

FAA ATO



April 31, 2010

Seismic Upgrade
Groton-New London Airport
ATCT & Base Building
Technical Specification

Volume I
Divisions 00 through 23

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SECTION 01 10 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 Scope of work:

- A. These specifications cover the requirements of the Federal Aviation Administration (FAA) for work associated with the Seismic Upgrade serving the Airport Traffic Control Tower(ATCT) facility at Groton-New London Airport in Groton, CT. The work includes but is not limited to providing and installing all labor, materials, supplies, and equipment necessary as described in this specification and drawings. The work involves metals, finishes, hazardous materials, mechanical, and electrical.
- B. The contractor shall provide and secure all labor, material, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.
- C. The work under this contract is to seismically upgrade the building. The work involves adding structural steel members and reinforcing existing cold formed structural members. A combination of welding and bolting will be used. Typical elements include the installation of columns, adding cover plates to cold formed girts, adding diagonal braces, adding cross braces above and below cab windows.
- D. Other work in support of the structural upgrades includes Asbestos abatement, relocation of electrical equipment, relocation of mechanical equipment, removal and restoration of architectural finishes and fire stopping.
- E. The non structural seismic upgrades include bracing tall narrow components, independent support of light fixtures and ceiling bracing
- F. Provide temporary sanitary facilities to be used by workers on site. These shall remain on site for the duration of the contract. If the Contractor requires storage area, then the Contractor will need to provide his own portable shelter to be located on site. Final location will be coordinated with the COTR and approved by the COTR.
- G. Provide a suitable dumpster for construction waste. The Contractor shall have container emptied with suitable frequency so that trash does not overflow and blow around site and adjacent property. A cover is required and shall be provided on the dumpster in order for the refuse not to blow out. The Contractor shall be responsible for the timely, legal disposal of all construction waste.

1.1 DIVISION OF SPECIFICATIONS:

- A. These specifications are divided for convenience into sections as set forth in the table of contents. The items of work listed under each section are given for convenience and shall not be construed as a comprehensive list of items necessary to complete the work of any section.

1.2 STANDARD REFERENCES:

- A. Military, Federal, and Society Institutes and Associations, standards, specifications and codes, of the issues in effect on the date of the Request for Offer, form a part of this specification and are applicable to the extent specified in each specification section.

1.3 LIST OF DRAWINGS:

- A. The following list of drawings form a part of the construction requirements for this contract:

<u>DRAWING NUMBER</u>	<u>DRAWING TITLE</u>
GON-806933-G001	COVER SHEET
GON-806933-G002	DRAWING INDEX, GENERAL NOTES
GON-806933-G003	GENERAL, ARCHITECTURAL/STRUCTURAL LEGENDS
GON-806933-G004	GUIDE PLANS- GROUND LEVEL, SECOND LEVEL THIRD LEVEL
GON-806933-S001	GENERAL NOTES AND DETAILS
GON-806933-S002	TOWER SHAFT FRAMING PLANS
GON-806933-S003	CAB FRAMING PLANS
GON-806933-S004	TOWER SHAFT ELEVATIONS
GON-806933-S005	CAB ELEVATIONS AND DETAILS
GON-806933-S006	TOWER CONNECTIONS AND DETAILS
GON-806933-S007	CAB CONNECTIONS AND DETAILS

1.4 REQUIRED PERMITS:

- A. This building is owned by the U.S. Government and therefore, a building permit is not required. All work shall be in compliance with national, state and local building codes in effect on the date of this solicitation or as specified in each section of this specification.

PART 2 - PRODUCTS – NOT USED.

PART 3 - EXECUTION – NOT USED.

END OF SECTION 01 10 00

SECTION 01 14 00 - WORK RESTRICTIONS AND ACCESS

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section includes the restrictions that affect construction operations, the use of premises, and acceptance of existing conditions.

1.2 SITE INSPECTION:

- A. The Contractor shall carefully examine the premises to determine the extent of work and the conditions under which it must be done.

1.3 CONSTRUCTION LIMITS AND ACCESS:

- A. The Contractor shall confine operations, activities, storage of materials, and employee parking within the designated areas. Access to the construction site shall be kept unobstructed and as indicated on the drawings.
- B. Personnel List: Contractor's personnel will be subject to security investigation by the FAA. Upon request from the COTR, the Contractor shall promptly complete all security forms provided for this purpose.

1.4 USE OF PREMISES:

- A. The Contractor shall have limited use of the premises within the construction limits for the execution of work, subject to work hour restrictions as detailed below. The Contractor shall assume full responsibility for the protection and safekeeping of products stored on the site. The Contractor and his subcontractors shall maintain the job site in a neat and orderly condition. This includes the daily removal of rubbish, waste, tools, equipment, and materials not required for the work in progress. Do not disturb portions of the site beyond the areas in which the work is indicated. Repair damage caused by construction operations. Take all precautions necessary to protect the building during the construction period and delivery.
- B. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Government, the Government's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Hours of Operation: The ATCT hours of operation are 5:00AM – 10:00 PM. The Contractor shall coordinate all construction activities with COTR so as to eliminate impacts that would adversely impact the functions of the Air Traffic Controllers. **To preclude adversely effecting air traffic operations, it is anticipated that some construction activities will have to be accomplished at night, or on the weekend, or both.** Night work shall be conducted from 10:30 PM – 4:30A M for specific tasks as noted on the drawings and as directed by the FAA COTR.
- D. Should increased traffic activity or adverse weather conditions require discontinuance of work that would interfere with air traffic, the Contractor will be required to stop such work promptly and remove any equipment or materials which may constitute interference.

PART 2 - PRODUCTS – (Not used).

PART 3 - EXECUTION – (Not used).

END OF SECTION 01 14 00

SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section describes the requirements for submittal of shop drawings, product data, samples, warranties, certificates, test reports, operations/maintenance instructions, parts lists, as-built drawings and utility survey as required by the Contract Documents. The submittals required by this contract are further described under each individual section of this specification. This section also covers the requirements for the submission of requests for substitutes in materials and/or construction methods.

1.2 DEFINITION:

- A. The term "submittal" refers to shop drawings, product data, samples, certificates, test reports, installation procedures, operation and maintenance instructions and additional data presented by the Contractor for review and approval by the Government

1.3 GENERAL REQUIREMENTS:

- A. The following requirements will apply to all required submittals unless otherwise noted:
 - 1. Where submittals show more than one item, the Contractor shall indicate by highlighting, bolding, circling or by arrows, the specific item or items being submitted for review and approval.
 - 2. Schedule: Within ten (10) days after award of contract, the Contractor shall develop for review and approval by the FAA, a list and schedule of submission for all submittals required by the various sections of this specification. Once approved, the Contractor shall maintain the status of the submittal list to track when the submittals were submitted, when returned and current status. This list is not to be considered final, the FAA can request additional submittals on materials used, components or the design. The Contractor shall also add these items to the submittal list and track their status.
 - 3. Number of copies: Submittals shall be provided in electronic format (pdf). One (1) copy of each submittal (or the number of copies required by individual section for color charts) shall be submitted to the COTR. One (1) copy will be returned to the Contractor.
 - 4. Time for approval: All submittals must be approved prior to the incorporation of the materials, equipment, or technique they represent, into the work. Time necessary for Government approval or disapproval of submittals shall be 14 calendar days after receipt of the item. After a submittal has been approved, no substitutions will be permitted without written approval by the COTR.
 - 5. Transmittal form: When making a submittal, the Contractor shall use the form at the end of this section or the company's standard transmittal form. Submit the form in duplicate, with original signatures on both. One copy will be returned to the Contractor. Upon request by the contractor the form at the end of this section will be provided in electronic format (Excel).

6. Sequentially number transmittal forms and file names. Re-submittals shall have original number with a suffix. Acceptable form of number is SS SS SS-N NN-T DES where:
 - a. SS SS SS indicates 6 digit specification section number.
 - b. N NN indicates paragraph number for different submittals for that specification section.
 - c. T indicates the number of times that submittal has been made.
 - d. DES indicates the description of the item.
7. Certification: The Contractor shall check each submittal prior to submission to the COTR for conformance to the Contract Documents. The Contractor shall certify that all contractual requirements have been met. This certification shall be written, stamped or printed on each submittal prior to submitting to COTR and shall be as follows:

I certify that I have checked these documents and that, to the best of my knowledge, they are in complete compliance with the Contract Documents.

Company Name _____
Date _____ By _____

8. Incomplete submittal: Should the Contractor omit items from his submittal he is not relieved from furnishing the same, even though submittal is approved by the COTR.
9. Approved as Submitted: If "Approved as Submitted" is marked by the COTR, the submittal is satisfactory. After submittal has been approved, no substitution will be permitted without written approval by the COTR.
10. Approved as Noted: If "Approved as Noted" is marked by the COTR, the submittal is satisfactory contingent upon Contractor acceptance of corrections or notations, or both and, if accepted, does not require resubmittal. After submittal has been approved, no substitutions will be permitted without written approval by the COTR.
11. Approved as Noted, Resubmittal Required: If "Approved as Noted, Resubmittal Required" is marked by the COTR, the submittal is satisfactory contingent upon recommended corrections and must be resubmitted to the COTR within 5 calendar days for final approval.
12. Disapproved: If "Disapproved" is noted by the COTR, the submittal does not meet the contract requirements and the Contractor must resubmit within 5 calendar days. The Contractor must resubmit in the same quantity, including reproducibles, as specified in the original submittals, for approval. The COTR's approval of resubmittals will require 14 calendar days after receipt of the item. Make all corrections required by the COTR and indicate all corrections with a revision symbol and revised date. This resubmittal process shall continue until submittal has been approved.
13. Limitation of approvals: The checking, marking or approval of the shop drawings and/or product data by the COTR shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Approval will not relieve the Contractor of the responsibility for any error that may exist. The Contractor is responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.

1.4 SUBSTITUTION PROCEDURES:

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- A. Formal requests for substitution shall be made only when the Contractor has investigated the proposed product and has determined that it will be equal to or superior in all respects to that specified. Warranties or bonds for accepted substitutes shall be provided as they would be for the original product specified. Coordinate installation of accepted substitutes into work complete in all respects; ensure that cost data is complete including all related costs.
 - B. Submit each substitution request separately, supported with the following information:
 - 1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents. This shall include: product identification, including manufacturer's name and address; manufacturer's literature identifying product description, reference standards, performance and test data; samples, as applicable; names and addresses of similar projects where product has been used, and dates of installation.
 - 2. Itemized comparison of proposed substitution with product specified, listing significant variations.
 - 3. Data relating to changes in construction schedule and Coordination Drawings.
 - 4. List of changes required in other work or products.
 - 5. Accurate cost data comparing proposed substitution with product specified including any net change to contract sum.
 - 6. Designation of required license fees or royalties.
 - 7. Designation of availability of maintenance services, and sources of replacement materials.
 - C. Without a formal request from the Contractor, substitutions will not be considered for acceptance when indicated or implied on shop drawings or product data submittals, or are requested directly by a subcontractor or supplier. Acceptance may require substantial revision of contract stipulations. Do not order or install substitute products without written acceptance from the COTR.

1.5 SHOP DRAWINGS:

- A. As used in this Section, shop drawings shall be defined as drawings, schedules, diagrams, and other data prepared specifically for this Contract, by the Contractor or through the Contractor by way of a subContractor, manufacturer, supplier, distributor, or other lower tier Contractor, to illustrate a portion of the work.
- B. Requirements: All connections necessary to complete the work under this contract shall be detailed and completed in a satisfactory method by the Contractor. This shall apply with equal force to items not shown or specified, but necessary to make indicated or specified connections or modifications to existing work and connection for any future installation indicated on the drawings or specified. All parts detailed by the Contractor shall be strong enough to withstand, without excessive deflection, any loads or pressures to which they are likely to be subjected to develop the strength of the members connected. In no case shall the construction be inferior in any manner to that required by the contract documents. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on contract drawings. Indicate gauge or thickness, anchors and fastening types, and sizes of all items to be fabricated. Describe finish, method of application for all materials.

- C. Verification: Prior to fabrication of materials, verify all field measurements and submit all shop drawings required by the technical specifications so as not to cause any delay in the work.
- D. Equipment clearances: Do not proceed with any construction that may be affected in any manner by machinery and equipment until submission and approval of shop and erection drawings, schedules, and equipment layouts showing all components with dimensions and necessary clearances.
- E. Related work: In indicating or describing the work and materials for related work in the submittals, the term "by others" is not acceptable. The specific installers and trades to furnish and install such related work shall be clearly noted by name or description; where such name or description is missing, it shall be understood and agreed that the Contractor is to furnish and install such related work.

