Smithsonian Institution

**Office of Planning, Design & Construction**

# SPECIFICATIONS

PROJECT NO.: 2466904

PROJECT TITLE: Renovate 4E NMAL Office Suite

FACILITY: Capital Gallery

DATE: April 18, 2025

This project is approved as being in conformance with applicable provisions of the Smithsonian Directive (SD) 410.

Andrew Scott 5/9/2025

Michael J. Carrancho, P.E., Deputy Director Date

600 Maryland Avenue, S.W.
Suite 5001
Washington, D.C. 20024
Voice: 202.633.6230 Fax: 202.633.6233

USPS Mail: OPDC Capital Gallery
MRC 511
P.O. Box 37012
Washington, D.C. 20013-7012

# S P E C I F I C A T I O N S

## TABLE OF CONTENTS

29. Debris Control and Daily Cleanup
30. Dust and Air Quality Control
31. Noise Control
32. Vermin, Pest and Rodent Control (Not Used)
33. Drilling, Welding and Torch Cutting

## TEMPORARY CONSTRUCTION FACILITIES

34. Contractor Field Offices, Trailers and Sheds (Not Used)
35. Staging, Storage and Work Areas
36. Sanitary Facilities
37. Temporary Utility Services and Extensions
38. Scaffolding and Platforms
39. Project Signs (Not Used)

## MEETINGS

40. Preconstruction Meeting
41. Pre-Condition Survey of the Site
42. Project Meetings

## SUBMISSIONS

43. Submittal Definitions (Not Used)
44. Submittals and Reviews
45. Criteria for Product Selection (Not Used)
46. Progress Photographs
47. Contractor Correspondence and Daily Reports

## SAFETY, HEALTH AND FIRE PROTECTION

48. Jobsite Safety
49. Toxic and Hazardous Substances
50. Personal Protective Equipment
51. Barriers, Barricades and Walkways
52. Existing Fire Protection Systems

## SECURITY REQUIREMENTS

53. General Security Requirements
54. Identification Badges
55. Access and Property Control at the Museum Support Center (Not Used)
56. Security of Temporary Openings
57. Existing Building Alarm Systems
58. Security Guard Duty Charges (Not Used)

## SCHEDULES AND PAYMENTS

59. Schedule of Values
60. Scheduling & Payments / Bar Chart
61. Scheduling & Payments / Critical Path Method (Not Used)
62. Assignment of Claims

## PROJECT CLOSEOUT REQUIREMENTS

63. Project Closeout
64. Substantial Completion
65. Final Completion and Acceptance

DIVISION 1 GENERAL REQUIREMENTS (CONT'D)

017419 Construction Waste Management and Disposal

DIVISION 2 EXISTING CONDITIONS

028200 Asbestos Abatement

| | | |
|---|---|---|
| DIVISION 3 | CONCRETE | NOT USED |
| DIVISION 4 | MASONRY | NOT USED |
| DIVISION 5 | METALS | NOT USED |
| DIVISION 6 | WOOD, PLASTICS AND COMPOSITES | NOT USED |
| DIVISION 7 | THERMAL AND MOISTURE PROTECTION | NOT USED |
| DIVISION 8 | OPENINGS | NOT USED |
| DIVISION 9 | FINISHES | NOT USED |
| DIVISION 10 | SPECIALTIES | NOT USED |
| DIVISION 11 | EQUIPMENT | NOT USED |
| DIVISION 12 | FURNISHINGS | NOT USED |
| DIVISION 13 | SPECIAL CONSTRUCTION | NOT USED |
| DIVISION 14 | CONVEYING EQUIPMENT | NOT USED |
| DIVISIONS 15-20 | RESERVED | NOT USED |
| DIVISION 21 | FIRE SUPPRESSION | NOT USED |
| DIVISION 22 | PLUMBING | NOT USED |
| DIVISION 23 | HEATING, VENTILATING AND AIR CONDITIONING | NOT USED |
| DIVISION 24 | RESERVED | NOT USED |
| DIVISION 25 | INTEGRATED AUTOMATION | NOT USED |
| DIVISION 26 | ELECTRICAL | NOT USED |

END OF TABLE OF CONTENTS

# PROJECT SUMMARY AND INFORMATION

## 1 PROJECT INFORMATION

1.1. Project No: 2466904
Project: Renovate 4E NMAL Office Suite
East Tower Fourth Floor
Capital Gallery
600 Maryland Avenue SW
Washington, DC

1.2. Smithsonian Institution Contacts:
Tom Dempsey, Contracting Officer
Smithsonian Institution
Office of Contracting
600 Maryland Ave, SW Suite 500E
Washington, DC 20024-2520

Rex Little, Contracting Officer's Technical Representative (COTR)
Smithsonian Institution
Office Engineering Design & Construction
600 Maryland Ave., SW Suite 5001
Washington, DC 20024

## 2 SUMMARY OF WORK

2.1. The Contractor shall furnish all supervision, labor, materials, and equipment needed to complete interior improvements at the Smithsonian Institution's Capital Gallery Administrative Headquarters located on the 4th Floor of the East Tower at 600 Maryland Avenue SW, Washington DC as set forth on the Drawings for Project No: 2466904, sheets 1 through 75 and in these specifications, both dated 04/18/2025. Supplemental Information includes Product Data and Basis of Design dated 04/18/2025.

2.2. The Work includes, but is not limited to:

- The Tenant Fit Up of approximately 13,500 square feet of existing 4th floor Office Suite with limited demolition; partition modifications; new ceiling tile, wall, and floor finishes; miscellaneous cabinetry.
- Demolition of plumbing fixtures and piping in existing pantries and addition of new plumbing fixtures and piping in new pantry and lactation room.
- New Communication and Security equipment including runs to existing LAN room.
- Limited HVAC alterations
- Modification to HVAC controls for central AHU’s and floor-mounted perimeter units.
- Limited Electrical alterations and additions of power, mechanical equipment, and lighting branch circuits;
- new lighting fixtures and lighting control system and devices; replacement and consolidation of existing panelboards;
- Fire Alarm – Modify existing fire alarm system to meet new tenant fit-out and NFPA 72 codes and SI OSHEM requirements. Installation of smoke detection throughout.
- Sprinkler – Providing all new quick response heads throughout and modifying existing

sprinkler system to meet new tenant fit-out.
- New Security System and Panel new devices, cameras, etc. tied into existing SI Security System.
- Communication/Data infrastructure and pathways from Office Suite to LAN Room; fiber and cabling by others.

2.3. Critical Elements of the Work: The successful Contractor shall be fully qualified to install critical elements of the Work. Upon request of the Contracting Officer, shall submit a statement of qualifications to address the following critical elements of the Work:

- Interior demolition
- Interior finishes
- Interior Mechanical & HVAC
- Interior Electrical
- Interior Plumbing
- Security Infrastructure & Devices
- IT & A/V Infrastructure

# 3 CONTRACT TIME FOR COMPLETION

3.1. Work under this contract shall begin by the Contractor within ten (10) calendar days after the Notice to Proceed and shall be completed within the total contract time of **One Hundred Sixty days (160) calendar days.** All work, including project closeout activities, shall be completed in every respect within the contract time.

3.2. The start date and completion date shall be as stated in the Notice to Proceed issued by the Contracting Officer.

# 4 SCHEDULE OF OPTIONS/ALTERNATES FOR BID (Not Used)

# 5 SCHEDULE OF UNIT PRICES (Not Used)

# 6 OFFEROR EXAMINATION OF SITE

6.1. Every effort has been made to indicate all work necessary to complete the project as identified. All Offerors shall carefully examine the premises during the Bid period and satisfy themselves as to the extent, nature and location of the work, general and local conditions, particularly those bearing on transportation, disposal, handling and storage of materials, availability of labor, water, electric power, access routes, uncertainties of the weather, type of equipment and facilities needed for the successful execution of the Work.

6.2. Before the Bid opening date, Offerors may view the project site on an appointment basis. Any comments, information or discussion during the site visit shall not modify the contract documents. Offerors shall make an appointment to view the site by contacting:

Rex Little, Construction Manager
Telephone No. (202) 359-6332
Smithsonian Institution
Office Planning Design and Construction
600 Maryland Ave. SW, Suite 5001
Washington, DC 20024

6.3. Pre-Bid Conference and Site Visit: Before the Bid opening date, a scheduled pre- Bid conference and site visit will be announced by the Contracting Officer. The purpose of the scheduled meeting is to provide an opportunity for all Offerors to review the project site. Any comments, information or discussion during the site visit shall not modify the contract documents.

6.4. This project requires special arrangements for access to a non-public area. Access to the site may be restricted at times other than during the scheduled visit.

## 7 AVAILABILITY OF DOCUMENTS (Not Used)

# SPECIAL PROJECT REQUIREMENTS

## 8 UNITS OF MEASURE

8.1. All fabrication and installation shall be performed in accordance with the units of measure given in the Contract Documents.

## 9 NON-PUBLIC, TENANT AND SECURED SPACES

9.1. Certain tenant spaces, non-public spaces, utility and equipment rooms and other areas related to or used for purposes of storage, research, or for scientific research may have restricted access.

9.2. The Contractor shall identify to the COTR as soon as possible, but no less than two (2) working days in advance, any occupied areas that the Contractor must access that are located outside the limits of the project site. The Contractor shall identify in writing:

9.2.1. Restricted areas to be accessed.

9.2.2. Specific reason for needing access.

9.2.3. Nature of the work to be performed.

9.2.4. Date(s) and hours needed to complete construction work activity.

## 10 SCIENTIFIC RESEARCH MATERIALS (Not Used)

## 11 PROTECTION OF HISTORIC PROPERTIES (Not Used)

## 12 COMMITMENT TO SUSTAINABILITY

12.1. The Smithsonian Institution is a trust instrumentality of the United States (recognized as a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code) and although not an Executive Branch of the U.S. Government, is committed to planning, designing, constructing, maintaining and operating its owned and leased buildings and facilities consistent with Federal environmental and energy management requirements, as listed in the Smithsonian Facilities Codes, Standards and Guidelines document, dated February 15, 2015, to the maximum extent practical.

## 13 COMMISSIONING

13.1 Provide industry standard start-up and testing. Coordinate with SI-COTR.

# CONTRACTOR USE OF PREMISES

## 14 HOURS OF WORK, WORKDAYS AND GOVERNMENT HOLIDAYS

14.1. Work shall be performed under this contract during the normal workdays of Monday through Friday, except Smithsonian holidays as specified herein and the normal work hours of 6:00 AM to 3:30 PM

14.2. The premises will be continually occupied, requiring the work under this contract, which is potentially disruptive to the tenants, to be performed during periods other than the normal building operation hours. The Capital Gallery Building Operation Hours are Monday through Friday between 7:00 AM - 7:30 PM and Saturdays 9:00am – 2:00pm. Therefore, the Contractor shall schedule and coordinate actual work hours with and through CM-COTR, who will coordinate with Boston Properties (BxP). The intent is to minimize disruption to the building tenants and their operations.

14.3. For each occasion the Contractor intends to work on Saturdays, Sundays, or Smithsonian holidays or during hours other than those indicated above, the Contractor shall obtain written permission from the COTR, at least three (3) working days in advance.

14.4. The Contractor shall reimburse the Smithsonian Institution for security and inspection services provided by the Smithsonian when the Contractor chooses to work outside the normal workdays and hours, as identified herein. However, the Contractor will not be charged for SI overtime security and inspection services, if, in the opinion of the COTR, the work cannot be done during the normal workdays and hours due to requirements of the Smithsonian or BxP.

14.5. Smithsonian Holidays: For holidays that fall on Saturday, the Smithsonian holiday is observed on the previous Friday. For holidays that fall on Sunday, the Smithsonian holiday is observed on the following Monday. The Smithsonian holidays are listed below.

| | |
|---|---|
| New Year's Day | January 1 |
| Martin Luther King Jr.'s Birthday | January, third Monday |
| George Washington's Birthday | February, third Monday |
| Memorial Day | May, last Monday |
| Juneteenth | June 19 |
| Independence Day | July 4 |
| Labor Day | September, first Monday |
| Columbus Day | October, second Monday |
| Veterans' Day | November 11 |
| Thanksgiving Day | November, fourth Thursday |
| Christmas Day | December 25 |

## 15 CONDITIONS AFFECTING CONTRACTOR’S WORK

15.1 Existing Occupied Spaces: The premises will be occupied during the performance of the Work. All requests for on-site storage shall be coordinated with CM-COTR. The Contractor

shall schedule work activities to minimize interruption of occupants and occupied spaces.

15.2 Space for Contractor Use: The space available for Contractor's use is limited to areas indicated on the Contract Drawings as the project site. Space allocation and availability are subject to change, at the discretion of the Smithsonian, to meet the needs of all parties requiring access and space within the building and the surrounding areas.

15.3 Other conditions:

- Ability to manage resources and schedule to deliver the project on time;
- Observance and Compliance with the Boston Properties (BxP) Construction Rules Rider (attachment B) coordinated through the COTR and SI Construction Manager Representative.
- All Design Documents are to be considered ‘Approved by Boston Properties’ and ready for Construction.
- Building Permit and Certificate of Occupancy to be received from SI at no cost to the Contractor.
- SI Office of Design and Construction, Permitting in SI Spaces
- SI-OSHEM, Authority Having Jurisdiction within SI Spaces

## 16 CONTRACTOR DELIVERIES, HAULING AND ACCESS

16.1 The Contractor's materials and equipment shall be delivered, received and handled by the Contractor's personnel.

16.2 Access to the building for on- and off-loading of all material, structures and equipment shall be the Capital Gallery loading dock.

16.3 The transportation of hazardous materials or hazardous waste into or out of the building shall be coordinated with the COTR. All hazardous materials shall be transported through the building in secondary containment and properly secured to transport carts to prevent breakage or spills.

## 17 DRESS AND DEPORTMENT

17.1. Contractors' personnel shall be fully and appropriately clothed at all times and shall conduct themselves in a manner appropriate to a public place. The COTR may require removal of any individual from the premises and project for unacceptable dress, demeanor or disruptive conduct, if the Contractor superintendent fails to correct conditions in violation of this paragraph.

## 18 CONTRACTOR PARKING

18.1 Contractor shall be responsible for making their own parking arrangements.

## 19 EATING, DRINKING, SMOKING, AND ILLEGAL SUBSTANCE ABUSE

19.1 Eating and drinking in Smithsonian buildings will not be allowed. Offenders may be subject to removal from the premises and project should the Contractor's Superintendent fail to correct conditions which, in the opinion of the COTR, violate this clause.

19.2 The consumption of alcoholic beverages by the Contractor's personnel is prohibited in all Smithsonian buildings or leased space.

19.3 Smoking or carrying lighted tobacco products is prohibited in all Smithsonian buildings or leased space, in exhibition and public spaces, in areas where hazardous materials are stored or handled, and in areas undergoing construction, renovation, or repair.

19.4 The possession, sale and/or use of narcotic or other illegal substances or firearms by Contractor employees is strictly prohibited in all Smithsonian facilities and leased space. Working on the project under the influence of alcohol or illegal substances is strictly prohibited.

# PROJECT COORDINATION

## 20 COORDINATION OF TRADES

20.1. The Contractor shall coordinate work of different trades so that interference between mechanical, electrical, architectural, and structural work, including existing services, shall be avoided.

20.2 Where work by separate entities requires off-site fabrication of products and accurate interfacing of materials to produce the required results, the Contractor shall prepare coordination drawings to indicate how work shown on separate shop drawings will be interfaced, intermeshed, and sequenced for installation. Coordination drawings shall be submitted in accordance with the requirements of the "Submissions" section.

20.2.1. Work installed prior to approval of coordination drawings shall be at the Contractor's risk. Subsequent relocations required to avoid interferences shall be made without additional expense to the Smithsonian. If an interference develops, the COTR will decide which work shall be relocated, regardless of which was installed first.

20.3. Installation of equipment and systems shall allow the maximum practical space for operation, repair, removal, and testing, within the limits indicated on the Contract Documents. Pipes, conduit, ducts, and other system components shall be installed as close as possible to ceiling slabs, walls, and columns to minimize space used while accommodating function and maintenance.

## 21 QUALITY ASSURANCE

21.1. The Contractor shall provide for quality control, inspections, testing and re-testing as necessary for all work, including that of subcontractors, to assure compliance with the contract documents.

## 22 PERMITS, LICENSES & FEES

22.1. The Contractor shall obtain and pay for all applicable permits and licenses required by regulating agencies, including, but not limited to: permits for pedestrian and road markings, construction fences, sidewalk cuts, utility company connections, elevator certificates, waste containers, etc.

16.2 A DC Building Permit is NOT REQUIRED for work within Smithsonian-owned Space. An SI Building Permit will be provided at NO COST to the Contractor.

## 23 UTILITY SERVICE INTERRUPTIONS AND NEW CONNECTIONS

23.1. Any planned interruption in utility service must be approved by and coordinated through the COTR. The Contractor shall submit a written request as far in advance of scheduled interruption as possible, but no less than two (2) full working days in advance. The Contractor shall make the necessary temporary provisions to supply continuous electrical power, HVAC space conditioning and security as required during periods when service is interrupted.

23.2. The Contractor's work efforts to restore service shall be continuous until the interrupted utility is back in service.

23.3. (Not Used)

23.4. A fire watch shall be provided for the time periods when fire suppression and detection systems are out of service. See Section 33 for additional requirements.

23.5 Areas of the facility will remain occupied and in operation beyond the construction zone throughout the construction period. Utility services to occupied areas must remain operable 24 hours a day. All work requiring shut down of equipment serving occupied areas beyond the construction zone will be coordinated with the COTR a minimum of 2 days in advance of scheduled work requiring shut down.

23.6 The Contractor must provide on-going access to SI personnel to all equipment which is to remain operational throughout the construction period.

## 24 SMITHSONIAN FURNISHED ITEMS INSTALLED BY CONTRACTOR

24.1 Refer to the responsibility’s matrix shown in the drawings.

## 25 SALVAGE

25.1. The Smithsonian Institution assumes no responsibility for salvage value or any loss or damage to materials or structures on the site for which the Contractor may have reflected a salvage value in their bid.

25.2. Except as specifically stated in the contract documents, construction materials, equipment or other items that are to be removed and neither re-used under this contract nor reserved as property of the Smithsonian Institution shall become the property of the Contractor and shall be removed from the premises by the Contractor.

## 26 CUTTING, PATCHING AND MATCHING EXISTING WORK

26.1. Existing work shall be cut, drilled, altered, removed, or temporarily removed and replaced as necessary for performance of work under the contract. Work that is replaced shall match similar existing work. Structural members shall not be cut or altered, except where noted on drawings, without authorization of the COTR. Work to remain in place, which is damaged or defaced during this contract shall be restored to match the conditions existing at the time of award of the contract, at no additional cost to the Smithsonian.

26.2. Conditions exposed by removal of existing work that do not match new finishes or align with new work shall be called to the COTR's immediate attention. Necessary corrective work directed by the COTR will be subject to adjustment provisions as stated in the General Conditions

of the contract.

# PROTECTION OF THE SITE

## 27 PROTECTION OF THE SITE

27.1. The Contractor shall provide adequate protection for all parts of the building, including interior and exterior surfaces, its occupants and contents and grounds wherever work under this contract is performed.

27.2 Plan for Protection of the Site: The Contractor shall submit a plan for protection of the site to the COTR for approval. As a minimum, the Plan shall describe:

15.2.1 Proposed method, location, and construction of temporary barricades, signage.

15.2.2 Methods of protection of existing surfaces and occupants.

## 28 PROTECTION OF FLORA AND FAUNA (Not Used)

## 29 DEBRIS CONTROL AND DAILY CLEANUP

29.1. The Contractor shall regularly clean up the work areas and shall, at all times, maintain the project in as neat and orderly a manner as is consistent with normal operations. Debris resulting from construction operations shall be removed daily from the site by the Contractor. The Contractor shall keep all access, haul routes and site areas free of dirt, debris and other materials resulting from construction activities.

Coordinate with SI-COTR and BxP.

## 30 DUST AND AIR QUALITY CONTROL

30.1 The Contractor will execute the Work by methods that minimize dust raised by construction operations. The Contractor will provide positive means to prevent objectionable odors and air-borne dust from dispersing into the atmosphere and from being drawn into existing air-intake louvers and ductwork.

30.2 Dust barriers shall be erected where necessary to protect adjacent areas from dust infiltration as required by the COTR. Dust barriers shall be rigid and visually opaque and shall seal the work area by affixing to the structure on all sides (i.e. ceiling, walls, and floor).

30.3 Means of connection of dust barriers to existing structures shall not damage the building fabric. Details of barriers shall be submitted for approval to the COTR.

## 31 NOISE CONTROL

31.1 The Contractor shall comply with the regulations of OSHA Standard 1926.52 and 1910.95 and all other regulations relative to safety noise control.

31.2 Activities that generate excessive noise or vibration and interrupt the facilities functions or create public disturbances may be required to be performed during off-hours at the discretion of the COTR.

31.3 The Contractor shall provide sound attenuation to maintain acoustic level below 75 dBA at a distance of 15 m.

## 32 VERMIN, PEST, AND RODENT CONTROL (Not Used)

## 33 DRILLING, WELDING, AND CUTTING

33.1 Daily Permit: When welding, torch cutting, or other heating operations are to occur, the Contractor shall obtain a daily welding permit from the COTR at least two working days in advance. The permit must be posted at the job site prior to beginning the scheduled work.

33.2 Fire Watch: No welding or torch cutting shall be performed unless adequate fire protection is provided. The Contractor shall maintain a fire watch for the duration of welding, cutting, and heating operations and for at least 30 minutes after the 'hot' work has stopped. The Contractor shall provide adequate ventilation to prevent air contamination or the accumulation of toxic materials. A fire extinguisher (minimum 10 pounds, dry-chemical type, typical) shall be on hand when drilling, welding, or cutting.

33.3 Use of Impact Hammers: The use of impact hammers or other equipment causing vibration, noise, and dust may be harmful the facilities equipment, telescopes and/or building occupants. The Contractor shall request approval from the COTR at least five working days before beginning this type of work.

# TEMPORARY CONSTRUCTION FACILITIES

## 34 CONTRACTOR FIELD OFFICES

34.1. The Contractor shall establish a temporary office at the project site. The Contractor shall provide information about proposed locations of any temporary office, staging and storage areas and designation of size, color, and materials to the COTR for approval at least five (5) working days prior to mobilization.

34.2. The Contractor may provide his own locking device on the door to the temporary office, trailer or shed. The Contractor shall be solely responsible for the safekeeping and security of the construction facilities, materials, and equipment.

34.3. Upon completion of the Work, the temporary offices be removed, and the area returned to its original pre-contract condition.

## 35 STAGING, STORAGE AND WORK AREAS

35.1. Before any work is started, the Contractor shall coordinate with the COTR regarding the use of area for staging and storage of materials and equipment.

## 36 SANITARY FACILITIES

36.1 The Contractor's personnel may use the public restrooms as long as the privilege is not abused, and the facility is kept clean. If in the opinion of the COTR the facility is not being properly used, it will be placed off limits and the Contractor will be required to make other arrangements.

## 37 TEMPORARY UTILITY CONNECTIONS AND EXTENSIONS

37.1. The Contractor shall provide and maintain all temporary lighting and power required, including interior lighting and security lighting, in all areas where permanent lighting or power has been disconnected or removed. Contractor shall continue to provide such temporary power of lighting until permanent lighting and power has been installed or restored or until otherwise directed by the COTR. Contractor shall maintain all permanent lighting and power in areas inside the construction zone even if such power or lighting is not part of the Work.

37.1.1. When the use of such temporary lighting and power is no longer required, all temporary wiring, and equipment including hangers and supports shall be completely removed by the Contractor.

37.1.2. Temporary Lighting shall meet minimum OSHA standards.

37.1.3. The required temporary lighting shall remain on twenty-four (24) hours a day and seven (7) days a week at all stairs and egress paths. In other areas temporary lighting may be shut off during non-working hours.

37.1.4. All temporary wiring and equipment shall be in conformity with the National Electric Code. Three-phase temporary power circuits shall be installed as required to operate construction equipment of the various trades and to install and test equipment such as pumps and fans. The Contractor shall install and maintain temporary or permanent service for the permanently installed building equipment such as sump pumps, air handlers, chillers, cooling towers, automatic temperature controls, boilers, boiler controls, fans, pumps, etc. so that such equipment may be operated when required and so ordered by the COTR. Wiring for temporary lighting and receptacles, within the existing building shall be type MC cable as defined in NFPA 70 and shall contain an insulated ground wire. Minimum conductor shall be No. 12 AWG solid copper with type THHN/THWN insulation.

37.1.5. Receptacles for temporary power during construction shall be provided in work areas, with maximum spacing of 25 feet. A maximum of three duplex receptacles shall be connected to 20A, 120V circuit GFCI protection must be provided at all temporary power receptacles.

## 38 SCAFFOLDING AND PLATFORMS

38.1. The Contractor shall erect temporary scaffolding in accordance with OSHA 29 CFR 1926.451 and ANSI A10.8. The Contractor shall provide landing platforms with stairways or ladders for proper access and egress to all work areas.

38.2. For all frame scaffolding greater than 4 m in height, the Contractor shall submit working drawings to the COTR a minimum of ten (10) working days in advance of scaffolding erection. Working drawings submitted by the Contractor shall be certified by a registered Professional Engineer.

38.3. During non-working hours, the Contractor shall close and lock the scaffolding with a physical barrier to prevent access by unauthorized persons.

## 39 PROJECT SIGNS (Not Used)

# MEETINGS

# 40 PRECONSTRUCTION MEETING

40.1. A Preconstruction Meeting will be scheduled with the Contractor before any work is started at the site. As soon as possible after the Date of Award, the COTR will contact the Contractor to arrange a time, date, and place for the conference. Items to be discussed at the Preconstruction Meeting include, but are not limited to:

40.1.1. Contract Time: Notice to Proceed date and Completion date;
40.1.2. Scheduling and Submittals;
40.1.3. Project Communications;
40.1.4. Mobilization and Staging;
40.1.5. Access to the Premises, Haul Routes, Loading Dock;
40.1.6. Security Requirements/List of Contractor's Personnel;
40.1.7. Emergency Procedures and Phone Numbers;
40.1.8. Protection of Site;
40.1.9. Fire Protection and Safety Requirements;
40.1.10. Utility Interruptions, Rough-in Inspections, Testing;
40.1.11. Applications for Payment;
40.1.12. Pre-Condition Survey of the Site;
40.1.13. Accessibility Requirements;
40.1.14. Sustainability Requirements;
40.1.15. Building Systems Commissioning;
40.1.16. Quality Assurance;
40.1.17. (Not Used)

40.2. The Contractor's key staff and representatives of all Subcontractors or Suppliers shall attend the Preconstruction Meeting.

40.3. Coordination Plan: The Contractor shall use the Preconstruction Meeting to develop a Coordination Plan for interaction with other parties working in or using the facility. The plan shall be submitted no less than five (5) working days after the Preconstruction Meeting and shall address interactions with other contractors, tenants, the public and any others making use of the site and surrounding areas. As a minimum it shall include:

40.3.1. Locations of overlap in use of the site by the Contractor and others, including work areas, delivery points, access/egress areas.

