C. The subcontractor should assume that extensive dismantlement and an aggressive decontamination effort will be required to achieve unrestricted release of items that have come in contact with radioactive material or were used extensively in contamination areas. Based on past experience using the best available technologies, decontamination and survey access requirements to meet the release criteria may be difficult to achieve.

D. Hand and portable tools used in contaminated areas for performance of the subcontract are to be considered expendable as specified in Part 4 IFB/RFP, Special Terms And Conditions, Disposition of Subcontractor Provided Equipment, Tools, and Materials That Have Become Contaminated (SC-11).

## SECTION 01519

### 1.2 RELATED SECTIONS

A. Work related to this Specification Section shall also be accomplished in accordance with the following Specification Sections:

- Section 01120 - Waste Handling Criteria.
- Section 01517 - Removing/Fixing Radiological Contamination.
- Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIALS

A. See Part 4 IFB/RFP, Special Terms and Conditions, Disposition of Contaminated Tools, Equipment, and Materials (SC-11).

### 1.4 REFERENCES, CODES, AND STANDARDS

A. United States Department of Energy (DOE):

- DOE Order 5400.5, Radiation Protection of the Public and the Environment.
- DOE/EH-0256T, Radiological Control Manual, April 1994.
- DOE/EM-0142P, Decommissioning Handbook, Chapter. 9, Mar. 1994.

B. 10CFR835 Occupation Radiation Protection

### 1.5 SUBMITTALS

A. The subcontractor must provide FDF with a list of all tools, vehicles, equipment and material to be brought on site which have been used in conjunction with radioactivity in the past including such information as:

- Previous use of the equipment.
- Dates of use.
- Levels of contamination.
- Radioisotopes involved.

This list must be submitted as soon as known but no less than 30 days in advance of bringing the item on site. FDF reserves the right to reject the subcontractor's request to bring these items on site.

1. Any tools or equipment contaminated with a radioactive material other than $<1\%$ enriched uranium or thorium-232 will be rejected.

2. Thorium contaminated tools and equipment may only be used in a thorium contaminated area.

B. The Subcontractor shall submit the manufacturer's technical information for any decontamination or contamination controlling agents for compliance review prior to use. This information shall include:

- Material to be used.
- Intended use.
- Application instructions.
- MSDS Sheets.

C. Before start of decontamination work, the Subcontractor shall submit a Safe Work Plan addressing tool and equipment decontamination for compliance review in accordance with Part 7 IFB/RFP, Subcontractor Work Plan Format Requirements, describing the following:

- Preventative measures to be employed.
- The design and construction of the decontamination area.
- The methods to be utilized for decontamination (see 3.1, C of this Section).
- The methods and equipment for controlling and handling effluent and/or secondary waste produced during decontamination activities.
- Plans for relocating, reusing, or releasing tools and equipment.

## PART 2 PRODUCTS

### 2.1 SUBCONTRACTOR PROVIDED TOOLS AND EQUIPMENT

A. The subcontractor shall furnish all equipment, tools, and material required to perform the work described in the subcontract except where the contract explicitly states FDF will provide the item.

1. The Subcontractor shall deliver approved decontamination and contamination controlling agent materials in original, new and unopened containers bearing the manufacturer's label, and the following information:

   - Name or title of material.
   - Manufacturer's stock number and date of manufacture.
   - Manufacturer's Name.
   - MSDS Sheets.

2. All possible shipping and packing materials will be removed upon receipt at the site prior to entering the controlled area to minimize contaminated waste generation.

B. For the purposes of meeting the "As Low As Reasonably Achievable" ( ALARA) goal for tools, equipment, and materials, it is expected that all reasonable efforts are used to control residual contamination to the extent that there is no detectable contamination on items that were free of contamination prior to use or there is no increase in the level of contamination on items that were previously contaminated and allowed to be used using standard field survey instruments when the items are no longer required for use. This includes, but is not limited to, the following:

- Protective measures prior to use of items.

- Preventative measures while items are being used.
- Decontamination upon completion of work activities.

1. All subcontractor furnished tools, vehicles, equipment, and material may be inspected for radioactive contamination by FDF personnel prior to initial entry and upon removal from the radiological controlled area.

2. The Subcontractor shall supply all equipment required to remove and/or control contamination.

3. The Subcontractor shall supply all equipment required to control, filter, and move effluent produced during removal of contaminants.

## PART 3 EXECUTION

### 3.1 APPLICATION

A. Prevention of or Minimizing Contamination

1. The subcontractor shall plan and coordinate all work to minimize exposure of equipment, tools, and vehicles to potential radioactive contamination. Equipment shall be located in the area with the least potential for contamination. For example, locate equipment outside the facility with leads, hose lines, etc. wrapped and run to the interior of the facility. Typical examples of equipment where this approach should be used include air compressors, high pressure washers, welders, generators, oxy-acetylene cylinders, and battery chargers.

2. It is the subcontractor's responsibility to evaluate materials, tools and equipment for ease of decontamination and disassembly that may be required for decontamination prior to use on-site. Use of unrestricted release items (i.e. those other than expendable as defined in Part 4 IFB/RFP, Special Terms And Conditions, Disposition Of Subcontractor Provided Equipment, Tools, And Materials That Have Become Contaminated) should incorporate appropriate precautions to prevent contamination which should be implemented prior to and during use. Examples of precautionary measures may include the following which are expected to be implemented as described in the Safe Work Plan:

   - Internal combustion equipment subject to contamination should make use of pre-filters or have a separate source of outside air on the intake.
   - High volume air handling equipment such as blowers, compressors, etc. shall have a filtered inlet to minimize the potential for internal contamination due to build up of low level radioactivity. Vents for air cooling shall be covered in a similar manner.
   - The Subcontractor is prohibited from bringing electrical driven mobile equipment to the FEMP (e.g., fork-lifts) except where only electric driven equipment is available.
   - Protective sheathing/covers, strippable coatings, or protective caps should be used to minimize the potential for contamination (e.g., coating the

buckets of man lifts or other walking/standing surfaces). In addition, all openings on equipment, tools, or vehicles that may permit contamination of inaccessible or difficult to clean areas shall be covered and protected.

B. Decontamination Area Requirements

1. Tools and equipment utilized inside an enclosure/building may be decontaminated at an existing indoor debris washing location.

2. The following are examples of options for establishing outdoor decontamination areas.

- Utilize an existing pad.
- Construct a temporary containment area.
  - Containment must have a bermed perimeter to ensure runoff control.
  - An example of acceptable containment is Herculite with sandbag underlayment perimeters on a non penetrating grade.
  - Containment used must be adequate to maintain its integrity.

C. Methods of Decontamination Activities

1. If decontamination becomes necessary, the subcontractor should at a minimum use the following as applicable:

- Dry cleaning.
- Steam cleaning.
- High pressure hot water washing (may be used in conjunction with abrasive techniques and approved decontamination agents) with a minimum of 1,000 psi and HEPA vacuuming.

2. When selecting a decontamination technique other than those identified in 1 above, consideration should be given to those technologies which minimize radiological airborne emissions, secondary wastes, and tool or equipment damage.

3. As an alternative to decontamination, replacement of contaminated components shall be in accordance with the requirements of Part 4 IFB/RFP, Special Terms And Conditions, Disposition of Subcontractor Provided Equipment, Tools, and Materials That Have Become Contaminated (SC-11).

   a. The contaminated components are subject to the cleaning and handling requirements of 3.4, B of this Specification Section.

   b. The contaminated components will be managed and handled per Specification Section 01120 and Part 6 of the IFB/RFP subsequent to the cleaning as directed by FDF.

   c. Actual disposal of the contaminated components will be provided by FDF.

## SECTION 01519

D. Control of Effluent and Waste Management Activities

1. The Subcontractor shall control and collect all waste and effluent generated while removing and/or fixing contamination in accordance with the requirements listed in Part 7 IFB/RFP, Specification Sections 01517 and 01120. Effluent may be either pumped to an existing approved sump or to an effluent holding tank.