1.6 SAMPLES:

- A. As used in this Section, samples are defined as physical examples of products, materials, equipment, assemblies, or workmanship, physically identical to a portion of the work, illustrating a portion of the work or establishing standards for evaluating the appearance of the finished work or both. Samples of all materials to be installed in the same room shall be submitted at the same time (i.e. paint and carpet).
- B. Quantities: Unless otherwise specified or directed, submit two (2) samples to the COTR.
- C. Identification: Label or tag each sample or set of samples, identifying the sample's name and quality, manufacturer's name and address, brand name, catalog number, project title, Contractor's name, date, and intended use.
- D. Colors, patterns and textures: For items required to be of selected and approved colors, patterns, textures, or other finish requirements, obtain instructions from the COTR and submit sufficient samples to show the range of shades, tones, values, patterns textures, or other features corresponding to the instructions. Submit color samples of field-applied paint materials.
- E. Approved samples: Approved samples may be incorporated in the job if approved by the COTR. The Contractor must state his request to use a sample in the construction on the submittal transmittal form.

1.7 CATALOG DATA:

- A. As used in this Section, catalog data consists of reprinted material such as illustrations, standard schedules, performance, charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate a portion of the work, but not prepared exclusively for this Contract.
- B. Requirements: Furnish catalog and technical data for all products, items of machinery and equipment covered under the Contract Documents. This shall include all Contractor furnished manufactured items.

- C. Preparation: All catalog data must be submitted using the following directions. Clearly mark or highlight each copy to identify pertinent products or models the Contractor intends to use. If the submittal is not clearly marked by the Contractor regarding the data indicated above, the submittal will be disapproved and returned.
- D. Drawings: Catalog data submittal shall not be construed as relieving the Contractor of the responsibility for submitting complete drawings and schedules; however, standard machinery and equipment need not be detailed, but all sizes, supports, connections, and clearances shall be indicated and detailed.
- E. Manufacturer's instructions: Where installation of work is required to be in accordance with the product manufacturer's directions, the Contractor shall obtain and distribute the necessary copies of the directions 7 calendar days prior to installation.

1.8 CERTIFICATES:

- A. Assemble certificates of compliance, executed by each of the respective makers, suppliers, and subcontractors. Provide complete information for each item to certify compliance with contract documents: Product or work item, firm with name of principal and scope of compliance.

1.9 TEST REPORTS:

- A. Promptly submit a written report of each test and inspection containing the following information:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name, address and telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Date of test.
 - 8. Identification of product and Specification.
 - 9. Location of sample or test in the project.
 - 10. Type of inspection test.
 - 11. Results of tests and compliance with Contract Document.
 - 12. Interpretation of test results, when requested by the COTR.

PART 2 - PRODUCTS --NOT USED.

PART 3 - EXECUTION --NOT USED.

*** END OF SECTION ***

SECTION 01 35 29 – HEALTH, SAFETY AND EMERGENCY RESPONSE PROCEDURES

PART 1 - GENERAL

- 1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications listed below are referenced as the latest edition published as of the date of this document. The publications are referred to within the text by the basic designation only.
- A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - 1. ANSI A10.32 Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
 - 2. ANSI Z359.1 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
 - 3. ANSI/ASSE A10.34 Protection of the Public on or Adjacent to Construction Sites
 - B. ASME INTERNATIONAL (ASME)
 - 1. ASME B30.22 Articulating Boom Cranes
 - 2. ASME B30.5 Mobile and Locomotive Cranes
 - C. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
 - 1. NFPA 10 Portable Fire Extinguishers
 - 2. NFPA 70E Electrical Safety in the Workplace
 - D. U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
 - 1. 29 CFR 1910 Occupational Safety and Health Standards
 - 2. 29 CFR 1926 Safety and Health Regulations for Construction
 - E. FEDERAL AVIATION ADMINISTRATION (FAA)
 - 1. Order 3900.19B Occupational Safety and Health Program
 - 2. ESA Safety Memo Safety Requirements for Welding, Cutting, and Brazing Activities
- 1.2 SUBMITTALS: The following shall be submitted in accordance with Section 01 33 00 Submittal Procedures:
- A. Preconstruction Submittals
 - 1. Accident Prevention Plan (APP)
 - 2. Fire Prevention Plan (FPP)
 - 3. Activity Hazard Analysis (AHA)
 - 4. Crane Critical Lift Plan
 - 5. Proof of qualification for Crane Operators
 - 6. List of Competent Persons
 - B. Reports: Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."
 - 1. Accident Reports
 - 2. Monthly Exposure Reports
 - 3. Crane Reports
 - 4. Regulatory Citations and Violations
 - C. Certificates

1. Hot work permit
2. Energized Electrical work Permits
3. Submit one copy of each permit/certificate attached to each Daily Report.
4. Grounding Assurance Plan, if applicable

1.3 DEFINITIONS

- A. Competent Person: A person who has the education and/or experience to identify hazardous or dangerous conditions and has the authority to take prompt corrective measures to eliminate the hazards.
- B. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.
- C. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- D. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:
 1. Death, regardless of the time between the injury and death, or the length of the illness
 2. Days away from work (any time lost after day of injury/illness onset)
 3. Restricted work
 4. Transfer to another job
 5. Medical treatment beyond first aid
 6. Loss of consciousness
 7. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

- A. Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS

- A. In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with all FAA standards, and the following federal, state, and local regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

- A. Personnel Qualifications: Site Safety and Health Officer (SSHO) Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. This person shall have the education and/or experience to perform such duties.

1. Crane Operators: Crane operators shall meet the all Federal, State, Local and Manufacturer's requirements to operate the crane on site. Proof of current qualification shall be submitted before crane operation.
- B. Personnel Duties: Site Safety and Health Officer (SSHO)/Superintendent
 1. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' report.
 2. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
 3. Maintain applicable safety reference material on the job site.
 4. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
 5. Implement and enforce accepted APPS and AHAs.
 6. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
 7. Ensure sub-contractor compliance with safety and health requirements.
- C. Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.
- D. Meetings
 1. Pre-construction Conference
 - a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP.
 - b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, and procedures.
 - c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.
 2. Safety Meetings
 - a. Shall be conducted and documented. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' report.

1.7 ACCIDENT PREVENTION PLAN (APP)

- A. The Contractor shall use a qualified person to prepare the written site-specific APP. Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the sub-contractors. Contractors are responsible for informing their subcontractors of the safety provi-

sions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer.

1. Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.
2. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public and the environment.
3. Copies of the accepted plan will be maintained with the COTR at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

B. APP Requirements

1. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSs, CHSTs. The duties of each position shall be specified.
2. Qualifications of competent and of qualified persons. Competent persons shall be designated and qualifications submitted as the project requires. Some of the following are major areas where competent persons are required: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.
3. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work. For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).
4. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet).
5. Fire Prevention Plan (FPP). The plan shall be site specific and address all fire hazards that may be associated with the construction. The contractor must review the Portland ATCT Occupant Emergency Plan and incorporate the plan into the FPP. All flammable and combustible material brought into the facility must be identified and a plan for storage and usage must be submitted. The contractor must provide their own fire extin-

guisher for this project. All fire extinguishers must have up to date testing and inspections. All processes that may be a fire hazard must be identified and a plan must be submitted before work. All work must be performed per local fire regulations and the authority having jurisdiction (e.g. Fire Marshall). Any work that may affect the fire protected tower stairway (such as exhaust fan work, doors propped open, and work in stairway) must be coordinated with the COTR prior to any activities in the stairway. Any work affecting the fire alarm system must be approved by the COTR and coordinated with the local authority having jurisdiction.

1.8 ACTIVITY HAZARD ANALYSIS (AHA)

- A. Submit the AHA for review at least 10 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.
- B. The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.
- C. The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.9 DISPLAY OF SAFETY INFORMATION

- A. Before work commencement, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by OSHA including OSHA posters, and emergency numbers and facilities. Any permits or sample results requiring posting may be included on this board. The location of the board shall be approved by the COTR.

1.10 SITE SAFETY REFERENCE MATERIALS

- A. Maintain safety-related references applicable to the project, including those listed in the article "References". Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

- A. Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment. Emergency numbers and directions to nearest emergency medical facilities shall be posted on the safety bulletin board.

1.12 REPORTS

- A. Accident Notification and Reports: Notify the COTR as soon as practical after any accident meeting the definition of Recordable Injuries or Illnesses, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Provide a report to the FAA with information including contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, brief description of accident (to include type of construction equipment used, PPE used, etc.) and root cause of accident.
- B. Monthly Exposure Reports: Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

- C. Certificate of Compliance: The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract. Certificate shall state that the crane and rigging gear meet applicable OSHA regulations and any manufacturer's recommendations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926.) Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used

1.13 HOT WORK

- A. All activities involving welding, cutting and brazing shall comply with attached memorandum dated 4/1/2005. The contractor shall submit the Hot Work Permit in attachment 3 of this memorandum.

PART 2 - PRODUCTS- NOT USED

PART 3 - EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

- A. The Contractor shall comply with the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.
 - 1. Hazardous Material Use: Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. All hazardous material brought to the site by the contractor for use on the project shall be disposed of by the contractor after its use. No hazardous material shall be left on site unless it is an integral part of the finish product or at the written request of the COTR.
 - 2. Hazardous Material Exclusions: Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.
 - 3. Material Safety Data Sheets: The contractor shall supply the COTR with MSDS's of each material 3 days before it is brought on site. The contractor shall place all MSDS's in a binder and in an accessible location so that all employees have access to them. The binder shall be updated each time a new material is brought on site or when a material is taken off site. The contractor shall inform the COTR when a material is brought on site or taken off site, so the COTR can update his/her MSDS file. After submission of the MSDS, no product substitution is allowed without prior approval from the COTR.
 - 4. Hazardous Material on Site: The contractor shall bring to the attention of the COTR any material suspected of being hazardous which he/she encounters during execution of the work. A determination will be made by the COTR as to whether the contractor shall perform tests, and/or if the material is found hazardous and additional protective measures are needed. A contract change may be required, subject to applicable provisions of this contract.

3.2 PRE-OUTAGE COORDINATION MEETING

- A. Contractors are required to apply for utility outages at least 10 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer] to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

- A. The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.4 EQUIPMENT

A. Material Handling Equipment

1. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
2. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
3. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

B. Weight Handling Equipment

1. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Conference. Contractor's operator shall remain with the crane during the spot check.
2. Cranes shall be equipped per OSHA regulations and per manufacturer's recommendations. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person. All testing shall be performed in accordance with the manufacturer's recommended procedures.
3. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
4. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.
5. All employees shall be kept clear of loads about to be lifted and of suspended loads.
6. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
7. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

8. A Competent Person must inspect the crane before each use. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by the COTR.
 9. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by the COTR.
 10. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.
- C. Equipment and Mechanized Equipment
1. Proof of qualifications for operator shall be kept on the project site for review.
 2. Manufacture specifications or owner's manual for the equipment shall be on-site. The equipment must not operate outside the manufacturer's recommendations.
 3. Any equipment requiring certifications must be submitted for review. Equipment inspection records must be available for review.
- D. Aerial Lifts
1. In addition to the requirement under 3.6.3, the aerial lift operator must be trained in the operation of the specific lift. Fall protection methods must be used in accordance with the manufacturer's recommendations.
- 3.5 ELECTRICAL
- A. Conduct of Electrical Work: No energized electrical work over 50 volts except for testing and troubleshooting are allow without prior approval from the COTR. All energized work including testing and troubleshooting must be in compliance with NFPA 70E. All electrical work that may impact the operation of the ATCT facility including Lockout/Tagout activities, shut down of equipment, testing and troubleshooting must be approve prior to work. FAA technician responsible for that equipment may be required to be on site.
- B. Portable Extension Cords: Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall have a label from a Nationally Recognized Testing Laboratory. GFCI shall be use with all extension cord usage unless the COTR approve otherwise.
- 3.6 INDOOR AIR QUALITY
- A. No machinery or construction methods emitting harmful gases and fumes can be used inside the facility. When running equipment with combustion engines outside the facility, care must be taken not to run the equipment near intakes and windows where exhaust can enter the building. All chemicals with fumes used inside the facility must be submitted with the MSDS and approved prior to use.

END OF SECTION 01 35 29

APPENDIX 2. FAA PRE-CONSTRUCTION AND MAINTENANCE PROJECT SAFETY AND HEALTH CHECKLIST

Purpose

This checklist is intended to be used as a tool by RE/COTR's, designated facility POC's, or SSC managers who oversee construction and maintenance activities that potentially have Occupational Safety, Health, and Environmental (OSH/E) related impacts on AT/AF operations. This tool shall be used, as appropriate, during critical phases of construction and maintenance activities (e.g. the pre-construction meeting, 30-60 days prior to commencement of work, weekly/daily construction meetings, etc.). Emphasis should be placed on using this checklist as a tool to assess as well as reassess hazards as the project progresses. Specifically, this checklist is intended to:

- Promote sensitivity to potential OSH/E hazards associated with projects and stress the importance of not disrupting NAS operations
- Assist in identifying and validating potential project hazards and associated risks
- Assist in preventing safety and health incidents/accidents and facility shutdowns
- Ensure appropriate contractor measures and controls are in place to address potential project hazards
- Facilitate discussion with the contractor regarding plans to prevent/minimize potential incidents/accidents
- Enhance coordination between OSH/E professionals, project personnel and contractors
- Facilitate review of critical FAA OSH/E procedures with contractors
- Raise OSH/E awareness

- **This checklist relies on the training and professional judgment of the user. OSH/E personnel should be consulted as needed.**
 - **A facility POC with a thorough understanding of facility procedures and equipment considerations should participate in the site walk-through.**

NOTE: For small procurements (e.g. credit card purchases) and internal FAA projects (e.g. field maintenance party projects), without specifications, immediately contact the designated OSH/E professional for assistance in completing this checklist.