40.3.2. Specific items of work by others required to support critical milestones in the Contractor's schedule.

40.3.3. Coordination with the work of the designated Commissioning Provider.

40.3.4. Completion or delivery of work by others that may impact the Contractor's schedule.

40.3.5. Portions of the work that create special hazards or disturbances.

40.3.6. Portions of the work that affect utilities, fire-protection or detection systems or security systems.

40.3.7. Events requiring access to areas outside of the project site or secured spaces.

40.3.8. Protection to be provided by the Contractor for work completed by others

either before or during this project.

## 41 PRE-CONDITION SURVEY OF THE SITE

41.1. After the Preconstruction Meeting and before the start of work on the site, the project site (i.e. building, its contents, grounds, and equipment) shall be inspected by the Contractor, major Subcontractors, COTR and other Smithsonian Institution personnel as may be required for the purpose of verification of the existing conditions. Any damages or defective equipment will be noted at this time and this survey will serve as the basis for the establishment of the pre-contract conditions. The identification of pre-contract conditions will be jointly established by the Contractor and Smithsonian Institution.

41.2. Written and photographic documentation: The Contractor shall prepare a typewritten and photographic report in PDF format to identify damages or defects of materials, equipment, and the site. The Contractor shall submit report electronically to the Contracting Officer and the COTR.

41.3. Video documentation: The Contractor shall video and document the observations made during the survey of the existing conditions for buildings, improvements, finishes, utilities, interior surfaces, construction and other systems, components, or materials, which might be affected by the Work, including sidewalks, streets, and adjacent facilities. The Contractor shall submit the report electronically to the COTR. The typewritten and photographic report and video reports shall be complimentary in content and shall be submitted together.

## 42 PROJECT MEETINGS

42.1. Progress Meetings: The COTR will lead regular progress meetings with an interdisciplinary integrated management team consisting of representatives of the Contractor, Smithsonian, Architect/Engineer Commissioning Provider, major Subcontractors and other critical Subcontractors and suppliers. The purposes of these meetings are to expedite the work, coordinate and schedule the Work and coordinate the work with Smithsonian activities. Progress meetings shall be held weekly unless otherwise directed by the COTR. The time and place of the meetings will be established at the Preconstruction Meeting. The Contractor shall ensure that all required Subcontractors and suppliers attend the Progress Meetings and the COTR will ensure that all necessary SI personnel attend.

42.2. Special-Topic Meetings: At the discretion of the COTR, additional meetings may be scheduled to address issues of quality control, sustainability requirements, coordination between contractors on the premises, coordination with other agencies, scheduling of the work, application for payments, etc. The Contractor's staff and Subcontractors or Suppliers shall attend.

42.3. Meeting Minutes: The Contractor shall promptly prepare Meeting Minutes, see Appendix A, of each meeting and transmit to the COTR, within three (3) working days.

# SUBMISSIONS

## 43 SUBMITTAL DEFINITIONS

43.1. Submittals are defined to include shop drawings, product data, samples and additional data required for submission to the COTR for review and approval prior to incorporation into the work.

43.1.1. Shop Drawings: Detailed drawings, schedules, diagrams, and illustrations prepared specifically for this project by the Contractor or any subcontractor, manufacturer, supplier, or distributor to illustrate fabrication and/or installation of a portion of the Work.

43.1.2. Schedule: A detailed tabulation of components, items, or parts to be furnished for use on this project.

43.1.3. Statement: An affirmation prepared by the Contractor, the installer or manufacturer of a material, product, or system, to satisfy a requirement defined in a technical section.

43.1.4. Factory Test Report: A written report of the findings of a test performed by the Contractor on an actual portion of the Work or prototype prepared for this project before it is shipped to the site.

43.1.5. Field Test Report: A written report of the findings of a test performed by the Contractor on a portion of the Work during or after installation.

43.1.6. Certificate of Compliance: A written statement, signed by an authorized official of the manufacturer of a product or system or supplier of a material attesting that the product, system, or material meets the requirements of the contract documents. The certificate of compliance must be dated after the award of this Contract and must name the project and cite the specification section, paragraph, and requirements, which it is intended to address.

43.1.7. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature and catalog information illustrating a material, product or system to be installed on this project, including all data related to LEED requirements, such as recycled and regional content information, Volatile Organic Compound (VOC) product schedules, Forest Stewardship Council (FSC) chain-of-custody documentation and other documentation as requested by the COTR.

43.1.8. Color Charts: Pre-printed brochures showing the color range of a material.

43.1.9. Test Reports: Reports verifying that a material, assembly, system, process, or laboratory meets requirements established in the Contract Documents. Reports shall indicate compliance by naming and describing the test method and test results. Testing must have occurred within three (3) years of the date of award of this contract.

43.1.10. Samples: Physical examples of materials, equipment, assemblies, or workmanship establishing standards for evaluating finished Work.

43.1.11. Color/Texture Selection Sample: Samples of an available range of textures and/or colors of a material formed of the actual finish material over a substrate identical to that which will be used in the field.

43.1.12. Mock-up: An assembly or sample panel constructed in accordance with specifications to show construction details, finished appearance and/or performance.

43.1.13. Safety Data Sheets: Instructions, warnings and recommended and required handling and use procedures for individual hazardous materials published by the product manufacturer.

# 44 SUBMITTALS AND REVIEWS

44.1. Contractor Responsibility for Submittals: The Contractor shall provide all required submittals, by technical specification section, in accordance with the contract documents. All submittals, with exception of mockups or samples, are to be submitted electronically by email in PDF format. The Contractor shall clearly indicate on the submittal that it has been reviewed by the Contractor and found to meet the project requirements. Any items submitted as substitutions shall be clearly identified as such on the submittal and the transmittal document. If shop drawings show variations from the contract documents because of standard shop practices or for other reasons, the Contractor shall provide a separate, written description of variations along with the submittal. The Contractor shall:

44.1.1. Review each submittal for conformance with requirements of the contract documents and coordination with related work.

44.1.2. Determine and verify all field measurements, required material quantities, method of assembly or erection, installation requirements and proper connection to adjoining materials installed by others.

44.1.3. Assure that all submittals use the appropriate units of measure. All drawings and technical data shall be in SI (metric) units for projects designed in SI units. Preprinted literature in other units shall be accompanied by documentation to show conformance to project requirements.

44.1.4. Transmit all required submittals for a technical specification section at the same time unless prior written waiver of this requirement has been provided by the COTR.

44.1.5. Transmit submittals to the COTR in a logical and orderly sequence in accordance with the Submittal Schedule to prevent project delays or adversely impact work by the Smithsonian Institution or other contractors.

44.1.6. Correct and resubmit submittals according to response from the Smithsonian Office of Planning Design and Construction (OPDC).

44.1.7. Commence work on items requiring submittals only after all related submittals are reviewed and approved by the Smithsonian. All Work shall conform to approved submittals.

44.1.8. Submittal Procedures: All submittals shall be submitted to and coordinated through the COTR. The Contractor shall establish and maintain a secure FTP/Web site for the duration of the project. The FTP/Web site will be used for the purpose of posting, exchanging, and sharing project information and documents, including but not limited to submittals, shop drawings, meeting minutes, reports, and test data. The FTP/Web site will be made available to the COTR, the project Architect/Engineer and their consultants and other project team members as approved by the COTR.

Submittals which cannot be posted electronically, such as samples, shall be delivered to the office of the COTR, properly labeled and with transmittals.

44.2. Submittal Schedule and Control Log: The Contractor shall submit, to the COTR, a schedule of work-related submittals using the Smithsonian Facilities Submittal Log form, see Appendix A, within fourteen (14) calendar days after the effective date of the Notice to Proceed.

Submittals shall be listed in the order they are scheduled to be submitted and the following information shall be given:

44.2.1. Project Name, Project Number, Contractor Name, Contract Number;

44.2.2. Technical Specification Section for each submittal;

44.2.3. Unique Submittal Number;

44.2.4. Description of item to be submitted, as listed in the specifications;

44.2.5. Date item must be submitted to the Smithsonian to support the project schedule;

44.2.6. Subcontractor providing submittal (in "Comments" column).

44.3. Quantities for Submittals: Unless otherwise noted in the technical specification, the Contractor shall deliver to the COTR:

44.3.1. Shop Drawings: Submit electronic copy of shop drawings in PDF format. Submittal will be forwarded electronically to the AE for review. After submittal review, submittal will be returned to the Contractor electronically, in PDF format. Submit in DWG format, if requested.

44.3.2. Product Data, Test Reports, Color Charts, etc: The Contractor shall make submittals in electronic format, preferably PDF.

44.3.3. Color/Texture Samples: Submit two (2) samples, minimum size 600 mm by 600 mm, unless otherwise specified. After submittal review, one (1) sample may be retained by the Smithsonian.

44.3.4. Mock-up and Sample Installations: Unless otherwise specified, minimum size shall be as noted to complete a panel section or normal break in the work.

44.3.5. Written Text Documents, Plans and Reports: Submit electronic copy of written text documents, plans and reports in PDF format. Submittal will be forwarded electronically to the AE for review. After submittal review, submittal shall be returned to the Contractor electronically, in PDF format.

44.4. Submittal Reviews by the Smithsonian: Reviewed submittals shall be marked "Approved," "Approved as Noted," "Revise/Resubmit," "No Action Taken." Submittal approval by the Smithsonian shall not relieve the Contractor of responsibility for submittal errors, omissions, or deviations from the contract documents. Approval of submissions does not constitute acceptance of substitutions except as covered under sub-paragraph entitled "Contract Requests for Substitutions."

44.5. Submittal Review Period: The Contractor shall transmit, to the COTR, all submittals sufficiently in advance of the time necessary for fabrication and installation to allow for review by the Smithsonian and return to the Contractor, including any time needed for correction and resubmission by the Contractor. The expected time required by the Smithsonian for review of initial submission is **21** calendar days. No extension of the Contract Time will be granted for the Contractor's failure to allow sufficient time for review and processing, including resubmission of items, which initially rejected due to improper submission or non-compliance with the Contract Documents.

44.6. Contractor Requests for Substitutions: Contractor requests for items identified by

manufacturer, brand name, make, catalog number, etc. in the contract documents shall be submitted to the Contracting Officer for approval prior to contract award, in accordance with the General Conditions. After award of the contract, contractor requests for substitutions may be considered and accepted by the Smithsonian at the discretion of the Contracting Officer.

44.7 Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

44.7.1. Note date and content of previous submittal.

44.7.2. Note date and content of revision in label or title block and clearly indicate extent of revision.

44.7.3. Cloud, bubble, or otherwise highlight and identify all revisions on the drawings. Submittals which do not identify changes and revisions will be returned as “Not Reviewed”. Do not renumber submittal documents which have been previously submitted for review except to modify the revision number. Drawings that have been renumbered will be rejected and returned. Resubmit submittals until they are marked with approval notation from COTR.

## 45 CRITERIA FOR PRODUCT SELECTION

45.1. To the greatest extent possible, subject to the restrictions of the Buy American Act, provide products, materials, or equipment of a singular generic kind from a single source. Where more than one choice of a product or material is available for Contractor's selection, select an option, which is compatible with other products and materials already selected.

45.2. Provide products complete with accessories, trim, finish, safety guards and other devices and details needed for complete installation for intended use and effect.

45.3. Products, which, by nature of their application, are likely to be needed at a later date for maintenance and repair or replacement work, shall be current models for which replacement parts are available.

45.4. Product selection shall be done in accordance with the following requirements:

45.4.1. Standards, Codes and Regulations: Select from among products that are in compliance with the project requirements, as well as with construction standards, all applicable codes and regulations and LEED requirements.

45.4.2. Performance Requirements: Provide products that comply with specific performances indicated and are recommended by the manufacturer (in published product literature or by individual certification) for the application indicated.

45.4.3. Prescriptive Requirements: Provide products that have been produced in accordance with prescriptive requirements, using specified ingredients and components and complying with specified requirements for mixing, fabricating, curing, finishing, testing and other operations in the manufacturing process.

45.4.4. Visual Matching: Where matching with an established sample for color, pattern and/or texture, the COTR shall determine whether a proposed product matches the sample.

45.4.5. Avoidance of banned materials: The Contractor will commit to not using the following toxic and hazardous materials:

45.4.5.1. Products containing asbestos, urea formaldehyde, polychlorinated biphenyls (PCBs) and/or chlorinated fluorocarbons;

45.4.5.2. Products containing lead content, including older or flux containing more than 0.2 percent lead; domestic water pipe or pipe fittings containing more than 8 percent lead; and paint containing more than 0.06 percent lead.

## 46 PROGRESS PHOTOGRAPHS

46.1. The Contractor shall provide digital photographs of the project site and construction activities throughout the progress of the Work. The COTR shall determine the vantage points from which photographs will be taken.

46.2. At least 24 color progress digital photographs shall be taken monthly. The actual number and location of views shall be directed by the COTR. Photographs shall be taken at the start and finish of various elements of construction designated by the COTR.

46.3. Within Seven (7) working days of taking digital photographs, the Contractor shall submit to the COTR, via email or other electronic means, JPEG files for all photographs taken.

46.4. On the front of each print provide, by photographic means, an information box (40 mm by 90 mm) in the lower right-hand corner. The box shall be typewritten and arranged as follows:

Smithsonian Institution
Title: _____
SI Project No.: _____Contract No.: _____
Contractor: _____
Photo No.: _____ Date:_____Time: _____
Description/View: _____

46.5. Submit all original images, select labeled images and typed index to COTR on electronic media and posted to FTP/Web site.

46.6. All photographs and digital files, including the copyright thereto, are the sole property of the Smithsonian Institution. The Contractor shall not use Smithsonian property except as authorized in writing by the Contracting Officer.

## 47 CONTRACTOR CORESPONDANCE AND DAILY REPORTS

47.1. The Contractor shall correspond with the COTR for all matters related to this construction project, unless otherwise directed. All correspondence shall be signed and dated by the Contractor and shall reference the project, project number and contract number.

47.2. The Contractor shall maintain daily reports using the Smithsonian Institution Contractor's Daily Report form, see Appendix A. Reports shall be numbered consecutively, and all sections shall be completed or noted as "not applicable." Reports shall contain detailed remarks each day, including but not limited to progress on the job, problems discovered and discussions with Smithsonian staff. Reports shall be submitted to the COTR each day for the previous workday.

47.3. The Contractor shall request information using the Smithsonian Institution Request for Information (RFI) form. RFIs shall be numbered consecutively and shall address a single topic,

include the specification section or drawing detail number, and clarification requested. The COTR will evaluate properly submitted RFIs in consultation with the project team and issue a response within 14 calendar days.

47.3.1 RFIs shall be submitted on the Smithsonian's standard form (available upon request).

47.3.2 RFIs shall be numbered consecutively.

47.3.3 Each RFI shall address a single topic, include the specification section or drawing detail number, and clarification requested.

47.3.4 The COTR will evaluate properly submitted RFIs in consultation with the project team and issue a response within **7** calendar days.

47.3.5 Requests for Information will be answered as prioritized by the COTR.

# SAFETY, HEALTH AND FIRE PROTECTION

## 48 JOB SITE SAFETY

48.1. Safety Coordinator: The Contractor shall designate a person responsible for safety at the project site for the duration of the project.

48.2. Jobsite Safety Plan: The Contractor shall submit a Jobsite Safety Plan within fourteen (14) calendar days of the Contract Award and at least ten (10) calendar days prior to mobilization to the site for approval by the COTR. See Site Specific Safety Plan (SSSP) Format template for requirements and shall detail the procedures, designated persons, instructions, and reports to be used to assure jobsite safety for all contractors, subcontractors, Smithsonian personnel, the public and others on the site.

48.3. Occupational Safety and Health: This contract is subject to Title 29 of the Code of Federal Regulations, Part 1910 "Occupational Safety and Health Standards" and Part 1926 "Safety and Health Regulations for Construction" pursuant to the Occupational Safety and Health Act (OSHA) of 1970 administered by the US Department of Labor, Occupational Safety and Health Administration.

48.4. Emergency Assistance: The Contractor shall post, at the site, telephone numbers for reporting emergencies, including the Smithsonian Office of Protection Services (OPS), ambulance, police, fire department, gas utility, electric utility, water/sewer utility, poison prevention aid and hazardous-waste handling. This information shall be posted in a conspicuous location within the project area prior to the start of any work at the site.

48.5. Safety Signs: The Contractor shall post legible accident prevention signs in construction areas in accordance with OSHA standards. Safety signs shall conform to ANSI 235.1 and 235.2 Vehicular traffic control devices, barricades and signals shall conform to ANSI D6.1.

48.6. Report of Accident or Illness: In the event of any accident or illness for which medical assistance is required, any criminal action or any fire, the Contractor shall notify the appropriate authority (Ambulance, Police, Fire Dept.), Smithsonian Security and the COTR.

48.7. Emergency Evacuation: The Contractor shall post evacuation routes and facility emergency/self-protection plans at the site, train all employees in emergency procedures, and

document such training. In the event of a fire, the Contractor shall immediately activate the alarm at the nearest fire alarm pull station and notify building security. Upon the activation of the audible alarm, the building will be evacuated. No personnel shall reenter the facility until security personnel signal that the building is safe.

48.8. Contractor Personnel to be Contacted: The Contractor shall submit a written list of emergency telephone numbers and names of persons to contact for the General Contractor superintendent and for each major sub-contractor working on the project site. The initial list shall be submitted to the COTR at the Preconstruction Meeting. The list shall be updated and resubmitted to the COTR as needed.

## 49 TOXIC AND HAZARDOUS SUBSTANCES

49.1. The Contractor shall submit to the COTR, at least ten (10) working days prior to their intended use, a written list of toxic and hazardous substances that will be used on the project. The Contractor shall submit a "Safety Data Sheet" similar to OSHA Form No. 20 for these substances to identify the following information:

49.1.1. Product Identification
49.1.2. Hazardous Ingredients
49.1.3. Physical Data
49.1.4. Fire and Explosion Hazard Data
49.1.5. Health Hazard Data
49.1.6. Emergency and First Aid Procedures
49.1.7. Reactivity Data
49.1.8. Spill or Leak Procedures
49.1.9. Special Protection Information
49.1.10. Special Precautions

49.2. The Contractor will commit to not using the following toxic and hazardous materials:

49.2.1. Products containing asbestos, urea formaldehyde, polychlorinated biphenyls (PCBs) and/or chlorinated fluorocarbons.

49.2.2. Products containing lead content, including solder or flux containing more than 0.2% lead; domestic water pipe or pipe fittings containing more than 8% lead; and paint containing more than 0.06% lead.

49.2.3. Chlorofluorocarbon (CFC)-based refrigerants in new base building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems and comprehensive CFC phase-outs when reusing existing base building HVAC equipment.

49.3.4. The Contractor hereby understands that historic properties may contain pre-existing harmful materials and coatings including, but not limited to, arsenic, lead, dioxide, polyvinylchloride (PVC) and asbestos. Upon discovery of hazardous or toxic materials, the Contractor shall alert the COTR immediately.

## 50 PERSONAL PROTECTIVE EQUIPMENT

50.1. Personal protective equipment for eyes, face, ears, nose, head, extremities and/or full body shall be provided, used, and properly maintained by the Contractor whenever necessitated by reasons of hazards encountered in a manner capable of causing illness, injury, or impairment in the function of any part of the body.

50.2. Persons required to use personal protective equipment shall be thoroughly trained. Training programs shall, as a minimum, meet OSHA and EPA requirements where applicable. The Contractor shall submit proof and criteria for employee training as requested.

## 51 BARRIERS, BARRICADES AND WALKWAYS

51.1. The Contractor shall provide safety barricades in accordance with the COTR, BxP and applicable OSHA regulations. The Contractor shall also provide barricades, subject to approval by the COTR, to deter passage of persons and/or vehicles into construction areas as specified or necessary.

51.2. The Contractor shall install temporary barriers, in a manner satisfactory to the COTR, to contain and secure the site from unauthorized entry and to minimize the adverse effects of noise, dust and vapors generated by construction activities on surrounding areas. Barriers shall be constructed of pressure-impregnated fire-retardant treated wood, with fire-retardant 6-mil polyethylene as necessary. Submit all product data to the COTR for review and approval.

51.3. If the work interferes with public or employee access to the facility or parts of the facility, as determined by the COTR, the Contractor shall provide personnel barriers and signage to create easily identifiable, accessible (to people with handicaps) walkways around the work. Signs shall be posted at decision points to prevent unnecessary travel along changed routes and to dead ends. The barriers shall be erected and dismantled in phases so that a clear route is always available. The COTR and Contractor personnel shall have access through the barriers to the work areas. The Contractor may use hardware on the barrier doors to prevent entry by unauthorized persons.

51.3.1. Interior barriers shall be of standard drywall partition construction, painted and terminated at the underside the existing ceilings. All requirements for fire protection shall be maintained.

51.3.2. Exterior barriers shall be of dimensional lumber and plywood, painted on both sides and supported to prevent overturning. Barriers shall be repainted and maintained as necessary to remain in good condition as long as they are required.

51.4. Unless specifically indicated otherwise, barricades, barriers and associated signs shall be removed upon completion of the Work. The Contractor shall coordinate the dismantling and removal with the COTR.

## 52 EXISTING FIRE PROTECTION SYSTEMS

52.1. During the course of the Work, all existing smoke and heat detectors and sprinkler heads must remain operable. Coverings may be applied to protect them from spray coatings or other hazardous conditions only during the actual operations. Coverings must be removed immediately after the operations have concluded. Damaged detectors and sprinkler heads shall be replaced immediately by the Contractor at no additional cost to the Smithsonian Institution. The Contractor shall test replaced detectors and sprinklers after installation to the satisfaction of the COTR.

# SECURITY REQUIREMENTS

## 53 GENERAL SECURITY REQUIREMENTS

53.1. The Contractor and his employees must comply with security requirements imposed by the Smithsonian Institution, including any necessary security clearances. Failure to inspect the site or obtain knowledge of security regulations shall not relieve the Contractor from security requirements or from performance of any part of the work.

## 54 IDENTIFICATION BADGES (Not Used)

## 55 ACCESS AND PROPERTY CONTROL AT MSC (Not Used)

## 56 SECURITY OF TEMPORARY OPENINGS

56.1 Any temporary opening in the building perimeter or between non-public and public interior spaces must be closed and secured with means acceptable to the COTR at the end of each workday. A clear and safe path shall be maintained at all times to allow staff and visitors entrance into the facility. The Contractor shall secure his facilities and equipment during non-working times at his own expense. Authorized Smithsonian personnel shall have access to the work site.

## 57 EXISTING BUILDING ALARM SYSTEMS

57.1. The Contractor shall notify the COTR prior to disturbing any alarm wiring, device, system, etc. The Contractor shall coordinate planned disturbances at least two (2) working days in advance of the scheduled work. Any alarm wiring, devices, or system that is broken or disturbed for any reason must be reported to the COTR within three (3) minutes of the occurrence.

57.2. If any system or component is damaged by Contractor employees, the COTR determine the procedures for repairing the damage to existing building alarm systems, and who will perform the repair work. The cost to repair the system and any related overtime costs for Smithsonian personnel shall be borne by the Contractor.

## 58 SECURITY GUARD DUTY CHARGES (Not Used)

# SCHEDULING AND PAYMENTS

## 59 SCHEDULE OF VALUES

59.1. The Contractor shall submit, to the COTR, a schedule of estimated values of all parts of the work. The breakdown of costs on the Schedule of Values shall follow the divisions used in the project specifications and shall reflect major items and groups of items shown on the Contractor's project schedule. All values shall be in US dollars.

59.2. Wages: The contractor shall verify wages and comply with regulated wage scales, i.e. Davis-Bacon, Service Contract Act, etc.

## 60 SCHEDULING & PAYMENTS / BAR CHART

60.1. Project Schedule: The Contractor shall submit to the COTR for approval, a Gantt bar chart project schedule within fourteen (14) calendar days after the date of contract award. Submit in PDF format. No work shall start at the site until the project schedule has been approved by the COTR. The approved bar chart will represent a baseline schedule on which the monthly construction progress will be indicated and submitted to the COTR. The baseline project schedule

shall comply with the following:

60.1.1. Weekly breakdown of work activities shall be provided, including interaction between building trades, subdivided by items of work and areas of the project. Items of work shall be grouped and subdivided according to the divisions of the Construction Specifications Institute (CSI) format.

60.1.2. The start date and completion date shall be consistent with the Contract Time established by the Contracting Officer. Any intermediate deadline dates needed to meet specific requirements for Smithsonian use of portions of the work shall be shown.

60.1.3. Project condition survey activities shall be scheduled not later than the 14th calendar day of the contract time and prior to the start of any site work.

60.1.4. Project closeout activities shall be scheduled for completion in accordance with the requirements for the Contract Time for Completion.

60.1.5. Order dates and projected delivery dates shall be shown for equipment, special devices, hardware, products, or other items requiring long lead time.

60.1.6. Required delivery dates for items to be furnished by Smithsonian and installed by the Contractor shall be shown, as well as items to be furnished and installed by Smithsonian, which will affect the Contractor's work.

60.1.7. Review periods for all submittals and time required for all necessary inspection and/or testing shall be shown.

60.1.8. Dates shall be given for ordering, delivery, installation and testing of major equipment and special materials and equipment.

60.1.9. The Contractor shall specifically identify work activities and dates associated with construction bid alternates.

60.2. Revisions to Baseline Schedules: The Contractor shall submit to the COTR for approval, all revisions to the approved baseline project schedule. The Contractor shall submit a proposed revision to the schedule, as necessary, along with proposals for construction changes, clearly indicating modifications to the schedule based on the proposal. The Contractor shall also submit, for review and approval, any proposed changes to the schedule due to inability to accomplish the work as planned for any reason. Approved changes to the schedule shall be incorporated into the Project Schedule and it shall be resubmitted as necessary or as requested by the COTR.

60.3. Progress Behind Schedule: If it becomes apparent to the COTR that the overall progress of the project is behind the approved project schedule, then the COTR will notify the Contractor in writing. The Contractor shall submit to the COTR for approval, a Recovery Schedule and Plan to describe how the Work will be accelerated to meet the Contract Time requirements in accordance with the General Conditions contract clause entitled "Commencement, Prosecution and Completion of the Work." The Recovery Schedule shall be superimposed on the approved baseline project schedule to demonstrate that proposed recovery activities will accomplish completion of the work by the approved completion date.

60.4. Reporting Progress and Applying for Payment: Each month, the Contractor shall apply for payment and submit a report of the actual construction progress as follows:

60.4.1. By the 25th of each month, the Contractor and the COTR shall have inspected the work to determine percentages complete for each item, projected through the end of the month. The parties shall attempt to reach agreement on each item, but if they cannot reach an agreement the COTR will determine percent complete.

1. The Contractor shall submit to the COTR a complete and up-to-date set of record prints for review prior to Application for Payment and certify that the project record documents are current at the time of application. The Contractor shall require such drawings to be current as a condition of approving any payment to the trade Contractor and Subcontractor.