2. Management of wastes generated during decontamination activities shall be in accordance with Specification Section 01120 and the Waste Management Plan located in Part 6 of the IFB/RFP.

E. Relocation, Reuse, and Release of Tools, Equipment, and Material

1. The Subcontractor shall perform all decontamination and surveying activities required to verify that the surface contamination limits identified in Table 1 of this section are not exceeded. FDF shall perform final verification surveying.

2. The Subcontractor is to provide a minimum of 24 hours prior notice to FDF of intent to remove tools and equipment from the work area.

3. Release of tools, equipment, and material from Contamination Areas to the Controlled Area

   a. If removable contamination in excess of the limits of Table 1 is present on the tools, equipment or material, then the items must remain in the contamination area for decontamination or the item must be contained such that no contaminated surfaces of the item are accessible without disassembling the equipment or breaching the containment.

   b. Examples of acceptable containment include plastic wrapping, yellow Herculite wrapping, or a sealable hard container. However, the containment used must be adequate to maintain its integrity considering the weather, conditions of storage, and the methods or conditions of transport.

   c. If the removable contamination limits are met but the total (fixed plus removable) limit is exceeded, the item may be labeled or identified as radioactive material by FDF and released to the controlled area.

4. Unrestricted Release Criteria

   a. All items are considered potentially contaminated if they have been used or stored in Controlled Areas that could contain unconfined radioactive material.

   b. Prior to being released from the controlled area, all items will be surveyed by FDF to determine whether both removable and total surface contamination (including contamination on and under any coating) are in compliance with the levels given in

Table 1 and that the item has been subjected to the ALARA process as described in Part 2.1, B of this Section.

c. Tools and equipment with detectable radioactivity may be released with the approval of a FDF Material Release Evaluator if all of the following have been met:

1) Residual radioactivity is at or below the unrestricted release limits identified in Table 1.

2) All areas must be readily accessible for survey for residual radioactivity including proper surface counting geometry to allow for accurate quantification. Items with inaccessible areas which are likely to be contaminated but are of such size, construction, or location as to make them inaccessible for survey shall be assumed to exceed the limits for release. The item must either be disassembled to permit an adequate survey to certify that internal contamination is at or below the limits of Table 1 or well documented process knowledge can be applied to provide confidence that contamination in inaccessible areas is not probable. In evaluating the potential for contamination in inaccessible areas, consideration will be given to where the item was used on site and preventative measures taken prior to use such as coverings, wrappings, air intake filters, etc.

3) The decontamination effort performed was such that the residual levels of radioactivity are as low as reasonably achievable and further significant reduction in radioactivity would require unreasonable efforts.

5. Release to an Off-Site Licensed Facility

A. If the subcontractor possesses the appropriate license to receive, possess, use, and transfer the equipment, tools, material, or vehicles with radioactive contamination, subcontractor may elect to remove such items from the site in lieu of decontamination. The responsibility of complying with all state, local and federal regulations during the packaging, shipping, and receipt of the equipment shall be the responsibility of the subcontractor. The subcontractor shall submit a copy of the license and applicable procedures to FDF for compliance review prior to removal of the contaminated equipment. A copy of all Bills of Lading shall be submitted to Fluor Daniel Fernald prior to shipment.

B. The Subcontractor is to provide 24 hours notice to FDF prior to shipping radioactive tools, equipment, and/or material.

## 3.2 QUALITY ASSURANCE

A. FDF will perform quality assurance and other oversight activities during the life of project to ensure contract specification are met. All QA requirements required to be met by the Subcontractor will be stated in Part 9 of the IFB/RFP.

## SECTION 01519

### 3.3 QUALITY CONTROL

A. The Subcontractor is to perform or witness inspections and tests of procured material, equipment and items, work in progress and completed items within the bounds of the contract.

### 3.4 UNSUCCESSFUL/IMPRACTICAL SUBCONTRACTOR DECONTAMINATION

A. If FDF determines that the subcontractor has implemented the requirements of this Section and the Safe Work Plan and the subcontractor's decontamination efforts are unsuccessful or decontamination is not practical (as identified below), refer to Part 4 IFB/RFP, Special Terms And Conditions, Disposition of Subcontractor Provided Equipment, Tools, and Materials That Have Become Contaminated (SC-11) for action to be taken.

1. Decontamination may be considered impractical for non-expendable items that are integral parts of equipment and not readily replaceable such as porus materials (e.g. wood and fiberglass), wire rope, chains, brushes, items with finned surfaces, and similar items where contamination may be embedded within the material configuration matrix. These items may not be released if detectable contamination is identified on the surface.

B. All tools, material, vehicles equipment accepted by FDF for disposition must have been cleaned to meet the visual inspection requirements defined in Specification Section 01517 and handled as defined in Specification Section 01120 and the Waste Management Plan located in Part 6 of the IFB/RFP.



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## SECTION 01519

Table 1

SURFACE CONTAMINATION LIMITS[a]

| NUCLIDE[f] | FIXED PLUS REMOVABLE | | REMOVABLE[b,e] |
|---|---|---|---|
| | AVERAGE[b,c] | MAXIMUM[b,d] | |
| U-nat, U-235, U-238, and associated decay products, alpha emitters. | 5,000 dpm /100 $cm^2$ | 15,000 dpm /100 $cm^2$ | 1,000 dpm/100 $cm^2$ |
| Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 | 100 dpm/100 $cm^2$ | 300 dpm/100 $cm^2$ | 20 dpm/100 $cm^2$ |
| Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 | 1,000 dpm/100 $cm^2$ | 3,000 dpm/100 $cm^2$ | 200 dpm/100 $cm^2$ |
| Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above. | 5,000 dpm /100 $cm^2$ | 15,000 dpm /100 $cm^2$ | 1,000 dpm /100 $cm^2$ |

Where surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma itting nuclides should apply independently.

s used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the trumentation.

Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the erage should be derived for each object.

The maximum contamination level applies to an area of not more than 100 $cm^2$.

The amount of removable radioactive material per 100 $cm^2$ of surface area should be determined by wiping that area with dry filter or t absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate trument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels uld be reduced proportionally and the entire surface should be wiped.

The limits presented for transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, and Ac-227 may be adjusted on a case by case basis. nsult with Radiological Compliance when required to apply these limits for unrestricted release.

## END OF SECTION

# SECTION 03315

# CONCRETE REMOVAL

## PART I GENERAL

### 1.1 SCOPE

A. Dismantling of all above- and at-grade concrete, including:

1. Elevated floor and roof slabs.
2. Cast-in-place walls.
3. Precast concrete components.
4. Foundations, piers, and selected curbs.
5. Concrete encasement (e.g., fireproofing).
6. Built-up roofing, gypsum roof panels, and insulation.
7. Control of fugitive emissions.
8. Windows, doors, roof louvers and lead.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01515 - Mobilization and Demobilization.

C. Section 01517 - Removing/Fixing Radiological Contamination.

E. Section 05126 - Structural Steel Dismantlement.

F. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.

### 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. American National Standards Institute (ANSI):

1. ANSI A10.6-90 Safety Requirements for Demolition Operations.

| | | |
|---|---|---|
| 2. | ANSI A10.8-88 | Construction and Demolition Operations - Scaffolding - Safety Requirements. |
| 3. | ANSI A10.9-83 | Construction and Demolition Operations - Concrete and Masonry Work - Safety Requirements. |

B. National Fire Protection Association (NFPA):

| | | |
|---|---|---|
| 1. | NFPA 101-94 | Code for Safety to Life from Fire in Buildings and Structures. |
| 2. | NFPA 241-93 | Standard for Safeguarding Construction, Alteration, and Demolition Operations. |

C. United States Department of Energy (DOE):

| | | |
|---|---|---|
| 1. | DOE N441.1 | Radiation Protection of the Public and the Environment. |
| 2. | 10 CFR 835 | Occupational Radiation Protection. |

D. Ohio Administrative Code (OAC):

| | | |
|---|---|---|
| 1. | 3745-17-08 | Restriction of Emission of Fugitive Dust. |

## 1.5 SUBMITTALS

A. The Subcontractor shall submit for approval a concrete removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, that contains the following information:

1. Detailed method and sequence of dismantlement, including equipment to be used.

2. Methods for control of contaminants, including control of fugitive emissions during cutting activities to control visible dust emissions.