1 Project Summary Information

Fill in the requested site-specific information.

Project Name, Description and Location: _____

Project/Activity/Task (detail): _____

Planned Start: _____

Expected Completion Date: _____

ANI/Contractor Contact: Name: _____

Phone: _____

OSH/E Contact: Name: _____

Phone: _____

Facility AF POC: Name: _____

Phone: _____

2 Facility Procedures

Review site specific FAA procedures and considerations with the contractor. For example, discuss when or how during the project, emergency plans will be used/required. After the procedures have been reviewed, perform a site walk-through with the contractor.

Facility Procedures	Reviewed?			Notes
	Yes	N/A	No	
Asbestos Contingency Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Critical Power Systems Awareness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lock Out/Tag Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Work Permits (e.g. Asbestos, Lead)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Plans (e.g. Occupant Emergency Plan)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Impacts to Fire Alarm and Suppression Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Walk-Through with Facility POC & Contractor(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hazard Communications (e.g. MSDS's)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (e.g. Access/Security/Communications Equip.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3 Project Hazard/Risk Analysis

Think about your project and its potential hazards and risks. Consider sensitive NAS operations and all facility personnel that may be impacted by your projects. As an example: Construction activities with potential for impacting asbestos materials in or near sensitive operations could result in incidents that disrupt NAS operations. For each potential project hazard indicate (with a checkmark) a level of potential risk for exposure/release/incident.

Potential Project Hazards (Consider Sensitive AT/AF Operations)	Level of Potential Risk For Exposure/Release/Incident			Notes
	High	Low	N/A	
Hazardous Substances and Env Controls				
Asbestos (e.g. Tiles & Insulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical, Gas, Fumes, Dust, Radiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indoor Air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lead-based Paint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Electrical Power Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pressurized Equipment and Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Work at Heights (>6 feet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other (e.g. Confined Space)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4 Site Safety and Health

After reviewing the potential hazards and risks in block 3, ensure that the contractor has identified measures and controls to address applicable site safety and health risks (e.g. through discussions, available site safety plans, or other applicable documents). In your judgment, if the contractor has appropriate measures to address the potential project hazards (see block 3), check the appropriate YES boxes below. If a potential project hazard has been identified in block 3 and no associated measures or controls are evident, then check the appropriate NO boxes below. If a NO box is checked, use the closeout date box to indicate when appropriate measures or controls have been incorporated into the contractor's site safety and health approach.

Program Elements	Yes	N/A	No	Closeout Date	Notes
Hazardous Substances & Environmental Controls					
Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Chemicals (e.g. Introduced to site) Provide MSDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fumes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lead Paint/Other Coatings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Radiation and Electric Fields	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ventilation and Exhaust Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Electrical Power Systems					
Procedures for Critical Power Systems Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Provisions for GFCI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Control of Hazardous Energy (lockout/tagout) (e.g. electrical, mechanical, hydraulic, thermal, radiation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Pressurized Equipment and Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Work at Heights (>6 feet)					
Safe Access and Fall Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Work Platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Floor and Wall Holes and Openings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Personal Protective and Safety Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Accident Prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Excavations (New Construction or Tie in)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Welding and Cutting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Demolition of Existing Facility in Whole or Part	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Medical and First Aid Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hand and Power Tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Material Handling, Storage, and Disposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Rigging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Machinery and Mechanized Equipment (e.g. Equipment & Operator Certifications)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sanitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Concrete & Masonry Construction & Steel Erection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hazardous, Toxic, Radioactive Waste Activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other (e.g. Noise)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

5 Review Information

The appropriate FAA point of contact and the contractor shall sign below to document discussion of the items on this form.

Reviewed By:	Date
FAA POC: <u>See Addendum</u>	
Contractor: <u>See Addendum</u>	
Incident Prevention and Hazard Control Methods Discussed? <input type="checkbox"/> Yes <input type="checkbox"/> No	

This block indicates routing of this checklist for project coordination.

This form has been forwarded to:	Name	Date
SECM, OSH/E Contact:	<u>See Addendum</u>	
AF Facility Manager:	<u>See Addendum</u>	
AT Facility Manager:	<u>See Addendum</u>	
Other:	<u>See Addendum</u>	

Notes (e.g. provide further explanation of potential hazards, locations, etc. below and attach additional sheets if necessary.)

ANI Risk Mitigation Addendum **Communicate Your Activities**

Review the project construction or installation activities with emphasis on potential risks to unscheduled interruptions with the site AF POC. Provide plans to mitigate each of those risks and to restore operations should an unscheduled interruption occur. Have the AF POC and the AF site manager sign the check sheet indicating approval of the plans and fax to the ANI platform manager for approval BEFORE beginning work. Ensure that the AF POC coordinates with air traffic to keep them aware of installation activities. *Items marked with an asterisk require daily coordination with AF.*

Elements	Risk		Mitigation and Restoration Plan
	Yes	No	
Engineering Package			
Review of risk mitigation procedures and cut-over plans	<input type="checkbox"/>	<input type="checkbox"/>	
Airport Access and On-Airport Driving			
Badging	<input type="checkbox"/>	<input type="checkbox"/>	
Airport driver training	<input type="checkbox"/>	<input type="checkbox"/>	
Communication with ATCT	<input type="checkbox"/>	<input type="checkbox"/>	
Properly marked vehicle	<input type="checkbox"/>	<input type="checkbox"/>	
Access to Electrical Power			
* Essential power panels, risk of opening panel, installing conduit, manipulating wiring, etc.	<input type="checkbox"/>	<input type="checkbox"/>	Site tech shall supervise any work in power panels and energize/de-energize circuits.
* Critical power panels, risk of opening panel, installing conduit, manipulating wiring, etc.	<input type="checkbox"/>	<input type="checkbox"/>	Site tech shall supervise any work in power panels and energize/de-energize circuits.
Cable raceways	<input type="checkbox"/>	<input type="checkbox"/>	
Demarcs, Junction Boxes, Racks and Buried Cable			
Proper identification of cables and terminations	<input type="checkbox"/>	<input type="checkbox"/>	
Proximity of critical operational circuits	<input type="checkbox"/>	<input type="checkbox"/>	
* Coordination of digging activities	<input type="checkbox"/>	<input type="checkbox"/>	
Backup Systems			
Checkout of backup systems that may be required after unscheduled interruption (including diverse routes).	<input type="checkbox"/>	<input type="checkbox"/>	
Checkout of operational systems prior to modifications	<input type="checkbox"/>	<input type="checkbox"/>	
Access to Signal Cable Raceways			
Identify affected cable trays	<input type="checkbox"/>	<input type="checkbox"/>	
ATCT shaft	<input type="checkbox"/>	<input type="checkbox"/>	
* Operational consoles	<input type="checkbox"/>	<input type="checkbox"/>	
Removing unused cable	<input type="checkbox"/>	<input type="checkbox"/>	
Equipment Releases			
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	
Coordination with AF/AT	<input type="checkbox"/>	<input type="checkbox"/>	
Log entries	<input type="checkbox"/>	<input type="checkbox"/>	Review maint log entries ensuring purpose for release is included.
* Removal from service	<input type="checkbox"/>	<input type="checkbox"/>	Will ask site technician to remove equipment from service.
Work Outside of Normal Duty Hours			
Schedule of activities	<input type="checkbox"/>	<input type="checkbox"/>	
Coordination of OPS overtime handoff if required	<input type="checkbox"/>	<input type="checkbox"/>	
Unscheduled Interruptions			
Restoration	<input type="checkbox"/>	<input type="checkbox"/>	
Return to service	<input type="checkbox"/>	<input type="checkbox"/>	Site tech must return to service and make log entries.
Notifications	<input type="checkbox"/>	<input type="checkbox"/>	Site AF manager and platform manager shall be notified ASAP.
Contractors			
Badging	<input type="checkbox"/>	<input type="checkbox"/>	
Oversight	<input type="checkbox"/>	<input type="checkbox"/>	ANI/TSSC shall provide continuous oversight of all contractors.
Parking	<input type="checkbox"/>	<input type="checkbox"/>	

Approvals (faxed signatures ok):

AF Site POC: _____ Date _____

AF Site Manager: _____ Date _____

ANI Site POC: _____ Date _____

ANI Platform Manager: _____ Date _____

Copies provided to Site AT, AFSMO (for SECM and OSH/E contact), and ANI Operations Liaison



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **ACTION**: Safety Requirements for Welding,
Cutting, or Brazing Activities

Date: APR 01 2005

From: Director, Eastern Service Area for Technical
Operations

Reply to
Attn. of:

To: Manager, Engineering Services for Eastern
Service Area
All SMO/AOCC Managers, Eastern Service
Area

The Federal Aviation Administration (FAA) and contractor personnel perform welding, cutting, and/or brazing activities at FAA facilities. These activities have led to fires causing injury, property damage, and/or other indirect costs from project schedule extensions. The fire hazard associated with these activities is significantly increased due to the heat, sparks, and slag generated. Therefore, special precautions must be taken to prevent fires during welding, cutting, and/or brazing activities.

The Occupational Safety and Health Administration (OSHA) has promulgated specific regulations when conducting these welding, cutting, and brazing activities to prevent fires and other hazards such as eye damage from radiant light. These regulations are found in Title 29 Code of Federal Regulations (CFR) 1910, Subpart Q, *Welding, Cutting, and Brazing* and 29 CFR 1926, Subpart J, *Welding and Cutting*.

Attachment 1 summarizes the OSHA requirements for personnel who will perform or supervise any welding, cutting, or brazing activity conducted at an FAA facility. These requirements include fire watches, removal of combustibles or flammables from the area, and other precautions that must be followed for these activities. Failure to fully comply with these requirements could translate in injury, fatalities, property damage, and/or impact to the National Airspace System (NAS). The facility managers and resident engineers must ensure that FAA and contractor personnel follow the requirements outlined in the attachments while performing welding, cutting, or brazing activities.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

If you or your staff has any questions, please contact Steve Hardee, Atlanta Implementation Center, Environmental and Occupational Safety and Health (EOSH) Coordinator, at (404) 305-6479.


For Teresa E. Hudson

3 Attachments
Eastern Service Area Guide
Personal Protective Equipment Assessment
Work Permit

ATTACHMENT 1

EASTERN SERVICE AREA GUIDANCE FOR WELDING, CUTTING, AND BRAZING ACTIVITIES

BACKGROUND.

Welding processes require heat and other substances to produce the weld; therefore, the potential for fire or explosion and injuries resulting from arc radiation, electrical shock, or materials handling is increased. Byproducts of the welding, cutting, and brazing processes include fumes and gases that can pose serious health hazards to employees. These activities exclude soldering. Minimizing the hazards associated with welding, cutting, and brazing is necessary to provide a safe work environment. Achievement of this goal begins with the implementation of the requirements in this guidance document.

FIRE PREVENTION REQUIREMENTS.

In order to prevent fires during welding, cutting, and brazing activities the following precautionary activities must be performed:

- Before welding, cutting, or brazing work is permitted, the area must be made fire safe and the individual(s) responsible for the operation must inspect the work area.
- All movable combustible and or flammable materials must be transported at least 35 feet from all welding or burning activities.
- If the object to be welded or cut cannot be moved, and if all fire hazards cannot be removed, then barriers or fire blankets must be used to isolate the combustible materials from the heat, sparks, and slag.
 - ◊ All fire blankets shall be free of holes, rips and tears, and cover the entire combustible material that is within the proposed welding work area.
- All cracks and openings through which hot sparks or slag could enter must be sealed or a fire resistant shield must be used to block the openings.
- Operational fire extinguishing equipment must be maintained in a state of readiness for instant use/within 20 feet.
- A fire watch with an approved portable fire extinguisher, not one that is currently provided for the facility, must be established to ensure the safety of the workers and the protection of assets.
 - ◊ The work area should be observed for no less than 30 minutes (60 minutes for roof work) after the completion of the work and must be specified on the hot work permit.
- Fire detection equipment in vicinity of welding, cutting, and brazing operation should be protected from false activation and damage. Fire suppression systems should be protected by noncombustible shielding or guarding to prevent inadvertent activation.
- Ensure an anti-flashback device is used on acetylene and oxygen tanks. Ensure all compressed gas cylinders are in good working condition and are properly stored and used in accordance with OSHA standard 1910.101, *Compressed Gases*.

SAFE WORK PRACTICES.

A safe work environment is not enough to control all hazards associated with welding, cutting, and brazing. The following safe work practices must be followed to prevent fire or injury.