60.4.2. By the last day of the month, the Contractor shall submit an Application for Payment based on the determined percentages complete for each item. The application shall be submitted on the Smithsonian standard Application for Payment form. Each copy of the Application for Payment shall be accompanied by the following:

1. A Progress Schedule identifying the cumulative progress superimposed on the latest revision of the approved Project Schedule. The net progress for the month and applicable dates shall be clearly indicated.

2. A complete set of copies of certified weekly-payroll data for the period.

60.5. Response to Application:

23.5.1. Payment shall be made only for progress agreed upon by the COTR, performed on original Contract Work or approved modifications, in accordance with the current, approved Project Schedule. Failure to submit the Application in accordance with the specifications will prevent the processing of payments.

23.5.2. Payments shall be mailed to the Contractor's address as identified in the contract documents on record with the Contracting Officer. Any changes of address or requests for wire transfer of progress payments must be made in writing, signed by the Contractor's authorized person and submitted to the Contracting Officer.

## 61 SCHEDULING & PAYMENTS / CRITICAL PATH METHOD (Not Used)

## 62 ASSIGNMENT OF CLAIMS

62.1. Assignment of Claims are subject to the approval of the Contracting Officer. Any Assignment of Claim or subsequent re-assignment shall meet the requirements of the General Conditions contract clause entitled "FAR 52.232-23 Assignment of Claims."

# PROJECT CLOSEOUT REQUIREMENTS

## 63 PROJECT CLOSEOUT

63.1. Definition: Project closeout is a scheduled process for fulfillment of remaining contract requirements at the end of the project in preparation for final acceptance, final payment, normal termination of contract, beneficial occupancy, and establishment of the warranty period(s).

## 64 SUBSTANTIAL COMPLETION

64.1. Definition: The date of Substantial Completion of a project or specified part of a project is the date, as confirmed by inspection by the COTR, when the construction is at least 95% complete and ready for beneficial occupancy, so that the Smithsonian can take possession of that area or part of the work. Portions of the work that are specified to be phased for completion, areas required for Smithsonian's use prior to completion of the total project or items of work identified by the COTR as necessary for partial beneficial occupancy may be inspected for substantial completion separately from the rest of the Work.

64.1.1. The Smithsonian Institution reserves the right to occupy or install equipment in completed areas of the building prior to substantial completion provided that such occupancy does not interfere with the completion of the work. Such partial occupancy shall not constitute acceptance of any part of the work.

64.2. Request for Substantial Completion Inspection: The Contractor shall submit a written request to the COTR for an inspection to establish Substantial Completion status. This request shall specify areas or parts of the work to be considered and shall include a listing of all exceptions to the request, that is, items not considered to be substantially complete.

64.3. Submission of Operation and Maintenance Manuals: Prior to requesting Substantial Completion Inspection, the Contractor shall submit, to the COTR, three (3) sets of manuals for all systems and equipment, as specified in the technical sections of this specification. The manuals shall be bound in letter-sized, three-ring, loose-leaf binders with durable plastic covers. They shall be organized into suitable volumes of manageable size using the divisions of the Specifications as a guide. Each manual shall have a table of contents and shall be assembled to conform to the table of contents with tab sheets locating each subject. The instructions shall be legible and easy to read. Where oversize drawings are necessary, they shall be folded to be not greater than letter-size. The words "Operation and Maintenance Manual," the name and location of the project, project number, contract number, date, and the name of the general contractor, shall appear on the cover. Data shall be specific to the equipment that is installed and reflect all approved changes and substitutions. Data shall also reflect any required or recommended seasonal adjustments or inspections. Include electronic copy of manual, in PDF format, on CD/DVD. Manuals shall include, as a minimum, the following data:

64.3.1. Detailed description of each system and each of its components, including layout showing piping, valves, controls, and other components and including diagrams and illustrations where applicable.

64.3.2. Wiring and control diagrams with data to explain detailed operation and control of each component.

64.3.3. Control sequence describing start-up, operation, and shutdown.

64.3.4. Procedures for starting, operating and shutdown.

64.3.5. Installation instructions.

64.3.6. Maintenance and overhaul instructions.

64.3.7. Lubricating schedule, including type, grade, temperature range and frequency.

64.3.8. Emergency instructions and safety precautions.

64.3.9. On-site acceptance test results for equipment installed under this contract.

64.3.10. Approved product data, shop drawings and system as-builts.

64.3.11. Copies of approved certifications and laboratory test reports (where applicable).

64.3.12. Notarized copies of warranties (originals to be provided as required by "Warranties and Guarantees").

64.3.13. Written instructions for test procedures.

64.3.14. Performance curves and rating data.

64.3.15. Parts list, including source of supply, recommended spare parts and service organization convenient to Smithsonian.

64.3.16. Name, address, and telephone number of each subcontractor who installed equipment and systems, local representative for each type of equipment and each system.

64.3.17. Other pertinent data applicable to the operation and maintenance of particular systems or equipment and/or other data as specified Divisions 2 through 33 of the Specifications.

64.4. Other Prerequisites for Substantial Completion Inspection: The Contractor shall also complete the following prior to requesting inspection for certification of substantial completion:

64.4.1. Testing and start-up of systems.

64.4.2. Installation of all signage, including accessibility related signs, equipment instructions, identification labels and permanent directional signs.

64.4.3. Submission of spare parts, tools and surplus materials as required in technical specifications. Submit to the COTR an MSDS for each surplus material that contains toxic or hazardous substances. Surplus materials that the SI determines not to retain shall be removed and properly disposed of by the Contractor according to all applicable regulations.

64.4.4. Scheduling of training sessions for Smithsonian personnel.

64.4.5. Removal of all waste, rubbish and temporary facilities and services. Means of access to all areas of the work to be inspected by the COTR shall be maintained.

64.4.6. Disposition of samples and mock-ups not incorporated into the work.

64.4.7. Arrangement for permanent utility connections and billing responsibility transfer to Smithsonian's Office of Facilities Operations (OFO).

64.4.8. Arrangement for transfer of security responsibility for the project site and changeover of locks by Smithsonian's Office of Protection Services (OPS).

64.4.9. Hazardous Waste Disposal: Submit copies to the COTR of the following hazardous waste records for hazardous waste generated on SI property and disposed of by contract personnel.

1. Hazardous Waste Manifests
2. Notification and Certification Forms
3. Material Profile Sheet or characterization
4. Container Content Sheets
5. Certificates of Disposal

64.5. Scheduling of the Substantial Completion Inspection: Within seven (7) calendar days after receipt of the Contractor's written request, the COTR will either schedule an inspection or advise the Contractor of work that must be completed or prerequisites that must be met prior to scheduling the Substantial Completion Inspection. In that case, another written request for Substantial Completion Inspection must be submitted when all requirements have been met.

64.6. The Substantial Completion Inspection: The Substantial Completion Inspection will be performed by representatives of the Smithsonian Institution led by the COTR. During the inspection, the COTR will prepare a punch list of deficiencies in the work. If the punch list becomes too extensive the COTR may cancel the inspection and require additional work to be performed for a repeat inspection.

64.6.1. For satisfactory inspection results, the COTR will issue the written punch list to the Contractor as soon as possible after the inspection. Items on the punch list must be completed prior to final acceptance of the total project work.

64.6.2. For unsatisfactory inspection results, the COTR will, within three (3) calendar days, give written notice to the Contractor that the Work or portion of the Work is not substantially complete in accordance with the contract documents and therefore does not meet Substantial Completion status. Requests for re-inspection shall meet all requirements for the original request for Substantial Completion inspection.

64.7. Punch List: Incomplete contract requirements identified during the Substantial Completion Inspection will form an initial basis for a punch list for final acceptance. All punch list items must be completed by the Contractor within the Contract Time. If additional days are needed to complete the punch list items beyond the Contract Time, then the Contractor shall submit, prior to the end of the Contract Time, a written request to the Contracting Officer stating:

64.7.1. Items requiring additional time;

64.7.2. Amount of time needed to complete each item;

64.7.3. Reasons why the items cannot be completed by the contract completion date.

## 65 FINAL COMPETION AND ACCEPTANCE

65.1. Definition: The date of final completion of a project is the date, as confirmed by inspection by the COTR, when the Work is satisfactorily completed and accepted in accordance with the contract documents, as amended and/or modified.

65.2. Request for Final Completion Inspection: When all items on the punch list have been corrected to the satisfaction of the COTR and additional requirements as described below have been satisfied, the Contractor shall submit a written request for Final Completion Inspection.

65.3. Prerequisites for Final Completion: Prior to requesting the inspection for certification of Final Completion, the Contractor shall complete the following:

65.3.1. Submission of a copy of a prior punch-list stating that each item has been completed or otherwise resolved for acceptance.

65.3.2. Provision of Instructions to Smithsonian Personnel -where instructions to Smithsonian personnel are specified in other sections, furnish, without additional expense to the Smithsonian, the services of competent instructors, who will give full instruction in the care, adjustment and operation of the systems and equipment to designated Smithsonian employees.

1. Each instructor shall be familiar with all parts of the system on which he or she is to give instruction and shall be knowledgeable about the systems' operation and required maintenance. Factory trained instructors shall be employed wherever practical and available.

2. Unless otherwise required or approved, the instruction shall be given during the regular workweek after the equipment has been accepted and turned over to the Smithsonian for regular operation. Where significant changes or modifications in equipment are made under the terms of the contract, additional instruction shall be provided as may be necessary to acquaint the operating personnel of the changes or modifications. Unless otherwise stated, at least half of the time allocated for instruction shall be "hands-on," using the actual system installed.

3. Upon completion the Contractor shall obtain written acknowledgment from the COTR that the required instruction was completed.

65.3.3. Posting of operating instructions approved by the COTR for each system and each principal piece of equipment. Include wiring and control diagrams showing the complete layout of the entire system including equipment, piping, valves, and control sequence framed under clear laminated plastic and posted where directed by the COTR. Printed or engraved operating instructions for each principal piece of equipment including start-up, proper adjustment, operating lubrication, shut-down safety precautions, procedure in the event of equipment failure and any other necessary items of instruction as recommended by the manufacturer of the unit shall be attached to or posted adjacent to the piece of equipment. Operating instructions exposed to the weather or wet or humid conditions shall be made of weather-resisting materials or shall be suitably framed and enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling. The Contractor shall coordinate the location of posted instructions with the COTR.

65.3.4. Provision of equipment demonstrations for each equipment item. The Contractor shall coordinate scheduling of all demonstrations through the COTR.

65.3.5. Submission of original warranties for all products, equipment, and systems.

1. The Contractor shall assemble original warranty certificates or notarized copies of warranty certificates executed by the Contractor, Subcontractors, suppliers, and manufacturers in a tab-indexed, three-ring loose-leaf binder with a durable plastic cover. Provide electronic copy, in PDF format, on CD/DVD. The table of contents shall identify the item covered, the location of the item, the date of Substantial Completion, expiration date of the warranty and the

supplier, vendor and installing contractor. Duplicate notarized copies of warranties shall be provided as required by "Manuals for Operation, Maintenance and As-Built Product Data."

2. Each warranty certificate or bond shall identify the date(s) for:

(1) Substantial Completion status in accordance with project closeout requirements.

(2) Beginning and ending of the warranty period.

(3) The Contractor shall provide any coincidental product warranty, which is available on a product incorporated in the Work, but for which the warranty is not specifically required by the contract documents.

3. Warranty of Construction: The Contractor shall warrant that the work performed under this contract conforms to the contract requirements and is free of any defect in equipment, materials, design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. Unless otherwise stated in the technical sections of the Specifications, the warranty of the Work shall continue for a period of one (1) year from the date of Final Completion status. If the Smithsonian takes partial occupancy before Final Completion, then the warranty for that portion shall be in effect for a period of one (1) year beginning on the date of Substantial Completion for that portion of the Work.

65.3.6. Submission of construction progress photographs and digital files, property survey and similar final record information.

65.3.7. Arrangement for changeover locks through the COTR and Smithsonian Office of Protection Services as required for security for Smithsonian occupancy.

65.3.8. (Not Used)

65.3.9. Submission of evidence that all regulatory agency permit and code requirements have been completed and recorded, as necessary.

65.3.10. Submission of a signed, written statement that no damage has occurred to the site as documented by the pre-condition survey report.

65.3.11. Final clean up, including:

1. Sweep and dust all surfaces and wash all finished surfaces to appear new and free of all stains, soil marks, dirt, and other forms of defacement.

2. Remove labels that are not required as permanent labels.

3. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances that are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.

4. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of dust stains, films, and similar noticeable substances. Except

as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

5. Wipe surfaces of equipment clean. Remove excess lubrication and other substances.

6. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

7. Wet-mop concrete and clean other hard-surface floors according to manufacturers' recommendations.

8. Vacuum clean carpeted surfaces and similar soft surfaces.

9. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

10. Clean project site (yard and grounds) of litter and foreign substances. Sweep exterior paved areas to a broom-clean condition; remove stains, petro-chemical spills, and other foreign deposits. Rake grounds, which are neither planted nor paved, to a smooth, even textured surface.

65.4. Inspection of the Work for Final Completion: Upon receipt of the Contractor's written notice that the work has been completed, the COTR will inspect the work to confirm Final Completion status and acceptance of the work. As soon as possible after inspection, the COTR will either provide written acknowledgment of final acceptance or advise the Contractor of work not completed or obligations not fulfilled as required for final completion and acceptance.

65.5. Application for Final Payment:

65.5.1. Application for Final Payment shall be submitted only after Final Acceptance has been certified in writing to the Contractor by the COTR. Application shall include final labor data and progress schedule update.

65.5.2. Final Payment will be approved when Final Acceptance has been certified and the following conditions have been met:

a. Certification signed and submitted by the Contractor that all contract requirements, including contract modifications, have been met.

b. Final Release of Claims submitted.

c. Release of assignment of claims or consent of surety submitted, as necessary.

d. (Not Used).

e. As-Built Record Drawings Submitted: During the progress of the work the Contractor shall maintain a complete and up-to-date set of record prints, open to inspection by the COTR at any time. These prints shall provide a complete and accurate as-built record of all changes to the Contract Drawings, including rerouting of runs, relocation of items or control points and all other modifications. The exact location of pipes, conduit, or other features concealed

underground, under concrete, in chases or above ceilings shall be shown by perpendicular dimensions from at least two available landmarks. As-built drawings shall be neatly marked with colored pencils or ink, marked "As-Built" and signed and dated by the Contractor. Upon completion of the Work and before final payment, the Contractor shall submit the following to the COTR: photographically produced as-built record drawings on 4-mil, double matte, mylar sheets, sized the same as the contract drawings; electronic copies of as-built record drawings in PDF and DWG formats.

f. As-Built Record Survey of Underground Utilities Submitted: If outside or underground utilities are part of the work, the Contractor shall furnish, to the COTR for approval, an acceptable and accurately dimensioned survey showing location and elevation of underground storage tanks, all utility lines for water, gas, electrical, sewer, steam, etc., including valves, connections and changes in direction, as installed under the contract, within the property lines and outside the building walls. Points where utility lines emerge from the building shall be located from lot monuments. The survey shall be made to scale and must be marked "As-Built" and signed and dated by the Contractor. The Contractor shall furnish a scanned, digital copy to the COTR as well as a copy on a 3-mil, double matte, mylar sheet or sheets the same size as the contract drawings.

g. As-Built Record Specifications Submitted: The Contractor shall submit one (1) hard copy and one digital (scanned) set of project specifications with annotations to identify any changes made during construction, referencing modification numbers, dates and originators of authorizing letters or memos and other sources of changes. The cover shall be marked "As-Built" and signed and dated by the Contractor.

h. Close-out Conditions Text and Photographic Documentation Submitted: The Contractor shall prepare a typewritten text and photographic report of observations made during the inspections for project closeout regarding conditions of new work and adjacent items that were examined for the pre-condition survey report. Any defects shall be identified and the Contractor's operations on the defect shall be described. Within ten (10) calendar days after the Final Inspection, the Contractor shall submit the text and photographic report in PDF format to the Contracting Officer and the COTR and retain a copy of each for the Contractor’s files.

i. Final Video Documentation Submitted: The Contractor shall prepare a video with audio narrative of the observations made during the inspections for project closeout. The video shall include work completed under the project and items examined for the pre-condition survey report. Within ten (10) calendar days after the Final Inspection, the Contractor shall submit the Final report electronically to the Contracting Officer and the COTR.

END OF SUPPLEMENTARY CONDITIONS FOR CONSTRUCTION

# SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

### 1.3 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

### 1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for commencement of the Work.

1.6 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.

B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference via teleconference. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there were no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include transportation and tipping fees and cost of collection containers and handling for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.

5. Revenue from recycled materials.
6. Savings in transportation and tipping fees by donating materials.
7. Savings in transportation and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total nonhazardous solid waste generated by the Work in four or more waste streams. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials including, but not limited to:

1. Demolition Waste:
   a. Wood studs.
   b. Plywood and oriented strand board.
   c. Wood paneling.
   d. Wood trim.
   e. Structural and miscellaneous steel.
   f. Rough hardware.
   g. Insulation.
   h. Doors and frames.
   i. Door hardware.
   j. Glazing.
   k. Metal studs.
   l. Gypsum board.
   m. Acoustical tile and panels.
   n. Carpet.
   o. Carpet pad.
   p. Demountable partitions.
   q. Equipment.
   r. Cabinets.
   s. Plumbing fixtures.
   t. Piping.
   u. Supports and hangers.
   v. Valves.
   w. Sprinklers.
   x. Mechanical equipment.
   y. Refrigerants.
   z. Electrical conduit.
   aa. Copper wiring.
   bb. Lighting fixtures.
   cc. Lamps.
   dd. Ballasts.
   ee. Electrical devices.
   ff. Switchgear and panelboards.
   gg. Transformers.

2. Construction Waste:
   a. Lumber.
   b. Wood sheet materials.
   c. Wood trim.
   d. Metals.
   e. Insulation.
   f. Carpet and pad.
   g. Gypsum board.
   h. Piping.
   i. Electrical conduit.
   j. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      6) Wood crates.
      7) Wood pallets.
      8) Plastic pails.

   k. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:

      1) Paper.
      2) Aluminum cans.
      3) Glass containers.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

   1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

   1. Distribute waste management plan to everyone concerned within three days of submittal return.

2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

## 3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

## 3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

## 3.4 RECYCLING DEMOLITION WASTE

A. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

B. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

D. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

E. Metal Suspension System: Separate metal members, including trim and other metals from acoustical panels and tile, and sort with other metals.

F. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet and pad in a closed container or trailer provided by carpet reclamation agency or carpet recycler.

G. Carpet Tile: Remove debris, trash, and adhesive.

1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.

H. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.

I. Conduit: Reduce conduit to straight lengths and store by material and size.

J. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

## 3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

## 3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.

C. Burning: Do not burn waste materials.

END OF SECTION 017419

# APPENDIX A:

SI Documents Examples:

- SI Site Specific Safety Plan (SSSP) Format
- Access Plan

**SI Site Specific Safety Plan (SSSP) Format (Rev 5a)**

A Site Specific Safety Plan (SSSP) is a safety and health policy and program document that outlines how the contractor will safely conduct their work. The following areas are typically addressed in an SSSP, but this plan shall be job-specific and shall also address any unusual or unique aspects of the project or activity for which it is written.

The SSSP shall interface with the employer's overall safety and health program, and a copy shall be available on the work site. Any portions of the employer's overall safety and health program that is referenced in the SSSP shall be included as appropriate.

**> For LIMITED-SCOPE SERVICE, SUPPLY AND R&D CONTRACTS, for example, mowing (only), surveying, industrial cleaning, inspecting, the Contracting Officer and Facility Safety Coordinator may allow the use of an ABBREVIATED SSSP (customized SSSP requirements and waive the more stringent elements of this section)*. > See section 11.***

**Section 1** **SIGNATURE SHEET.** Title, signature, and phone number of the following:

a. Plan preparer (Qualified Person, Competent Person, such as corporate safety staff person, QC);
b. Plan must be approved, by company/corporate officers authorized to obligate the company;
c. Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional, project QC). Provide concurrence of other applicable corporate and project personnel (Contractor).

**Section 2** **BACKGROUND INFORMATION.** List the following:

a. Contractor;
b. Contract number;
c. Project name;
d. Brief project description, description of work to be performed, and location; phases of work anticipated these will require a Job Hazard Analysis (JHA's). **OSHA 3071**

**Section 3** **STATEMENT OF SAFETY AND HEALTH POLICY.** Provide a copy of current corporate/company Safety and Health Policy Statement, detailing commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract should be provided.

**Section 4** **RESPONSIBILITIES AND LINES OF AUTHORITIES.** Provide the following:

a. A statement of the employer's ultimate responsibility for the implementation of Safety and Health on the job site;
b. Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes. Qualifications shall include the OSHA 30-hour course or equivalent course areas as listed here:

(1) OSH Act/General Duty Clause;

(2) 29 CFR 1904, Recordkeeping;

(3) Subpart C: General Safety and Health Provisions, Competent Person;

(4) Subpart D: Occupational Health and Environmental Controls, Citations and Safety Programs;

(5) Subpart E: PPE, types and requirements for use;

(6) Subpart F: understanding fire protection in the workplace;

(7) Subpart K: Electrical;

(8) Subpart M: Fall Protection;

(9) Rigging, welding and cutting, scaffolding, excavations, concrete and masonry, demolition; health hazards in construction, materials handling, storage and disposal, hand and power tools, motor vehicles, mechanized equipment, marine operations, steel erection, stairways and ladders, confined spaces or any others that are applicable to the work being performed.

c. The names of Competent and/or Qualified Person(s) and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached. Requirements that no work shall be performed unless a designated competent person is present on the job site;

e. Requirements for pre-task safety and health analysis;

f. Lines of authority;

g. Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;

h. Provide written company procedures for holding managers and supervisors accountable for safety.

**Section 5 SUBCONTRACTORS AND SUPPLIERS.** If applicable, provide procedures for coordinating **Safety and Health** activities with other employers on the job site:

a. Identify key personnel of subcontractors and suppliers (if known);

b. Establish how safety responsibilities of subcontractors and suppliers will be communicated and managed.

**Section 6 TRAINING.**

a. Requirements for new hire Safety and Health orientation training at the time of initial hire or transfer of each new employee to the job site.

b. Requirements for all employees to be briefed and familiar with the contents of the SSSP prior to beginning their assigned work.

c. Requirements for mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, confined space entry, respiratory protection, crane operator, fall protection, vehicle/equipment operators, HAZWOPER training and certification, PPE etc.) and any requirements for periodic retraining/recertification.

d. Procedures for periodic safety and health training for supervisors and employees to include "Tool Box" safety meetings.

**Section 7 SAFETY AND HEALTH INSPECTIONS.**

a. Specific assignment of responsibilities for a minimum daily/weekly job site safety and health inspection during periods of work activity: Who will conduct (e.g., Site

Superintendent, Safety Professional, Project Manager, QC, supervisors, employees – depends on level of technical proficiency needed to perform said inspections), proof of inspector's training/ qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures;

**Section 8 ACCIDENT REPORTING** The Contractor shall identify person(s) responsible to provide the following:

a. Exposure data (man-hours worked);

b. Accident investigations, reports, and logs: Report all accidents as soon as possible but not more than 24 hours afterwards to the Contracting Officer/ Representative (COTR). The contractor shall thoroughly investigate the accident and submit the findings of the investigation along with root causes and appropriate corrective actions to the COTR as soon as possible but no later than five (5) working days following the accident. Implement corrective actions as soon as reasonably possible;

c. The following require **immediate** accident notification:

(1) A fatal injury;

(2) The hospitalization of one or more people resulting from a single occurrence;

(3) Injuries to employees, SI staff, visitors, or members of the public requiring emergency response and/or transport to the hospital;

(4) Any damage to SI property.

**Section 9. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL.** Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational risks and compliance plans. Using the 29 CFR 1926 and/or current and accepted procedures in the EM 385-1-1 as a guide, plans must include but not be limited to:

a. Layout plans/Temporary Facilities (04.A.01)

Plans for the layout of temporary construction buildings, facilities, lay down area, fencing, and access routes and anchoring systems for temporary structures shall be submitted.

b. Emergency response plans:

(1) Procedures and tests (01.E.01); 1926.35

(2) Spill plans (01.E.01, 06.A.02);

(3) Firefighting plan (01.E.01, Section 19); 1926.24

(4) Posting of emergency telephone numbers (01.E.05); 1926.50

(5) Medical Support. Outline on-site medical support and off-site medical arrangements including rescue and medical duties for those employees who are to perform them, and the name(s) of on-site Contractor personnel trained in first aid and CPR. A minimum of one employee shall be certified in CPR and first-aid per shift/site (Section 03.A.02; 03.D); 1926.50(c)

c. Plan for prevention of alcohol and drug abuse (01.C.02); Drug-Free Workplace Act 1988

d. Site sanitation plan, housekeeping (Section 02); 1926.25, 1926.51

e. Access and haul road plan (4.B); Access/haul roads shall be designed in accordance with current engineering criteria.
f. Respiratory protection plan (05.G); 1910.134
g. Health hazard control program (06.A); 1926.53
h. Hazard communication program (06.B.01); 1910.1200(e)
i. Process Safety Management Plan (06.B.04); 1926.64 and 1910.119
j. Lead abatement plan (06.B.05 & specifications); 1910.1025 and 1926.62
k. Asbestos abatement plan (06.B.05 & specifications); 1910.1001, 1926.1101 and 40 CFR 61, Subpart M
l. Radiation Safety Program (Ionizing & Non-Ionizing) (06.E.03.a); 1926.53, 1926.54
m. Abrasive blasting (06.H.01); 1926.57
n. Inclement Weather/Heat/Cold Stress Plan (06.I.02) Plan shall developed to outline actions when there are warnings or indications of impending severe weather (heavy rains, thunderstorms, damaging winds, tornados, hurricanes, floods, lightning, etc.). Weather conditions shall be monitored using appropriate weather station or similar notification system. Appropriate precautions shall be outlined and taken to protect personnel and property from the effects of the severe weather. Employers shall also develop a comprehensive written activity/site -specific heat/cold stress monitoring plan.
o. Crystalline Silica Monitoring Plan (Assessment) (06.M); 1926.55 and 1910.1000
p. Night operations lighting plan (07.A.08); 1926.56
q. Fire Prevention Plan (09.A); 1926.24,1926.151,
r. Hot Work Plan; The plan shall include the name of the person in charge of hot work safety for the contractor and will designate who maintains the hot work plan and ensures that hot work safety guidelines are implemented for all hot work activities. The plan will also include written verification of employees who are trained and authorized to conduct hot work operations and the names of those who are designated and trained as fire watch. The plan will contain a description of anticipated site specific hot work activities and outline the process for obtaining SI hot work permits and ensuring conditions are in accordance with SI hot work permit requirements before hot work begins. SI Safety Manual Chapter 14, NFPA 51B;
s. Hazardous energy control plan (12.A.01); 1910.147
t. Crane and Hoisting Safety Plan (16.H); 1926.1400 Subpart CC
u. Site-Specific Fall Protection & Prevention Plan (21.C); The plan shall describe in detail, the specific practices, equipment, and methods used to protect workers from falling to the next lower level. Fall protection competent person(s) will be identified, worker training verified, description of fall hazard tasks, anchorage and fall arrest systems, and rescue procedures will be outlined as a minimum. 1926.501, Subpart M
v. Demolition plan (to include engineering survey) (23.A.01); 1926.850
w. Excavation/trenching plan (25.A.01); 1926.652
x. Concrete Formwork and shoring erection and removal plans (27.C); 1926.703, Subpart Q
y. Precast Concrete Plan (27.D);1926.704
z. Lift slab plans (27.E); 1926.705
aa. Steel erection plan (27.F.01); 1926.752
bb. Confined space Program (34.A); 1910.146
cc. Protection of the staff, visitors, and public; A detailed plan shall describe procedures taken to protect staff, visitors, and members of the public from construction activities including but not limited to signs, barricades, engineering controls; pedestrian and traffic control; lighting requirements; falling object protection; protection from heavy equipment operation; protection from noise, vibration, dust, etc.