3. Controlled explosive methods may be used on building structures that are constructed of precast columns and roof beams. A detailed work plan containing the following information shall be prepared:

   a. Methods and materials to be used.

   b. Means to protect adjacent structures, equipment, material, and underground utilities from damage, including protection from projectiles.

   c. Methods and materials to control fugitive emissions.

   d. Contingency plan for detonation failure.

e. Proof of permit, issued by the Bureau of Alcohol, Tobacco and Firearms, to use explosives.

f. Methods and materials to store explosives according to the requirements of 29 CFR 55 Subpart K.

g. Evidence of previous work experience using controlled explosives to take down multi-story structures near other structures within the last 5 years. Provide project locations and contacts for verification.

4. Methods of cutting, including equipment to be used.

5. Calculations to verify structural adequacy of partially dismantled structure, as applicable.

6. If dismantlement method requires personnel on the roof, the Subcontractor shall provide calculations verifying the structural adequacy of the roof to support personnel and equipment. These calculations shall be stamped by a Registered Professional Engineer.

## 1.6 QUALITY ASSURANCE

A. Calculations to verify the structural integrity of the partially dismantled structure must bear the stamp of a Registered Professional Engineer.

# PART II PRODUCTS

## 2.1 MATERIALS

A. Non-woven Geotextile Fabric:

1. Trevira Spunbond 1120 by Hoechst Celanese Corp.
2. Mirafi 160N by Mirafi, Inc.
3. ADS 600 by Advanced Drainage Systems, Inc.
4. Equal products manufactured by others will be acceptable.

B. Surfactant used in amended water.

1. Childers CP-225 CHIL-SORB.
2. Certech.
3. Expert Environmental Products.
4. International Protective Coatings Corp.

## SECTION 03315

## PART III EXECUTION

### 3.1 PREPARATION

A. The Subcontractor shall ensure that adequate lay down space has been cleared and barriers have been established.

B. The Subcontractor shall take the following precautions to control fugitive emissions. A wet dust suppression system shall be used. This system will utilize the following:

a. Amended water (with surfactant).
b. Finely atomized water spray.

### 3.2 APPLICATION

A. Concrete shall have contamination fixed or removed prior to leaving local containment or building enclosure, in accordance with Section 01517 of this specification package.

B. All bituminous roofs felled through the use of explosives are to be dropped in a single unit and impact the ground in a horizontal plane.

C. All dismantlement activities shall be performed in accordance with the references listed in Article 1.4 of this section.

1. Activities to fell concrete structures outside their own footprint require prior approval.

2. Activities to fell concrete structures shall maintain the integrity of porous surfaces to the extent practical to minimize dispersal of debris.

D. If concrete dust is a result of removal operations (due to crumbling, etc.), dust suppression techniques must be employed during demolition and, if necessary, during transportation.

E. The Subcontractor shall prevent damages to adjacent structures, materials, and equipment including underground utilities, during dismantlement activities.

F. All lifting and rigging required shall be in accordance with Part 8 of the IFB/RFP.

G. Removal of Above-Grade Concrete Projections

1. Above-grade concrete equipment, column, and other miscellaneous foundation piers, walls, and curbs are to be sealed and may remain intact until structural dismantlement.

2. Prior to structural dismantlement, a FDF approved method shall be used to minimize fugitive emissions.

3. After structural dismantlement, the concrete is to be segregated and containerized per the Waste Management Plan located in Part 6 of the IFB/RFP.

H. Removal of At-Grade Concrete

1. At-grade concrete equipment, column, and other miscellaneous foundation piers, walls, and curbs will be sealed and may remain intact during and after structural dismantlement.

I. Cutting

1. All material shall be cut as required for containerization in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

2. Embedded steel reinforcing is considered part of concrete.

3. Because of contamination levels, some concrete may require local containment for cutting activities in accordance with Section 15067 of this specification package. These areas are identified in Part 6 of the IFB/RFP.

J. Interior concrete/Concrete Masonry Unit (CMU) walls shall be removed using non-explosive methods prior to opening the shell of the structure. A water spray shall be used to minimize fugitive emissions.

## 3.3 SPECIAL INSTRUCTIONS

A. The following items are also included (where applicable) in the sequence of concrete removal:

1. Doors, Windows, and Frames

a. The Subcontractor shall remove all windows in one piece and place them in appropriate containers.

b. The Subcontractor shall remove all doors (wood and/or steel) and place them in appropriate containers.

2. Lead Materials

a. The Subcontractor shall segregate all lead materials (i.e., flashing, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

b. 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.

## SECTION 03315

c. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

3. Wall and Roof Louvers

a. The Subcontractor shall ensure that louvers and roof vents are removed during exterior concrete removal and placed in appropriate containers.

B. All material will be placed in containers as per the requirements of Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

**END OF SECTION**

# SECTION 04225

# MASONRY REMOVAL

## PART I GENERAL

### 1.1 SCOPE

A. The work includes:

1. Removal of all interior and exterior masonry according to the requirements of the following sections.

2. Removal of acid brick where required.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01515 - Mobilization and Demobilization.

C. Section 01516 - Asbestos Abatement.

D. Section 01517 - Removing/Fixing Radiological Contamination.

E. Section 15066 - Interior Dismantlement.

F. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.

### 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. American National Standards Institute (ANSI):

| | | |
|---|---|---|
| 1. | ANSI A10.6-90 | Safety Requirements for Demolition Operations. |
| 2. | ANSI A10.8-88 | Construction and Demolition Operations - Scaffolding - Safety Requirements. |

| | | |
|---|---|---|
| 3. | ANSI A10.9-83 | Construction and Demolition Operations - Concrete and Masonry Work - Safety Requirements. |

B. National Fire Protection Association (NFPA):

| | | |
|---|---|---|
| 1. | NFPA 241-93 | Standard for Safeguarding Construction, Alteration, and Demolition Operations. |

## 1.5 SUBMITTALS

A. The Subcontractor shall submit to Fluor Daniel Fernald (FDF) for compliance review a masonry removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, that contains the following information:

1. Detailed method and sequence of dismantlement, including equipment to be used.

2. Methods of dust control.

3. Methods of cutting, including equipment to be used.

4. If dismantlement method requires personnel on the roof, the Subcontractor shall provide calculations verifying the structural adequacy of the roof to support personnel and equipment. These calculations shall be stamped by a Registered Professional Engineer.

## 1.6 PROJECT CONDITIONS

A. Conduct dismantlement to avoid damaging adjacent structures.

# PART II PRODUCTS

Not used.

# PART III EXECUTION

## 3.1 PREPARATION

A. Clean and/or fix contamination on interior surface of exterior masonry walls in accordance with Section 01517 of this specification package prior to dismantlement.

## 3.2 APPLICATION

A. Dismantle masonry walls, using controlled means. Some masonry walls or acid brick may require local containment in accordance with Section 15067 of this specification package. See Part 6 of the IFB/RFP for identification of any areas with this requirement.

B. Follow procedures in ANSI A10.6, A10.8, and A10.9, and in NFPA 241.

C. Cut all reinforcing and anchors (if applicable) flush with base slab. Fill in damaged areas of base slab with patching grout as described in Section 01515 of this specification package.

D. Remove all acid brick down to supporting concrete slab.

E. Place materials in containers as required by Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

F. The Subcontractor shall take the following precautions to control fugitive emissions or visible dust emissions. A wet dust suppression system shall be used as approved by FDF. This system will utilize the following:

a. Amended water (with surfactant).
b. Finely atomized water spray.