- If conducting welding, cutting, or brazing activities, perform a risk evaluation and address any other potential ancillary hazards. Some examples of potential ancillary hazards include, but not limited to, welding, cutting, and brazing:
 - ◊ On substrates with lead based paint or on galvanized metals (zinc fumes),
 - ◊ In areas that impacts the egress paths (e.g. stairwells); or
 - ◊ That requires respirator use.
- All persons involved in welding, cutting, and brazing operations shall:
 - ◊ Use safe work practices and engineering controls to protect persons in adjacent areas and FAA property; and
 - ◊ Wear the appropriate Personal Protective Equipment (PPE) as listed in the PPE Hazard Assessment contained in Attachment 2.
- The location of hot work should be determined using the following priority list:
 - ◊ The work should be performed in an area designed for hot work use such as welding shops.
 - ◊ If work must be performed on site, combustibles should not be located within 35 feet of the work area.
 - ◊ If work must be performed on site and combustibles cannot be removed from within 35 feet of the work area, fire barriers such as screens or blankets will be used to protect combustibles.
- Only authorized and trained personnel are permitted to use welding, cutting, or brazing equipment.
- Welding screens must be provided in areas where pedestrian traffic may be exposed to flashes or sparks.
- In the area where the welding, cutting, and brazing activities are occurring, ensure adequate ventilation is available.
- Welding, cutting, brazing, or grinding on vessels, tanks, drums, or other containers that contain or have contained flammable materials is prohibited, unless approved by the Service Area Safety Staff.
- Use of chlorinated hydrocarbons (e.g. solvents, degreasers, etc.) for cleaning substrates prior to welding is prohibited due to the toxic gases that may form.
- Do not observe welding, cutting, and brazing activities without the proper PPE.
- Routine grinding is not considered hot work; however, any grinding on piping, containers, or other vessels that contain or have contained flammable materials is considered hot work and a hot work permit is required.

HOT WORK PERMIT REQUIREMENTS.

Hot work includes, but is not limited to; electrical/gas welding, torch cutting, brazing, any activity that produces open flames, and grinding on containers/vessels that contain or have contained flammable materials. A hot work permit (Attachment 3) is required for any operation involving open flames or producing heat and/or sparks or when welding, cutting, or brazing activities are performed in a confined space.

The person responsible for the facility must approve any hot work permits. Contractors' performing hot work must complete the FAA Hot Work Permit or their own equivalent permit and this permit must be approved by the project Resident Engineer (RE). The RE must coordinate all project-related hot work with the manager of the facility. If the required precautions cannot be met, hot work is prohibited.

- Before any welding, cutting, or brazing work begins, a hot work permit must be completed and approved.
- All hazards and precautions noted on the permit must be addressed before operations begin.

- The permit must be prominently posted in the area, where the hot work is performed.
- Upon completion of hot work operations, maintain the permit in the project file or as needed.

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS.

When welding, cutting, and brazing hazards exist that cannot be eliminated, engineering controls, administrative procedures, safe work practices, PPE, and proper training for welding will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

Employee protection during welding operations must include all requirements as shown in the attached PPE Hazard Assessment for welding, cutting, and brazing activities.

- The work supervisor shall provide employees with the appropriate PPE as needed and shall ensure that the equipment is used properly.

TRAINING.

Employees and contractors who perform welding, cutting, and brazing operations in FAA facilities must be trained to:

- Recognize the hazards associated with various welding operations,
- Know the safe work practices for welding, cutting, and brazing operations;
- Understand the importance and requirements of hot work permits and fire prevention,
- Use the appropriate PPE for the job; and
- Understand the importance of regular inspections of welding equipment, attachments, and accessories.

ATTACHMENT 2

**Federal Aviation Administration
Personal Protective Equipment Hazard Assessment**

Job Task Welding, Cutting, or Brazing
Task #: 8

	ASSESSMENT OF HAZARD	PPE REQUIRED	CORRECTIVE ACTION	RAC *
HEAD				
EYES OR FACE	Ultraviolet (UV) light, sparks, and debris, during welding cutting, or brazing	Welding helmet or goggles with appropriate UV protection	Don appropriate PPE	4
SKIN	Burns from welding	Welders jacket/smock and covering for legs	Don appropriate PPE, have fire extinguisher nearby	4
HAND	Burns, cuts, and scrapes	Leather welding gloves	Don appropriate PPE	5
FOOT	Burns from welding, cutting, or brazing	Spats	Don appropriate PPE	5
HEARING				
ELECTRICAL SHOCK	Ground fault of welding cable	Rubber mats when working in wet areas	Use clean dry rubber mats, do not splice cable within six feet of welder or equipment	5
WHOLE BODY				
RESPIRATORY	Welding fumes	See corrective action	Weld in open well-ventilated areas, avoid inhalation of welding fumes.	5

NOTE:

- Be aware of the potential for heat stress when wearing arm and leg coverings.
- Prior to performing welding, cutting, and brazing activities conduct a risk evaluation to determine what respiratory hazards are present.
- Workers in area of welding, cutting, and brazing operations must not watch welding unless wearing appropriate PPE.

* Risk Assessment Code (RAC)

RAC 1 = Likely to occur immediately/current condition and cause serious injury or death; RAC 2 = Probably will occur in time and cause serious injury;
RAC 3 = Possible to occur in time and cause a lost workdays, RAC 4 = Possible to occur in time and cause minor injury treatable with first aid; RAC 5 = Unlikely to occur and cause minor injury.

These job tasks and PPE are based on general hazards that are encountered during these tasks. However, the facility supervisor has the authority and responsibility of changing the PPE if the hazards change or become more severe. Each facility supervisor also should ensure that all technicians are wearing the PPE as necessary for each task.

ATTACHMENT 3

HOT WORK PERMIT (for welding, cutting, or brazing activities)

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY BY THE RESPONSIBLE PERSON PERFORMING THE HOT WORK,
OR THE RESIDENT ENGINEER OVERSEEING THE CONTRACTOR WHO IS PERFORMING THE HOT WORK.

Facility ID and Type: _____

Date: _____

Responsible Person: _____

Start Time: _____

Finish Time: _____

Work to be performed: _____

Building: _____

Room Number, Area or Equipment: _____

Is it possible to perform this work in a welding shop or other type of workshop? Yes No

Complete the checklist below and if any of the tasks have not been completed, please provide, in the comments section the reasons for not completing the tasks and the precautionary measures that will be implemented.

<u>Task</u>	<u>Yes</u>	<u>No</u>	<u>Comments and/or Corrective Measures</u>
Flame or spark-producing equipment to be used has been inspected and found in good repair.			
Fire Alarm systems are operational and will not be taken out of service while welding, cutting, or brazing activities are performed. If necessary, the automatic smoke detectors in the immediate vicinity of the hot work may be temporarily disabled via functions at the fire alarm control panel or otherwise covered, and returned to operational immediately following the smoke producing activities associated with the hot work.			
Sprinklers, where provided, are operational and will not be taken out of service while this work is being done.			
There are no combustible fibers, dusts, vapors, gases or liquids in the area.			
The work will only be performed in the area specified on this permit.			
Surrounding floors have been swept clean and, if combustible, wet down.			
All floor and wall openings within 35 feet of the operations have been tightly covered.			
All combustibles have been relocated at least 35 feet from the operation. If no, then are barriers or guards used to contain the heat, sparks and slag. Protection should include metal guards or flame-proofed curtains, blankets, or covers (not ordinary tarpaulins (tarps)).			

<u>Task</u>	<u>Yes</u>	<u>No</u>	<u>Comments and/or Corrective Measures</u>
A "Fire Watch" will be posted in area of activity, prior to starting welding, cutting, and brazing activity, and will patrol the area, including floors above and below, during any lunch or rest period and for at least one-half hour after the work has been completed to ensure the sparks and slag have not started fires.			
If bystanders and/or fire watch may be exposed to UV or burn hazards they will be appropriately protected with PPE.			
Fire extinguisher available for instant use within 20 feet.			
Cutter/welder is trained in safe operation of equipment and the safe use of the process.			
On-site contractors were advised about flammable material or hazardous conditions of which they may not be aware.			
Welding or cutting on material containers that contain or did contain flammables: Container thoroughly cleaned and ventilated; Any pipe lines or connections to containers disconnected or blanked; and Approved by ROSHM or EOSH Coordinator.			
Personal Protective Equipment (PPE) used: Eye protection Helmets Protective clothing Other (Specify)			
Warning sign posted to warn of hot metal.			
Appropriate ventilation provided.			
When working in confined spaces a permit has been issued as per 1910.146 and local Confined Space Program.			

For specific requirements refer to General Industry Standards 1910.146; 1910.252; .253; .254 and .272 and Construction Standards 1926.803; .350; .352 and .353.

I attest that the above precautions have been taken:

Printed Name of Person Responsible
for Performing Hot Work

Signature

Approval:

Facility Manager - Printed Name

Facility Manager - Signature

NOTE: THIS PERMIT EXPIRES 24 HOURS AFTER THE DESIGNATED "START TIME". IF WORK IS TO CONTINUE ANOTHER PERMIT MUST BE ISSUED.

MAINTAIN THE COMPLETED AND APPROVED PERMITS ON FILE FOR A MINIMUM OF ONE YEAR.

SECTION 01410 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section describes information required for conformance to regulatory requirements, including building codes, mechanical codes, electrical codes and other regulations applicable to the project.

1.2 REQUIREMENTS:

- A. The Contractor shall conform to the latest edition of the following regulations and standards (not listed in order of precedence) in effect on the date of this solicitation:

- 1. AIA American Institute of Architects
- 2. AISC American Institute of Steel Construction
- 3. ANSI American National Standards Institute
- 4. ASCE American Society of Civil Engineers
- 5. ASTM American Society for Testing and Materials
- 6. AWS American Welding Society
- 7. CFR Department of Labor - Code of Federal Regulation
- 8. CSI Construction Specifications Institute
- 9. FAA Federal Aviation Administration
- 10. IBC International Building Code
- 11. IEC International Electric Code
- 12. IMC International Mechanical Code
- 13. IPC Internatinoal Plumbing Code
- 14. IEEE Institute of Electrical and Electronics Engineers
- 15. NEC National Electrical Code
- 16. NEMA National Electrical Manufacturers Association
- 17. NFPA National Fire Protection Association
- 18. NIBS National Institute of Building Sciences
- 19. NIST National Institute of Standards and Technology
- 20. OSHA Occupational Safety and Health Administration
- 21. SSPC Steel Structures Painting Council
- 22. UL Underwriter's Laboratories

1.3 APPLICABLE CODES AND STANDARDS:

- A. All materials and workmanship shall comply with all applicable State and National codes, specifications, and industry standards, subject to review and approval of the COTR. All material shall be listed by the Underwriters' Laboratories, Inc., as conforming to its standards and so labeled in every case where such a standard has been established for the particular type of material in question.

PART 2 - PRODUCTS -- NOT USED.

PART 3 - EXECUTION -- NOT USED.

*** END OF SECTION ***

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey COTR's action on Contractor's submittals, applications, and requests, "approved" is limited to COTR's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by COTR. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson

Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (973) 882-1170
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
GA	Gypsum Association www.gypsum.org	(202) 289-5440
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937
NFPA	NFPA	(800) 344-3555

	(National Fire Protection Association) www.nfpa.org	(617) 770-3000
RCSC	Research Council on Structural Connections www.boltcouncil.org	
SAE	SAE International www.sae.org	(877) 606-7323 (724) 776-4841
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers (See ASCE)	
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
UL	Underwriters Laboratories Inc. www.ul.com	(877) 854-3577 (847) 272-8800

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ICBO	International Conference of Building Officials (See ICC)	
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)	
ICC	International Code Council www.iccsafe.org	(888) 422-7233 (703) 931-4533
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	
FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322

GSA	General Services Administration www.gsa.gov	(800) 488-3111
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512-1800 (202) 512-1800
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from General Services Administration www.gsa.gov Available from National Institute of Building Sciences www.wbdg.org/ccb	(215) 697-2664 (202) 619-8925 (202) 289-7800
MILSPEC	Military Specification and Standards	(215) 697-2664

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Sewers and drainage.
 - 2. Water service and distribution.
 - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
 - 4. Heating and cooling facilities.
 - 5. Ventilation.
 - 6. Electric power service.
 - 7. Lighting.
 - 8. Telephone service.
- C. Support facilities include, but are not limited to, the following:
 - 1. Temporary roads and paving.
 - 2. Project identification and temporary signs.
 - 3. Waste disposal facilities.
 - 4. Field offices.
 - 5. Storage and fabrication sheds.
 - 6. Lifts and hoists.
 - 7. Temporary elevator usage.
 - 8. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Environmental protection.
 - 2. Pest control.
 - 3. Security enclosure and lockup.
 - 4. Barricades, warning signs, and lights.
 - 5. Temporary enclosures.
 - 6. Temporary partitions.
 - 7. Fire protection.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by COTR, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to FAA and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 - 1. FAA's construction forces.
 - 2. Occupants of Project.
 - 3. Testing agencies.