Additional plans listed in EM 385-1-1 that although not normally part of SI Construction projects, should be reviewed for applicability:

- **Man overboard/abandon ship (Section19.A.04);**
- **Wild Land Fire Management Plan (09.K);**
- **Float Plan (19.F.04);**
- **Compressed air plan (26.I.01); 1926.803**
- **Emergency rescue (tunneling) (26.A.);**
- **Underground construction fire prevention and protection plan**
- **(26.D.01); 1926.800**
- **Site Safety and Health Plan for HAZ Waste Site Cleanup work**
- **(28.B); 1926.65(b)**
- **Blasting Safety Plan (29.A.01); 1926 Subpart U**
- **Diving plan (30.A.13); 1910 Subpart T**

**Section 10 RISK MANAGEMENT PROCESSES** Detailed project-specific hazards and controls shall be provided by a Job Hazard Analysis for each major phase/activity of work, including but not limited to work involving confined space, fall protection, trenching/excavation, crane/rigging, steel erection, hot work, protection of the public, scaffolding, and other activities that involve high risk potential. 01.A.13; **OSHA 3071**

**Section 11 ABBREVIATED SITE SPECIFIC SAFETY PLAN (SSSP) for LIMITED-SCOPE SERVICE, SUPPLY AND Research & Development (R&D) CONTRACTS.**

If service, supply and R&D contracts with limited scopes are awarded, the contractor may submit an abbreviated Site Specific Safety Plan. This SSSP shall address the following areas **at a minimum**. If other areas of OSHA 1910 and 1926 are pertinent to the contract, the contractor must assure these areas are addressed as well.

a. Title, signature, and phone number of the plan preparer.
b. Background Information to include: Contractor; Contract number; Project name; Brief project description, description of work to be performed, and location (map); The project description shall provide a means to evaluate the work being done (see **JHA requirements in OSHA 3071**) and associated hazards involved. Contractor's SSSP shall address the identified hazards involved and the control measures to be taken.
c. Statement of Safety and Health Policy detailing their commitment to providing a safe and healthful workplace for all employees.
d. Responsibilities and Lines of Authorities – to include a statement of the employer's ultimate responsibility for the implementation of his Safety and Health Program; Identification and accountability of personnel responsible for safety at all levels to include designated Site Safety and Health officer (SSHO) and associated qualifications.
e. Training - new hire Safety and Health orientation training at the time of initial hire of each new employee and any periodic retraining/recertification requirements.
f. Procedures for job site inspections - assignment of responsibilities and frequency.
g. Procedures for reporting man-hours worked and reporting and investigating any accidents as soon as possible but not more than 24 hours afterwards to the Contracting Officer/Representative (COTR). An accident that results in a fatal injury, permanent partial or permanent total disability shall be immediately reported to the (COTR).
h. Emergency Planning. Employees working alone shall be provided an effective means of emergency communication. This may be cellular phone, two-way radio or other acceptable means. The selected means of communication must be readily available and must be in working condition.

i. Drinking Water provisions, toilet and washing facilities.
j. First Aid and CPR training (at least one employee on each shift shall be qualified/certified to administer first aid and CPR) and provision of first aid kit (types/size).
k. Personal Protective Equipment.
    (1) WORK CLOTHING - Minimum Requirements. Employees shall wear clothing suitable for the weather however minimum requirements for work shall be short-sleeve shirt, long pants (excessively long or baggy pants are prohibited) and leather work shoes. If Job Hazard Analysis (JHA) determines that safety-toed (or other protective) footwear is necessary (i.e., mowing, weed eating, chain saw use, etc), they shall be worn.
    (2) Eye and Face Protection. Eye and face protection shall be worn as determined by an JHA of the operations being performed HOWEVER, all involved in chain saw use, chipping, stump grinding, pruning operations, grass mowing, weed eating and blowing operations shall be provided safety eyewear (Z87.1) as a minimum.
    (3) Hearing Protection. Hearing protection must be worn by all those exposed to high noise activities (to include grass mowing and trimming, chainsaw operations, tree chipping, stump grinding and pruning).
    (4) Head Protection. Hard hats shall comply with ANSI Z89.1 and shall be worn by all workers when a head hazard exists. At a minimum, hard hats shall be worn as determined by JHA.
    (5) High Visibility Apparel shall comply with ANSI/ISEA 107, Class 2 requirements at a minimum and shall be worn by all workers exposed to vehicular or equipment traffic.
    (6) Protective Leg chaps shall be worn by all chainsaw operators.
    (7) Gloves of the proper type shall be worn by persons involved in activities that expose the hands to cuts, abrasions, punctures, burns and chemical irritants.
    (8) If work is being performed around water and drowning is a hazard, PFDs must be provided and worn as appropriate.
l. Machine Guards and safety devices. Lawn maintenance equipment must have appropriate guards and safety devices in place and operational.
m. Hazardous Substances. When any hazardous substances are procured, used, stored or disposed, a hazard communication program must be in effect and MSDSs shall be available at the worksite. Employees shall have received training in hazardous substances being used. When the eyes or body of any person may be exposed to corrosives, irritants or toxic chemicals, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within 10 seconds of the worksite.
n. Traffic control shall be accomplished in accordance with DOT's Manual on Uniform Traffic Control Devices (MUTCD).
o. Control of Hazardous Energy (Lockout/Tagout). Before an employee performs any servicing or maintenance on any equipment where the unexpected energizing or startup of the equipment could occur, procedures must be in place to ensure adequate control of this energy.
p. Driving, working on (i.e., working with equipment/mowers) while on slopes, working from/in boats/skiffs, etc shall also be considered and dealt with accordingly.

**Access Plan**

SI CAP GALLERY EAST BUILDING - PLAZA LEVEL
1" = 50'-0"

- CONSTRUCTION TRAVEL PATH FROM EAST LOADING DOCK TO FREIGHT ELEVATOR HIGLIGHTED IN YELLOW.
- MOVING PROTECTION WILL NEED TO BE PLACED BY THE VENDOR TO PREVENT DAMAGES ALONG THE WAY.

# APPENDIX B:

Other Supporting Documents

- Boston Properties Rules for Construction Projects (Generic) - Lease Use (rev. 05.13.24)
- Boston Properties Cap Gallery (OVD01) Rules Rider - 01.13.25

Form Version: 5/13/24

# RULES FOR CONSTRUCTION PROJECTS IN OPERATING BUILDINGS

The following requirements have been developed to ensure that modifications or improvements to the building and/or building systems and equipment are completed to BXP's building standards. BXP may, at its discretion, elect to impose additional regulations in order to maintain a level of safety, code compliance and consistency within industry standards.

The review of plans and/or specifications by BXP and its insurers, consultants and/or other representatives, does not imply that reviewed materials comply with applicable laws, ordinances, codes, standards or regulations. Additionally, BXP's review and/or approval does not imply that any work is to be performed at BXP's expense.

BXP has the explicit right to remove from the project any person who does not comply with these rules after 24-hour notice.

## I. GENERAL

A. No work will be performed until BXP has received two (2) hard copy sets of drawings and specifications and has given written approval. BXP to receive one (1) hard copy final "for construction" set of documents including all BXP and permit comments, which must be clearly identified, dated and clouded. A complete set shall also be kept on site.

B. When constructing new demising walls, Architectural and Engineering firm must clearly depict future adjacent spaces as code compliant in plans. General Contractor may not build or demolish conditions that would otherwise leave adjacent tenant spaces non-code compliant.

C. Upon completion of the work, the General Contractor shall furnish to BXP one hard copy and one electronic copy of all "As-Built Drawings." As-Built Drawings shall reflect all modifications made to the Construction Documents and shall be comprised of all applicable drawings. For tenant managed projects, it is the responsibility of the tenant to track all close out document requirements listed in such tenant's lease and ensure that such tenant's consultants and contractors submit them to BXP at completion of work.

Architect and Engineer of record shall provide an electronic copy of the most current drawings on a USB flash drive and via email to BXP's designated construction manager and to DC-Drawings@bxp.com. "Electronic copy" is defined as a full set of both PDF and AutoCAD (.dwg) drawings, saved down to AutoCAD Version 2011 (or such other more current version as designated by BXP), all X-Reference files bound, and raster images included. The USB flash drive and email subject line should clearly reference the project name and address.

Files should be named using the **United States National CAD Standard** followed by a short description and the date on the final drawings (https://www.archtoolbox.com/construction-document-sheet-numbers/).

D. All modifications to the building or to the building systems and equipment must comply with federal, state, and local codes and ordinances.

E. All modifications, relocations or additions to the fire life safety within the building, in relation to a construction project, will require the tenant to obtain a building permit, pass final inspections, and obtain a certificate of occupancy from the jurisdiction having governing authority, prior to any occupancy of the space.

F. For phased construction projects where the demolition occurs as the initial phase and prior to the commencement of the main construction portion, the tenant is required to ensure that all fire life safety systems are in full code compliance, as dictated by the jurisdiction having governing authority. This includes but is not limited to the sprinkler heads being turned upright until the main construction commences. BXP, at its discretion, has the right to review and direct fire life safety protocol prior to implementation.

G. The General Contractor and its subcontractors shall comply with all applicable federal, state or local laws, regulations, ordinances, rules or codes relating to employment or conditions of employment of its employees, including, without limitation, laws or regulations concerning workers' compensation, social security, unemployment insurance, classification of employees, hours of labor, wages, working conditions, safety regulations and work practices. The General Contractor and its subcontractors confirm that their employees are licensed and qualified under all applicable federal, state and local requirements.

H. The General Contractor shall comply with all applicable provisions of the Occupational Safety and Health Act, 29 U.S.C. Section 651 et seq., as amended, all applicable standards and regulations promulgated thereunder, and applicable responsibilities under OSHA's Multi-Employer Citation Policy (CPL 02-00-124).

I. Prior to the work commencing, a building permit must be obtained and displayed on site and an electronic copy must be provided to BXP.

J. Prior to the work commencing, a construction kick-off meeting must be held with BXP, the Project Manager, the Superintendent, the Tenant Representative and the General Contractor. BXP must be notified and invited to all weekly construction progress meetings, which must include the entire Project Team. Prior to commencing any work, the General Contractor must provide BXP with a list of all General Contractor personnel and subcontractors working in the building, which list must include emergency contact information, including telephone numbers.

# RULES FOR CONSTRUCTION PROJECTS IN OPERATING BUILDINGS

K. The General Contractor must provide an on-site project superintendent at all times during ongoing construction when subcontractors are working on site. This superintendent must be knowledgeable of the project's scope of work and have on-site reference materials including "for construction" plans, specifications and MSDS information on all materials used in the performance of the work. If more than one contractor is working in the building at the same time, then it is the responsibility of the contractors to coordinate schedules and building shared uses accordingly.

L. Prior to the work commencing, all blinds must be raised and bagged. All windowsills and other base building components must be adequately protected throughout construction. Workers must not stand on windowsills or other building components. Prior to mobilization, General Contractor shall survey work area(s) and public areas, including all existing blinds, and identify deficient items on a floor plan or on a list provided to Property Management.

M. The General Contractor shall repair all existing public area finishes disturbed by the work or damaged by the General Contractor's or subcontractor's personnel.

N. Any work that requires access to adjacent tenant spaces must first be coordinated through BXP. Any additional costs of security or building engineering services required due to General Contractor's work or during the performance of the General Contractor's work shall be charged to the Tenant.

O. All workers must be dressed appropriately when working in an occupied building and in compliance with OSHA standards, which includes appropriate PPE. No shorts are permitted.

P. BXP must approve manufacturer of lockset and key cores for compatibility with building master keying system.

Q. All carts must be furnished with pneumatic tires and rubber bumpers.

R. Smoking is not allowed in and around any occupied building.

S. Radios/speakers/music are prohibited on site.

T. Dumping of construction debris into building drains, mop sinks, trash dumpsters, etc. is strictly prohibited. If this occurs, the General Contractor shall be charged 200% of the cost of clearing any drain, plus administrative time, where evidence of this is found.

U. Base building restrooms within the construction area will not be available for use by the General Contractor unless BXP indicates otherwise. Alternative restroom options may be determined by BXP personnel. If General Contractor is permitted to use the restrooms, General Contractor shall be responsible for any damage, cleaning and

stocking during construction. All other base building restrooms are for tenant use only and are not to be used by construction personnel.

V. Use of the building stairwells for moving construction materials and construction personnel shall be limited to the stairwell designated by BXP.

W. There is to be no communication between the building tenants, their guests and the General Contractor's/subcontractor's personnel.

X. No work will be performed during building operating hours that will disturb or inconvenience any existing tenants in the building. Examples of noisy work include, but are not limited to:

1. Core drilling and anything that causes building vibration (e.g., dropping heavy materials, chipping concrete, etc.)
2. Shooting track
3. Noxious odors
4. Threading pipe
5. Hammer drilling or impact gun usage
6. Cutting metal ductwork
7. Pulling BX or rigid conduit through metal.

BXP must pre-approve any work that could be deemed to disturb or inconvenience any existing tenants in the building.

Y. The General Contractor shall immediately report any and all accidents to BXP in writing after first notifying BXP's Construction Manager and Property Management by telephone.

Z. Any roof related work must be performed by a roofing contractor authorized to do so by the roof manufacturer or by BXP (see attached building specific rider for details).

AA. All requests requiring assistance by building personnel, including, but not limited to, freight and loading dock reservations, access to other tenant spaces, drain down of sprinkler, call out of fire alarm, hot work permits and inspections must be scheduled a minimum of 48 hours in advance. Depending on current staffing and ability to meet off hours requests this advance notice is subject to change at the discretion of BXP's specific property team. A separate process is in place for power shut down requests (de-energizing of floors/building) and the specific building will set the notice guidelines

due to current tenant requirements and needs. If a project requires a shut down, then the tenant A/E team must note such requirement on the plans when they are submitted for review. All contractors are encouraged to discuss shut down requirements for projects at the initial kick off meeting to ensure they receive the required notification timelines from the building personnel. It is the responsibility of the General Contractor to incorporate these scheduling activities into their schedule and the management of their project.

## II. STRUCTURAL

### A. GENERAL

Design load on office floor levels is 100 psf, including 20 psf for partitions. Any uniform live load exceeding the design load shall be reviewed and approved by the base building structural engineer.

### B. CORE DRILLING

1. Prior to core drilling or cutting, all slabs with any power-driven penetrations greater than ½" depth must be x-rayed.

2. A plan of all core drills identified and numbered with photos of the scans, dimensions of scans from building columns and/or perimeter wall, must be provided to BXP and BXP's base building structural engineer. BXP's base building structural engineer must review and approve x-rays, scans and associated plan(s) in writing. Prior to commencing the work, such approval shall be provided to BXP's Construction Manager. Structural engineer review costs must be borne by Tenant as a project cost.

3. If obstructions are detected, the core drill locations must be moved as required by the base building structural engineer. Ultrasound and ground penetrating radar are acceptable substitutes for x-ray only upon approval by the base building structural engineer.

### C. POST-TENSION REQUIREMENTS

1. For buildings that are post-tensioned concrete construction, all slabs must be x-rayed. Scheduling of all x-ray scans must be coordinated with BXP's building team a minimum of 72 hours in advance. Provide x-ray technician's horizontal and vertical spread to BXP when making schedule requests. All scans must be performed after hours, as directed by BXP.

2. Concentration of punching shear stresses, reinforcement and post-tensioned cables are heavier around columns. All coring shall be kept away from the column as much as possible. Coring is not permitted in the beams or column drop pads. Locations of all coring shall be approved and backed per tests as indicated. Any coring shall clear

post-tensioned cables as directed by the base building structural engineer.

3. Duct supports, conduit attachments, ceiling hangers, etc. should all be supported by power-actuated fasteners with maximum slab penetration of 5/8". Hilti HDI-P drop-in anchors with ¾". These hanger locations should also be coordinated with the formwork paint marking to avoid the indicated location of the tendons on the underside of the slab.

4. When ceiling, deck or slab is to be painted/sprayed, all post-tensioned markings are to be taped; taping to be inspected and approved by the property management team prior to commencement of slab painting.

## III. LIFE SAFETY

### A. GENERAL

General Contractor shall perform the work in full compliance with NFPA 241, which prescribes the minimum safeguards for construction, alteration and demolition operations necessary to provide reasonable safety to life and property from fire.

### B. SPRINKLER

1. General Contractor shall furnish BXP with sprinkler submittal inclusive of shop drawings, product data and calculations (if applicable) prepared by subcontractor and ready for submittal to the fire marshal. Based on project size, the General Contractor must adhere to the following:

    a. Spaces **under** 5,000 SF: Once approved by the fire marshal, the General Contractor shall (i) furnish BXP with one set of the approved sprinkler shop drawings and (ii) provide BXP with electronic copies of the sprinkler submittal inclusive of shop drawings and product data, for BXP's review and approval prior to scheduling any sprinkler work (e.g., drain downs, relocation of head, etc.).

    b. For first generation spaces or renovation of spaces **larger** than 5,000 SF, General Contractor must provide BXP with two (2) hard copies of the following:

        i. Full-size sprinkler plans
        ii. Sprinkler calculations
        iii. Cut sheets highlighting the selected sprinkler heads, pipe, hangers, fasteners and all fittings.
        iv. All components of the sprinkler system to be UL listed and FM approved.

BXP's Risk Management shall review and approve the aforementioned items prior to scheduling any sprinkler work (e.g. drain downs, relocation of head, etc.). BXP's risk management review may take up to ten (10) business days. General Contractor should incorporate review time in its construction schedule.

2. The entire sprinkler system should be designed and installed in accordance with NFPA Pamphlet No. 13, 231 and 231C latest issues. If demolition is not immediately followed by a build out, General Contractor must turn up sprinkler heads as directed by BXP and in accordance with all applicable jurisdictional regulations and code requirements.

3. General Contractor must adhere to the following when designing the sprinkler system:

   Note #1: If concealed type sprinkler heads are to be utilized in office areas, the system must be designed as an Ordinary Hazard Group 1 System. If hybrid pendant installation exists (i.e., concealed, recessed, semi-recessed, etc. in one design), then Ordinary Hazard Group 1 System design always governs.

   Note #2: If determined by the definitions of NFPA Pamphlet No. 13 that the system is a light hazard designed system, the hydraulically most remote design area shall not be allowed a 40% reduction. The minimum design area shall be 1,500 square feet.

   Note #3: Partial renovation of space where majority of heads are not relocated:

   a. Since there is not a quick pendant sprinkler head with FM Approvals, BXP will allow use of a UL Listed quick response head when it also carries an FM Approval standard response (i.e., V3802 sprinkler head).

   b. General Contractor must provide BXP written confirmation that the existing heads within the same physical space are also existing quick response heads and the sprinkler system can support an ordinary hazard group 1 design. If the existing heads are standard response, then the heads must be designated as UL Listed and FM Approved.

   Note #4: Complete renovation of space where majority of heads are affected or relocated:

   a. Standard response head that is UL Listed and FM Approved is required.

   Note #5: Sprinkler work will not commence until BXP has received a copy of the sprinkler permit and BXP has approved the sprinkler shop drawings and product data (as well as calculations when necessary) as indicated above.

4. All buildings must be fully protected by automatic sprinkler systems in accordance with BXP's standards and specifications.

5. All sprinkler systems and equipment must be designed and installed in accordance with the current standards of the National Fire Protection Association.

6. All equipment, devices, materials, hangers, etc., used in the life safety system installation must be UL Listed and FM Approved.

7. Connections to the base building sprinkler system/standpipe riser shall be provided with a control valve and water flow alarm device. Sprinkler system control valves shall be UL Listed and FM Approved, clockwise closing, indicating valves with supervisory switches.

8. Enclosed, as Attachment A, is a copy of the "Guidelines for Managing Construction Project Fire Protection Impairments."

## C. FIRE ALARM

1. General Contractor will not disconnect, tamper with, delete, obstruct, relocate, or expand any life safety equipment, except as indicated on drawings approved by BXP. General Contractor shall not interfere with or delay any other contractors' (or BXP's) inspections that are scheduled prior to the General Contractor's inspections or testing.

2. The General Contractor must take necessary precautions to prevent accidental fire alarms. General Contractor will be charged for all emergency response costs and penalty fees imposed by any authority having jurisdiction over the building for any accidental fire alarms caused by their activities. In the event of an increased likelihood of an accidental fire alarm by the General Contractor's activities, such as demolition, sprinkler work or hot work, the General Contractor must take steps needed to prevent accidental alarms, including but not limited to, monitoring the fire alarm panel for accidental alarms.

3. Any unit or device temporarily incapacitated must be red tagged "Out of Service" and BXP must be alerted prior to the temporary outage. Please refer to the procedures outlined in Attachment A for additional information.

4. The base building fire alarm system shall monitor all Tenant installed special fire extinguisher/alarm detection systems. The connections to the base building fire alarm system will be at the Tenant's expense.

5. All Tenant installed fire alarm initiation and notification devices that connect with the base building fire alarm system must match the base building system and must be approved by BXP.

6. All connections to the building's existing fire alarm system are to be made only by the subcontractor specified by BXP.

7. General Contractor shall perform a ring-down of the affected area, as well as a pre check of the functionality of all fire alarm devices. A report outlining any deficiencies must be submitted to BXP prior to commencement of work. Absent such report, any deficiencies found after commencement of work will be the responsibility of the Tenant and General Contractor to correct.

8. All fire alarm testing will be scheduled at least 72 hours in advance with BXP and must occur after normal business hours if the building is occupied.

9. Combustible and hazardous materials are not allowed to be stored in the building without prior written approval of BXP. Material safety data sheets on all materials to be stored in the building must be kept on site and a copy submitted to BXP.

10. Dust protection of smoke detectors must be installed and removed each day (if operational). Dust protection is required during construction to avoid false fire alarms and damaging of detector system. Filter media must be installed over all return air paths to any equipment rooms prior to demolition. The media must be maintained during construction and removed at substantial completion.

11. All corrective work to the fire alarm system due to the General Contractor's work shall be charged to the General Contractor.

12. Final tie-in of fire alarm work into the base building fire alarm system is to be made by the base building fire alarm contractor.

## IV. MECHANICAL, ELECTRICAL, PLUMBING AND VOICE/DATA/LOW VOLTAGE CABLING

### A. GENERAL

1. Before any new electrical or mechanical equipment is installed in the building, the General Contractor must submit a copy of the manufacturer's data sheets along with complete shop drawings and submittal to BXP for approval.

2. Any installation or modification to building HVAC or electrical systems must be first submitted to BXP for review. This includes base building systems as well as supplemental units and/or exhaust systems. The mechanical and electrical plans must be prepared by a licensed engineer and must show size and location of all supply and return grilles. BXP may require that its MEP engineer review the MEP drawings. In such an event, the Tenant will pay for the cost of the review and BXP will notify the Tenant prior to engaging BXP's engineer.

3. As required by code and BXP regulations, all telecommunications, data, access control, security, fire alarm, HVAC control, electrical lighting, electrical power, cable and other systems' wiring and piping which is not to be reused by Tenant and is not a part of other tenants' or base building systems, including but not limited to:

conduit, BX/MC cable, “plenum cable” (low voltage electric, telephone, data wiring ), plumbing and/or mechanical piping shall be removed from the risers (including ceiling plenums, telephone, mechanical, utility and electrical closets and risers) and shall be removed back to the originating terminal block, panel board, wet stack or source as determined by BXP.

The installation of Tenant equipment (except emergency lighting per code) on the base building emergency power supply systems is not permitted.

4. BXP’s building engineering team shall complete a baseline multi-point inspection of the mechanical equipment within the Tenant space prior to (or immediately following) ceiling demolition by the General Contractor. It is the responsibility of the General Contractor to provide 48-hour written notice to BXP identifying when the ceiling demolition will be complete. Prior to commencement of construction, it is the responsibility of the General Contractor to document any mechanical equipment deficiencies and provide an associated report for BXP’s review. Failure to provide such report prior to the commencement of construction will require any corrections be the responsibility of the General Contractor, in order for BXP to be able to approve the final design and performance of system.

## B. MECHANICAL

1. General Contractors modifying or relocating ductwork, air grilles, VAV boxes, etc. must balance the air and water systems as necessary. All air balancing must be done in the presence of BXP. Two (2) copies of all balance shall be submitted to BXP for review and approval.

2. All Test Adjust Balance contractors must be either NEBB or AABC. The following standard NEBB and AABC terminal unit data must be accounted for within the report:

    a. Manufacturer
    b. Terminal Type
    c. Terminal Model Number
    d. Terminal Size
    e. Identification/Designation
    f. Location (Typically an acceptable mechanical print mark up)
    g. DDC Address
    h. Fan Design CFM
    i. Fan Actual CFM
    j. Maximum Primary Air Design CFM

k. Maximum Primary Air Actual CFM

l. Minimum Primary Air Design CFM

m. Minimum Primary Air Actual CFM

n. DDC Maximum/Minimum CFM

o. Fan Speed (High, medium, low, variable, etc.)*

p. DDC Flow Correction/Calibration Factors**

q. For terminals with electric heat, the following shall also be provided:

   i. Provide design and actual KW
   ii. Voltage
   iii. Amperage
   iv. Entering and leaving temperature readings from terminal

* Note: Item o. Fan Speed – Log fan control voltage (from speed controller) for PSC motors, log control DCV to ECM motors.

** Note: Item p. DDC Flow Correction/Calibration Factors – Verify factor via manufacturer's published inlet velocity ring DP vs. CFM graphs. Provide reference graph with report.

To reduce the possibility that a balance report is rejected, we suggest the Test Adjust Balance Contractor submit a sample report in advance of its work for BXP's approval.

3. Exhaust fans discharging air directly into the ceiling plenum are for room-generated heat transfer applications only. Air cooled condensers and fans used for toilet, smoking, or chemical fumes' exhaust shall not be permitted to be discharged into the ceiling plenum.

4. Tenant-installed supplemental HVAC units and certain utility intensive equipment are required to have an electric and/or water submeter. Absent such submeter, Tenant may incur a flat rate electricity and/or water charge which is to be paid by the Tenant based on anticipated consumption.

   Meter Specifications:

   - Electrical Submeter – EMON Class 3400 with expanded feature package and type 3 communications BACnet MS/TP.

   - Water Meter – Badger Recordall Disc Meter with remote reader and pulse output.

   Units: DC – cubic feet (cf); MD – gallons (gal); VA – gallons (gal).

Note: General Contractor to be responsible for the full installation including low voltage connections from submeter to building metering network.