## 3.3 SPECIAL INSTRUCTIONS

A. The following items are also included (where applicable) in the sequence of masonry removal:

1. Doors, Windows, and Frames:

a. The Subcontractor shall remove all windows in one piece and place them in appropriate containers.

b. The Subcontractor shall remove all doors (wood and/or steel) and place them in appropriate containers.

2. Lead Materials:

a. The Subcontractor shall segregate all lead materials (i.e., flashing, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

b. 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.

c. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

## SECTION 04225

3. Wall and Roof Louvers:

   a. The Subcontractor shall ensure that louvers and roof vents are removed during exterior masonry removal and placed in appropriate containers.

**END OF SECTION**

# SECTION 05125

# NEW STRUCTURAL STEEL

## PART I GENERAL

### 1.1 SCOPE

A. Design, fabrication, and erection of miscellaneous metal items for protective barriers, lifting assemblies, rigging, and temporary bracing and supports.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 05126 - Structural Steel Dismantlement.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.

### 1.4 REFERENCES, CODES, AND STANDARDS

A. American Society for Testing and Materials (ASTM):

| | | |
|---|---|---|
| 1. | ASTM A36/A36M-94 | Standard Specification for Carbon Structural Steel. |
| 2. | ASTM A307-94 | Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength. |
| 3. | ASTM A325M-94 | Standard Specification for Bolts, Structural Steel, Heat Treated, 120/105 KSL Minimum Tensile Strength. |

B. American Welding Society (AWS):

| | | |
|---|---|---|
| 1. | AWS A2.4-93 | Standard Symbols for Welding, Brazing, and Nondestructive Examination. |
| 2. | AWS D1.1-94 | Structural Welding Code Steel. |

C. American Institute of Steel Construction (AISC):

1. AISC — Steel Construction Manual - Allowable Stress Design (ASD), 9th Edition.

D. American National Standards Institute (ANSI):

1. ANSI A10.13-89 — Construction and Demolition Operations - Steel Erection - Safety Requirements.

## 1.5 SUBMITTALS

A. The Subcontractor shall submit the following for conformance review by Fluor Daniel Fernald (FDF).

1. Calculations: Indicate design loads, member forces, moments and stresses, and connection forces.

2. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

3. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths. Submit copies of welder's certifications with shop drawings.

4. Plan for conducting and documenting field quality testing and inspection including test methods and reports required under Field Quality Assurance.

B. For additional submittal requirements see Part 6 of the Invitation for Bid/Request for Proposal (IFB/RFP).

## 1.6 QUALITY ASSURANCE

A. Calculations and shop drawings must bear the stamp of a Registered Professional Engineer.

## 1.7 DELIVERY, STORAGE, AND HANDLING.

A. ASTM A325 high strength bolts shall be delivered to the site in the original labeled containers and once on site shall not be transferred into unlabeled containers. The label information shall include the type of bolt, purchase order number, and the name of the supplier.

## SECTION 05125

## PART II PRODUCTS

### 2.1 MATERIALS

A. Steel Sections: ASTM A36.

B. Threaded Fasteners: Heavy hexagon bolts, nuts, and hardened washer shall be ASTM A325 or ASTM A307.

1. Bolts connecting primary members shall be A325.

C. Expansion Anchors: Expansion bolts used for securing steel to concrete shall be one of the following:

1. "Parabolt" as manufactured by Molly Fastener Group of Emhard, Temple, PA 19560.

2. "Wedge Anchors" as manufactured by ITT Phillips Drill Division, Michigan City, IN 46360.

3. "Kwik Bolt" as manufactured by Hilti, Inc., Stamford, CT 06405.

D. Welding Materials: AWS D1.1 - Structural Welding Code.

### 2.2 FABRICATION

A. For delivery to site, fit and ship assemble in largest practical sections.

B. Supply components required for anchorage of fabricated structural assemblies.

C. All welding procedures, welder's certification, and visual acceptance criteria must be in accordance with AWS D1.1, Chapter 5.

D. Clean surfaces of rust, scale, grease, and foreign matter prior to applying shop primer.

E. Shop prime with one coat of rust-resistant red oxide primer.

F. Do not prime surfaces in direct contact with concrete or where field welding shall be required.

G. All coatings shall be lead and chromium free.

## PART III EXECUTION

### 3.1 PREPARATION

A. Prior to fabrication, the Subcontractor shall verify field dimensions.

## SECTION 05125

### 3.2 INSTALLATION - GENERAL

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Allow for erection loads and provide temporary bracing to maintain true alignment until completion of erection.

C. Field weld components as indicated on the approved drawings. Field welding shall be in accordance with AWS D1.1, Chapter 3.

D. Fasteners shall be tightened to manufacturer's specifications or applicable design requirements.

E. Field modifications to load bearing structures shall require prior approval from FDF.

F. After erection, prime field welds and abrasions. Any steel embedded in concrete is an exception.

G. All steel shall be fabricated and erected in accordance with the codes and standards referenced in Article 1.4 of this section.

H. After use, all steel shall be dismantled and cut for containerization in accordance with Section 01120 and Section 05126 of this specification package.

I. All coatings shall be lead and chromium free.

### 3.3 FIELD QUALITY ASSURANCE

A. The Subcontractor shall inspect high-strength bolted connections for all shop-fabricated steel, perform tests and prepare test reports in accordance with the AISC specifications. All test results shall be submitted to FDF.

B. The Subcontractor shall conduct and interpret tests, shall state in each report whether test specimens comply with requirements, and shall specifically state any deviations. Deviations must be approved in writing by FDF.

C. Shop and Field Welding

1. The Subcontractor shall: inspect and test, during fabrication and erection of structural steel assemblies in accordance with AWS Structural Welding Code and as follows:

   a. Conduct inspections and tests as required. Record types and locations of all defects found in the work. Record work required and performed to correct deficiencies. All test results to be submitted to FDF.

   b. Perform visual inspection of all welds.

   c. Perform nondestructive tests of welds per Subcontractor submitted plan.

d. All welds that fail shall be repaired per approved Subcontractor repair plan.

e. Reworked areas shall be retested in accordance with the original design requirements.

2. Full penetration welded connections on structural steel rigging frame utilized for critical lifts, as defined in the FEMP Hoisting and Rigging Manual, shall be 100 percent radiograph tested by an independent certified testing lab. Results shall be submitted to FDF for approval.

a. All welds that fail shall be repaired per approved Subcontractor repair plan.

b. Reworked areas shall be retested in accordance with the original design requirements.

D. Correction of Substandard Work:

1. The Subcontractor shall correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to be not in compliance with requirements.

**END OF SECTION**

# SECTION 05126

# STRUCTURAL STEEL DISMANTLEMENT

## PART I GENERAL

### 1.1 SCOPE

A. Dismantling and containerization of structural steel, miscellaneous steel, and metal siding/roofing:

1. Structural steel.
2. Bar joists.
3. Floor plate/decking.
4. Grating.
5. Stairs, ladders, and handrail.
6. Metal siding and roofing, including doors, louvers, and windows.
7. All other miscellaneous steel.
8. Control of fugitive emissions.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01517 - Removing/Fixing Radiological Contamination.