4. Personnel of authorities having jurisdiction.
- B. Sewer Service: Provide temporary toilets at the expense of the Contractor. Provide hand sanitizer facility at chemical toilets.
- C. Water Service: Use water from FAA's existing water system without metering and without payment of use charges.
- D. Electric Power Service: Use electric power from FAA's existing system without metering and without payment of use charges. Coordinate with COTR where electrical connections shall be used. IMPORTANT: Do not use electrical service outlets without the express consent of the COTR. Improper, unauthorized use may result in power outage or destruction of sensitive equipment at the Facility.
 1. Welding: Using FAA's electrical system for welding equipment is strictly prohibited.

1.4 SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
- B. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
- C. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- D. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Utilities: At earliest feasible time, when acceptable to FAA, change over from use of temporary service to use of permanent service.
- B. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before FAA's acceptance, regardless of previously assigned responsibilities.
- C. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 1. Keep temporary services and facilities clean and neat.
 2. Operate temporary services in a safe and clean manner.
 3. Relocate temporary services and facilities as required by progress of the Work.
 4. Do not overload temporary services and facilities or permit them to interfere with progress.
 5. Provide necessary fire prevention measures.
 6. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by COTR. Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Section 06 10 00, "Rough Carpentry."
- C. Safety Barrier and Covered Walkway materials: Unless otherwise indicated, products shall comply as follows:
 - 1. Panels: Minimum 5/8-inch thick exterior plywood.
 - 2. Paint: Exterior primer and exterior grade acrylic-latex emulsion top coat.
- D. Gypsum Board: Minimum 5/8 inchthick by 48 incheswide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.
- E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.
- F. Paint: Comply with requirements in Division 09 for Interior Paints and Exterior Paints.
- G. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- H. Water: Potable.

2.2 EQUIPMENT

- A. General: Provide equipment suitable for use intended.
- B. Field Offices: Prefabricated or Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.
- C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- E. Heating Equipment: Unless FAA authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
- F. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
- G. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.
- H. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- I. Lamps and Light Fixtures: General service incandescent lamps of wattage required for adequate illumination.
 - 1. Provide guard gages or tempered glass enclosures where exposed to breakage.
 - 2. Provide exterior fixtures where exposed to moisture.
- J. Power Distribution System Circuits: Where permitted and overhead and exposed for surveil-

lance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be non-metallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 - 1. Arrange with utility company, FAA, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
- C. Obtain easements to bring temporary utilities to Project site where FAA's easements cannot be used for that purpose.
- D. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
 - 1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
 - 2. Connect temporary sewers to service as directed by sewer department officials.
 - 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
 - 4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.
- E. Water Service: Use of FAA's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to FAA. At Substantial Completion, restore these facilities to condition existing before initial use.
 - 1. Provide rubber hoses as necessary to serve Project site.
 - 2. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- F. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
- G. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for

- disposal of used material.
- H. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
 - I. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
 - J. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.
 - K. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - L. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
 - 1. Install electric power service underground, unless overhead service must be used.
 - 2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
 - M. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
 - 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 - 2. Provide warning signs at power outlets other than 110 to 120 V.
 - 3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
 - 4. Provide metal conduit enclosures or boxes for wiring devices.
 - 5. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
 - N. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
 - 3. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
- B. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and

- support facilities for easy access.
- C. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
 - D. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to FAA.
 - E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.
 - F. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.
 - G. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
 - H. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.
 - I. Existing Elevator Usage: Use of FAA's existing elevators will be permitted, as long as elevators are cleaned and maintained in a condition acceptable to FAA. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
 - J. Existing Stair Usage: Use of FAA's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to FAA. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
- B. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.
- C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.
- D. Covered Walkway: Erect a structurally adequate, protective, covered walkway for passage of persons along adjacent public street. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
 1. Construct covered walkways using scaffold or shoring framing.
 2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 3. Extend back wall beyond the structure to complete enclosure fence.
 4. Paint and maintain in a manner approved by COTR.
 5. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.
- E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- F. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
- G. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 1. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
 2. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.
- H. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
 1. Construct dustproof partitions of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on construction side.
- I. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
 - a. Field Offices: Class A stored-pressure water-type extinguishers.
 - b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
 - c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.

4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
6. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
7. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
- C. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- D. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- E. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- F. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are the property of Contractor. FAA reserves right to take possession of Project identification signs.
- G. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
- H. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 56 00 - TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section covers the provision for labor, materials, equipment and procedures for the protection of occupants and existing buildings during construction.

1.2 REQUIREMENTS:

- A. Care shall be exercised to protect all adjoining surfaces, equipment, utility lines, materials, and structures from damage, including damage by fire or water, and by the Contractor's operations. All work shall be performed in a safe manner and in accordance with local fire and safety regulations. Any damage to the work, or materials of others, or to other structures resulting from the Contractor's operations under this contract shall be promptly repaired or replaced at the expense of the Contractor and to the satisfaction of the Contracting Officer's Technical Representative (COTR).

1.3 BARRIERS:

- A. Contractor shall furnish, install, and maintain suitable barriers, from beginning to completion of contract, as required to prevent public entry, and to protect the work, existing facilities, and building occupants from construction operations.

1.4 SAFETY REQUIREMENTS:

- A. All work performed under the contract, and all equipment, appliances, tools, hoists, scaffolds, and other items used in the work shall conform to all Federal, State and local safety codes and regulations.
- B. Construct temporary barricades, walkways, passageways, etc., that are necessary to protect persons and property from hazard or damage due to construction operations, and as required by State, or Federal laws, ordinances, or codes. Site safety devices shall be designed and constructed to have sufficient strength and of such materials as will accomplish their protective function. Provide warning signs, hazard and service lights, etc., as necessary for the protection of persons from injury due to construction operations.

1.5 DUST CONTROL:

- A. Throughout the contract period, the Contractor shall effectively control dust in the working areas and storage areas connected with this project.

1.6 POWDER DRIVEN FASTENERS:

- A. Use of powder driven fasteners is permissible for this project where specified, detailed, or otherwise indicated or as allowed by the COTR. Adequate safety precautions for the public and workmen shall be provided, and the responsibility for these measures shall be borne by the Contractor.

1.7 CUTTING AND REPAIRING:

- A. Unless otherwise specified, the Contractor shall coordinate all structural cutting work by and for the various trades, and shall be responsible for all repair and refinishing required. Cutting torches shall not be used.

1.8 PROTECTION OF FINISHED WORK:

- A. The Contractor shall be responsible for the security and protection of the work under construction and of the completed work until the Government has made final acceptance
- B. Protection of finished floors and stairs from dirt and damage shall be accomplished by the following: In areas subject to foot traffic, heavy paper, sheet goods, or other materials shall be secured in place. For movement of heavy products, planking of similar materials shall be laid in place. For storage of products, tight wood sheeting shall be laid in place.
- C. Use of waterproofing and/or roofing materials for protection of any kind, and for storage of any products shall be prohibited. When some activity must take place in order to carry out the contract, installer recommended protection shall be installed and removed upon completion of that activity. The use of adjacent unprotected areas shall be restricted.
- D. Traffic of any kind across planted lawn and landscaped areas not in the designated construction area shall be prohibited.

1.9 FIRE PROTECTION:

- A. In addition to the requirements on the drawings and in the remainder of this Specification, the Contractor shall take necessary precautions to guard against possible fire hazards and to prevent damage to construction work, building material, equipment, storage sheds, and public and private property. The Contractor shall be responsible for providing, maintaining, and enforcing the following conditions and requirements during the entire construction period.
 - 1. Extinguishers: Provide and maintain, during construction, fire extinguishers rated not less than ABC in the in the Base Building and in the Contractor's office/storage trailer if applicable.

PART 2 - PRODUCTS -- NOT USED.

PART 3 - EXECUTION --NOT USED.

END OF SECTION 01 56 00

SECTION 01 61 00 - BASIC PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE:

- A. This section describes the procedures to be followed for the ordering, transportation, delivery, storage and handling and installation of materials and equipment used in construction.

1.2 REQUIREMENTS:

- A. Material and equipment incorporated into the work shall meet the following requirements:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, and quality specified, or as approved by the Contracting Officer's Technical Representative (COTR) in writing.
 - 3. Manufactured and Fabricated Products: Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - a. Manufacture all like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - b. Two or more items of the same kind shall be identical, by the same manufacturer.
 - c. Products shall be suitable for service conditions.
 - d. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are approved in writing.
 - 4. Do not use material or equipment for any purpose other than which it is designed for or is specified.
 - 5. The Contractor is expressly forbidden to use materials containing asbestos or lead paint.

1.3 ORDERING OF MATERIALS:

- A. The Contractor shall promptly, after the execution of this contract and approval of submittals, place orders for materials and/or equipment that delivery of same may be made without delays to the work.

1.4 DELIVERY of materials:

- A. Deliveries of products shall be arranged in accordance with construction schedules, and coordinated to avoid conflict with work and conditions at the site.
- B. All materials shall be delivered, stored flat and covered sufficiently to protect materials and/or equipment from damage, moisture, dust, etc. Those delivered otherwise shall be rejected by the COTR

1.5 STORAGE AND PROTECTION OF MATERIALS:

- A. Store all materials and containers that are subject to damage by moisture off the ground, under a waterproof cover, on a strong level surface with board edges, ends, and surfaces protected from damage. Store all flammable or volatile materials outside the building.
- B. Storage shall be arranged in a manner to provide easy access for inspection. Periodic inspections of stored products shall be made to assure that products are maintained under specified conditions and free from damage or deterioration.

1.6 INSTALLATION:

- A. Manufacturer's instructions: When Contract Documents require that installation of work shall comply with the manufacturer's printed instructions, obtain and distribute copies of such instructions to those involved in the installation, including two (2) copies to the COTR. Maintain one set of complete instructions at the job site during installation and until completion. The Contractor shall handle, install, connect, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the COTR for further instructions. Do not proceed with work without clear instructions. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.
- B. These specifications are accompanied by drawings of the installation indicating the locations of materials, equipment, piping, ductwork, outlets, switch controls, circuits, lines, etc.
- C. All dimensional information related to existing facilities shall be taken from actual measurements made by the Contractor on the site. Dimensions and data of existing facilities indicated in Contract Documents are for information purposes only, and shall be verified by the Contractor.
- D. Space and Equipment Arrangement.- All equipment shall be installed in a manner that allows access to all operable components, motors, and service personnel. Applicable code clearances shall be required. All valves, motors, filters, and other accessory items shall be installed in a position to allow removal for service without disassembly of piping or another part of the assembly.

PART 2 - PRODUCTS (Not used.)

PART 3 - EXECUTION (Not used.)

END OF SECTION 01 61 00

SECTION 01 74 00 - CLEANING

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section covers the requirements for maintaining the site in a neat condition during construction and for final cleaning prior to final inspection by the FAA.

1.2 SUBMITTALS:

- A. Submit the following in accordance with Section 01 33 00:
- B. Dust control plan: The plan, submitted with the Contractor's Safety Plan, shall detail all procedures to be used to prevent the migration of dust
- C. Material Safety Data Sheets (MSDS): The Contractor shall submit 3 copies of MSDS for all cleaning products. Those products that create a hazard to personnel or property will not be allowed.

1.3 SITE MAINTENANCE:

- A. All areas under the Contractor's control shall be maintained free of extraneous debris. Maintain site in a clean and orderly condition at all times. The Contractor shall initiate and maintain a specific program to prevent accumulation of debris at the construction site, storage and parking areas, or along access roads and haul routes.
- B. On-site containers for the collection of waste materials, debris, and rubbish shall be provided by the Contractor.
- C. Daily collections and disposal of debris shall be scheduled with additional collection and disposal of debris provided whenever the periodic collection is inadequate to prevent accumulation. Overloading of trucks carrying disposal shall be prohibited. Rubbish transportation shall conform to local and/or state requirements.
- D. Provide a suitable dumpster for construction waste. The Contractor shall have container emptied with suitable frequency so that trash does not overflow and blow around site and adjacent property. A cover is required and shall be provided on the dumpster in order for the refuse not to blow out. The Contractor shall be responsible for the timely, legal disposal of all construction waste.

1.4 FINAL CLEANING:

- A. Products: Only those cleaning materials which will not create hazards to health or property and which will not damage surfaces shall be used. Cleaning materials and methods as recommended by the manufacturer of the surface to be cleaned shall be used.
- B. The Contractor shall accomplish the following:
 - 1. Employ skilled workers for final cleaning.
 - 2. Remove grease, mastic, adhesive, dust, dirt, stains, fingerprints, labels, and other foreign materials from visible interior and exterior surfaces.
 - 3. For ventilating systems: Clean permanent filters and replace disposable filters if units are operating during construction. Do not operate blowers and coils without filters during construction.

4. Vacuum carpets.
5. Clean area above acoustical ceiling such that no foreign objects are above ceiling.
6. All equipment enclosures shall be free from debris including but not limited to metal shavings, dirt, wire, etc.
7. Prior to final inspection by the FAA, the Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas to verify that the entire work is clean.

PART 2 - PRODUCTS (Not used.)

PART 3 - EXECUTION (Not used.)