5. All base building mechanical equipment shall be properly protected with pre-filters, dust covers etc. prior to start of work. Protection shall be removed and equipment wiped down at completion.

6. Energy management and building control work is to be performed by the base building controls contractor (see attached building specific rider for details).

7. Tenant installed equipment that supplements existing base building equipment such as VAV boxes, fire alarm devices, control work, etc. shall be identical to the existing base building equipment to facilitate warranty and maintenance operations.

8. All concealed equipment shall be located with necessary accessibility for maintenance and repair.

9. Tenant shall engage MEP engineer to perform inspection of above ceiling conditions, prior to the General Contractor's scheduled ceiling close-in inspection. MEP engineer to provide field report of such inspection findings to BXP, prior to ceiling close-in completion.

10. General Contractor shall contact BXP 48 hours in advance for BXP wall and ceiling close-in inspections. All items noted in BXP and MEP engineer ceiling inspection reports must be corrected by General Contractor prior to ceiling close-in completion.

## C. ELECTRICAL

1. Receptacles shall not be installed with building envelope.

2. All circuit breaker panels must be clearly and accurately identified with typed labels and directories.

3. All wiring run outside of Tenant-demised area and in core rooms (i.e. below slab, electrical room, mechanical room or where exposed) shall be in rigid conduit.

## D. PLUMBING

1. Any domestic or condenser water connections made to the building's piping system must include a high-quality isolation valve (e.g., brass bodied gate or ball-type) and adequate system drain valves. If the system piping is of a different material a dielectric union must be installed. All valves and equipment must be easily accessible; access doors are required in drywall or other fixed construction.

2. Compression (aka ferrule), ProPress, shark bite (aka push to connect) fittings are not permitted at any plumbing connection. Viega ProPress System Fittings: Only in very limited and justified circumstances will ProPress fittings be permitted for use (e.g., fire hazard, leaking supply lines, etc.). A specific written request with justification for the circumstances must be submitted to BXP for review and approval prior to use in any circumstances.

3. All new piping points of connection to existing domestic or condenser water must match the base building system connection methods, fitting types, and pressures. Saddle taps are not permitted. Refer to Hot Work Permit Section from Property Management Team prior to commencement of work.

4. General Contractor shall provide leak detection system and automatic shut off system to stop flow of domestic cold and hot water to associated plumbing equipment (e.g. sinks, water heater, ice maker, dishwasher, shower, etc.). Request specifications from BXP for building-specific leak detection requirements and sequence of operation.

5. Sanitary Sewer Clean Outs: In-floor cleanouts are required for use with sanitary piping laterals serving kitchens, bathrooms, cafeterias, fitness centers and other high volume plumbing areas. Clean out provisions in ceiling of the space below (below slab) are not acceptable.

### E. VOICE/DATA/LOW VOLTAGE CABLING

All wiring/cabling run outside of Tenant-demised area and in core rooms (i.e. below slab, electrical room, mechanical room or where exposed) shall be in rigid conduit.

## V. PARKING – LOADING DOCK

**A.** Contractors, subcontractors and their personnel will not use the loading dock area for daytime parking. BXP may permit at its discretion parking at the loading dock. Unauthorized vehicles will be ticketed and towed.

**B.** Use of the loading dock for deliveries/trash removal must be scheduled through BXP a minimum of 48 hours in advance.

**C.** Material that does not fit into the service elevator must be delivered through a window opening. The contractor will be required to properly remove and replace the glass and adequately protect the window framing. General Contractor must use the base building glass contractor and request prior approval and scheduling from BXP.

## VI. UTILITIES

**A.** All inside utilities (i.e. electric, natural gas, water, sewer, telephone, cable, condenser water) must not be disconnected or interrupted without first notifying BXP (except in

emergencies). A minimum of 48-hour notice and written permission from BXP must be provided and attained, respectively.

**B.** In unoccupied Tenant space under construction or control by the General Contractor, the General Contractor shall turn off all lights, except emergency lighting, at the end of each workday. In the event the General Contractor fails to turn off the non-emergency lighting at the end of each workday, the General Contractor will be invoiced for the excess electric consumption at the rate of $0.01 per square foot, per day.

## VII. SECURITY

**A.** The General Contractor will be responsible for controlling any keys or access cards furnished by BXP and will return them to BXP at the completion of construction. There will be a charge to the General Contractor for lost or unreturned access fobs/key cards.

**B.** At the completion of the workday, the General Contractor will be responsible for locking all base building areas that were made available by BXP.

**C.** ID Badges: If requested, contractors may be required to wear identification badges.

## VIII. ELEVATORS

### A. PASSENGER ELEVATOR

1. Passenger elevators will not be used to move construction material or construction personnel. During full floor construction, General Contractor must protect all passenger elevator openings, jambs, call lanterns, call buttons, sills, etc. Lack of protection of the elevator may result in back charges (e.g. service calls, shaft or machine room cleaning, etc.). General Contractor must coordinate with BXP for locking off of passenger elevator access to the floor for the duration of construction.

2. All work on any component of the elevators, inside or outside the cab must be performed by BXP's base building elevator contractor. This includes moving, removing/installing, relocating and/or shifting call buttons and/or indicator lights to install new wall finish. If it is determined by BXP that elevator work as noted above was performed by anyone other than BXP's base building elevator contractor, the General Contractor will be responsible for all repairs, inspections and testing, etc. as determined by BXP's base building elevator contractor to ensure the equipment is functioning normally. All costs associated with the repair, replacement and inspections, etc. will be the responsibility of the General Contractor and/or Tenant.

### B. SERVICE ELEVATOR

The service elevator can be used to move construction personnel at any time during the day, provided the elevator doors are not held open. The service elevator cannot be used

to move construction materials, furniture, furnishing or equipment into the building during building operating hours unless approved in writing by BXP. All other usage must be scheduled with BXP with at least 48 hours advance notice. General Contractor shall protect the service elevator's walls with homasote and plywood. In some instances, corex and masonite may be permitted at BXP's discretion. Any costs to repair damage to the elevators including dust or dirt in machine rooms or shaft or costs for service calls resulting from the General Contractor's operations will be charged to the General Contractor.

## IX. CLEANING

**A.** The General Contractor will remove all trash and debris daily or as often as necessary to maintain cleanliness in the building(s). The building trash compactors or containers may not be used for construction debris.

**B.** Walk-off mats or other protection must be provided at door entrances where work is being performed.

**C.** Carpeting must be protected by masonite or corex as necessary to maintain cleanliness and to protect carpets from damage.

**D.** Tile, terrazzo, stone and wood floors must be protected from damage.

**E.** General Contractor will furnish a vacuum(s) with a supply of clean bags and an operator to facilitate ongoing clean- up.

**F.** Trash removal will be scheduled and coordinated with BXP.

**G.** Contractors must remove all food cartons and related debris from the work area on a daily basis.

**H.** Driveway and street cleaning by General Contractor will be required when General Contractor's work has created mud or debris.

# ATTACHMENT A

## GUIDELINES FOR MANAGING CONSTRUCTION PROJECT FIRE PROTECTION IMPAIRMENTS

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### I. IMPAIRMENTS

Impairments to the building sprinkler and fire alarm systems are typically required when renovations involve changes to these systems. The following impairment procedures must be adhered to whenever impairments to the sprinkler or fire alarm systems are required or encountered.

General Contractors requiring an impairment shall follow these steps:

1. Request a Red Impairment Tag from BXP's Impairment Coordinator and be prepared to fulfill the responsibilities assigned to the General Contractor.

2. Assist the Impairment Coordinator in completing the Pre-Impairment Checklist part of the Red Impairment Tag (Part A).

3. The "hard copy" of the Red Impairment Tag is placed on the impaired equipment.

4. Upon completion of work and/or to release the impairment the General Contractor shall return the Red Impairment Tag "hard copy" to the Impairment Coordinator.

5. The General Contractor and Impairment Coordinator place both parts of the tag together and complete the system restoration checklist (Part B) including signing off that the restoration is complete.

Enclosed as Attachment A-1 is a copy of the Impairment Tag. Important points are as follows:

- A Red Tag Permit is required for any impairment of the sprinkler / fire alarm systems.

- Each permit will be valid for one shift.

- Plan all work to minimize the duration of the system(s) impairment.

- The actual impairment of the system(s) should not take place until all personnel, material and equipment are at the work location.

- If possible, isolate only the work zone for impairment. System(s) must be restored at the end of the work shift.

- Impairments to large areas or that would affect primary life safety system(s) should be scheduled for times when the building or area is unoccupied. Fire watch tours of the impaired area shall be established and if applicable, personnel should be provided at closed valves or fire pumps to quickly restore the system if a fire occurs.

- Hot work or other hazardous-type operations shall not be conducted in an area where the fire protection or life safety system(s) are impaired.

- If any hot work or hazardous operations are necessary as part of the impairment, fire watches must be established.

## II. HOT WORK

Hot Work Permit is required for any temporary operation producing open flame or sparks. This includes brazing, cutting, grinding, soldering, pipe thawing, torch applied roofing and welding.

General Contractors requiring a hot work permit shall follow these steps:

1. Request a Yellow Hot Work Permit from BXP's Impairment Coordinator and be prepared to fulfill the responsibilities assigned to the General Contractor, adhering to Attachment A-3, BXP Operational Guidelines.

2. Assist the Impairment Coordinator in completing Part A of the Yellow Hot Work Permit.

3. The "hard copy" of the Yellow Hot Work Permit is placed at the work location.

4. Upon completion of the hot work, the General Contractor shall complete Part B of the Yellow Hot Work Permit and return the "hard copy" to the Impairment Coordinator.

5. The General Contractor and Impairment Coordinator place both parts of the tag together and sign off/close the Yellow Hot Work Permit.

Enclosed as Attachment A–2 is a copy of the Hot Work Permit. Important points are as follows:

- If there is a practical and safer way to do the job without hot work and that is approved in advance by BXP, that method should be used.

- No hot work is permitted without authorization from BXP's representative serving as the fire safety supervisor / impairment coordinator, in the form of a signed hot work permit. This permit will be valid for a maximum of one eight-hour shift. After this time, another permit must be obtained from and signed by the fire safety supervisor / impairment coordinator, before any additional hot work can continue.

- Specific firefighting equipment and protection material will be required at the hot work site before work starts. General Contractor shall provide all equipment and protection required to ensure fire safe operations or otherwise specified by BXP.

- No hot work is permitted without a designated fire watch present. The General Contractor is responsible to provide necessary personnel to conduct a fire watch for

four (4) hours after the hot work has been completed. The subcontractor completing the work will monitor the work the 1st hour with the General Contractor monitoring the last 3 hours. The four (4) hour fire watch overrides the timeframe indicated on the sample hot work permit. The General Contractor will notify BXP upon completion of the hot work and that the four (4) hour fire watch has commenced. If unsafe conditions are observed, the hot work operation will be stopped until the hazard is neutralized or eliminated. Additionally, the fire safety supervisor/impairment coordinator must be notified immediately of all unsafe or hazardous conditions.

- The General Contractor will verify that all equipment associated with the hot work is in proper working order. An inspection of the equipment may be conducted by the fire safety supervisor/impairment coordinator before the hot work permit is issued. Any unsafe equipment must be removed from the property and replaced prior to starting hot work.

- All contractor-owned equipment or materials stored in the facility overnight must be properly secured in an area designated by the fire safety supervisor/impairment coordinator.

- A sprinkler impairment and hot work in the same zone at the same time will not be allowed.

## ATTACHMENT A-1

## IMPAIRMENT TAG

Revision 01/02

bxp Boston Properties

Impairment Tag

CONTROL NUMBER 283351

Property: _____ Area: _____

System(s): _____ Equip. I.D. #: _____ Date: _____

**All items in Part A should be completed prior to any fire protection or life safety system impairment with the exception of impairments conducted as part of a documented routine test procedure where the systems(s) can be immediately restored by standby personnel. Part B should be completed as part of the restoration procedure.**

**PART A: PRE-IMPAIRMENT**

| | Yes | No | N/A |
|---|---|---|---|
| 1. Boston Properties□ Impairment Guidelines have been reviewed? | | | |
| 2. Was this impairment planned? | | | |
| 3. Scope of impairment has been reviewed with property management? | | | |
| 4. Work will be performed continuously until protection is restored? | | | |
| 5. The following notifications have been made:<br>Impairment Database<br>Fire Department<br>Fire Alarm Monitoring Company<br>Security<br>Tenants | | | |
| 6. Hazardous operations have been terminated (Hot Work)? | | | |
| 7. Additional fire extinguishers/charged hose lines have been located in impairment work area? | | | |
| 8. Security rounds have been modified to include impairment area/increased rounds? | | | |
| 9. Impairment tags have been completed and placed on impaired systems? | | | |

**Completed by:** _____ **Date:** _____

**Reviewed by:** _____ **Date:** _____
Impairment Coordinator

**PART B: SYSTEM RESTORATION**

| | Yes | No | N/A |
|---|---|---|---|
| 1. All systems have been restored? | | | |
| 2. Work area has been inspected and found to be satisfactory? | | | |
| 3. Operational test of system has been completed with satisfactory results? | | | |
| 4. All parties notified in Part A, Section 5, have been notified that system(s) are restored? | | | |
| 5. Tags and status boards have been cleared? | | | |
| 6. Any fire equipment displaced has been returned to original location? | | | |

**Completed by:** _____ **Date:** _____

**Reviewed by:** _____ **Date:** _____
Impairment Coordinator

**RETAINED BY IMPAIRMENT COORDINATOR**

(second page of tag is identical and is placed on impaired equipment)

## ATTACHMENT A-2

## HOT WORK PERMIT

bxp **Hot Work Permit**

**CONTROL NUMBER** 298701

All items in Part A should be completed prior to the start of any hot work operations. Part B should be completed as part of the restoration procedure at completion of the hot work operation.

**Building:** _____ **Date:** _____

**Location:** _____

**Description of Work:** _____

**Work Approved to be Done from:** **to:**

**PART A**

| | Yes | No | N/A |
|---|---|---|---|
| 1. Boston Properties Hot Work Guidelines have been reviewed? | | | |
| 2. Has smoke detection system in area been arranged to prevent unnecessary alarms as a result of hot work? | | | |
| 3. Scope of work has been reviewed with Property Manager, Hot Work Coordinator, Impairment Coordinator and Chief Engineer? | | | |
| 4. Sprinkler systems in service? | | | |
| 5. Equipment to be used in hot work is in good condition? | | | |
| 6. Flammable/combustible liquids and explosive atmospheres removed/eliminated? | | | |
| 7. Combustibles finishes/furnishings removed or covered with fire resistant material? | | | |
| 8. Combustibles on opposite side of wall moved away? | | | |
| 9. Wall and floor openings covered, protective curtains in place? | | | |
| 10. Air transfer equipment arranged to prevent products of combustion from getting into occupied areas? | | | |
| 11. Ventilation acceptable for hot work area? | | | |
| 12. Fire watch in place with portable communications device and portable fire extinguishes. | | | |
| 13. Emergency reporting instructions have been provided to fire watch? | | | |
| 14. Hot Work Coordinator has reviewed and approved start of work? | | | |

Fire Watch: _____ Date: _____

Hot Work Coordinator: _____ Date: _____

**PART B**

| | Yes | No | N/A |
|---|---|---|---|
| 1. Area has been inspected by fire watch at completion of work? Record time of inspection: _____ | | | |
| 2. Continuous fire watch of area has been maintained for 60 minutes after work was completed? Record time: _____ | | | |
| 3. Periodic inspection of area has been conducted for four hours after work was completed? Record final time: _____ | | | |
| 4. All fire protection and building systems restored to normal operations? | | | |
| 5. Property Manager, Hot Work Coordinator, Impairment Coordinator and Chief Building Engineer notified of completion? | | | |

**Fire Watch:** _____ **Date:** _____

**Hot Work Coordinator:** _____ **Date:** _____

**RETAINED BY HOT WORK COORDINATOR** Page 1 of 2 Rev/ 3/02

(second page of tag is identical and placed at site of hot work)

## ATTACHMENT A-3

## OPERATIONAL GUIDELINES

### I. Hot Work Project Planning

Hot work may be conducted as a repair measure or on a larger scale during construction or tenant buildouts. Historically, hot work operations have contributed significantly in large loss fires. In order to prevent losses, the following guidelines are provided for your consideration in managing hot work projects:

1. If possible, hot work should be scheduled for periods when the building is unoccupied.

2. Plan all work to minimize the exposure to fire. If possible, remove and relocate system/equipment component(s) to be worked on to an exterior area or an area designated for hot work.

3. Hot work should not take place until all personnel, material and equipment are at the work location and all approvals have been provided.

4. Do not conduct hot work in an area where the sprinkler system is impaired. If the hot work must be conducted in an area of sprinkler impairment or if sprinklers are not installed, hose lines and/or other special arrangements should be made in addition to these operational guidelines.

5. Smoke detection devices should be reviewed in area of hot work. Steps to prevent activation of the fire alarm system due to hot work should be taken. Smoke detection devices sharing sprinkler waterflow alarm zones should not be zoned out.

6. Special attention to the transfer of flying sparks to adjacent areas should be evaluated and controlled. Consideration should be given to floor and wall openings and air transfer systems.

7. Building furnishings and interior finishes may have inflammatory characteristics that are unknown and should be covered with resistant materials.

8. The products of combustion from hot work may become a problem if large concentrations are accumulated in an area without proper ventilation.

9. The products of combustion from hot work may become a problem if they are transferred into occupied tenant areas by the air handling equipment or other building ventilation systems. All systems should be arranged to prevent transfer of products of combustion.

10. Hot work in or near air handling units should be conducted when building is not occupied and the unit should be shut off.

11. Spare fire extinguishers should be used to support fire watch operations. Relocation of existing building fire extinguishers may cause delay in others trying to retrieve extra units from known locations. The proper class of fire extinguisher should be selected based on combustibles in area and building construction.

12. Communication systems for reporting fire emergencies should be available to the fire watch and tested prior to the start of the job.

## ATTACHMENT A-3

## OPERATIONAL GUIDELINES

| Step | Responsibility | Action |
|---|---|---|
| **1.** | **Hot Work Coordinator (HWC)** | • Manages all hot work projects as follows:<br>➢ coordinates hot work with property management.<br>➢ reviews scope of work.<br>➢ reviews hot work permit.<br>➢ reviews contractor's hot work program and monitors activities related to meeting Boston Properties' requirements.<br>➢ secures/reviews permits required by local authority having jurisdiction.<br>• Directs staff in monitoring of project.<br>• Completes all items on yellow Hot Work Permit tag (Part A) - [contact risk management for additional tags]<br>• Inspects area where hot work will be performed prior to the start of the work.<br>• Inspects condition of equipment to be used to perform hot work to determine that it is in good condition.<br>• Verifies that fire watch personnel are trained in:<br>➢ preparing the area for hot work.<br>➢ following emergency guidelines for Fire/Explosion.<br>➢ operating portable fire extinguishers.<br>➢ implementing fire watch responsibilities.<br>• Verifies that the sprinkler system in the area is not impaired and that additional portable fire extinguishers are brought to the area for use by the fire watch.<br>• Posts yellow Hot Work Permit work tag(s) in area.<br>• Implements Impairment Guidelines as required. |
| **2.** | **Property Manager** | • Coordinates with the HWC, engineering staff, contractors and tenants as necessary.<br>• Notifies tenants of the project if it will affect their operations.<br>• Terminates or suspends any operations that threatens the safety of the occupants of the building or could cause damage to the property. |
| **3.** | **Chief Building Engineer** | • Reviews scope of work and supports project as required. |

## II. Fire Watch

Note: If contractor fire watches are being provided, they must meet the minimum standards as outlined below.

| Step | Responsibility | Action |
|---|---|---|
| 1. | **Fire Watch** | • Verifies that the HWC has inspected area and that yellow Hot Work Permit tag (Part A) has been completed and signed.<br>• Maintains area free of combustible material as indicated on yellow Hot Work Permit tag (Part A)<br>• Verifies that all floor openings and communicative openings to adjacent areas are covered/closed.<br>• Maintains portable fire extinguisher ready for use and has, at a minimum, one back-up extinguisher.<br>• Maintains a two-way radio, telephone or other means of quickly reporting a fire emergency. Emergency telephone numbers should be in possession of fire watch.<br>• Conducts visual surveillance of the hot work area for possible sparks or fires during work.<br>• Conducts inspections of the work area at the completion of work. |
| 2. | **HWC** | • Inspects work area at least once during the workday.<br>• Implements corrective actions as necessary.<br>• Suspends work if sprinkler system in area becomes impaired. |

## III. Post-Job Inspection and Review

| Step | Responsibility | Action |
|---|---|---|
| 1. | **Fire Watch** | • Verifies that all equipment used to perform hot work has been properly secured and/or removed from area.<br>• Conducts inspection of work area and adjacent areas at conclusion of hot work to look for sparks or smoldering fires.<br>• Restores all fire protection and building systems to normal operation and notifies Impairment Coordinator of system(s) status.<br>• Conducts follow-up inspection of area for four hours after the completion of work.<br>• Removes yellow Hot Work Permit tag at conclusion of final inspection (four hours).<br>• Completes yellow Hot Work Permit tag (Part B).<br>• Notifies the HWC. |
| 2. | **HWC** | • Inspects area.<br>• Reviews completed yellow Hot Work Permit tag (Part B).<br>• Completes Impairment Guidelines as necessary.<br>• Notifies Property Manager and Chief Engineer of job completion.<br>• Maintains completed yellow Hot Work Permit tag(s) in file. |

**BXP**
*Capital Gallery*

## RULES FOR CONTRACTORS WORKING IN OCCUPIED BUILDINGS – BUILDING SPECIFIC RIDER

**Building Address:** 600 Maryland Avenue SW, Washington DC 20024

**Hours of Operation:**

| | |
|---|---|
| Monday – Friday: | 7:00 AM to 7:30 PM |
| Saturday: | 9:00 AM to 2:00 PM |

### Required Contractors and Vendors

| | |
|---|---|
| Access Control: | Datawatch Systems, Inc.<br>Stephanie Doggett<br>Phone: (301) 280-4333<br>Cell: (301) 370-5798<br>sdoggett@datawatchsystems.com |
| Base Building Structural Engineer: | KCE Structural Engineers, P.C.<br>Phone: (202) 833-8622 |
| Elevator Service: | Otis Elevator<br>Phone: (301) 324-4140 |
| Exterior Glazing: | Dominion Glass<br>Phone: (703) 378-8329 |
| Fire Alarm Tie-Ins: | Freestate Electric<br>Phone: (301) 230-3868 |
| HVAC Controls: | Siemens (West Building)<br>Justin Hare<br>Phone: (301) 837-2598<br>Email: justin.hare@siemens.com<br><br>EMS (East Building)<br>Phone: (301) 858-0220 |
| Locksmith | Lock Technology<br>Phone: (301) 345-8300 |
| Roofing Installer: | Prospect Roofing |

| | |
|---|---|
| | Phone: (703) 450-2355 |
| Roofing Manufacturer: | _____ |
| Base Building Structural Engineer: | Mark J. Tamaro, P.E., LEED AP<br>Thornton Tomasetti<br>Phone: 202-580-6300<br>Direct: 202-580-6348<br>Fax: 202-580-6301<br>Cell: 202-997-1625<br>MTamaro@ThorntonTomasetti.com |

**Recommended TAB Contractors:**

1. Comfort Control – (301) 931-9300 – contact: Darren Aley
2. Metro T&B – (301) 808-3660 – contact: James M. Noto
3. Seneca Balance, Inc. – (410) 665-1281 – contact: Eric Fleischer

**Special Conditions:**

1. No parking at loading dock (at any time) without Property Management approval.
2. Large deliveries must be performed after-hours and scheduled in advance with the Property Management office.
3. After hours work may require a Boston Properties or security escort. Tenant responsible for costs associated with after hours services.
4. After hours work requiring Boston Properties engineering staff assistance must be scheduled at least 48 hours in advance with Property Management.

**SECTION 02 82 00**
**ASBESTOS ABATEMENT**

**TABLE OF CONTENTS**

**SECTION 02 82 00**
**ASBESTOS ABATEMENT**

**TABLE OF CONTENTS**

**SECTION 028200**
**ASBESTOS ABATEMENT**

PART 1 - GENERAL

1.1 Introduction

1.1.1 Perform all planning, administration, execution, and cleaning necessary to safely remove asbestos-containing or contaminated materials.

1.1.2 Approval of or acceptance by the Contracting Officer's Technical Representative (COTR) of various construction activities or methods proposed by Contractor does not constitute an assumption of liability either by the COTR or Smithsonian Institution (SI) for adequacy or adverse consequences of said activities or methods.

1.2 Description of the Abatement Work

1.2.1 The asbestos abatement shall also include, but not be limited to the following:

(a) Notification to regulatory agencies

(b) Regulatory permits, licenses and approvals

(c) Worker health and safety program

(d) Air monitoring

(e) Construction of temporary containment barrier/decontamination enclosures

(f) Preparation for abatement operations

(g) Removal of existing asbestos-containing material

(h) Transport and disposal of asbestos-containing material

(i) Decontamination and cleaning

(j) Application of lockdown encapsulant**s**

(k) Removal of temporary containment barrier/decontamination enclosures

(l) Final job close-out

1.2.2 Summary Listing of Work Locations and Approximate Quantity: The Contractor shall review all contract documents and make a site visit to make his/her own

determination about quantity values prior to applying for the required federal, state, or local permits from agencies having authority or jurisdiction.

1.2.3 Drawings and Other Information: Drawings of the project area(s) and the reference location(s) within the building may be provided upon request to assist in the Contractor's planning of the abatement work effort for protection of occupants and contents.

1.2.4 Other Work Not Included: Concurrently with this contract, the SI reserves the right to collect and analyze samples or retain an independent testing laboratory to provide supplemental sampling services. These services will in no way relieve the Contractor from compliance liability or from providing the testing required by these specifications or any other requirements of other agencies with jurisdiction authority.

NOTE: The SI has contracted independent air monitoring and testing services. The Contractor shall use a different firm for air monitoring and testing on this project.

1.3 Definitions

1.3.1 Abatement: Procedures to control or eliminate fiber release from asbestos-containing building materials, to include encapsulation, enclosure and removal.

1.3.2 Abatement Work Area (regulated area): An area established by the employer to demarcate areas where Class I, II, III and IV asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

1.3.3 Airlock: A system of enclosures within the containment area consisting of two (2) doorways, curtained with polyethylene sheeting, at least 1 meter apart.

1.3.4 Air Filtration Units: A local exhaust unit, utilizing high-efficiency particulate air (HEPA) filtration and capable of maintaining a minimum negative pressure differential of 0.05 mm of water within the containment barrier with respect to that of the environment surrounding the containment barrier. The unit also cleans recirculated air or generates a constant air flow from adjacent areas into the abatement work area through the decontamination enclosure.

1.3.5 Air Monitoring: The process of measuring the fiber content of a specific volume of air during a stated period of time.

1.3.6 Air Pressure Monitoring: The process of measuring the air pressure differential between the containment barrier and the surrounding area using a micromanometer unit.

1.3.7 Amended Water: Water to which a surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate asbestos containing materials (ACM).