C. Section 03315 - Concrete Removal.

D. Section 07415 - Transite Removal.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.

### 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. American National Standards Institute (ANSI):

1. ANSI A10.6-90 — Safety Requirements for Demolition Operations.

2. ANSI A10.8-88 — Construction and Demolition Operations - Scaffolding - Safety Requirements.

3. ANSI A10.13-89 Construction and Demolition Operations - Steel Erection.

B. National Fire Protection Association (NFPA):

1. NFPA 241-93 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

C. United States Occupational Safety and Health Administration:

1. 29 CFR 1926.858 Removal of Steel Construction

## 1.5 SUBMITTALS

A. The Subcontractor shall submit to Fluor Daniel Fernald (FDF) for conformance review a structural steel removal work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, that contains the following information:

1. Detailed sequence of dismantlement, including equipment to be used.

2. Methods for contaminant control, including fugitive emissions during cutting.

3. If controlled explosive methods are used for structural steel dismantlement, a detailed work plan containing the following information shall be prepared:

a. Methods and materials to be used.

b. Means to protect adjacent structures, equipment, material, and underground utilities from damage, including protection from projectiles.

c. Methods and materials to control fugitive emissions.

d. Contingency plan for detonation failure and safe recovery of all undetonated charges.

e. Proof of permit, issued by the Bureau of Alcohol, Tobacco and Firearms, to use explosives.

f. Evidence of previous work experience using controlled explosives to take down multi-story structures within the last 5 years. This experience may be shown through the sub-tier contract. Provide project locations and contacts for verification.

g. If interior concrete/concrete masonry unit (CMU) walls and slabs are removed, refer to concrete removal method in Sections 03315 and 04225 of this specification package for methods.

h. Identify locations of all cuts and charges and detonation sequence on composite drawings which will be provided by FDF.

i. Provision of adequate protection of charges to prevent shrapnel from damaging the non-electric detonation system or persons near the exclusion boundary.

j. Predications of rubble/debris piles should be made to ensure that safe exclusion zones are established.

4. Methods of cutting, including equipment to be used.

5. Detailed plan for protecting lay down and cutting areas from contamination by lead paint chips and for controlling airborne radioactivity.

6. Methods and materials used for cutting lead-painted steel.

7. Calculations to verify the structural integrity of the partially dismantled structure must bear the stamp of a Registered Professional Engineer.

8. In addition, the Subcontractor shall submit a detailed work plan that describes plans for personnel tie offs, use of pick boards and walking on or near roof purlins/girders.

## PART II PRODUCTS

### 2.1 MATERIALS

A. Non-woven Geotextile Fabric:

1. Trevira Spunbond 1120 by Hoechst Celanese Corp.
2. Mirafi 160N by Mirafi Inc.
3. ADS 600 by Advanced Drainage Systems, Inc.
4. Equal products manufactured by others will be acceptable.

B. Surfactants:

1. Childers CP-225 CHIL-SORB.
2. Certech.
3. Expert Environmental Products.
4. International Protective Coatings Corp.

## PART III EXECUTION

### 3.1 PREPARATION

A. The Subcontractor shall ensure that adequate lay down space has been cleared and barriers have been established.

B. Steel and siding shall have contamination removed or removed and fixed prior to exposing steel and siding to the environment in accordance with Section 01517 of this specification package.

C. If controlled explosive methods are used, the Subcontractor shall take precautions to control fugitive emissions by saturating the explosion footprint with water 2 to 4 hours prior to the implosion.

## 3.2 APPLICATION

A. All dismantlement activities shall be performed in accordance with the standards listed in Part 1.4 of this section.

B. The Subcontractor shall apply mechanical means of cutting and removing the structural steel to the largest extent possible.

C. The roof deck and roofing material, panels and concrete floor deck shall also be tripped with the structure wherever possible. Roofing material containing ACM shall not be tripped with structural steel.

D. The Subcontractor shall dismantle, shear and segregate the structural steel to maximize accessible surfaces.

1. The Subcontractor shall shear the steel (beams, joists, purlins, etc.) as close to the joints (cross members, plates, decking, etc.) as practical to create long, accessible (straight) metal pieces which may be recycled.

   NOTE: Some bending of the structural steel may occur during shearing activities. Straight pieces may be difficult to obtain where main structural members are connected to plates, deck, grates, or cross members.

2. The Subcontractor shall segregate the structural steel into two categories/piles. The segregation criteria for the steel categories are defined as follows:

   Category 1 Structural Steel: Steel allowing access to surfaces for a radiological contamination survey for unrestricted release. Surfaces must be accessible to a Geiger Mueller pancake probe to allow areas to be surveyed. Category 1 steel includes steel with ends crimped due to sizing (e.g., shearing) operations. Welded and riveted joints that have been in place since original construction are not required to be made accessible. However, brackets or structural members bolted to the superstructure must be removed to allow access for survey.

   Category 2 Structural Steel: contains surfaces which cannot be radiologically surveyed.

3. The Subcontractor shall minimize bending, twisting, and smashing of the steel during segregation and bulk storage.

E. Control of fugitive emissions shall be maintained at all times during this removal work to minimize visible dust.

F. If structural steel is removed in sections, verify the structural adequacy of the remaining structure.

G. Prior to torch-cutting any steel or siding that has a lead based coating, an 8 inch strip of paint shall be removed at the area of the cut.

H. All lifting and rigging required shall be in accordance with the Fluor Daniel Fernald Hoisting and Rigging Manual.

I. All temporary bracing and rigging frames required shall be in accordance with Section 05125 of this specification package.

J. All steel columns, anchors, and other projections shall be removed flush with the floor slab or existing grade.

K. Lead-based paint chips and debris, released during structural steel dismantlement, shall be collected and managed in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

## 3.3 SPECIAL INSTRUCTIONS

A. The following items are also included (where applicable) in the sequence of structural steel dismantlement:

1. Doors, Windows, and Frames:

   a. The Subcontractor shall remove all windows.

   b. The Subcontractor shall remove all doors and frames (wood and/or steel).

2. Lead Materials:

   a. The Subcontractor shall segregate all lead materials (i.e., flashings, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

   b. 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.

   c. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will minimize inaccessible surfaces and maximize straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

## SECTION 05126

3. Gutters, and Wall and Roof Louvers:

   a. The Subcontractor shall ensure that louvers, gutters (see Specification Section 07415 for gutters), and roof vents are removed during structural steel dismantlement.

4. Metal Siding and Roofing:

   a. The Subcontractor shall remove metal siding and roofing in full sheets in tact without cutting or bending the sheets, to the extent feasible.

B. All material shall be cut and managed in accordance with the Waste Management Plan located in Part 6 of the IFB/RFP.

**END OF SECTION**

# SECTION 07415

# TRANSITE REMOVAL

## PART I GENERAL

### 1.1 SCOPE

A. The work includes:

1. Removal of all interior and exterior transite panels (ACM).

2. Use of an encapsulant, lockdown, and/or surfactant on the transite panels before removal to prevent airborne asbestos fibers.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01516 - Asbestos Abatement.

C. Section 01517 - Removing/Fixing Radiological Contamination.

D. Section 15066 - Interior Dismantlement.

E. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.

### 1.4 REFERENCES, CODES, AND STANDARDS

A. 29 CFR 1910.1001 Asbestos (General Industry).
29 CFR 1926.1101 Asbestos (Construction Industry).
29 CFR 1910.134 Use of Respirators.

B. Ohio Department of Health Asbestos Hazards Abatement Rules Chapter 3701-34, OAC (Ohio Department of Health).

C. Ohio Environmental Protection Agency Chapter 3745-20, OAC.

D. United States Environmental Protection Agency (US EPA) 40 CFR 61 Subpart M (NESHAPS).

## SECTION 07415

### 1.5 SUBMITTALS

A. The Subcontractor shall submit to Fluor Daniel Fernald (FDF) a detailed work plan for approval in accordance with Part 7, Subcontractor Work Plan Format Requirements, and Part 8, Asbestos Abatement Work Plan Requirements, of the IFB/RFP, including the procedures proposed for use in complying with the requirements of this specification.

1. Include in the plan:

   a. The location and layout of storage and queuing areas.

   b. The method of applying encapsulant, lockdown, and/or surfactant.

   c. The methods and sequencing of interior and exterior panel removal.

   d. The interface of trades involved in the performance of work.

   e. A detailed description of the methods to be employed to prohibit visible emissions in the work area.

   f. A detailed description of the methods for moving transite panels from the location to storage to containerization.

   g. A detailed description of methods to be employed to ensure transite panels are removed without cutting, abrading, or breaking.

2. Describe the use of a portable HEPA ventilation system, the containerization of removed asbestos debris, the method of treating broken and/or damaged panels, and the method of protecting adjacent structures.