END OF SECTION 01 74 00

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section describes the administrative procedures for final completion of work.

1.2 SUBSTANTIAL COMPLETION:

- A. The FAA considers that "Substantial Completion" occurs when a high percentage of the work is complete and the project is ready for its intended use. Specifically, "Substantial Completion" has been reached when:
 - 1. All construction as required by the contract is complete, with the exception of "punch list" items.
 - 2. All major systems are operational (i.e. HVAC)
 - 3. All Unacceptable Work Order items have been resolved.
 - 4. All major systems testing and balancing has been completed and is in compliance with the contract documents.

1.3 CERTIFICATE OF COMPLETION:

- A. When the Contractor considers the work as completed and ready for final inspection/acceptance by the FAA, he shall submit written certification that:
 - 1. Contract documents have been reviewed.
 - 2. Work has been inspected for compliance with contract.
 - 3. Equipment and Systems have been tested in the presence of the Contracting Officer's technical Representative (COTR) and are operational, and required test and balance reports have been submitted and approved.
 - 4. Required instruction of maintenance personnel has been done.
 - 5. Work is completed, premises cleaned and ready for inspection.
 - 6. Operations/maintenance manuals have been submitted for approval.

1.4 PRELIMINARY PUNCH LIST

- A. Submission of the Contractor's written Certificate of Completion shall initiate the COTR to conduct a preliminary inspection and furnish the Contractor a list of all discrepancies in the work, material, and equipment; noted upon preliminary inspection.

1.5 FINAL INSPECTION:

- A. The COTR shall schedule the Final Inspection upon approval and endorsement of the Contractor's second Certification of Completion stating all discrepancies listed on the Preliminary Punch List have been corrected.

1.6 FINAL PUNCH LIST:

- A. The COTR shall furnish the Contractor with a Final Punch List listing of all discrepancies in the work, material, and equipment noted during the Final Inspection.

1.7 ACCEPTANCE OF WORK:

A. The Contractor shall correct discrepancies noted during the Preliminary Inspection and Final Inspection, clean the premises, and notify the COTR that the work is ready for acceptance.

1. The foregoing procedures shall be repeated until the work is acceptable to the COTR.

1.8 CONTRACTOR ACCEPTANCE INSPECTION (CAI):

A. After completion of all of the Contractor's work, a CAI will be conducted between the Contractor and the FAA. The COTR will review the contract documents and verify the Contractor has completed all required work. A Joint Acceptance Inspection (JAI), which is an internal approval process within the FAA, may be held concurrently with the CAI.

PART 2 - PRODUCTS - NOT USED.

PART 3 - EXECUTION - NOT USED.

END OF SECTION 01 77 00

SECTION 01 78 00 - CONTRACT CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY:

- A. This section describes the procedures for closeout submittals, revised project documents, and delivery and distribution of spare parts and maintenance manuals.

1.2 OPERATION AND MAINTENANCE MANUALS:

- A. Prepare operating and maintenance data as specified in this section.
 - 1. Number of copies: Submit three (3) hard-bound manuals containing copies of manufacturer's literature, technical data, operating and maintenance instruction, service manuals and parts lists applicable to each item of equipment furnished.
 - 2. Furnish an operation and maintenance manual. The manual shall include: wiring and control diagrams with data to explain detailed operation and control of each item of equipment; a control sequence describing start-up, operation and shutdown; description of the function of each principal item of equipment; the procedure for starting; the procedure for operating; shutdown instructions; installation instructions; maintenance instructions; lubrication schedule including type, grade, temperature range, and frequency; safety precautions, diagrams, and illustrations; test procedures; performance data; and parts list. The parts lists for equipment shall indicate the sources of supply, recommended spare parts, and the service organization that is reasonably convenient to the project site. The manual shall have complete information on the equipment, controls, accessories, and associated appurtenances provided.

1.3 POSTED OPERATING INSTRUCTIONS:

- A. Furnish approved operating instructions for each system and principal item of equipment as specified in each individual section for the use of the operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal item of equipment. Operating instructions shall be printed or engraved, and shall be framed under glass or in approved laminated plastic and posted where directed. Operating instructions shall be attached to or posted adjacent to each principal item of equipment and include directions for start up, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other areas as recommended by the manufacturer of each item of equipment. Operating instructions exposed to the weather shall be made of weatherproof materials or shall be suitably enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.4 PRODUCT WARRANTIES:

- A. All warranties under this contract shall continue for a period of one (1) year from the date of final acceptance of the work, unless otherwise stated. Two (2) original signed copies of each warranty are required.
- B. Each warranty shall contain complete information including the following:
 - 1. Product or work item.

2. Firm, with name of principal, address, and telephone.
3. Scope and limitations.
4. Date of beginning warranty, which shall be date of final acceptance by the Government.
5. Duration of warranty. In no cases shall the warranty be less than one year from the date of final acceptance by the Government.
6. Information for owner's personnel to include proper procedure to evoke the warranty in case of failure, and for instances which might affect the validity of warranty.
7. Contractor, name or responsible principal, address and telephone number.

1.5 PROJECT RECORD DRAWINGS:

- A. Prior to final acceptance by the FAA, the Contractor shall furnish the COTR with as built record drawings. Approved detailed shop drawings submitted for review and approval are acceptable. Where shop drawings were not required, the Contractor shall provide engineering sketches detailing the installation. The information provided by as-built drawings, shop drawings or engineering sketches must provide adequate information for the revision of existing facility drawings. This information is to reflect the actual construction and installation of the equipment and materials under the terms of the contract.

1.6 SPARE PARTS:

- A. Prior to final acceptance by the FAA, the Contractor shall deliver to the COTR all spare parts as required by all other sections in this specification. All spare parts shall be delivered in its original, unopened containers or packages. All packages shall be clearly labeled as to the type and number of parts enclosed. A complete listing of all spare parts provided shall be included in the Operation and Maintenance Manual. This list shall indicate a local source for additional spare parts.

PART 2 - PRODUCTS -- NOT USED.

PART 3 - EXECUTION -- NOT USED.

END OF SECTION 01 78 00

SECTION 02 41 19 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

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

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
1. Inspect and discuss condition of construction to be selectively demolished.
 2. Review structural load limitations of existing structure.
 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 5. Review areas where existing construction is to remain and requires protection.

1.5 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure FAA's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of stairs.
5. Coordination of FAA's continuing occupancy of portions of existing building and of FAA's partial occupancy of completed Work.

C. Predemolition Photographs or Video (DVD): Submit before Work begins.

1.6 CLOSEOUT SUBMITTALS

- A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.7 FIELD CONDITIONS

- A. FAA will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so FAA's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by FAA as far as practical.
- C. Notify COTR of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by FAA. FAA does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to COTR.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. FAA will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to FAA.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 4. Maintain adequate ventilation when using cutting torches.
 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 6. Dispose of demolished items and materials promptly.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by COTR, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least **3/4 inch** at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain FAA's property, remove demolished materials from Project site and legally dispose of them.
1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off FAA's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 02 82 00 - ASBESTOS ABATEMENT AND LCC DEMOLITION
PART 1 - GENERAL

1.1 SUMMARY

- A. This specification is being included as part of the bid package to identify the location of asbestos containing materials and lead coated components that may be disturbed during the course of the project.
- B. Observe all existing conditions prior to submitting a bid. Include in the bid, existing conditions and their impact, particularly to cost and health and safety of workers and occupants, and proper function and operation of the facility. Failure to visit the site shall in no way provide relief from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the Contract Documents without additional cost to the FAA. All site visits shall be scheduled with the FAA.
- C. Asbestos containing materials and lead containing coatings have been identified at the Tower. Refer to Drawings for locations.
- D. This project may require drilling holes through asbestos containing floor tile and mastic to attach bracing. Local exhaust ventilation or a foam may be used to collect asbestos fiber at the point of generation.
- E. This project may require lead paint spot abatement and lead component removal. Structural steel component removal, mechanical demolition, architectural components demolition, and electrical demolition shall be included as part of the demolition pricing. Paint or coating with a lead component may be removed using local exhaust ventilation or a foam to collect lead particulate at the point of generation, or construction of a negative pressure enclosure to contain the lead particulate.

1.2 REFERENCE DOCUMENTS

The following documents are included for general reference and may not be inclusive of all standards applicable for this project. The current issue of the following documents on the date of Invitation for Bids form a part of this specification and are applicable to the extent specified. Work shall conform to applicable federal, state and local government's regulations and to the requirements specified in these Contract Documents. Whenever inconsistencies occur between the referenced materials, the more stringent shall apply. The intent of these documents is to verify the Work is conducted at the highest level of safety.

American National Standards Institute (ANSI)

ANSI Z87.1	Occupational and Educational Eye and Face Protection
ANSI Z88.2	Respiratory Protection
ANSI Z89.1	Hard Hats
ANSI Z9.2	Fundamentals Governing the Design and Operation of Local Exhaust Systems

American Society for Testing and Materials (ASTM)

ASTM C 732	Aging Effects of Artificial Weathering on Latex Sealants
ASTM D 522	Mandrel Bend Test of Attached Organic Coatings
ASTM D 1331	Surface and Interfacial Tension of Solutions of Surface-Active Agents
ASTM D 2794	Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 4397	Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
ASTM E 84	Surface Burning Characteristics of Building Materials
ASTM E 96	Water Vapor Transmission of Materials
ASTM E 119	Fire Tests of Building Construction and Materials
ASTM E 736	Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
ASTM E 1368	Visual Inspection of Asbestos Abatement Projects
ASTM D 2986	Evaluation of Air Assay Media by the Monodisperse DOP (Diocetyl Phthalate) Smoke Test
ASTM D 4884-96	Standard Test Method for Strength of Sewn or Thermally Bonded Seams of Geotextiles

Code of Federal Regulations (CFR)

29 CFR Part 1910	Occupational Safety and Health Standards
Subpart I	Personal Protective Equipment
1910.132	General Requirements
1910.134	Respiratory Protection
Subpart J	General Environmental Controls
1910.145	Specifications for Accident Prevention Signs and Tags
Subpart Z	Toxic and Hazardous Substances
1910.1000	Air Contaminants
1910.1001	Asbestos
1910.1025	Lead
1910.1200	Hazard Communication
29 CFR Part 1926	Safety and Health Regulations for the Construction Industry
Subpart D	Occupational Health and Environmental Controls
1926.51	Sanitation
1926.52	Occupational Noise Control
1926.56	Illumination
1926.62	Lead
Subpart E	Personal Protective & Life Saving Equipment
1926.100	Head Protection
1926.101	Hearing Protection
1926.102	Eye and Face Protection
1926.103	Respiratory Protection

1926.104	Safety Belts, Lifelines, and lanyards
Subpart F	Fire Protection and Prevention
1926.150	Fire Protection
1926.151	Fire Prevention
1926.154	Temporary Heating Devices
Subpart J	Welding and Cutting
1926.350	Gas Welding and Cutting
1926.352	Fire Prevention
1926.353	Ventilation and Protection in Welding, Cutting and Heating
Subpart L	Scaffolds
1926.450	Scope, Application, and Definitions Applicable to this Subpart
1926.451	General Requirements
1926.452	Additional Requirements Applicable to Specific Types of Scaffolds
1926.453	Aerial Lifts
1926.454	Training Requirements
Appendix A	Scaffold Specifications
Subpart M	Fall Protection
1926.500	Scope, Applicability, and Definitions Applicable to this Subpart
1926.501	Duty to Have Fall Protection
1926.502	Fall Protection Systems Criteria and Practices
1926.503	Training Requirements
Subpart N	Cranes, Derricks, Hoists, Elevators, & Conveyors
1926.552	Material Hoists, Personnel Hoists, and Elevators
Subpart Z	Toxic & Hazardous Substances
1926.1101	Asbestos
Appendix F	Work Practices and Engineering Controls for Major Asbestos Removal, Renovation, and Demolition Operations
Appendix I	Medical Surveillance Guidelines for Asbestos
40 CFR	Environmental Protection Agency
Part 61	
Subpart M	National Emission Standard for Asbestos
Part 261	Identification and Listing of Hazardous Waste
Part 763	Asbestos
Subpart E	Asbestos-Containing Materials in Schools
Subpart G	Asbestos Worker Protection
49 CFR	Department of Transportation
Part 173	Shippers - General Requirements for Shipments and Packaging

National Institute for Occupational Safety and Health (NIOSH). Department of Health and Human Services

Method 7400	Fibers
Method 7402	Asbestos Fibers

Method 7082	Atomic Absorption; Flame
Method 7105	Atomic Absorption; Graphite Furnace

National Fire Protection Association (NFPA)

70	National Electrical Code
241	Construction and Renovations
701	Standard Method of Fire Tests for Flame-Resistant Textiles and Films.