1.3.8 ANSI: American National Standards Institute.

1.3.9 ASTM**:** American Society for Testing and Materials.

1.3.10 Asbestos: Asbestiform varieties of chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

1.3.11 Asbestos-Containing Material (ACM): Any material containing more than 1% asbestos by volume of any type or mixture of types.

1.3.12 Authorized Person: Any person authorized by the SI and required by work duties to be present in a regulated area.

1.3.13 Caulking: High-grade rubber base caulk for masonry and/or for other materials to be used or existing, as appropriate.

1.3.14. Class I Asbestos Work: Activities involving the removal of thermal systems insulation (TSI) and surfacing ACM and presumed asbestos containing materials (PACM).

1.3.15. Class II Asbestos Work: Activities involving the removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

1.3.16. Class III Asbestos Work: Repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

1.3.17. Class IV Asbestos Work: Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II and III activities.

1.3.18 Clean Room: An uncontaminated area or room which is part of the abatement worker/equipment decontamination enclosure, with provisions for storage of workers' or visitors' street clothing, protective equipment and uncontaminated materials and equipment. It may be used for changing clothes.

1.3.19 Competent Person: In addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 (f)**.** In addition, the competent person shall have successfully completed training for Class I, Class II, Class III, and Class IV projects meeting the criteria set forth in the EPA Model Accreditation Plan (40 CFR 763) for project designer or supervisor, and operations and maintenance training.

1.3.20 Containment Barrier: A temporary enclosure constructed with fire-retardant plastic sheeting, suitable framing, tape (as defined in 1.3.52) and other adhesives within the abatement work area. This barrier serves to confine the asbestos abatement and decontamination work, and to contain the release of asbestos containing dust and debris through the action of pressure differential ventilation and air filtration systems. The only entrance is via the abatement worker/equipment decontamination enclosure.

1.3.21 COTR (Contracting Officer's Technical Representative)**:** An individual representing the SI as the technical advisor to the SI's Contracting Officer. This individual may be an employee of the SI or consultant.

1.3.22 Critical Barrier: Those portions of the containment barrier which represent the minimum structural components necessary to maintain the asbestos removal area in airtight isolation from the surrounding areas. Critical barriers shall be placed at floors, windows, ventilation louvers and other openings as necessary to achieve abatement work area isolation before putting up the double-layer plastic sheeting containment enclosure within which abatement work is performed. If a temporary plastic sheeting/stud wall must be erected, it shall be treated as a critical barrier. The double-layer plastic sheeting containment enclosure shall then be erected on that wall. Wrappings on lights, control boxes, etc., do not constitute part of the critical barrier.

1.3.23 Curtained Doorway: A minimum 2-flap passageway to allow access or egress from one room to another while permitting minimal air movement between the rooms of the decontamination enclosure system. It is constructed by placing 2-3 overlapping sheets of plastic sheeting at least three feet wide over an existing or temporarily framed doorway. The sheets shall be weighted at the bottom so that they close quickly after being released.

1.3.24 Decontamination Enclosure: A series of connected rooms with curtained doorways between each room, for the decontamination of the abatement workers and equipment/materials. A decontamination enclosure contains a minimum of three (3) separate rooms (typically with airlocks located between the rooms) consisting of an equipment room, shower room, and clean room. The system is constructed of an air-tight, impermeable, temporary barrier. Framing for enclosure shall be metal or fire retardant pressure impregnated wood.

1.3.25 Disposal Bag: A properly labeled minimum 0.15 mm thick, leak-tight plastic bag used for transporting asbestos waste from the abatement work area to an EPA-approved disposal site for ACM waste.

1.3.26 Disturbance: Contact which releases fibers from ACM or presumed asbestos-containing material (PACM) or debris containing ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag (as defined in 1.3.29) or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 1.52 m in length and width.

1.3.27 Encapsulant: A material applied after the removal of ACM or to the ACM-edges of partially abated substrates which surrounds or embeds residual asbestos fibers in an adhesive matrix to prevent their release into the atmosphere. Encapsulation for purpose of final lockdown is not to be accomplished until after the project has passed final air clearance tests and the COTR has authorized removal of the containment.

1.3.28 Enclosure**:** Procedures necessary to completely enclose material containing asbestos behind airtight, impermeable, permanent barriers.

1.3.29 Equipment Room: A contaminated area or room which is part of the decontamination enclosure, with provisions for storage of contaminated clothing and equipment and cleaning supplies for decontamination of equipment. Airlocks are required at all entrances to the equipment room.

1.3.30 EPA: United States Environmental Protection Agency.

1.3.31 Excursion Limit: Airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc), as averaged over a sampling period of thirty minutes.

1.3.32 Fiber: A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.

1.3.33 Fixed Object: A unit of equipment or furniture in the abatement work area which cannot be removed from the abatement work area.

1.3.34 Glove Bag: A pouch, typically constructed of a minimum 0.15 mm thick, 1.5 m x 1.5 m (maximum), transparent polyethylene or polyvinylchloride plastic, with inward projecting sleeve gloves to abate ACM in a sealed micro-environment with designated inlets for amended water and sealant application, and a HEPA filtered vacuum unit attachment. The pouch has capacity for tool storage and to hold removed ACM.

1.3.35 GFCI (Ground Fault Circuit Interrupter): A type of ground fault protection in areas where personnel are at high risk of receiving electrical shocks (for example, in damp locations); makes use of a device designed to trip at a ground current in the milliampere range, i.e., very much below currents that are normally harmful.

1.3.36 HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of all mono-dispersed particles 0.3 micrometer in diameter or larger.

1.3.37 HEPA-Filtered Vacuum Cleaner: HEPA-filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers.

1.3.38 Holding Area: A chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system.

1.3.39 Impermeable Waste-Disposal Containers: Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.

1.3.40 Lockdown: The process of applying encapsulant as a finishing coat to abated surfaces after project has successfully passed final air clearance tests and the COTR has authorized removal of containment.

1.3.41 Movable Object: A unit of equipment or furniture in the abatement work area which can be removed from the abatement work area.

1.3.42 MSHA: Mine Safety and Health Administration:

1.3.43 Negative Exposure Assessment (NEA): A demonstration by the contractor, which complies with the criteria in OSHA 29 CFR 1926.1101(f)(2)(iii), that employee exposures during an operation are expected to be consistently below the permissible exposure limits (PELs). Such assessment is to be used to justify level of respiratory protection to be used on the job.

1.3.44 NESHAPS: National Emissions Standard for Hazardous Air Pollutants.

1.3.45 N.E.C.: National Electrical Code.

1.3.46 NIOSH: National Institute for Occupational Safety and Health.

1.3.47 OSHA: Occupational Safety and Health Administration.

1.3.48 PACM: Presumed Asbestos-Containing Material, meaning thermal system insulation and surfacing material found in buildings constructed no later than 1980.

1.3.49 PEL: Permissible Exposure Limit. An occupational limit of exposure to a chemical substance or physical agent.

1.3.50 Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee. Breathing zone is defined as a radius of 150 mm to 250 mm around the employee's head.

1.3.51 Personal Protective Equipment: Equipment which may consist of coveralls, shoes, gloves, helmet, goggles, and respirator used for protection against asbestos exposure.

1.3.52 Plastic Sheeting: Fire retardant Polyethylene sheet material of specified thickness used for protection of walls, floors, etc., and critical barriers in the abatement work area.

1.3.53 Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

1.3.54 Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres and approved by NIOSH or MSHA for a specific category of use.

1.3.55 SI IH - Smithsonian Institution's Industrial Hygienist: An individual serving as the Smithsonian's industrial hygienist. This individual may be an employee or consultant.

1.3.56 Surfactant: A chemical wetting agent added to water to decrease surface tension and improve material penetration.

1.3.57 Tape: Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic (0.15 mm polyethylene) and for attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions, including use of amended water. Minimum tape width shall be 51 mm.

1.3.58 Warning Labels and Signs: As required by OSHA regulations 29 CFR 1910.1001 and 1926.58.

1.3.59 Waste Water Filters: Discharged liquids shall pass through a primary filter and the output shall be particles 20 microns or smaller. The secondary filter shall have output particles 5 microns or smaller.

1.3.60 Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water.

1.4 Regulations and References

1.4.1 Regulations: Contractor shall comply with the most current edition of all federal, state, county, and city codes and ordinances as they apply to the location(s) in which the work is performed. Make available for review at the site one copy of all applicable federal, state, county and city regulations governing the abatement work, including but not limited to:

1.4.1.1 Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

(a) 29 CFR 1910 (General Industry) and 29 CFR 1926 (Construction) Occupational Safety and Health Standards

(b) 29 CFR 1910.1001 and 29 CFR 1926.1101 Asbestos

(c) 29 CFR 1910.134 Respiratory Protection

(d) 29 CFR 1910.1200 Hazard Communication

1.4.1.2 U. S. Department of Transportation

(a) 49 CFR 171 Subchapter C, Hazardous Materials Regulations

(b) 49 CFR 172 Subchapter C, Shipping Container Specifications

1.4.1.3 U.S. Environmental Protection Agency

(a) 40 CFR 763, Toxic Substances Control Act; particularly Subpart E, Asbestos Containing Materials in Schools

(b) 40 CFR 61, Sub-parts A and M, National Emission Standard for Hazardous Air Pollutants (NESHAPS)

1.4.1.4 District of Columbia Law Title 20 DCMR Section 800. District of Columbia Department of Health.

1.4.1.5 New York City Department of Environmental Protection.

1.4.1.6 New York State Department of Health; New York State Department of Environmental Conservation; New York State Department of Labor.

1.4.1.7 Virginia Department of Labor and Industry; Virginia Department of Professional and Occupational Regulation; Virginia Department of Environmental Quality.

1.4.1.8 Maryland Department of the Environment; Maryland Occupational Safety and Health.

1.4.1.9 Arizona Department of Environmental Quality.

1.4.1.10 Hawaii Department of Health.

1.4.1.11 Florida Department of Environmental Protection.

1.4.1.12 Massachusetts Department of Environmental Protection.

1.4.1.13 American National Standards Institute (ANSI), 1430 Broadway, New York, New York 10018. Telephone (212)354-3300

(a) ANSI Publication Z88.2 Practices for Respiratory Protection

1.4.1.14 American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103. Telephone (215) 299-5400

(a) ASTM Standard P-189 Specification for Encapsulants for Friable Asbestos Containing Building Materials Proposal

1.4.1.15 Compressed Gas Association, Inc. New York. Pamphlet G-7 "Compressed Air for Human Respiration", Specification G-7.1 Commodity Specification for Air"

1.4.1.16 Canadian Standard Association (CSA), Rexdal, Ontario, Standard Z180.1, "Compressed Breathing Air".

1.5 Submittals

1.5.1 Reference Division 1, Section 01000 Supplementary Conditions for Construction, for additional requirements.

1.5.2 Contractor's Work Plan: The Contractor shall submit a Contractor's Work Plan for asbestos abatement work within 15 calendar days after contract award to the COTR for approval. Approval of the Plan is required prior to beginning abatement work. The Plan shall be on 220 mm x 280 mm paper in a binder indexed by the subjects listed

below. Detail the procedures, instructions, and reports used to assure compliance with the contract documents.

1.5.2.1 Barchart Schedule: Provide barchart scheduling of the abatement work by daily and/or weekly increments for each abatement work area and individual decontamination enclosure system. The time line is to include all work, both on and off the job site, for the entire contract period.

1.5.2.2 Notices: The contractor shall notify federal, state, and local regulatory agencies in writing immediately upon contract award and a minimum of 10 days in advance of any asbestos related work. Notifications shall be made by the Contractor as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M)). Submit copies of notifications and documentation to the COTR. If a project consists of multi-phases, with distinct start and stop dates, these shall be declared on the EPA Notice or individual notices shall be filed for each phase.

1.5.2.3 Permits and Licenses: Maintain current licenses and obtain applicable permits as required by federal and applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the abatement work of this contract. Submit copies of all state and local licenses and permits necessary to carry out the abatement work of this contract.

(a) All asbestos containing waste is to be transported by an entity maintaining a current "Industrial waste hauler permit" specifically for asbestos-containing materials, as required for transporting of waste asbestos-containing materials to a disposal site.

(b) Notices of Violations: Submit copies of all Notices of Violations issued to the contractor and its sub-contractors within the last three (3) years by federal, state, and local regulatory agencies.

1.5.2.4 Sequence of Work: Narrative description of the proposed sequencing of asbestos work and breakdown of abatement work areas requiring separate or individual decontamination enclosures. Include how enclosure systems will be erected and dismantled. Include how re-useable equipment will be cleaned for re-use before relocation or removal from the site. Include how waste disposal containers will be cleaned and removed from the abatement work area.

1.5.2.5 Abatement Work Area Layout Sketch: Layout sketch of decontamination enclosure systems and abatement work area. Describe assembly of construction, materials to be used and location of notices to be posted on the job site. Indicate which areas will be sealed off (and by what means). Show locations of facilities and equipment such as showers, lockers, storage, etc. Show locations of all filtration devices to be used, their exhaust, and calculations to determine the number of these devices needed to provide the minimum 4 air changes per hour in the abatement work area. These requirements shall be coordinated with the COTR and facility representative

1.5.2.6 Isolation of Abatement Work Areas: Methods to isolate/restrict access to abatement work areas. Include how access will be controlled, how building HVAC ventilation systems will be isolated from abatement area. Include how security and fire systems will be maintained within the containment. Include plans for electrical lock-out and dedicated electrical systems. These requirements shall be coordinated with the COTR and facility representatives.

1.5.2.7 Transportation and Disposal: Details of hauling equipment, materials and contaminated debris from inside the building. Submit written identification of licensed hauler and landfill location.

1.5.2.8 Personnel Organization and Responsibilities: The Contractor shall provide a list of all project personnel, both on-site and in the offices, and a statement of their responsibilities and authority for work on this project.

1.5.2.9 Personal Protective Equipment: Details of personal protective equipment and use, storage and maintenance at job site.

1.5.2.10 Posted Notices and Warning Signs: Submit copies of notices to be posted at the job site, as required by EPA and OSHA regulation for asbestos abatement activities.

1.5.2.11 Materials and Equipment Product Data: Submit manufacturer's literature and written information for all materials and equipment, including NFPA test report of flame resistant materials, and material safety data sheets for all chemical-content supplies. Contractor shall not change materials or equipment without approval of a new submittal to the COTR.

1.5.2.12 Contractor Monitoring Services: Before start of asbestos work, submit to the COTR the name of the contractor's industrial hygiene consultant and analytical laboratory for air monitoring.

1.5.2.13 Superintendent/Competent Person: Before start of asbestos work, submit to the COTR the name of job site supervisor who must meet the following requirements as a minimum. Furnish documentation that the General Superintendent:

(a) has a minimum of five (5) years on-the-job experience as a supervisor of asbestos abatement projects

(b) is a competent per Section 1.3.15 of this document.

(c) is certified as an Asbestos Abatement Supervisor in accordance with 40 CFR Part 763.

(d) is fluent in the English language and all other primary languages spoken by the abatement work crew.

1.5.2.14 Workers' Specialized Training: Submit training course descriptions, locations, and dates. Submit to the COTR a written affidavit before start of asbestos removal as proof that all employees have had instruction on the

hazards of asbestos exposure; and on all aspects of work procedures and personal protection and area protective measures as required and/or recommended by OSHA and EPA and other applicable guide documents. The affidavit shall include course name, designation, installation, place, date taken, and student names.

(a) Training shall be in accordance with 29 CFR 1926.1101.

(b) Course certification shall be in accordance with EPA as required by 40 CFR 763.

(c) Workers should have a minimum of one (1) year experience as an asbestos worker.

1.5.2.15 Respiratory Program: Submit a written respiratory program as defined in OSHA 1926.1101 and in these specifications. Submit type of NIOSH/MSHA certified respiratory equipment intended for each operation required by this project. Selection criteria must meet 29 CFR 1926.1101 (h) (2). When a Type "C" supplied positive pressure air respiratory system is required by the abatement work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in abatement work area(s), routing of air lines to abatement work area(s) from compressor.

1.5.2.16 Negative exposure assessment data submitted to justify respiratory selection must be less than 12 months old and closely resemble the current project following criteria set forth in 29 CFR 1926.1101 (f) (2) (iii).

1.5.2.17 Emergency Preparedness: Submit an emergency plan to COTR for approval by SI Office of Safety, Health and Environmental Management (OSHEM). The emergency plan shall address responses to fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may requiremodification or abridgement of decontamination or abatement work area isolation procedures. Show exit routes from the building, locations of the nearest manual pull stations, telephone number of Smithsonian security office, name of the designated employee responsible for fire protection, fire hazards inherent to the project and measures taken for prevention. All employees shall be familiar with the emergency plan and have initialed the plan after reading it, know how to activate the fire alarm, and trained in the use of portable fire extinguishers. One on-site employee shall be designated as responsible for fire protection. The plan shall be available at the job site in all primary languages of the abatement work crew. In addition, the following emergency information shall be posted at all entrances to the abatement work area:

(a) Exit route map
(b) Phone number of SI security office

1.6 Daily Reports

1.6.1 The Contractor shall correspond with the COTR for all matters related to this construction project, unless otherwise directed.

1.6.2 All correspondence with the SI shall be in the English language, signed and dated by the Contractor.

1.6.3 Reference General Conditions (Construction Contract Clauses) and Specifications Division 1 for Supplementary Conditions for Construction.

1.6.4 The Contractor shall maintain daily logs and reports of job-site activities and personnel exposure monitoring at the site and shall provide copies to the COTR for inspection upon request.

1.6.5 The Contractor shall maintain daily reports using the SI Contractor's Daily Report form. Reports shall be numbered consecutively and all sections shall be completed or noted as 'not applicable.' Each day's report shall contain detailed remarks including but not limited to progress on the job, problems discovered, and discussions with Smithsonian staff. Reports shall be submitted to the COTR each day for the previous work day.. Copies shall be maintained at the jobsite and made available to the COTR upon request.

1.6.6 Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of pressure differential system, rupture of temporary enclosures, equipment or power failure, high airborne fiber reading), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

1.6.7 Accident Reporting: Report all accidents to Smithsonian Security Office first, then to the COTR. Prepare reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury. Report shall be submitted to the COTR, who will forward copies to OSHEM and the facility Safety Coordinator.

1.6.8 Waste Manifest-Asbestos: At completion of hauling and disposal of each load, submit a copy of waste manifest, chain of custody form, and landfill receipt to the COTR. Waste manifest to be submitted shall be signed by the contractor, waste transporter, and the disposal facility. A copy of all manifests will be included in the post-job submittal.

1.6.9 Waste Manifest-Hazardous Waste: Any hazardous waste generated as a result of asbestos abatement activities will be disposed of by a Certified Hazardous Waste Disposal Contractor. A copy of the Hazardous Waste Manifest generated by this disposal is to be submitted to the COTR, who will forward a copy to the facility's SI

Hazardous Waste Coordinator. A copy of all manifests will be included in the post-job submittal.

1.7 Product Handling

1.7.1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.

1.7.2 Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

1.7.3 Remove from the premises all damaged or deteriorated materials. Dispose of materials that become contaminated with asbestos in accordance with applicable regulatory standards and these specifications.

PART 2 - PRODUCTS

2.1 Materials

2.1.1 Caulking: High-grade rubber base caulk for masonry and/or for other materials.

2.1.2 Encapsulant: Product shall be rated as acceptable for use intended when field tested in accordance with ASTM Proposed Specification P-189 “Specification for Encapsulants for Friable Asbestos Containing Building Materials". Use only materials that have a flame spread index of 25 or less when dry, when tested in accordance with ASTM E-84.

2.1.3 Glove-Bag: 0.15 mm thick, 1500 mm x 1500 mm, transparent polyethylene or polyvinylchloride plastic with long sleeve gloves, designated inlets for HEPA vacuum attachment, and storage pouch.

2.1.4 Impermeable Waste-Disposal Containers: Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.

2.1.5 Plastic Sheeting: Product Standard PS 17-69 and OSHA Regulation 29 CFR 1926.1101; Polyethylene plastic sheeting material 0.15 mm thickness for covering floors and walls, providing air locks, and sealing doors and windows; supply in appropriate widths to minimize seams. Must be flame-resistant material and must meet test criteria in NFPA 701. Reinforced sheeting is required for applications subject to wear and tear.

2.1.6 Surfactant (Wetting Agent): 50% polyoxyethylene ester and 50% polyoxyethylene ether, or approved equal, shall be mixed with water to provide a concentration of 2 ml surfactant to 1 liters of water, or manufacturer's recommended concentration.

2.1.7 Tape: Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic sheeting and for attachment of plastic sheets to finished or unfinished surfaces

of dissimilar materials under both dry and wet conditions, including use of amended water. Minimum tape width shall be 50 mm.

2.1.8 Warning Labels and Signs: As required by OSHA regulations 29 CFR 1910.1001 and 1926.58.

2.1.9 Waste Water Filters: Discharged liquids shall pass through a primary filter and the output shall be particles 20 microns or smaller. The secondary filter shall have output particles 5 microns or smaller.

2.2 Equipment

2.2.1 Air Filtration Units: Shall be factory-sealed and equipped with HEPA filters(final), pre-filters, instrumentation to monitor pressure differential, and safety and warning devices.

2.2.1.1 Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL).

2.2.1.2 Access to the units for replacement of all air filters shall be from intake end. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps. The filter media shall be completely sealed on all edges with a structurally rigid frame with a continuous rubber gasket.

2.2.1.3 HEPA Filters: Provide units equipped with HEPA filters. Filters shall be individually tested and certified by the manufacturer.

2.2.1.4 Pre-filters: Provide a two-stage pre-filtration to extend the life of the primary HEPA filter. The first-stage pre-filter is a low-efficiency type effective for particles 100 micrometers and larger. The second-stage (or intermediate) filter has a medium efficiency effective for particles down to 5 micrometers.

2.2.1.5 Instrumentation: Provide units equipped with a magnehelic gauge or manometer to measure the pressure drop across filters and to indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the magnehelic gauge affixed near the gauge for reference, or the magnehelic reading indicating at what point the filters should be changed, noting cubic feet per minute (CFM) air delivery at that point. Provide an elapsed time meter to show the total accumulated hours of operation.

2.2.1.6 Safety and Warning Devices: Provide units with the following safety and warning devices:

(a) Warning lights to indicate normal operation, too high a pressure drop across the filters (i.e., filter overloading), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge)

(b) GFCIs.

(c) Audible alarm if unit shuts down due to operation of safety systems.

(d) Electrical overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.

2.2.2 Respirators and Respirator Systems

2.2.2.1 Product Data: Must possess NIOSH and MSHA approval for each component in an assembly and/or for entire assembly.

PART 3 - EXECUTION

3.1 Controlled Access to Site

3.1.1 Access to the abatement work area shall be restricted to contractor's workers and authorized visitors as defined in these specifications.

3.1.2 Authorized visitors shall have access to the work site at all times following notification to COTR. Contractor shall supply protective clothing and equipment for visitors as necessary, except for respirators which are to be provided by the visitor in accordance with Section 3.4 of this document.

3.1.3 Contractor shall prominently post signs at all potential entry points to the abatement work area which clearly state: "Restricted Area Under Construction-Admittance by Special Permission Only - Protective Clothing Required Beyond This Point". Immediately inside entry point and outside critical barriers post a warning sign meeting specifications of OSHA 29 CFR 1910 and 1926. Suggested format is a sign of minimum size 508 mm by 356 mm displaying the following legend:

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DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTIVE CLOTHING ARE
REQUIRED IN THIS AREA

==========

3.1.4 All workers and authorized visitors shall enter the abatement work area only through the abatement worker/equipment decontamination enclosure, in accordance with Section 3.3 of this document.

3.1.5 All workers and authorized visitors, before entering the abatement work area, shall read and be familiar with all posted regulations, personal protection requirements, and emergency procedures and exit routes.

3.1.6 Contractor shall maintain a daily job site personnel log listing names and social security numbers of individuals who entered the abatement work area, and the times of entering and leaving the area.

3.2 Worker and Visitor Protection

3.2.1 No eating, drinking, smoking, or chewing gum is permitted within the abatement work area. The COTR shall designate a "break area" where these activities, except for smoking, are permitted. Smoking is prohibited in SI facilities.

3.2.2 Workers and Visitors shall be fully protected with respirators and protective clothing during any work which may disturb asbestos-containing materials and result in fiber release. Full protection is not required during pre-abatement inspections of the containment, while work is not being conducted.

3.2.3 Protective Clothing and Equipment: Provide workers and visitors with sufficient sets of protective full body clothing, to include full body coveralls with hood, boots (for workers) and footwear coverings (for workers and visitors), and gloves. Provide eye protection and hard hats as required by applicable safety regulations. Contaminated non-disposal clothing and footwear shall be left in the equipment room until the end of the asbestos abatement work, at which time such items shall be disposed of as asbestos waste, or shall be thoroughly cleaned of all asbestos or asbestos-containing material. Contractor shall have at least six (6) sets of disposable protective full body clothing for COTR and authorized visitors for each work day. Provide storage facilities for visitors and workers for removed street clothing in the clean room.

3.2.3.1 Boots: Provide workers non-skid type work boots with protective shields as required by OSHA. Paint uppers of boots with red waterproof enamel paint as a permanent marking that the boots have been exposed to ACM abatement work areas. These boots are to be handled as asbestos-contaminated materials.

3.2.3.2 Hard Hats: Provide hard hats that meet ANSI Z89.1 for use where work is overhead, scaffolding is being used, or as otherwise required by OSHA. Label hats with same warning labels as required for ACM disposal bags.

3.2.3.3 Goggles: Provide goggles that meet ANSI Z87.1 as required by OSHA.

3.2.3.4 Gloves: Provide disposable work gloves for use in the abatement work area.

3.2.3.5 Coveralls with Hood: Provide disposable coveralls with hoods for use in the abatement work area.

3.2.3.6 Respirators: Provide workers with personally issued and marked respirator equipment approved by NIOSH/MSHA and, in accordance with these specifications, suitable for the asbestos exposure level in the abatement work area. Where respirators with disposable filters are employed, provide sufficient filters for replacement as necessary by the abatement worker, or as required by the applicable regulation. Authorized visitors must provide their own

respirators, with fresh filters or cartridges as necessary, to enter the abatement work area. These are minimum requirements. Section 3.4 of this document is to be consulted for more detail.

3.3 Abatement Work Area Entry and Exit Procedures

3.3.1. Each time the abatement work area is entered remove all street clothes in the Clean Room of the Decontamination Enclosure and put on new disposable coveralls, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.3.2 Each time the abatement work area is exited, the following procedures shall be followed:

3.3.2.1 Before leaving the regulated area, employees and authorized visitors shall remove all gross contamination and debris from their protective clothing.

3.3.2.2. Personnel exiting the regulated area shall remove their protective clothing and equipment (except respirators) in the equipment room and deposit the clothing in labeled impermeable bags or containers.

3.3.2.3 Personnel shall remove their respirators in the shower room, washing and rinsing them.

3.3.2.4 Personnel shall shower thoroughly before entering the clean room.

3.3.2.5 After showering, employees shall enter the clean room before changing into street clothes.

3.4 Respiratory Protection

3.4.1 Contractor is hereby advised that asbestos has been determined by the U.S. Government to be a CANCER-CAUSING AGENT. Provide workers with respirators [which, as a minimum, meet the requirements of OSHA 29 CFR 1926.1101] and protective clothing during all phases of the abatement work and until final air tests are accepted by COTR.