3. The plan must be approved by FDF prior to commencement of work.

4. If dismantlement method requires personnel on the roof, the Subcontractor shall provide calculations verifying the structural adequacy of the roof to support personnel and equipment. These calculations shall be stamped by a Registered Professional Engineer.

5. The Subcontractor shall submit a detailed work plan that describes plans for personnel tie off, use of pick boards and walking on or near roof purlins/girders.

B. Prior to initiation of the work, the Subcontractor shall submit the following items to FDF:

1. OSHA-required documentation for Asbestos Removal Contractors.

   a. Documentation of training.
   b. Medical surveillances.
   c. Respirator fit-test.

d. Employee exposure assessments.

C. Prior to submittal of notification to government agencies, the Subcontractor shall provide a copy to FDF for concurrence.

D. Product Data: The Subcontractor shall submit for approval manufacturer's technical information, including application instructions for each material proposed for use.

## 1.6 QUALITY ASSURANCE

A. Prior to commencement of work, the Subcontractor shall provide for approval a FDF selected sample area of transite for approval, 10 feet by 10 feet in size, to demonstrate encapsulant, lockdown, and/or surfactant methods. The approved mock-up shall serve as a standard for the balance of the work.

## 1.7 HANDLING AND STORAGE

A. The Subcontractor shall:

1. Manage transite in accordance with Specification Section 01120 and the Waste Management Plan, located in Part 6 of the IFB/RFP.

2. Take precautions to prevent breakage of transite panels during handling.

## 1.8 PROJECT CONDITIONS

A. Subcontractor shall apply encapsulants, lockdown, and/or surfactants according to the product manufacturer's specifications for application conditions (e.g., temperature).

# PART II PRODUCTS

## 2.1 MATERIALS

A. Deliver materials in original, new, and unopened containers bearing manufacturer's name, label, and the following information:

a. Name or title of material.
b. Manufacturer's stock number and date of manufacture.
c. Manufacturer's name.
d. Thinning and application instructions.

B. Encapsulants:

1. Certane 2050 Certified Technologies.
2. Expert Environmental Products - Eppco #1.
3. International Protective Coatings Corp. - Serpiloc.

C. Surfactants:

1. Childers CP-225 CHIL-SORB.
2. Certech.
3. Expert Environmental Products.
4. International Protective Coatings Corp.

D. Lockdowns:

1. 1050-Clearcoat by Certane.
2. Fiber-Seal by Eppert.
3. International Protective Coatings Corp. - Serpiloc.

E. Fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant, as manufactured by Griffolyn or Herculite.

F. Or equal.

## PART III EXECUTION

### 3.1 PREPARATION

A. The Subcontractor shall notify the Ohio Department of Health (ODOH) and FDF shall notify the EPA's and all other applicable governmental agencies before the start of work.

B. The Subcontractor shall be responsible for:

1. Adherence to and compliance with work practices and procedures set forth in the most current and applicable Federal, State, and local codes, regulations, and standards.

2. Obtaining certifications and licenses.

C. Subcontractor shall maintain the integrity of the exterior of the building until the interior transite and insulation has been removed and encapsulant or lockdown, and/or surfactant has been applied to the interior surface of exterior panels. Encapsulation, lockdown, or surfactant on interior surfaces of exterior panels is not required if the building passes an aggressive air test for asbestos.

### 3.2 APPLICATION

A. For exterior transite, the Subcontractor shall:

1. If necessary, apply the encapsulant, lockdown, and/or surfactant to the interior surface of the exterior panels prior to removal. When encapsulant or lockdown is applied, it shall be applied to provide visible coverage.

2. Wherever practical, the Subcontractor shall use a scan climber as the preferred method to remove transite from the roof and building siding.

B. Apply encapsulant, lockdown, and/or surfactant to areas around fasteners of transite panels before removal of fasteners. If cut, fasteners shall be cut in a manner which minimizes abrading the transite panel. A flat, sharp instrument shall be used to cut the fasteners. If original application becomes dried out before or during removal or handling, apply a second application.

C. Unwrapped transite panels shall be lowered to the ground, or placed in an impervious waste bag, or wrapped in 6 mil fiber-reinforced sheeting and lowered to the ground no later than the end of the work shift. Removed transite panels shall be wrapped in 6 mil fiber-reinforced sheeting and sealed by the end of the work shift. Refer to Waste Managment Plan located in Part 6 of the IFB/RFP for transite handling.

D. In the event a transite panel is broken or deteriorated, the Subcontractor shall apply encapsulant, lockdown, and/or surfactant to the edges of deteriorated areas.

E. Removal of transite roof panels:

1. Removal of transite roof panels shall be sequenced to minimize exposed surfaces.

2. Bodily contact with the transite roof panels, as practical, shall be avoided.

3. When dust is observed between panels, collect the dust with a HEPA-filtered vacuum.

4. Apply the encapsulant, lockdown, and/or surfactant to the interior surface of the two layers of panels prior to removal. Encapsulant, lockdown, and/or surfactant shall be applied to provide visible coverage.

5. Load the panel into a skip box.

## 3.3 SPECIAL INSTRUCTIONS

A. The following items are also included (where applicable) in the sequence of transite removal:

1. Gutters:

a. The Subcontractor shall remove and collect all ACM from gutters, apply an encapsulant, lockdown, and/or surfactant to the gutters before their removal.

2. Insulation:

a. The Subcontractor shall remove the mineral wool insulation between the transite panels and/or other materials.

## SECTION 07415

3. Doors, Windows, and Frames:

   a. The Subcontractor shall remove all windows in one piece.

   b. The Subcontractor shall remove all doors (wood and/or steel).

4. Lead Materials:

   a. The Subcontractor shall segregate all lead materials (i.e., flashing, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

   b. 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.

   c. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

B. The Subcontractor shall use dust control techniques (minimum of applying amended water) to minimize airborne contaminants generated during insulation removal.

C. All material shall be managed in accordance with the Waste Management Plan located in Part 6 of IFB/RFP.

**END OF SECTION**

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# SECTION 15065

# EQUIPMENT DISMANTLEMENT

## PART 1 GENERAL

### 1.1 SCOPE

A. This section includes the Subcontractor's responsibility for removal or dismantlement of equipment from a facility and support systems within or outside a facility.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01515 - Mobilization and Demobilization.

C. Section 01517 - Removing/Fixing Radiological Contamination.

D. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIAL

A. See Part 6 of the Invitation for Bid/Request for Proposal (IFB/RFP) for the Waste Management Plan.

B. See Part 7 of the IFB/RFP for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. HEPA Vacuum Cleaner Requirements.
5. HEPA Air Filtration Device Requirements.
6. Air Cleaning Device (ACD) Procurement Specification.
7. Air Cleaning Device Filter Procurement Specification.
8. Subcontractor Work Plan Format Requirements.

C. See Part 8 of the IFB/RFP for the hoisting and rigging information.

### 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

a. 29 CFR 1926.301 Hand Tools.
b. 29 CFR 1926.302 Power Operated Hand Tools.

SECTION 15065

## 1.5 SUBMITTALS

The Subcontractor shall submit the following for approval:

1. Detailed removal work plan in accordance with IFB/RFP Part 7, Subcontractor Work Plan Format Requirements, including sequence, methods of removal and dismantlement, equipment required, catalog cut sheets, drawings and method and materials to control possible generation of fugitive emissions from cutting operations, methods to seal equipment openings for each equipment type and location of interim storage areas and allowable floor loads.

2. Catalog cuts, proposed location, and method of installation of all hoisting equipment, and specialized construction equipment submitted for approval by FDF with the work plan.