Compressed Gas Association (CGA)

CGA G-7	Compressed Air for Human Respirators
CGA G-7	Commodity Specifications for Air

Underwriters Laboratories (UL)

UL 586	High-Efficiency Particulate Air Filter Units
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Other Standards

NSF 49	National Sanitation Foundation Class II (Laminar Flow) Biohazard Cabinetry
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Federal Aviation Administration (FAA) Orders

Article 77	Agreement between DOT/FAA and the National Air Traffic Controllers Association (NATCA)
Article 52	Agreement between DOT/FAA and the Professional Airways System Specialists (PASS)
Order 1050.20A	Airway Facilities Asbestos Control
Order 3900.19B	FAA Occupational Safety and Health Program
Local Order	Facility Asbestos Abatement Contingency Plan

State Requirements

18 AAC 60.450	Connecticut Administrative Code Title 18 Chapter 60 Section 450 (Disposal)
8 AAC 61.600-790	Asbestos Abatement Statutes and Regulations

1.3 DEFINITIONS

A. The following terms used in the text shall be defined as follows:

1. CIH: An Industrial Hygienist certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.

2. Class I Asbestos Work: Activities involving the removal of thermal system insulation (TSI) and surfacing ACM.
3. Class II Asbestos Work: Activities involving the removal of ACM that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of caulk.
4. Class III Asbestos Work: Repair and maintenance operations where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos or asbestos-containing debris is actively disturbed. Removal of small amounts of ACM that would fit into a single 60 x 60 inch glove bag or disposal bag may be classified as a Class III job.
5. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.
6. Competent Person: On all construction work sites, the contractor shall designate a competent person having the qualifications and authority for verifying worker safety and health as required by 29 CFR 1926.20 and for overseeing asbestos-related work as required by 29 CFR 1926.1101. The duties of the competent person include, but are not limited to, the following: establishing the negative pressure enclosure, verifying its integrity, controlling entry into and exit from the enclosure, and verifying workers wear required personal protective equipment and are trained in the use of hygiene facilities, work practices, and decontamination procedures specified in this specification and applicable regulations.
7. COTR: Contracting Officer's Technical Representative
8. Critical Barrier: 2 Layers of 6-mil polyethylene sheeting sealed over the openings in the work area (or other similarly placed physical barrier) sufficient to prevent airborne fibers in the work area from migrating to an adjacent area.
9. Demarcated Area: An area that has been isolated from the remaining portions of the building by installing critical barriers and/or flapped barriers on the doorways/entrances/and other openings to the area, posting the area with OSHA approved warning signage to prevent unauthorized entry, and providing HEPA equipped ventilation equipment to filter the air and provide directed airflow out of the area.
10. Friable ACM: A term as defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 that means any material containing more than one percent asbestos as determined using the method specified in 40 CFR 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
11. High Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

12. Immediately: When the contractor is on-site, immediately refers actions required to take place within 15 minutes of being notified. When the contractor is off-site, immediately refers to actions required to take place within 2 hours of being notified.
13. Monitoring Contractor (MC): contracted as a third party to the FAA, to perform inspections and air monitoring.
14. Presumed Asbestos-Containing Material (PACM): Thermal system insulation and surfacing material found in buildings constructed no later than 1980.
15. Permissible Exposure Limit (PEL): OSHA PELs are worker exposure limits regulating the concentration of a substance in air that shall not be exceeded. (1) An airborne concentration of asbestos of 0.1 fibers per cubic centimeter of air (f/cc) as an eight- (8) hour time weighted average (TWA). (2) An airborne concentration of asbestos of 1.0 f/cc as averaged over thirty- (30) minutes (Excursion Limit).
16. Time-Weighted Average (TWA): The TWA is an 8-hour time weighted average concentration of airborne asbestos fibers (longer than 5 micrometers) per cubic centimeter of air that represents the employee's 8-hour workday as determined by Appendix A of 29 CFR 1926.1101.

1.4 PROVIDE THE FOLLOWING PRE-BID CONTRACTOR QUALIFICATION SELECTION SUBMITTALS

- A. Contractor Identification: The Contractor shall be licensed by the State of Connecticut for the work to be performed.
- 1 Company name and address (street and mailing if different).
 - 2 Name of individual supplying information.
 - 3 Name of parent company, if any.
 - 4 Connecticut State Business License
 - 5 Project Manager Name.
 - 6 Address of office responsible for this project.
 - 7 Telephone number.
- B. Insurance: Contractor shall have at a minimum the following insurance.
- | | |
|------------------------------|---|
| Commercial General Liability | \$5 million per occurrence and aggregate with bodily injury and property damage coverages |
| Automobile Liability | \$5 million per occurrence and aggregate with bodily injury coverage |
| Worker's Compensation | Consistent with state statutory requirements |
| Employer's Liability | \$2 million per occurrence and each employee |
| Pollution Liability | \$5 million per occurrence and aggregate |
- C. Staff:
1. Number of full-time company employees.
 2. Names of local office Company Officers.

3. Names of local office full-time field supervisory personnel, and years of asbestos and lead removal experience, include resumes.
 4. Names of local office part-time field supervisory personnel, and years of experience.
 5. Number of local office full-time foreman and laborers.
 6. Number of local office part-time foreman and laborers.
 7. Name of employees' union(s), if any.
 8. Usual ratio of supervisory to labor personnel used.
- D. Experience:
1. Briefly describe company history.
 2. Provide evidence verifying the company has a minimum of three (3) years of successful experience working in the State of Connecticut.
 3. Provide a representative list (at least three projects) of successful projects working in occupied facilities. List project name, date, size, duration, removal cost, references and telephone numbers for each project.
 4. State average yearly dollar volume of work over the past two years.
- E. Regulatory (Past 5 Years):
1. List and explain warnings or citations received from Federal, State or Local Regulatory Agencies related to asbestos and/or lead abatement activities. Include project name, date and resolution.
 2. List assessed penalties, liquidated damages or schedule overruns and resolutions, which occurred. Include contract terminations.
 3. List projects where the owner, architect or consultant halted project activities. State project name, date, reason for shutdown and resolutions.
 4. List asbestos or lead related legal proceedings/claims in which the company (or employees scheduled to participate in this project) have participated or are currently involved. Include descriptions of role, issue and resolution to date.
- F. Medical Requirements: Provide a copy of the company's Medical Surveillance Program.
- G. Training: Provide a copy of the company's training program for supervisors and laborers. The program shall include, but is not limited to, how often training is conducted, who conducts the training, when it is conducted, what the duration of the program is and how documentation of training is accomplished for asbestos and lead.
- H. Respiratory Protection: Provide a copy of the company's respiratory protection training program.
- I. Health and Safety Program: Provide a copy of the company's health and safety program.

- J. Submittal Notarization: Sign and date submittal by an officer of the company, indicating name and title of person signing.

1.5 PROVIDE THE FOLLOWING POST-AWARD CONTRACTOR SUBMITTALS (Provide two copies of the following.

- A. Prepare a Safety, Health and Accident Prevention Plan for all work being performed. Incorporate the requirements and procedures of the Groton/New London ATCT Asbestos Abatement Contingency Plan into the plan. At a minimum, the plan shall include the following:
1. Emergency procedures shall be in written form and prominently posted on-site. Everyone, prior to entering the work area, shall be required to read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.
 2. Emergency planning shall include considerations of fire, explosion, toxic or oxygen deficient atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat/cold related injury. Written procedures shall be developed and employee training in procedures shall be provided.
 3. Emergency planning shall include a Hazard Communication Program (HAZCOM). A written HAZCOM program shall be established and implemented according to 29 CFR 1926.59. Copies of Material Data Sheets (MSDS) for chemicals brought on-site by the Contractor shall be attached to the written HAZCOM Program. The FAA has the option of disallowing the use of some chemicals due to high toxicity, objectionable odors, and when more suitable substitutes are available.
- C. Project Personnel
1. Provide number of full-time laborers that shall be assigned to this project.
 2. Provide number of crews and shifts for this project.
 3. Provide documentation that each employee has received asbestos awareness and lead coating training.
- D. Laboratories: Submit documentation that the laboratory(ies) to be used for Personnel Samples on this contract is (are) accredited.
1. For lead air samples, the laboratory shall be accredited by the American Industrial Hygiene Association (AIHA) and participates in the Environmental Lead Laboratory Accreditation Program (ELLAP).
- E. Product Data: Submit Manufacturer Product Data on the following, if applicable:
1. HEPA equipped Air Filtration Devices (AFDs) Product Data
 2. HEPA equipped vacuum unit Product Data
 3. Disposable Clothing Product Data

4. Respirator(s) Product Data
 5. Portable Shower Product Data
 6. Wetting Agent Product Data and MSDS
 7. Encapsulant Product Data and MSDS
 8. Chemical Stripper Product Data, MSDS, and Manufacturer recommended work practices for the product
 9. Spray Adhesive Product Data and MSDS
 10. Polyethylene Sheeting Product Data
 11. Waste Water Filter and Equipment Product Data
 12. Airless Sprayer Product Data
- F. Miscellaneous: Provide copies of written notification to any rental company concerning the intended use of rental equipment (including scaffolding), the possibility of lead contamination, and the decontamination procedures that shall be used prior to the return of the equipment.
- G. Submittal Notarization: The submittal shall be approved, signed and dated by an officer of the company and the contractors CIH indicating name and title of each person signing.

1.6 ONGOING PROJECT SUBMITTALS

- A. Submit required documentation for new employees, equipment, materials or chemicals that arrive on-site at least one day prior to arrival on-site.
- B. Submit on a weekly basis, previous week's daily field notes and containment sign in sheets for the project.
- C. Submit delivery manifest 48 hours in advance of delivery date.
- D. Submit OSHA compliance monitoring results within 48 hours of collection date.
- E. Submit required Federal, State and Local documentation regarding the transportation and disposal of lead containing materials at the earliest possible time.

1.7 PROJECT CLOSEOUT SUBMITTALS

- A. Closeout Submittal: Within 30 days of the completion of the work, the Contractor shall provide a closeout submittal. The closeout submittal shall consist of the following documents:
 1. Written certification on final completion of the Work that the Work complies with Contract Documents.
 2. Certification that items on punch list issued at substantial completion have been completed or corrected and that tools, construction equipment and surplus materials have been removed from the site.
 3. Daily logs for abatement work.
 4. Copies of Waste Manifests for the project.

5. Copies of asbestos and lead worker and supervisory personnel certifications, fit test records, and physicians written opinion forms.
6. Copies of air monitoring results.

1.8 PROJECT CONDITION

- A. The work consists of the containment and removal of lead containing coatings. Local, state, FAA Orders and federal rules, regulations and laws govern the work.
- B. The FAA shall employ an independent Monitoring Contractor (MC) to verify conformance to the Contract Documents.
- C. The Contractor shall cooperate with the FAA and the Monitoring Contractor. This cooperation shall include allowing access to the work areas to allow for visual and air monitoring, collecting samples, providing requested data on personnel, equipment, scheduling and facilitating FAA monitoring of the work.
- D. Allow access to the work area when authorized by the FAA to enter the site of work.
- E. The ATCT facility operates from 7:00 am to 10:00 pm, 7-days per week, and is essential to the safe operation of air traffic in the control area. Immediately notify the FAA in the event of a breach of any regulated work areas. Coordinate construction and abatement activities with the FAA in order to prevent any disruption of FAA operations.
 1. Disruption of operations for any amount of time could jeopardize the safety of the flying public.
 2. The FAA shall occupy the facility during construction activities. Cooperate fully with the FAA during construction operations to minimize conflicts and to facilitate FAA usage. Perform the work so as not to interfere with FAA operations. Provide FAA personnel access to equipment remaining in service.
 3. The work shall be limited to specific areas of the building and site. Unlimited access is specifically not permitted. Arrangements for use of the buildings and site shall be restricted to those areas specifically allowed by FAA. Other contractors shall be working at the site. Cooperate with other on-site contractors. Construction planning meetings shall be held once a week to discuss other projects.

1.9 WORK BY FAA

- A. Environmental monitoring and sample analysis (by separate contract).
- B. The shutdown, lockout/tag out and re-start of mechanical equipment, and all energized source.
- C. The shutdown, lockout/tag out and re-start of electrical circuits and equipment.

1.10 NOTIFICATION

- A. The Contractor is responsible for lead related notifications, permits, and associated fees prior to and following abatement. Notify the FAA ten (10) working days prior to the start of the on-site abatement operations.

1.11 HOURS OF WORK

- A. The Contractor shall strictly adhere to work hours as specified in these specifications and in Division 01. Deviations shall be pre-approved, in writing by the FAA 48 hours in advance. Noisy activities may be limited to the hours of 10:00 pm to 6:00 am. Work methods that result in unacceptable disturbance or rejection by the FAA shall not result in an increase to the contract sum or extension of the contract time.
- B. Request to change work hours or overtime shall require the FAA written approval prior to implementing changes. The rejection of request for change shall not result in an increase to the contract sum or extending contract time.

1.12 SCHEDULE

- A. Adhere to the schedule as defined in the contract documents.