3.4.2 The Contractor shall select respirators from among those jointly approved as being acceptable for protection by the MSHA and the NIOSH under the provisions of 30 CFR Part 11.

3.4.3 The Contractor shall select and provide respirators, at no cost to the employee and shall ensure that the employee uses the respirator provided.

3.4.4 Instruct and train each worker involved in asbestos abatement or maintenance and repair of asbestos-containing materials in proper respiratory use and require that each worker always wear in the abatement work area a respirator, properly fitted on the face. The respirator shall be worn from the start of any operation which may cause airborne asbestos fibers until the abatement work area is completely decontaminated.

3.4.5 Allow an individual to use only those respirators for which training and fit-testing have been provided. Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2.

3.4.6 For all jobs that involve the removal of thermal system insulation (TSI) or surfacing materials (OSHA definition of Class I work) the employer shall provide respirator protection in accordance with 29 CFR 1926.1101 (h) Table 1 - Respiratory Protection for Asbestos Fibers. This level of respiratory protection shall be maintained until the employer can produce a negative exposure assessment.

3.4.7 For all other abatement work, use respiratory protection appropriate for the fiber level encountered in the abatement work area or as required for other toxic or oxygen-deficient situations encountered. The level of respiratory protection which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed. (Table
1, Respiratory Protection for Asbestos Fibers, 29 CFR 1926.1101*)* Do not use single-use, disposable, or quarter-face respirators.

3.4.8 Authorized visitors are responsible for providing their own respirator and replacement filters and cartridges, with the exception of Type C which shall be provided by Contractor, and for having been previously and properly trained fit-tested, for the respirator used.

3.4.9 For use with air-purifying respirators, provide, at a minimum, HEPA type filters certified by NIOSH and MSHA for protection against asbestos fibers. In addition, a chemical cartridge may be added, if required for protection against chemicals used on this job.

3.4.10 For use with powered air purifying respirators, supply a sufficient quantity of HEPA filters approved for asbestos, so workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement.

3.4.11 For supplied-air respirator systems, provide equipment capable of producing air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. Type 1, Gaseous Air, Grade D. (See 1.5.2.15) System must be certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure face-piece including as a minimum the following:

- Auxiliary backup system
- Escape air supply
- Backup air supply
- Warning Alarm Device
- Compressor Shut Down
- Compressor Motor (electric)
- Compressor Location (outside building)
- Air Intake

- After-Cooler

3.5 Air Monitoring; Stop Action and Clearance Levels

3.5.1 This section describes work being performed by the SI. The SI will not be performing air monitoring to meet Contractor's OSHA requirements for personal sampling or any other purpose.. The Contractor is to conduct air monitoring required by OSHA for Contractor personnel.

3.5.2 Analytical Methods: The following methods will be used by the SI in analyzing filters used to collect air samples. Minimum sample volumes will be 1200 liters for clearance samples.

3.5.2.1 Phase Contrast Microscopy (PCM) - will be performed using the OSHA Reference Method, Appendix A to 29 CFR 1926.1101, or NIOSH Method 7400.

3.5.2.2 Transmission Electron Microscopy (TEM) - will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A, or NIOSH Method 7402, whichever is deemed more appropriate by SI in each case.

3.5.3 Before Start of Work: The SI will secure abatement work area air samples to establish a base line fiber level in each homogeneous abatement work area before start of work. All samples will be taken at the same time to ensure identical environmental conditions.

3.5.4 Daily: From start of abatement work through project decontamination, the SI may be taking samples on a daily basis inside and outside each abatement work area.

3.5.5 All Clearance Air Samples will be taken using aggressive sampling techniques.

3.5.6 Stop Action: If any air sample taken outside of the abatement work area exceeds 0.01 f/cc by PCM, or 70 structures per $mm^2$ by TEM, depending on sampling method used, immediately and automatically stop all work except corrective action. PCM air samples will be re-analyzed by TEM to determine whether the high outside-of-work-area results were due to asbestos or non-asbestos fibers. The SI and the abatement contractor will determine the source of the high reading. The contractor will correct the condition, as appropriate.

3.5.7 Abatement Work Area Final Clearance Levels:

3.5.7.1 The SI standard for abatement work area final clearance in all occupied areas for removing the containment and re-occupancy is 70 structures per $mm^2$ by TEM using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

3.5.7.2 The SI standard for abatement work area final clearance in un-occupied areas, or at the case-by-case discretion of the SI, is less than 0.01 fibers per cubic centimeter of air using PCM methods specified in NIOSH 7400.

3.5.7.3 Final air clearance requirements of specific state and local regulations that exceed the requirements of 3.5.7.1 and 3.5.7.2 will be utilized (e.g., in the District of Columbia, at least two PCM samples per 2,500 square feet of floor are required).

3.6 Initial Isolation of Abatement Work Area

3.6.1 Contractor shall completely separate the abatement work area from other portions of the building, and the outside, by sealing all openings (windows, doorways, elevator openings, corridor entrances, drains, ducts, grill, diffusers, skylights, etc.) with barriers of 0.15 mm polyethylene sheeting and tape, or by sealing cracks leading out of the abatement work area. Contractor shall caulk the joints and seal holes in that portion of the walls, ceiling, and floor inside the abatement work area that could allow airborne asbestos fibers to be carried into adjoining spaces, or the exterior. Note in particular where pipes, conduit, and ductwork penetrate walls, ceilings and floor. Doorways and corridors which will not be used for passage during work must be sealed with 9.5 mm plywood, wood framing and plastic sheeting with tape.

3.6.2 All heating, ventilating, and air conditioning (HVAC) components that are in, supply or pass through the abatement work area shall be shut down. During asbestos removal and until job completion, elevators, exhaust fans, and HVAC vents and intakes will be key locked to not operate in the abatement work area.

Coordinate with the COTR and Building Representative which areas are to be shut down and for what duration. Seal all intake and exhaust vents, and seams in system components, with a double layer of 0.15 mm polyethylene sheeting.

3.6.3 If it becomes necessary to shut down electric power to the enclosed abatement work area, then the contractor shall provide temporary power and lighting and ensure safe installation of temporary power sources and equipment in accordance with NFPA 70 electric code requirements.

3.6.4 Arrange for the abatement work area to be locked during non-work hours. Install temporary doors with entrance type locksets that are key lockable from the outside and always unlocked and operable from the inside. Remove deadbolts and padlocks. Provide one key (to be held by SI security office on site) to the COTR.

3.7 Preparation of Abatement Work Area and Temporary Enclosures

3.7.1 No exhibit collection object shall be handled by the contractor without the approval of the COTR. Methods for surface decontamination and/or disposal of unsalvageable objects shall be determined with the input from the COTR, the object owner, the contractor and the SI IH.

3.7.2 Clean all contaminated furniture, equipment, and supplies with a HEPA-filtered vacuum cleaner or by wet wiping, as directed by the COTR, prior to being moved or covered.

3.7.3 Before removal, clean by HEPA-filtered cleaner and/or by wet wiping, all electrical and mechanical items, (such as lighting fixtures, clocks, diffusers, registers, etc.) and general construction items (such as cabinets casework, door and window trim,

moldings, etc.) which cover the surface of the abatement work as required to prevent interference with the abatement work. Reinstall all such materials upon completion of the removal work with materials, finishes, and workmanship to match existing installations before start of work.

3.7.4 Remove all removable furniture, equipment, and supplies that have been deemed by the COTR to be uncontaminated, or completely cover with 2 layers of polyethylene sheeting, at least 0.15 mm in thickness, securely taped in place with duct tape. Such furniture, equipment, and supplies shall be considered outside the abatement work area unless covering plastic or seal is breached.

3.7.5 Clean all surfaces in abatement work area with a HEPA-filtered vacuum cleaner or by wet methods prior to installation of primary barrier.

3.7.6 All critical barriers, including ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, speakers, and other openings into the abatement work area shall be individually sealed with 0.15 mm plastic sheeting and tape. Elevator doors, fire extinguisher cabinets and all other penetration in the floor, walls, or ceiling shall be sealed in the abatement work area. If a temporary polyethylene/stud wall must be erected, that wall shall be treated as a critical barrier. The double layer polyethylene containment enclosure shall then be erected on that wall. Critical barriers shall be sealed prior to installation of primary barriers

3.7.7 Take care in sealing of lighting fixtures and control boxes to avoid melting or burning of sheeting. The inside of unsealed lighting fixtures, control boxes, and buss lines are to be cleaned by asbestos workers specially certified to work on high voltage lines.

3.7.8 Cover floor of abatement work area with 2 layers of clear polyethylene, at least 0.15 mm in thickness, turned up at the walls at least 600 mm. Both spray-glue and duct tape all seams in floor covering. Size to minimize seams. Locate seams in top layer 2.0 meters from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer. Do not locate seams at wall/floor interface.

3.7.9 If carpeting is to remain, cover carpeting with three layers of polyethylene sheeting at least 0.15 mm in thickness. Place one layer of corrugated cardboard sheets between the top and middle layers of polyethylene.

3.7.10 Cover plastic sheeting in areas where scaffolding is to be used with a single layer of 12.7 mm fire retardant plywood. Wrap edges and corners of each sheet with duct tape.

3.7.11 Cover all walls in abatement work area including critical barrier sheet plastic with primary barrier of 2 layers of 0.15 mm polyethylene sheeting, mechanically supported and sealed with duct tape or spray-glue in the same manner as critical barrier sheet plastic. Size to minimize seams. Seams shall be staggered and separated by at least 600 mm. Wall sheeting shall overlap floor sheeting by at least 406 mm beyond wall/floor joint. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated by the COTR.

3.7.12 Cover interior surfaces of any existing elevator with 2 layers of 0.15 mm plastic sheeting. Arrange entry to abatement work area so that elevator door is in a positively pressurized space outside the clean room of the decon unit.

3.7.13 When installing the critical and primary barriers, automatic sprinkler heads and fire detectors shall not be covered or altered to prevent or delay operation. Smoke detectors should be protected (but not completely masked) to avoid nuisance alarms during paint or demolition operations. The covers on the smoke detectors shall be removed directly after such operations and at the end of the abatement workday.

3.7.14 A secondary barrier of plastic as a drop cloth shall be used to protect the primary layer from debris and shall be rolled and disposed as contaminated waste at the end of each workday.

3.7.15 Provide emergency exiting from the enclosure as required by NFPA 101, Life Safety Code. Arrange exit door(s) so that it is secure from outside the abatement work area but permits exiting from the abatement work area. Mark outline of door on barriers with luminescent paint at least 250 mm wide. Hang a razor knife on a string beside outline. Post a sign identifying "EMERGENCY EXIT", using letters at least 150 mm high, inside outline with luminescent paint. Arrows shall be taped on the polyethylene wall covering at eye level and at floor level to indicate location of exits. At entrance to decontamination chamber, post building floor plan and escape routes, plus locations of nearest exist and phone numbers of SI security. Emergency lighting shall be required, in accordance with the Life Safety Code.

3.7.16 A 4.5 kg ABC type portable fire extinguisher shall be located by each exit and clean room.

3.7.17 Install inspection windows in the containment barrier enclosure system walls. Each window shall have a minimum 600 mm x 600 mm viewing area fabricated from 6.0 mm acrylic or polycarbonate sheeting. Install window with top at 2.0 m above floor height in a manner that provides unobstructed vision from outside to inside of the abatement work area. A sufficient number of windows are to be installed to provide observation of all portions of the abatement work area that can be made visible from adjacent areas. Provide also for viewing to be blocked from the inside with opaque plastic flap.

3.7.18 Where the abatement work area is immediately adjacent to or within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 0.15 mm in thickness so that the abatement work procedures are not visible to building occupants. Where this visual barrier would block natural light, substitute frosted or woven rip-stop sheet plastic in locations approved by the COTR.

3.7.19 Provide GFCI protection for all electrical equipment.

3.7.20 Provide temporary lighting inside the decontamination enclosure facility.

3.8 Construction of Worker/Equipment Decontamination and Waste Load-Out Enclosures

3.8.1 Worker/equipment decontamination enclosures shall be provided at each location where workers shall enter or exit the abatement work area.

3.8.2 The Contractor shall construct a worker/equipment decontamination enclosure consisting of at least a clean room, a shower room, and an equipment room, each separated by 900 mm air locks. Narrower air locks may be built if approved by the COTR.

3.8.2.1 All rooms shall be constructed of or fully lined with 0.15 mm thick polyethylene sheeting and suitable framing to make them as air-tight as possible. Where joining separate sheets of polyethylene is necessary, the two sheets of polyethylene shall be over-lapped at least 150 mm and adhered with an unbroken line of tape in such a manner to prohibit air movement. Stagger joints. Tape shall then be used to further seal the joint on the other side of the containment barrier so that both loose edges of the overlap are completely sealed.

3.8.2.2 Doorways will consist of three 3 sheets of 0.15 mm polyethylene from ceiling to floor. The width of these polyethylene sheets shall be sufficient to prevent air movement through the doorways when closed.

These doorways shall be the only source of make-up air for the HEPA negative air filtration unit under normal circumstances, unless other sources are specifically approved by the COTR.

3.8.2.3 Provide GFCI protection for all electrical equipment.

3.8.2.4 Provide temporary lighting inside the decontamination enclosure facility.

3.8.3 The Clean Room shall have a curtained doorway leading to the outside of the abatement work area, and an airlock leading to the Shower Room. The clean room shall be of sufficient size to accommodate at least one worker, and a supply of clean disposable coveralls and storage facilities for street clothing, and uncontaminated equipment.

3.8.4 The Shower Room shall have two airlocks, one adjacent to the clean room and one adjacent to the equipment room. The Shower room shall provide hot and cold running water and soap and towels. It should have adequate space for a shower stall. Waste water from the shower shall be discharged through a water filtration unit efficient to 5 microns, then to a sanitary sewer. Shower room shall have opaque walls.

3.8.4.1 Shower Stall: Provide leak tight shower enclosure unit with integrated drain pan fabricated from fiberglass or other durable waterproof material. Equip with hose bibs for hot and cold water. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the abatement work area. Provide splash proof entrances. Provide back flow prevention device and vacuum breaker, where required. Connect drain to a reservoir, pump water from reservoir through filters to a drain. Mount filters inside shower stall in manner that allows for access for filters to be changed from inside the shower. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan. Provide

temporary extensions of existing (if available and authorized for Contractor use by COTR) hot and cold water and drainage, as necessary for a complete and operable shower.

3.8.4.2 Filtered Waste Water Drainage: Provide cascaded disposable HEPA filter units on drain lines from showers or any other fluid source carrying ACM. Connect so that discharged water passes primary filter and output of primary (particles 20 microns and smaller) filter passes through secondary (particles 5 microns and smaller) filter.

3.8.4.3 Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 75 mm remains between top of liquid and top of sump pan.

3.8.5 The Equipment Room shall have two airlocks, one adjacent to the abatement work area and one adjacent to the shower room. The room shall be of sufficient size so as to accommodate at least one worker to change clothes, and temporarily house any equipment which the contractor wishes to store when not in use. The area shall have facilities for decontaminating material and equipment, and a container lined with 0.15 mm polyethylene bag for collection of disposable coveralls and foot coverings.

3.8.6 Waste Load-Out Enclosure: Asbestos-contaminated waste that has been containerized shall be transported out of the abatement work area either through the personnel/equipment decontamination enclosure or through a separate waste load-out enclosure. If a separate enclosure is used, it shall be built with two airlocks, with curtained doorways: one to the abatement work area and one to an uncontaminated area outside the abatement work area.

3.9 Air Circulation Inside Containment Barrier

3.9.1 Formula for Quantity of Air-Filtration Units: The number of air filtration units needed to achieve the required air circulation rate shall be determined by the following formula:

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| | |
|---|---|
| CALCULATE | Volume of abatement work area (CF) |
| MULTIPLY BY | Number of air changes per hour, four to ten. |
| MULTIPLY BY | 1/60 (hr/minutes) |
| DIVIDE BY | Capacity of air filtration unit fully loaded with all filters (pressure differential activates warning light for loaded filters) |

| | |
|---|---|
| DIVIDE BY | 80% expected efficiency |
| ADD | one additional unit as backup for machine failure or shutdown |
| EQUALS | minimum number of units required |

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3.9.2 Supplemental Makeup Air Inlets: As necessary to achieve air flow throughout the abatement work area, locate auxiliary makeup air inlets as far away as possible from the air filtration units, preferably near the ceiling and away from barriers that separate the containment barriers and enclosures from surrounding areas. Cover inlet with plastic sheeting flaps to reseal automatically if the pressure differential system should shut down for any reason. Provide rigid framing around the opening. Spray the flap and around opening with spray adhesive so that if flap closes, the meeting surfaces are both covered with adhesive. Use adhesive that forms contact bond when dry. If used during clearance monitoring, tape or seal HEPA filters over inlets.

3.9.3 Penetrations through masonry and/or fire walls, required for improving air circulation, shall be protected with a fire damper.

3.9.4 Accomplish the pressure differential by exhausting a sufficient volume of HEPA filtered air from the abatement work area. Efforts to achieve pressure isolation shall first address:

3.9.4.1 Establishing required air circulation

3.9.4.2 Verifying seals are complete as practical

3.9.4.3 Establishing increased pressure in adjacent areas, if available

3.9.4.4 Exhausting sufficient volume of HEPA filtered air with additional air filtration units.

3.9.4.5 Decreasing the size of abatement work area to affect a smaller volume required for filtration

3.10 Placement of Air Filtration System Units

3.10.1 Equipment shall be located so as to optimize air movement throughout the abatement work area by positioning air filtration units as far away as practical from the access opening or other supplemental make-up air inlets.

3.10.2 The auxiliary air-filtration unit shall be located on site and available and ready to run at any time.

3.10.3 Air movement shall be established in such a way that air borne fibers will be carried away from workers' breathing zones.

3.10.4 Dead air pockets shall be minimized by proper ducting of make-up air if necessary, and by optimum location of the negative air filtration units.

3.10.5 The Contractor shall use smoke tubes to determine if dead air spots are present, and shall take corrective action as outlined above when they are found. Report such actions to the COTR immediately.

3.10.6 The air filtration units shall be placed so that access for changing the filters is inside the containment barrier. The unit is to run continuously during filter changing. A supply of filters shall be kept on site outside of containment area. If a unit must be turned off for servicing, an auxiliary unit must be in place and turned on.

3.10.7 Vent to the outside of the building, whenever practical, as determined by the COTR. Units may be vented inside the building only if outside venting is impractical. Units venting inside a building must be vented through an expansion chamber or diffuser system (self-contained water baffle) to reduce exhaust air velocity. A secondary HEPA unit may also be used after the expansion chamber/diffuser. Terminal exhaust ductwork must be placed as far away as possible from occupied areas. Special provisions for air monitoring shall be implemented by the SI air monitoring firm.

3.10.8 Mount units to exhaust directly or through disposable ductwork. Use ductwork and fittings of same diameter or larger than discharge connection on fan unit. Use spiral wire-reinforced flex duct in lengths not greater than 15 meters. If direction of discharge from fan unit is not aligned with duct use sheet metal elbow to change direction. Use six feet of spiral wire reinforced flex duct after direction change.

3.10.9 All HEPA units shall be tested in-place before removal begins. Test will be the responsibility of the contractor.

3.11 Pressure Differential Isolation

3.11.1 The abatement work area and the decontamination enclosure system shall be maintained at a negative pressure relative to adjacent areas. The relative pressure differential when measured across any physical or critical barrier must continuously equal or exceed a static pressure of 0.5 mm of water. Measurement shall be by manometer or magnahelic gage.

3.11.2 Minimum 4 air changes per hour. Continuous HEPA filtered exhaust unit is to be in operation until job is completed.

3.11.3 Make-up air shall be obtained only through the decontamination enclosure facilities, or as provided in Section 3.9.2 of these specifications.

3.11.4 Where asbestos-containing material covers an opening or joint, provide negative air pressure sufficient to draw air from the adjoining space into the containment barrier when the opening or joint is exposed after asbestos removal. Seal newly exposed openings and joints immediately to prevent contamination of adjoining spaces.

3.11.5 Supply sufficient pre-filters to allow frequent changes.

3.11.6 During and after the pre-abatement test, run the air filtration units continuously to maintain a constant pressure differential and air circulation until decontamination, cleaning, and encapsulation of the abatement work area is complete.

3.11.7 The HEPA-filtered units shall be left on continuously until after final clearance air measurement of 0.01 f/cc or the pre-removal background level, whichever is lower is achieved, and the COTR authorizes the shut-down of the units. Where feasible, the units shall be left on until the enclosure is completely removed.

3.11.8 HEPA units must be set up to cause an alarm-bell or buzzer to sound should the HEPA filter become clogged or the exhaust unit fails in operation after working hours. The alarm must be loud enough to alert a SI Security Officer of the equipment failure. The guard will phone a previously designated contractor employee whose 24-hour number shall have been recorded at the beginning of the project. The notified contractor will immediately dispatch a repair crew to the job site. A spare HEPA unit shall always be available to immediately restore negative air pressure.

3.11.9 If the pressure differential between inside and outside the containment barrier drops to 0.4 mm of water, the Contractor will immediately inspect the containment for sources of pressure leaks and report actions taken to the SI IH and COTR. The system warning alarm shall sound if pressure drops below 0.03 mm of water, and work shall stop.

3.12 Pre-Abatement Inspection, Testing, and Approval

3.12.1 Pre-Abatement Testing Requirements: Contractor must demonstrate with continuous data log that abatement work area can hold negative pressure of 0.5 mm of water for a minimum of 2 hours, prior to commencement of actual asbestos removal, unless the system is exhausted through an isolated ventilation system. In this case, the test period shall be long enough to ensure that the lock-out ventilation controls are not over ridden and the HVAC system does not reactivate. As a minimum, the Contractor shall make all arrangements and demonstrate satisfactory equipment operation and set-up for compliance with these specifications.

3.12.1.1 Show proper condition of equipment seals including results of in-place HEPA-filter testing.

3.12.1.2 Show proper operation of safety and warning devices.

3.12.1.3 Show proper operation and calibration of instrumentation.

3.12.1.4 Show identification of equipment unit and fan capacity.

3.12.1.5 Use smoke tubes to demonstrate adequate air circulation, elimination of dead air pockets, and positive air motion through the decontamination enclosure system into the abatement work area.

3.12.1.6 Show the installation method for pre-filters and the HEPA primary filter in the air filtration unit. Show supply of filters available on site.

3.12.1.7 Demonstrate and record that a minimum 0.50 mm of water pressure differential has been achieved and can be maintained.

3.12.1.8 Demonstrate procedures for how workers will enter and exit the decontamination enclosure system.

3.12.1.9 Demonstrate procedures for handling emergencies and for the prevention of contamination of surrounding areas.

3.12.1.10 With COTR and Building Representative, identify disabled building ventilation systems and the positive means that will prevents accidental or premature restarting. Confirms means to have unit restarted at the conclusion of the abatement work. With COTR and Building Representative, verify that all equipment affected is secured at the main breaker.

3.12.1.11 Demonstrate how contaminated shower water is filtered and drained.

3.12.1.12 Use a pressure differential meter or manometer to demonstrate the required pressure differential at every barrier separating the abatement work area from the balance of the building, equipment, ductwork or outside.

3.12.1.13 Demonstrate that each air filtration unit is serviced by a dedicated minimum 115V-20A circuit with GFCI protection.

3.12.1.14 Demonstrate how asbestos will be removed and bagged for transport. Identify procedures for hauling through the building to the loading dock.

3.13 Maintenance of Containment Barrier and Enclosures

3.13.1 Ensure that the containment barrier, decontamination enclosure rooms, and other sealed doors, vents, etc., and plastic linings are effectively sealed and taped for the duration of the abatement work.

3.13.2 Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosure at the beginning of each work period.

3.13.3 Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes exposed to and contaminated with asbestos shall be decontaminated or disposed of in accordance with the applicable regulations and special requirements.

3.13.4 Clean debris and residue from inside of the decontamination enclosure system on a daily basis. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

3.13.5 Maintain floors in the clean room and airlocks as dry as possible to minimize slips and trips. Damp wipe all surfaces twice after each shift change with a disinfectant solution.

3.14 Removal of Asbestos-Containing Materials (ACM) - General

3.14.1 Prohibited Work Practices. The following methods shall not be used for work related to or disturbing asbestos, regardless of exposure level:

3.14.1.1 High-speed abrasive disc saws that are not equipped with point of cut ventilation or enclosures with HEPA-filtered exhaust air.

3.14.1.2 Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.

3.14.1.3 Dry sweeping, shoveling or other dry cleanup of dust and debris containing ACM and PACM.

3.14.1.4 Employee rotation as a means of reducing employee exposure to asbestos.

3.14.2 Methods of Compliance. The following engineering controls and work practices shall be used, at a minimum, for all asbestos tasks:

3.14.2.1 HEPA-filtered vacuum cleaners.

3.14.2.2 Wet methods.

3.14.1.3 Prompt cleanup and disposal.

3.14.3 The following work shall be done only after the decontamination facilities have been constructed, the area has been isolated and can be maintained under negative air pressure as specified in the previous section, pre-abatement background sampling has been conducted, and arrangements have been made for disposing waste at an acceptable site.

3.14.4 Start abatement work at a location farthest from the fan units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and negative air filtration units are operating again. Immediately notify COTR of occurrence. Any torn or unsealed plastic sheeting shall be immediately repaired. Floor sheeting shall be replaced if damaged.

3.14.5 Wet Removal: Prior to stripping and/or tooling, the asbestos material shall be sprayed using an airless pump and wetting agents (amended water or removal encapsulant) to enhance penetration and reduce fiber dispersal into the air.

3.14.5.1 A fine spray of amended water shall be applied to reduce fiber release preceding the removal of the asbestos material. The material shall be sufficiently saturated to prevent emission of excessive airborne fibers.

3.14.5.2 Spray material repeatedly during the abatement work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's instructions. Perforate outer covering

of any insulation which has been painted and/or jacketed in order to allow penetration of water, amended water or removal encapsulant. Where necessary, carefully strip away while simultaneously wetting the insulation to minimize dispersal of asbestos fibers into the air.

3.14.5.3 Remove materials in manageable quantities and control the descent to the staging or floor below. If over 6 meters, use drop chutes to contain material during descent.

3.14.6 Gross removal of dust and debris from contaminated material, material containers, and equipment shall be accomplished in the containment barrier before removal to the equipment decontamination room for wet sponging before leaving the abatement work site.

3.15 Requirements for Specific ACM and Methods - Fireproofing/Soundproofing on Scratch Coat or Wire Lath

3.15.1 Spray asbestos-containing fireproofing or architectural acoustic finish with a fine mist of amended water. Allow time for amended water to saturate materials to substrate.

3.15.2 Spray the asbestos-containing material repeatedly during the abatement work to maintain wet condition but do not use excessive amounts of water that results in ponding or entry into other areas of the building.