## 1.6 QUALITY ASSURANCE

A. Calculations submitted on maximum allowable floor loading must bear the stamp of a Registered Professional Engineer.

## 1.7 PROJECT CONDITIONS

A. Residual process material (hold-up) has been removed from equipment to the maximum extent practical. If hold-up is found, FDF shall be notified immediately. If the volume is estimated to be less than 1 quart, the D&D Subcontractor will be responsible for removing and containerizing the hold-up in accordance with the Waste Management Plan, Part 6 of the IFB/RFP. If the material found (solid or liquid), is estimated to be greater than 1 quart by volume, D&D activities will cease on that piece of equipment.

# PART II PRODUCTS

## 2.1 EQUIPMENT

A. The Subcontractor shall supply items such as duct tape, 6 mil fiber-reinforced sheeting, ½ inch plywood and an approved foam that is not ultraviolet degradable as sealing materials.

B. The Subcontractor shall use mechanical means of cutting whenever possible.

C. Prior to torch-cutting any material that has a lead-based coating, an 8 inch strip of paint shall be removed at the area of the cut.

## 2.2 MATERIALS

A. The Subcontractor shall supply all materials required to seal equipment openings, to prevent spillage and/or migration of contaminants, per requirements of this section.

B. Fiber-reinforced polyethylene or polyester material approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite, or equal.

SECTION 15065

## PART III EXECUTION

### 3.1 APPLICATION

A. All equipment and piping shall be dismantled, cut, and segregated per the requirement of Section 01120 of specification package and Part 6 of the IFB/RFP.

B. If methods used for dismantlement generate loose contamination, or if upon dismantlement, loose contamination is discovered, the openings on the equipment shall be sealed. Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The Subcontractor shall seal openings after cleaning and after verification inspection by FDF as defined in Section 01517.

C. Prior to cutting into tanks or piping where the potential for flammable lining exists, it shall be the Subcontractor's responsibility to verify that no lining exists. Should the Subcontractor find lined pipes or tanks, the pipes or tanks shall be cut and removed by mechanical means and shall not be torch cut.

D. In some cases, equipment may be elevated from the ground by the means of a structural platform. In these cases, the equipment should be cut away or disconnected from the platform and lowered to the ground. The dismantlement of this equipment shall be accomplished by shearing and cutting whenever possible. If this is not possible, the equipment shall be dismantled at convenient assembly joints.

E. Equipment which must be removed in one piece during dismantlement of the building will be required to meet the criteria in Specification Section 01517.

F. If necessary, the equipment shall be rigged in accordance with the FEMP Hoisting and Rigging Manual.

### 3.2 INTERIM MATERIAL STORAGE

A. Where removed materials are staged or stored within the facility, they shall be stored in designated floor storage areas as described in Specification Section 01120.

B. Damaged areas within facilities identified by the Subcontractor's Engineering Survey shall not be used for interim material storage.

### 3.3 SPECIAL INSTRUCTIONS

A. Lead Materials:

1. The Subcontractor shall segregate all lead materials (i.e., flashing, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

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.

## SECTION 15065

3. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

**END OF SECTION**



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# SECTION 15066

# INTERIOR DISMANTLEMENT

## PART I GENERAL

### 1.1 SCOPE

A. This section includes the Subcontractor's responsibility for the removal of demolition debris materials within the facility and support items within or outside the facility. Segregation of demolition debris into various waste streams and preparation for containerizing shall include, but not be limited to, the following:

1. Conduit.
2. Wire.
3. Electrical boxes (junction, switch).
4. Contactors.
5. Lighting fixtures.
6. Motor operated valves.
7. Lighting station.
8. Raceway and troughs.
9. Cable trays.
10. Piping.
11. Assorted valves, fittings, elbows, gauges, spool pieces, etc.
12. Ductwork, plenums, branches, etc.
13. Miscellaneous similar items.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01515 - Mobilization and Demobilization.

C. Section 01516 - Asbestos Abatement.

D. Section 01517 - Removing/Fixing Radiological Contamination.

E. Section 15067 - Ventilation and Containment.

### 1.3 REFERENCE MATERIAL

A. See Invitation for Bid/Request for Proposal (IFB/RFP) for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Subcontractor Work Plan Format Requirements.
5. Air Cleaning Device (ACD) Procurement Specification.
6. Air Cleaning Device Filter Procurement Specification.

SECTION 15066

## 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

| | |
|---|---|
| 29 CFR 1926.301 | Hand Tools. |
| 29 CFR 1926.302 | Power Operated Hand Tools. |

## 1.5 SUBMITTALS

A. The Subcontractor shall submit the following for conformance review:

1. Detailed removal work plan, in accordance with IFB/RFP Part 7, Subcontractor Work Plan Format Requirements, including sequence, methods of removal and dismantlement; equipment required, catalog cut sheets; drawings; methods and materials to control possible generation of fugitive emissions from cutting operations; and locations of interim storage areas and allowable floor loadings.

2. Catalog cuts, proposed location, method of installation of all hoisting equipment, and specialized construction equipment submitted for approval by Fluor Daniel Fernald (FDF) with the work plan.

## 1.6 QUALITY ASSURANCE

A. Calculations submitted on maximum allowable floor loading must bear the stamp of a Registered Professional Engineer.

## 1.7 PROJECT CONDITIONS

A. Residual process material (hold-up) has been removed from the demolition debris to the maximum extent practical. If hold-up is found, FDF shall be notified immediately. If the volume is estimated to be less than 1 quart, the D&D Subcontractor will be responsible for removing and containerizing the hold-up in accordance with the Waste Management Plan, located in Part 6 of the IFB/RFP. If the material found is estimated to be greater than 1 quart by volume, D&D activities will cease on that piece of demolition debris.

# PART II PRODUCTS

## 2.1 EQUIPMENT

A. Subcontractor shall supply all tools and equipment required for demolition debris material removal.

B. All lifting and hoisting equipment required shall be in compliance with the FEMP Hoisting and Rigging Manual.

SECTION 15066

## 2.2 MATERIALS

A. The Subcontractor shall supply all materials required to seal openings, to prevent spillage and/or migration of contaminants, per requirements of this section.

B. The Subcontractor shall supply duct tape, 6-mil fiber-reinforced sheeting, ½ inch plywood and an approved foam that is ultraviolet degradable as sealing materials.

C. A fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of 6 mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite or equal.

# PART III EXECUTION

## 3.1 APPLICATION

A. The Subcontractor should remove the ductwork and piping and seal at both ends prior to movement. Prior to removal, the Subcontractor shall take the necessary actions to preclude spillage of residual material, if encountered. Sealing is not a requirement for conduit. All demolition debris shall be managed in accordance with Section 01120 of this specification package and Part 6 of the IFB/RFP.

B. The Subcontractor shall utilize mechanical dismantlement means using best available technology, such as mechanical shears whenever possible.

C. Uncontrolled dropping of materials is not allowed.

D. Piping insulated with asbestos may be removed in its entirety per the requirements of Section 01516 of this specification package.

E. Prior to cutting into tanks or piping where the potential for flammable lining exists, it shall be the Subcontractor's responsibility to verify that no lining exists. Should the Subcontractor find lined pipes or tanks, the tanks shall be cut and removed by mechanical means and shall not be torch-cut.

F. Hanging light fixtures may be required to be wrapped in plastic to prevent the spread of contamination prior to being cut down.

G. For management of debris and waste refer to Section 01120 of this specification package and the Waste Management Plan in Part 6 of the IFB/RFP.

H. Prior to torch-cutting any material that has a lead based coating, an 8 inch strip of paint shall be removed at the area of the cut.

## 3.2 INTERIM MATERIAL STORAGE

A. When removed materials are staged or stored within the facility, they shall be placed in areas designated as storage areas as described in Specification Section 01120.

B. Damaged areas within facilities identified by the Subcontractor's Engineering Survey shall not be used for interim material storage.

## 3.3 SPECIAL INSTRUCTIONS

A. Lead Materials:

1. The Subcontractor shall segregate all lead materials (i.e., flashing, vent stacks, etc.) and place them in appropriate containers in accordance with Section 01120 of this specification package and the Waste Management Plan located in Part 6 of the IFB/RFP.

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.

3. The Subcontractor shall (whenever possible) dismantle lead flashing in a manner that will facilitate recycling. This will include minimizing inaccessible surfaces and maximizing straight lengths. This will also include avoiding the use of fixatives on the lead flashing that would require an abrasive method of removal.

**END OF SECTION**

# SECTION 15067

# VENTILATION AND CONTAINMENT

## PART I GENERAL

### 1.1 SCOPE

A. This section consists of the work related to the Subcontractor-supplied ventilation and local containment that is required for radiological contamination purposes. The principal items included in this section are:

1. Local containment and vestibule design requirements.
2. Ventilation requirements.
3. Types of ventilation/local containment design.
4. Guidance on type of ventilation/local containment applicability.
5. Exterior items; such as, dust collectors.

B. Definitions:

1. Local Containment - is an enclosure that is designed to maintain 0.1 inch water gauge negative pressure or six air changes per hour within its structure to prevent fugitive emissions from escaping to the outside environment.

2. Vestibule - is an enclosed entrance, a passage, or space that is between the outer door and the interior of the building. The space within the vestibule does not have to be under a negative pressure.

3. Enclosure - is the exterior wall of a sealed building.

### 1.2 RELATED SECTIONS

A. Section 01120 - Waste Handling Criteria.

B. Section 01515 - Mobilization and Demobilization.

C. Section 01517 - Removing/Fixing Radiological Contamination.

D. Section 03315 - Concrete Removal.

E. Section 04225 - Masonry Removal.

F. Section 05126 - Structural Steel Dismantlement.

G. Section 07415 - Transite Removal.

H. Section 15065 - Equipment Dismantlement.

I. Section 15066 - Interior Dismantlement.

SECTION 15067

## 1.3 REFERENCE MATERIALS

A. See Part 7 of the Invitation for Bid/Request for Proposal (IFB/RFP) Package for the following:

1. Index of Drawings.
2. Photographs.
3. Existing Drawings.
4. Air Cleaning Device Procurement Specification.
5. Air Cleaning Device Filter Procurement Specification.

## 1.4 REFERENCES, CODES, AND STANDARDS

All work shall be accomplished in accordance with the following reference, code, and standard requirements:

A. The entire work under this section shall be in compliance with the provisions of the following:

1. United States Department of Energy (DOE):

| | | |
|---|---|---|
| a. | DOE 6430.1A | General Design Criteria Division 15. |
| b. | DOE 5400.5 | Radiation Protection of the Public and the Environment. |
| c. | DOE/EH 0256T | Radiological Control Manual, April 1994. |

2. Energy Research and Development Administration (ERDA):

| | | |
|---|---|---|
| a. | ERDA 76-21-79 | Nuclear Air Cleaning Handbook. |

3. American Conference of Governmental Industrial Hygienists (ACGIH):

| | | |
|---|---|---|
| a. | ACGIH | Industrial Ventilation (latest edition). |

4. American Society of Civil Engineers (ASCE):

| | | |
|---|---|---|
| a. | ASCE 7-95 | Minimum Design Loads for Buildings and Other Structures. |

## 1.5 SUBMITTALS

A. The Subcontractor shall submit a work plan in accordance with IFB/RFP, Part 7, Subcontractor Work Plan Format Requirements, with the following information to Fluor Daniel Fernald (FDF) for approval.



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1. Drawings and Data:

   a. Indicate materials of construction, sizes, locations, entrances, and egresses that do not allow for breach of the local containment or vestibule, and all other details of local containments and vestibules to be erected.

   b. Provide calculations and air flow diagrams for local containment and vestibule ventilation.

   c. Submit calculations indicating that a minimum negative pressure of 0.1 inch water gauge or six air changes per hour is maintained in all local containments when the ventilation system is in operation.

   d. All drawings and calculations shall bear the stamp of a Registered Professional Engineer.

   e. If any part of this affects or involves asbestos activities, the Ohio Department of Health/OSHA Asbestos Hazard Abatement Project Designer certification shall be part of the documentation submitted with the work plan.

2. Equipment:

   a. Submit vendor information on all accessory ventilation equipment that will be used.

3. Provide building-specific work plans on the use of portable HEPA units including replacement of HEPA filters and prefilters.

## PART II PRODUCTS

### 2.1 MATERIALS

A. The Subcontractor shall provide air cleaning devices, HEPA, and prefilter elements, and all other ventilation accessory equipment for the completion of this project in accordance with Part 7 of the IFB/RFP.

B. Polyethylene sheeting as manufactured by Blueridge Films Inc., or equal.

## PART III EXECUTION

### 3.1 EXAMINATION

A. All vestibules, equipment, and/or structure containment material shall be noncombustible, or fire resistant and corrosion resistant.

B. Local containment structures shall be designed to be leak-tight and capable of maintaining a negative pressure of at least 0.1 inches water gauge or six air changes per hour. Typical design features on various local containments should include the following standardized features, where applicable:

1. Windows and mountings.
2. Glove ports.
3. Ease of cleaning.
4. Adequate interior illumination.
5. Connections for services lines, conduits, instrument leads, and ductwork.
6. 6 mil polyethylene sheeting.
7. Pressure differential readouts.
8. Attachments for interconnection of local containments.

C. Where practical, and without penetrating the local containment, all equipment components not functionally required to operate directly in the presence of radioactive materials shall be located outside the local containment.

D. The local containment or vestibule structure external to the building shall be designed to withstand the effects of normal operating conditions and the environment.

## 3.2 PREPARATION

A. The Subcontractor shall ensure that all building exterior holes, gaps, or openings are adequately sealed to prevent exhaust of airborne radioactive particulates.

B. The Subcontractor shall ensure that all ductwork used is free of dust or dirt before installing it in the ventilation system to prevent premature impingement loading of the prefilters and HEPA filters.

C. The Subcontractor shall ensure that all vestibules are large enough to support appropriate storage containers, material handling and dismantling equipment, and debris containerizing operations.

## 3.3 ERECTION/INSTALLATION/APPLICATION

A. The Subcontractor shall block, tie-down, or wheel lock all portable HEPA units.

B. The Subcontractor shall ensure HEPA filter and prefilter element replacements occur as indicated in Part 7 of the IFB/RFP Package. All HEPA filter and prefilter element replacements shall be provided by the Subcontractor.

C. The following guidelines for localized ventilation and in-place cutting control measures shall be adhered to by the Subcontractor. The exhaust volume rate shall be at least 10 percent of the actual containment air volume per minute. Ventilation provided must be HEPA filtered. When containments are out-of-doors or border the outdoors, or are to be used for torch-cutting in the size reduction area, containments must have an airlock for the passage of equipment, personnel, and materials, so the main body of the containment is never directly open to the atmosphere. Other containments must be maintained such that there are no undesigned holes in the containment and the

entrance/exit-way closes sufficiently to meet the air exchange/negative pressure requirements. The following criteria shall be met by the Subcontractor:

1. The Subcontractor shall ensure that ventilation air is provided in the quantities required to maintain OSHA air quality limits, all Permissible Exposure Limits (PELs), and all ACGIH Threshold Limit Values (TLVs).

2. For activities outside of enclosures, HEPA filters with a flexible ventilation duct shall be used as follows:

   a. Exhaust rate of the HEPA filters with a flexible ventilation duct shall maintain sufficient airflow capture velocity to prevent entry of fumes into the room. A minimum face velocity of 150 fpm is required.

   b. Each HEPA filters with a flexible ventilation duct in the cutting area should be capable of being isolated by means of control dampers to prevent backflow through a hood when it is not in service.

D. The Subcontractor shall ensure that all local containments can maintain negative pressures.

E. The Subcontractor shall comply with all other requirements for HEPA air filtration devices indicated.

F. Within an enclosure, the Subcontractor shall use local ventilation to maintain exposures ALARA.

## 3.4 FIELD QUALITY ASSURANCE

A. Final acceptance of local containments, building enclosures, and vestibule structures shall be obtained from FDF.

**END OF SECTION**