3.15.3 Do not over-saturate to cause excess dripping. Scrape materials from substrate. Remove residue remaining on scratch coat after scraping using stiff nylon bristled hand brush. Use high pressure washer only with written authorization from the COTR.

3.15.4 Remove the saturated asbestos-containing material in small sections. Do not allow material to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm minimum thickness.

3.15.5 Carefully lower removed and bagged asbestos-containing material to the floor without dropping or throwing, or transport to the floor via dust-tight chutes or containers, in accordance with the procedures set forth in 40 CFR 61.147.

3.15.6 Cut wire lath into 50 mm x 150 mm sections and cut hanger wires. Roll or fold up complete with asbestos-containing material and hand place in container. Do not drop on floor. After removal of lath and asbestos-containing material remove any overspray on decking and structure above using stiff nylon bristled brush. Use one of the following methods for containing waste.

(a) Wrap material in felt and place in fiberboard drum lined with two disposal bags. Use caution to insure that all edges of wire lath that could cut plastic are covered with felt.

(b) Place material directly in a steel drum. Use waste containers which are impervious to puncture, leakage, tearing, or ripping from wire lathe.

3.16 Requirements for Specific ACM and Methods - Vinyl Asbestos Tile (VAT) and Mastic

3.16.1 Full containment barriers, with pressure differential ventilation units, shall be used. Dispose as ACM.

3.16.2 Removal of asbestos-containing floor tile and mastic shall be performed in accordance with the procedure outlined below.

(a) Prepare abatement work area as previously specified for the abatement work.

(b) Spray areas of asbestos-containing material with amended water using spray equipment capable of providing a "mist" application to reduce the release of fibers. Wet the material sufficiently to maintain dust control. Spray the asbestos-containing material repeatedly during work process to maintain wet condition but do not use excessive amounts of water.

(c) Do not break the individual tiles to remove them. Gently pry up a corner of the tile with a broad blade putty knife and slip the knife between the tile and the substrate while cutting the mastic bond.

(d) If the mastic is especially tenacious, use a heat gun to loosen the bond between the tile and the substrate and to make the tile more pliable.

(e) Non-toxic organic solvents may be used to remove mastic.

(f) Continuously use a HEPA vacuum around the individual tiles that are being removed. Do not allow any dust or debris to accumulate on the floor or other surfaces of the abatement work area.

(g) Do not allow dislodged tiles to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm minimum thickness. Place sealed asbestos debris in second 0.15 mm plastic bag, appropriately labeled, and remove from abatement work area.

(h) After removal of asbestos-containing material, wet-clean all surfaces in the abatement work area to remove residual accumulated material. Continue wet-cleaning until surfaces are visibly free of material.

*****OR USE THE FOLLOWING STANDARD FOR FLOOR TILE*****

3.16.3 Removal of asbestos-containing floor tile and mastic, baseboard and mastic shall be performed in accordance with the procedure outlined below.

(a) All critical barriers, including ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, speakers, and other openings into the work area shall be individually sealed with 0.15 mm plastic sheeting and tape. Elevator doors, fire extinguisher cabinets and all other penetration in the floor, walls, or ceiling shall be sealed in the abatement work area.

(b) Prepare a worker and/or equipment decontamination and waste load-out enclosure as previously specified.

(c) Cover all walls in the abatement work area with two layers of 0.15 mm polyethylene sheeting and seal-with duct tape or spray-glue. The sheeting shall be applied to a height of 1.5 m above the floor. The seams shall be staggered and separated by at least 150 mm.

(d) Wet asbestos-containing materials with amended water to minimize fiber release during removal. Use amended water sparingly to eliminate standing water and to prevent water from traveling on the floor.

(e) Remove tiles individually and minimize breakage. Heat guns may be used to heat tile and soften the adhesive. Immediately place tiles in disposal bags.

(f) Non-toxic organic solvents may be used to remove mastic.

(g) Wet clean all surfaces to remove residual material. Continue cleaning until abatement work area is free of visible material.

(h) Proceed to clearance testing following approval from COTR that abatement work area is visually free of asbestos-containing materials.

3.17 Requirements for Specific ACM and Methods - Roofing

Use the wet removal method for ACM to eliminate visible emissions in accordance with NESHAP regulations. Controls shall be used to prevent re-entrainment into building HVAC system. Dispose as ACM.

(a) Spray large areas of asbestos-containing roofing material thoroughly with amended water using spray equipment recommended by surfactant manufacturer capable of providing a "mist" application to reduce the release of fibers. Spray the asbestos material repeatedly during the abatement work process to maintain wet conditions, but do not use excessive amounts of water that result in ponding or entry into building.

(b) Remove the asbestos-containing material in small sections. Do not allow material to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm

minimum thickness. Place sealed asbestos debris in second 0.15 mm plastic bag, appropriately labeled, and remove from abatement work area.

(c) Carefully lower removed and bagged asbestos-containing material to the ground without dropping or throwing, or transport to the ground via dust-tight chutes or containers, in accordance with the procedures set forth in EPA 40 CFR 61.147 Code of Federal Regulations.

(d) Clean area of all debris and notify COTR for visual inspection.

3.18 Requirements for Specific ACM and Methods – Exterior and Interior Window Caulk

(a) Exterior: Work will be done from the exterior of the building. If lifts are needed, lift platforms should be covered with canvass drop cloths.
(b) Interior: If lifts are needed, lift platforms should be covered with canvass drop cloths.

(c) Cover the ground or floor area below the abatement work area with 2 layers of 0.15 mm polyethylene sheeting.

(d) Wet the asbestos-containing materials with amended water to minimize fiber and dust release during removal. Use amended water sparingly to eliminate standing water and to prevent water from traveling on the ground sheeting.

(e) Remove the window caulk in small sections using manual methods, not power tools. Keep the material wet with amended water and do not allow the material to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm minimum thickness, and completely seal the bag. Place sealed debris bag into a second 0.15 mm plastic bag, and completely seal the bag.

(f) Carefully lower the sealed material debris bag to the polyethylene sheeting on the ground without dropping or throwing.

(g) After removal of the sealed material debris bags from the work area, HEPA vaccum and wet-clean all surfaces and equipment in the abatement work area to remove residual accumulated material. Continue cleaning until the surfaces are visibly free of material.

(h) Place dropcloths and other abatement related disposable materials into sealable plastic bags of 0.15 mm minimum thickness, and completely seal the bag. Place sealed debris bag into a second 0.15 mm plastic bag, and completely seal the bag. Remove from the work site and dispose as asbestos waste per these specifications.

(i) Notify COTR for visual inspection.

3.19 Requirements for Specific ACM and Methods - Gypsum Wallboard Joint Compound

(a) All critical barriers, including ventilation openings supply and exhaust), lighting fixtures, clocks, doorways, windows, speaker, and other openings into the abatement

work area shall be individually sealed with 0.15 mm plastic sheeting and tape. Elevator doors, fire extinguisher cabinets and all other penetrations in the floor wall, or ceiling shall be sealed in the abatement work area.

(b) Prepare worker/equipment decontamination and waste load-out enclosure as previously specified.

(c) Isolate the abatement work area by constructing a temporary double layered 0.15 mm polyethylene/stud wall.

(d) Cover the floor of the abatement work area with 2 layers of 0.15 mm polyethylene sheeting turned up at walls at least 600 mm.

(e) Wet the asbestos-containing materials with amended water to minimize fiber and dust release during removal. Use amended water sparingly to eliminate standing water and to prevent water from traveling on the floor.

(f) Remove the gypsum wallboard and joint compound in small sections. Do not allow the material to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm minimum thickness. Place sealed debris in a second 0.15 mm plastic bag, and remove from the work area.

(g) Carefully lower the material to the floor without dropping or throwing.

(h) After removal of the material, HEPA vacuum and wet-clean all surfaces in the abatement work area to remove residual accumulated material. Continue cleaning until the surfaces are visibly free of material.

3.20 Requirements for Specific ACM and Methods - Duct Insulation Mastic

(a) All critical barriers, including ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, speaker, and other openings into the abatement work area shall be individually sealed with 0.15 mm plastic sheeting and tape. Elevator doors, fire extinguisher cabinets and all other penetrations in the floor wall, or ceiling shall be sealed in the abatement work area.

(b) Prepare worker/equipment decontamination and waste load-out enclosure as previously specified.

(c) Isolate the abatement work area by constructing a temporary double layered 0.15 mm polyethylene/stud wall.

(d) Cover the floor of the abatement work area with 2 layers of 0.15 mm polyethylene sheeting turned up at walls at least 600 mm.

(e) Wet the asbestos-containing materials with amended water to minimize fiber and dust release during removal. Use amended water sparingly to eliminate standing water and to prevent water from traveling on the floor.

(f) Removed the duct wrap and insulation and the duct mastic in small sections. Do not allow the material to dry out. As it is removed, place the material in sealable plastic bags of 0.15 mm minimum thickness. Place sealed debris in a second 0.15 mm plastic bag, and remove from the work area.

(g) Carefully lower the material to the floor without dropping or throwing.

(h) After removal of the material, HEPA vacuum and wet-clean all surfaces in the abatement work area to remove residual accumulated material. Continue cleaning until the surfaces are visibly free of material.

3.21 Requirements for Specific ACM and Methods - Contaminated Soils

Saturate dry soil with amended water or a removal encapsulant for a depth of 75 mm. Remove the top 25mm of soil. Start removal at the point of work farthest from the entrance to the soil floor area and proceed toward the entrance. Do not permit traffic into the fresh soil surface. After the entire first layer of soil is removed, completely change coveralls and at the entrance to the soil removal area don clean boot covers. Use amended water to keep the surface of the soil continuously wet throughout removal and decontamination. Remove the second 25 mm of soil in the same manner as the first. Remove the third 25 mm of soil in the same manner as the previous 50 mm.

3.22 Requirements for Specific ACM and Methods - Contaminated Carpeting

Deface carpeting with a light coat of contrasting spray paint before the abatement work. Coat lightly enough that wetting will not be retarded. Prior to cutting, thoroughly wet the asbestos-contaminated carpeting to be removed to reduce fiber dispersal into the air. Accomplish the wetting by using a fine spray (mist) of amended water or encapsulant. Saturate material completely without causing excess dripping. Allow time for water or encapsulant to penetrate material thoroughly. Roll up carpeting and dispose of as ACM.

3.23 Requirements for Specific ACM and Methods -Removal of Asbestos-Containing Transite Panels.

(a) Develop a daily removal plan indicating the square footage of panel material that will be removed during the abatement working day.

(b) Establish a regulated area by posting necessary barricades and warning signs to isolate the abatement work area.

(c) Prior to commencing work, establish a regulated area by covering the surface with plastic sheeting a minimum of 4.5 m from the panels being removed.

(d) At all times, keep the panels misted with water.

(e) Remove the panels individually and minimize breakage.

(f) Gently place the panels in bags or wrap the panels in two layers of 0.15 mm plastic sheeting.

(g) Collect and dispose of any debris that falls on the plastic sheeting as asbestos-containing material.

(h) Wet-clean all surfaces of the structure which secured the panels to remove residual ACM.

(i) Encapsulate the structure surfaces wet-cleaned in (h) above.

(j) Wet wipe the plastic sheeting prior to disestablishing the regulated area and dispose of the sheeting as contaminated waste.

3.24 Requirements for Specific ACM and Methods - Glove-Bag Removal Method

(a) Preparation: Before any work commences, a layer of polyethylene sheeting shall be placed on the floor, as a drop cloth, beneath the glove bag abatement work area. A temporary enclosure shall be constructed around the general removal area to separate it from occupied areas of the building and to serve as a physical barrier should accidental fiber release occur. Appropriate warning signs shall be posted outside this barrier in areas of high visibility. A HEPA filtered air filtration unit shall be on-site to be used to contain an emergency fiber release.

(b) Remove asbestos-containing material inside a glove bag according to manufacturer's guidelines. Thoroughly wet material to be removed with amended water or removal encapsulant and allow to soak through to substrate.

(c) Each glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.

(d) Glovebags shall be smoke-tested for leaks and any leaks sealed prior to use.

(e) Glovebags may be used only once and may not be moved.

(f) Glovebags shall not be used on surfaces whose temperature exceeds 65° C.

(g) Before beginning the operation, loose and friable material adjacent to the glovebag/box operation shall be wrapped and sealed in two layers of 0.15 mm plastic sheeting or otherwise rendered intact.

(h) Use two people for glove-bag operation. One shall remove insulation, the other shall operate water sprayer and repair any leaks in bag.

(i) Using a small HEPA vacuum, create a negative pressure inside the glove-bag before starting any asbestos removal and maintain throughout the use of the bag.

(j) Gently remove insulation from pipe and place it in bottom of bag.

(k) After removal of insulation, brush and wet-clean pipe to remove residual material. Continue wet cleaning until surfaces are free of visible material. Clean area of all debris and notify COTR for visual inspection.

(l) Spray all tools with water inside bag and place back in pouch.

(m) Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity.

(n) Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected.

(o) Wet and seal visible ends of remaining pipe insulation.

(p) Spray the inside of the bag with amended water and remove the watering wand, taping the water sleeve closed.

(q) Tape the make-up air opening closed.

(r) Using the HEPA-vacuum, collapse bag and seal off lower portion containing asbestos-containing material and gloves of the bag.

(s) Remove bag from pipe and tools from pouch.

(t) Glove-bag shall be considered the first container for material. Dispose of properly.

(u) Encapsulate abated section of pipe and any adjacent pipe as required.

(v) Accidental Fiber Release During Glove Bag Removal: If the glove bag is accidentally cut open, duct tape from inside the bag shall be used to seal the opening. If the glove bag should rupture during abatement, the drop cloth sheeting beneath the bag shall be used to contain the bag by bringing the edges together, twisting, taping and folding over in gooseneck fashion and taping again. The area around and under this cloth shall be cleaned with a HEPA vacuum.

3.25 Requirements for Specific ACM Methods: Negative Pressure Glove Box Systems

Negative pressure glove box systems shall be used to remove ACM or PACM from pipe runs with the following specifications and work practices:

(a) Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal.

(b) A negative pressure generator shall be used to create negative pressure in system.

(c) An air filtration unit shall be attached to the box.

(d) The box shall be fitted with gloved apertures.

(e) An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water.

(f) A back-up generator shall be present on site.

(g) Waste bags shall consist of 0.15 mm thick plastic, double-bagged before they are filled, or plastic thicker than 0.15.mm.

Work Practices:

(a) At least two persons shall perform the removal.

(b) The box shall be smoke tested prior to each use.

(c) Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 0.15 mm plastic prior to the job, or otherwise made intact prior to the job.

(d) A HEPA filtration system shall be used to maintain pressure barrier in box.

3.26 Requirement for Specific ACM Methods: Water Spray Process System

A water spray process system may be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. The system shall meet the following specifications and shall be performed by employees using the following work practices.

Specifications:

(a) Piping shall be surrounded on three sides by rigid framing.

(b) A 360 degree water spray, delivered through nozzles supplied by a high pressure separate waterline, shall be formed around the piping.

(c) The spray shall collide to form a fine aerosol which provides a liquid barrier between workers and the ACM and PACM.

Work Practices:

(a) The system shall be run for at least ten minutes before removal begins.

(b) All removal shall take place within the water barrier.

(c) The system shall be operated by at least three persons, one of whom shall not perform removal, but shall check equipment, and ensure proper operation of the system.

(d) After removal, the ACM and PACM shall be bagged while still inside the water barrier.

3.27 Requirement for Specific ACM Methods: Mini Enclosure

A small walk-in enclosure which accommodates no more than two persons may be used if the disturbance or removal can be completely contained by the enclosure with the following specification and work practices.

Specifications:

(a) The fabricated or job-made enclosure shall be constructed of 0.15 mm plastic or equivalent.

(b) The enclosure shall be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit.

Work Practices:

(a) Before use, the mini-enclosure shall be inspected for leaks and smoke tested to detect breaches, and breaches sealed.

(b) Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed.

(c) During use air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

3.28 Requirements for Specific ACM and Methods - Dry-Removal of Electrical Equipment

Do not begin dry removal work until authorized in writing by the EPA NESHAP coordinator and the COTR. A State regulatory authority waiver may be required and if so shall be obtained by the contractor. Use where wetting may create a hazard for workers or damage equipment or finishes, such as electrical closets, transformer vaults, high pressure steam lines, etc. Work on active electrical equipment is to be performed by qualified trades person with prior experience in the installation or repair of the involved equipment. Restrict access to electrical equipment.

3.29 Post Removal: Cleaning and Clearance

3.29.1 Provide general clean-up of abatement work area concurrent with the removal of all asbestos-containing materials. Do not permit accumulation of debris on workspace floor.

3.29.2 Do not perform dry dusting or dry sweeping.

3.29.3 Maintain the minimum required pressure differential of 0.50 mm of water inside the abatement work area enclosure at all times, and until the COTR authorizes the Contractor to remove the enclosure.

3.29.4 During decontamination of automatic sprinkler and smoke detectors, the Smithsonian security office must be contacted for possible nuisance alarms. Care must be taken in the wiping down of the sprinkler heads and smoke detectors so as not to damage them. Smoke detectors must be vacuumed clean as directed by the Fire Alarm Shop, Office of Physical Plant.

3.29.5 Initial Phase Cleanup Sequence

(a) Remove all visible accumulations of asbestos-containing material and debris.

(b) Wet clean and HEPA-vacuum all surfaces in the abatement work area.

(c) Clean all equipment (excluding that which will be needed for further cleaning phases) used in the abatement work area and remove from abatement work area via the Equipment Decontamination Enclosure.

(d) Remove the top layer (secondary barrier) of plastic sheeting, change all air filtration system pre-filters, and proceed with the second cleaning.

(e) Replace all HEPA-filters and pre-filters in air filtration air machines with clean filters. Clean all air filtration machines.

(f) Notify SI IH for observation of cleaning to determine completeness. Plastic sheeting surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from abatement operations or other activities subordinate to these operations.

(g) Perform no activity in abatement work area for at least 12 hours in order to allow settlement of airborne fibers. No reduction in this settling period will be allowed.

3.29.6 Secondary Phase Cleanup Sequence

(a) Wet clean and HEPA-vacuum all surfaces in abatement work area at least one more time.

(b) Notify SI IH for observation to determine completeness of cleaning.

(c) SI IH will perform a visual observation of the abatement work area in general accordance with ASTM 1368, *Standard Practice for Visual Inspection of Asbestos Abatement Projects.*

(d) If visual clearance is not attained, then subsequent re-cleaning will be required. This sequence will continue until visual clearance is attained.

(e) When visual clearance has been obtained, the plastic barriers down to the critical barriers may be removed.

3.29.7 Final Air Clearance Testing.

(a) SI IH will test for the final air clearance levels, in accordance with 3.5.7 of this specification, when areas have passed the visual clearance phase. Final air testing shall be performed using aggressive air sampling techniques.

(b) Re-clean and continue to clean at Contractor's expense, areas which do not comply with the specified final clearance level.

3.29.8 Consider abatement work areas and all other decontaminated and cleaned areas clean when:

(a) All phases of clean up have been completed and level of cleanliness is approved by COTR.

(b) All asbestos final clearance testing results will be as specified in 3.5.7 of this specification.

3.29.9. After area passes final air clearance dismantle Decontamination Enclosure Systems and thoroughly HEPA-vacuum and wet clean immediate areas.

3.29.10 Dispose of debris from removal operation, used cleaning materials, unsalvageable materials used for sturdy barriers, and any other remaining materials. Consider the materials to be contaminated, and dispose of accordingly.

3.29.11 The "COTR's Certification of Visual Inspection and Final Air Sampling for Asbestos Abatement" form (see page 45) or equivalent shall be completed, signed by the Contractor, SI IH, COTR and included with the COTR project records. The COTR shall provide written results of all visual inspections and final clearance testing to the facility safety coordinator.

3.30 Post Clearance: Application of Lockdown Encapsulant To Base Material

3.30.1 Pre-Lockdown Encapsulant Mock-up Test: Prior to beginning lockdown encapsulant work, provide a sample area for approval by the COTR. Notify the COTR a minimum of 72 hours in advance to schedule the test. Lockdown encapsulant shall be applied using methods set forth in ASTM Proposed Specification P-189 "Specification for Encapsulants for Friable Asbestos Containing Building Materials". The test must be witnessed by the COTR or as otherwise designated by the COTR. The approved procedures and materials shall serve as a standard for the balance of the lockdown encapsulant work.

3.30.2 Apply encapsulant only when environmental conditions in the abatement work area are as required by the manufacturer's instructions and the COTR. Prior to applying any encapsulant, ensure that its application will not cause the base material to fail and allow the encapsulated material to fall of its own weight or separate from the substrate.

3.30.3 Apply encapsulant with an airless spray gun with air pressure and nozzle orifice or as otherwise recommended by the encapsulant manufacturer.

3.30.4 Encapsulant Application to Plaster Scratch Coat: Apply two coats of encapsulant to the scratch coat plaster after all ACM has been removed. Apply in strict accordance with the manufacturer's printed instructions. Any deviations from such printed instructions must be approved by the COTR in writing prior to commencing work.

3.30.4.1 Apply the first coat of encapsulant while the plaster scratch coat is still damp from the asbestos removal procedures. If the surface has been permitted to dry, vacuum surface with a HEPA vacuum prior to applying the encapsulant.

3.30.4.2 Apply second coat over first coat in strict conformance with manufacturer's instructions.

3.30.4.3 Color the encapsulant with contrasting colors in alternate coats so that visual confirmation of complete and uniform coverage of each coat is possible. Adhere to manufacturer's instructions for coloring. At the completion of work, the encapsulated surface must be a uniform third color produced by the mixture.

3.30.4.4 Sealing Exposed ACM edges: Prior to encapsulation, permit the exposed edges to dry completely to permit penetration of the encapsulant. Seal edges of ACM with two coats of encapsulant. Label the joint for the portions which are asbestos and non-asbestos.

3.31 Containment Barrier Removal

3.31.1 Following area final clearance and lockdown encapsulation, leave pressure differential units running as long as feasible during containment barrier removal.

3.31.2 Equipment, machinery, scaffolding, tools, etc., within the abatement work area shall not be removed without first being thoroughly cleaned with amended water or in the case of delicate items susceptible to rust, an acceptable substitute.

3.31.3 After the abatement work area is found to be in compliance, the remaining sealed areas and exits are unsealed and the plastic sheeting, tape, and any other trash and debris are disposed of in sealable plastic bags and treated as asbestos waste. The SI IH will conduct a final walkthrough and document results for the COTR.

3.31.4 Before removal from the abatement work area, remove and properly dispose of pre-filter, decontaminate exterior of machine and seal intake to the machine with 0.15 mm polyethylene to prevent environmental contamination from the filters.

3.31.5 The contractor shall patch and paint and repair all damaged areas and restore them to their original, pre-contract condition.

3.32 Waste Disposal

3.32.1 The COTR reserves the right to restrict when containerized ACM will be moved outside of the abatement work area and pass through the building. Times chosen to move containerized ACM in the building shall be during non-public hours and when limited staff is in attendance or under other appropriate conditions as determined by the COTR.

3.32.2 Asbestos-contaminated waste that has been containerized shall be transported out of the abatement work area either through the personnel/equipment decontamination enclosure or through a separate waste load-out enclosure. Waste load-out procedures shall be performed by two teams. The team inside the abatement work area shall clean the outside of properly labeled asbestos waste containers using HEPA vacuums and/or wet wiping, and place them into the waste load-out enclosure. No personnel from the inside team shall exit any further from the abatement work area. The team inside the–waste load-out area (wearing protective clothing and respirators) shall retrieve the waste containers from the load-out enclosure, double-bag the waste and pass them to an uncontaminated area outside the enclosure. No unprotected personnel from the outside team shall enter this enclosure. As applicable, routes to the elevator, the elevator itself, and route to covered carts shall be lined with polyethylene sheeting.

3.32.3 For Amosite Fibers: If the material contains amosite fibers, evacuate air from disposal bags with a HEPA vacuum before sealing.

3.32.4 Water not disposed of with the asbestos-containing materials shall be filtered to remove asbestos fibers and debris before disposal into sanitary sewer.

3.32.5 Do not store containerized materials outside of the abatement work area. Take containers from the abatement work area directly to a sealed truck or dumpster.

3.32.6 Bulk and containerized asbestos waste shall be packed, labeled, and transported according to DOT Regulations 49 CFR 173.216 and 49 CFR 173.240. All removed ACM, plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the abatement work area shall be packed into double bagged sealable 0.15 mm plastic bags or double containerized with one bag and one drum. The bags shall be marked with the labels required by OSHA 29 CFR 1910.1001 and/or 1910.1200, and 1926.1101.

3.32.6.1 If the asbestos waste can reasonably be expected to damage double bagged 0.15 mm plastic bags, the following barrel decontamination procedures shall be followed.

(a) Line barrels with a 0.15 mm plastic liner to prevent leaking of contaminated material from the containers.

(b) As bags are moved out through the decontamination system, wet wipe bags to remove all contamination from them before they are moved into an uncontaminated space.

(c) Place bagged waste into appropriately labeled barrels for transport to landfill.

(d) After bagged contaminated waste is placed in barrels, seal lids on barrels.

3.32.6.2 Minimum labeling required:

First Label:

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DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
==========

Second Label:

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PROVIDE IN ACCORDANCE WITH U.S. DEPARTMENT OF TRANSPORTATION REGULATION ON HAZARDOUS WASTE MARKING. 49 CFR PART 172, SUBPART D: "RQ ASBESTOS NA 2212". PROVIDE A "CLASS 9" LABEL, PER 49 CFR PART 172, SUBPART E.
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3.32.6.3 Notify COTR prior to removing each trailer or other waste transport from the jobsite.

3.32.6.4 Notify COTR not less than 48 hours prior to the proposed time of delivery of contaminated waste to the landfill. Owner may elect to observe this operation.

3.32.6.5 The Contractor shall transport the approved sealed drums to an approved waste disposal site.

3.32.6.6 Allow only sealed plastic bags or impermeable containers to be deposited in landfill. Leave damaged, broken, or leaking plastic bags in the impermeable container and deposit entire barrel in landfill.

3.32.6.7 Ensure that there are no visible emissions to the outside air from site where materials and waste are deposited.

3.32.7 Contractor shall submit a disposal certificate from the EPA approved landfill confirming final disposal in accordance with EPA standards and regulations before final payment. Retain receipts from landfill or processor for materials disposed off. At completion of hauling and disposal of each load, submit copy of waste manifest, chain of custody form, and landfill receipt to the COTR.

3.32.8 The COTR shall provide copies of all hazardous waste disposal manifests to the facility hazardous waste coordinator.

3.33 Job Close-Out

3.33.1 The Contractor shall submit to the COTR, Post Abatement Drawings to indicate location of the asbestos material removed. If required, the Contractor may edit the Project Drawing to show the actual or additional abatement work completed.

3.33.2 The Contractor shall remove from the site all other debris and rubbish resulting from removal and disposal operations and the temporary construction of containment barriers and enclosures.

3.33.3 The Contractor shall use positive means to demonstrate to the COTR that any building utilities that were temporarily disabled are now in full service. Notify the COTR when disabled building ventilation, systems, electrical power, smoke detectors, building access/egress passages may safely be re-started or used.

**** END OF SECTION 028200 ****