1.13 PRECONSTRUCTION MEETING

- A. The FAA shall schedule a preconstruction meeting after the Notice to Proceed. The minimum agenda shall consist of the following:
 - 1. Establishing chain of authority.
 - 2. Work schedule.
 - 3. Critical work sequencing.
 - 4. Processing of field decisions.
 - 5. Distribution of Submittal Documents.
 - 6. Review the facility Asbestos Contingency Plan.
 - 7. Submittals: schedules, product data and samples, manufacturer's certifications of products, manpower reports, major equipment deliveries and priorities, procedures for maintaining record documents, use of FAA facilities by contractor (access, parking, office area, storage area, and waste load-outs), safety and first aid procedures, security procedures and housekeeping procedures.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Material and Equipment - Prior to bringing material and equipment on site it shall be clean of environmental contamination or debris.

- A. Materials and products shall comply with the requirements of 29 CFR 1910.134, 29 CFR 1926.62 and 29 CFR 1926.1101.
- B. Polyethylene Sheeting: ASTM D4397, 6 mils thick, flame-retardant. Sheeting shall meet flammability requirements of NFPA 701, and flame spread and smoke density requirements of ASTM E84.
- C. Duct Tape: Waterproof, pressure-sensitive adhesive tape, 3 mils (min.) thick by 3 inches wide for criticals, containment seams and repairs, and decon units; 2 inch wide may be used only on disposal bags and personnel clothing.
- D. FSK Tape: Waterproof, pressure-sensitive adhesive tape, 2 mils (min) thick by 3 inches wide for criticals, containment seams, repairs, and decon units.
- E. High Efficiency Particulate Air (HEPA) Filtered Vacuum: Vacuum(s) shall be:
 - 1. Be capable of removing 99.97% of the asbestos particles (0.3 microns or greater in diameter) from the air.
 - 2. Be portable.
 - 3. Be equipped with hoses of sufficient length to reach areas behind pipes, ducts and other obstacles.
 - 4. Have new filters installed at the beginning of the project. The filters shall be changed on a regular basis for the duration of the project.
 - 5. Be removed from the FAA property immediately if they are found to be non-conforming.
- F. HEPA Filtered Ventilation System: Portable ventilation system designed to exhaust and clean the air inside the enclosure prior to exhausting to the outside of the building. The units shall have at least three (3) filter stages, including readily accessible pre- and secondary filters, and a final filter, which shall be a High Efficiency Particulate Air (HEPA) filter. The units shall:
 - 1. Be capable of capturing particles having a diameter of 0.3 micrometers or greater in size with an efficiency of 99.97%.
 - 2. Be equipped with the automatic restart feature.
 - 3. Have new filters installed prior to the onset of abatement activities. The filters shall be changed on a regular basis for the duration of the project.
 - 4. Be located as far away from the fresh air intakes as possible.
 - 5. Be removed from the FAA property immediately if they are found to be non-conforming.
- G. Ducts: All HEPA ventilation ducts from the negative air machines shall be constructed of new and unused tubing. The attachment of the ducts shall be spliced by means of sheet

metal connectors and sealed in order to verify an adequate seal. The attachment of the ducts shall withstand the force from the machines for the entire duration of the project. The Contractor shall have the responsibility to inspect the integrity of the exhaust ducts on a regular basis throughout the duration of the abatement activities.

- H. Wetting Agent: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the asbestos-containing material and in retardation of fiber release during disturbance of the material, equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether mixed with five gallons of water.
- I. Encapsulant: Provide an encapsulant/sealant, which shall be compatible with the existing surfaces, and one, which shall act as a suitable substrate for future surface coatings. Taint (or tint) the encapsulant with a contrasting color, to be approved by the FAA, so as to identify coverage.
- J. Airless Sprayer: Hand-pump type, pressure-can sprayer fabricated of either metal or plastic, equipped with a wand at the end of a hose capable of delivering a stream or spray of liquid under pressure.
- K. Respirators: Personal protective breathing equipment shall be in accordance with 29 CFR 1926.62 and 29 CFR 1926.1101.
- L. Signs and Labels: Signs and labels shall be provided in accordance with 29 CFR 1926.62, 29 CFR 1926.1101 and 40 CFR 61 subpart M.
- M. Disposal Bags: Leak-tight, 6 mil thick clear polyethylene bags with appropriate hazard warning, per EPA regulations 40 CFR 61.150 (a) (1) (v), OSHA requirement 29 CFR 1926.1101 and DOT.
- N. Miscellaneous Materials: Not applicable.
- O. Air Monitoring Equipment. The equipment shall include, but not be limited to:
 - 1. Low-volume, battery powered, body-attachable, portable personal pumps with a power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours.
 - 2. Standard 25-millimeter diameter, 0.8 micron pore size filters and cassettes in accordance with 29 CFR 1926, 1101, for asbestos personal air sampling.
 - 3. Standard 35-millimeter diameter, 0.8 micron pore size filters and cassettes in accordance with 29 CFR 1926.62, for lead personal air sampling.
 - 4. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 20 degrees C (minus 4 degrees F) to plus 60 degrees C (140 degrees F) and traceable to a National Institute of Standards and Technology (NIST) primary standard.

PART 3 - EXECUTION

3.1 GENERAL DESCRIPTION OF WORK

- A. Comply with the requirements of these Specifications and ANSI Z9.2, 29 CFR 1910.145, 29 CFR 1926.62, 29 CFR 1926.1101 and 40 CFR 61 and 763. The most stringent of codes shall apply.
- B. Environmental Monitoring: Environmental monitoring for airborne asbestos fiber concentrations or airborne lead concentrations and third party inspections shall be accomplished by the FAA's monitoring contractor, who shall be under a separate contract with the FAA. This monitoring contractor shall respond directly to the FAA.
- C. Wet Removal: ACM shall be removed using an amended water wet removal method as recommended by the EPA340/1-90-019 Asbestos NESHAP Adequately Wet Guidance Document and OSHA. The Contractor shall provide for the continual prevention of excessive water accumulation throughout the duration of the project.
- D. Housekeeping: Essential parts of abatement dust control are housekeeping and clean up procedures. Maintain surfaces of the abatement work area free of accumulations of lead debris. Give meticulous attention to restricting the spread of dust and debris. Keep waste from being distributed over the general area. The use of compressed air to move waste material or dust is prohibited. Material generated be packaged and removed at the end of each shift and shall not be allowed to accumulate inside the work area. The FAA shall inspect the removal area daily for residual debris.
- E. Abatement Superintendent: Designate a qualified employee as superintendent. The superintendent shall meet the requirements of a competent person/supervisor in accordance with OSHA and possesses at least 5 years asbestos/lead abatement experience. The competent person shall perform the following:
 - 1. Oversee all abatement personnel performing any abatement related work,
 - 2. Oversee construction of all enclosures.
 - 3. Control entry to and exit from the removal area.
 - 4. Supervise all employee exposure monitoring required by OSHA.
 - 5. Verify the proper use of protective clothing and equipment.
 - 6. Verify that all occupants of the removal area are properly trained and certified.
 - 7. Verify the proper use of hygiene facilities and decontamination procedures.
 - 8. Verify that all engineering controls are functioning per design.
- F. The contractor will maintain radio or telephone communication with the on-site Jacobs superintendent.
- G. Inspection by the FAA: During abatement work, the work shall be subject to on-site inspection by the FAA, who may be assisted by the monitoring contractor.

- H. Work Stoppage: The FAA shall issue a "stop work" order for any of the reasons listed below. No work shall be allowed to resume until the conditions stabilize and upon approval from the FAA. Standby time required to identify and resolve the problem shall be at the expense of the Contractor and may include the costs incurred by the extended efforts of the FAA's Monitoring Contractor.
1. If lead air monitoring results outside the containment indicate the presence of air lead outside the containment to be greater than 30 ug/m³.
 2. If excessive water accumulations appear or if water leakage or gross contamination is detected in areas adjacent to the removal area.
 3. If the work is found to violate specified requirements.
 4. If conditions arise that may adversely impact or disrupt the flying operations or working conditions at the facility.

3.2 PERSONAL PROTECTIVE EQUIPMENT

- A. Personal Protective Equipment (PPE): The Contractor will provide PPE for their worker's. The contractor's respiratory protection shall comply with 29 CFR 1910.134, 29 CFR 1926.62, and 29 CFR 1926.1101.

3.3 TEMPORARY FACILITIES AND UTILITIES

- A. Field Office: The Contractor shall furnish their temporary office space.
- B. Temporary Electric: The Contractor shall provide and maintain a GFCI electrical power center for the work operations. Connection locations and lockout/tag out shall be as directed by the FAA and electric power shall be provided at no charge to the Contractor. Under no circumstances shall FAA existing electrical circuits be used by the Contractor for any purpose, without prior authorization from the FAA.
1. The Contractor shall provide:
 - a. Main distribution panel with a capacity of 110-120 volts, single phase or three phase and 60 hertz and of sufficient capacity to service the complete project.
 - b. Circuit protection for each circuit.
 - c. Ground fault interruption protection for all circuits.
 - d. Grounded, UL listed extension cords from power centers to the point of operation.

UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE ALLOWED TO CONNECT INTO THE CRITICAL POWER SOURCE AT THE FAA FACILITY

- C. Temporary Lighting: The Contractor shall provide temporary illumination for construction needs, safe working conditions, public safety and security lighting in compliance with the requirements of 29 CFR 1926.26 and subpart D. Supports and ties shall be constructed of non-conductive materials and exposed two wire conductors shall not be allowed. Lamps shall be covered with safety guards or deeply recessed in reflector and lamps shall not be suspended by their electric cords unless cord and fixture is designed for that purpose.
- D. Temporary Water: The Contractor shall provide and maintain temporary water service connection throughout the work period. The temporary water shall be equipped with an approved backflow protection device. The contractor shall install valves at tie-in locations that shall be turned off and locked-out and tagged-out when the contractor is not present on-site.
- E. Temporary Sanitary: The Contractor shall provide and maintain temporary sanitary service connection throughout the work period.
- F. Existing Systems: The Contractor may make written arrangements with the FAA to modify, supplement and extend an existing system to meet temporary requirements for the project, subject to approval by the FAA. If existing systems are modified, supplemented and/or extended, the Contractor shall not overload the system or interfere with FAA's normal use of the system.
- G. Removal of Temporary Systems: The Contractor shall remove all temporary services and repair all damage caused by the contractor and restore to original conditions.

3.4 ISOLATION OF THE WORK AREA

- A. Prepare the work areas in accordance with 29 CFR 1926.62 and 29 CFR 1926.1101, Appendix F, and as detailed in this specification for the work areas.
- B. Establishing Negative Pressure: If containments are used by the contractor, establish negative pressure in accordance with the recommendations of 29 CFR 1926.1101 Appendix F.
 - 1. Maintain negative pressure for containments between negative 0.02 and negative 0.10 inches of water gauge. The intent of the design negative pressure is to prevent the contamination of non-abatement areas.
 - 2. Air Filtration Devices shall exhaust to the buildings exterior a minimum distance of thirty feet from the buildings HVAC make-up air.

- C. Work Place Entry and Exit: Enforcement is the responsibility of the Contractor. Entry shall be controlled to prevent unauthorized, accidental access into the containment area.
- E. Maintenance of Enclosure System: The FAA shall be immediately notified of problems that have developed such as a puncture of the containment system, electrical power loss, GFCI failure, equipment failure, accidental discharge into occupied areas, and partial collapse of the critical barrier (plastic sheet fails to remain in place), etc.

3.5 DECONTAMINATION UNIT

- A. Worker Decontamination Unit: No employee decontamination is required for this task.

3.6 PROCEDURE FOR DISPOSAL

- A. Lead: Pending TCLP testing (TCLP testing is for painted materials being disposed of in a landfill, otherwise collect metal components and recycle in accordance with local rules and regulations), collect lead waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing and place in sealed, impermeable containers. Properly label each container including identification of the type of waste (40 CFR 178) and the date the drum was filled. The labeling shall include the following additional information:

**Federal Aviation Administration
Groton/New London ATCT (GON)
155 Tower Street
Groton, Connecticut 06340
(Name of Contractor)**

1. Perform TCLP tests (not required for materials being recycled) on the painted material being removed to determine if the material requires disposal as a hazardous waste or can be disposed of as a solid waste. Dispose of hazardous waste lead material at an Environmental Protection Agency (EPA) or local-approved hazardous waste treatment, storage, or disposal facility off FAA property. Comply with land disposal restriction notification requirements as required by 40 CFR 268. An area for interim storage (less than 90 days) of lead waste-containing drums shall be assigned by the FAA. Procedure for hauling and disposal shall comply with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265, and with state,

regional, and local standards. Test results shall be submitted to the FAA prior to transportation off the site.

2. The Generator (FAA), the Waste Transporter (Contractor) and the Approved Landfill (Disposal Facility) shall sign waste Manifests. Minimum requirements for information included on the waste manifest include:
 - a. Contain a unique number.
 - b. Be signed by generator when shipping.
 - c. Be signed by transporter when material is picked-up.
 - d. Be signed by disposal facility when received.
 - e. Name and address of pick-up site.
 - f. Estimated quantity of waste.
 - g. Specific location within the building where waste was generated.
 - h. Type and number of bags and drums used at each specific location within the building.
 - i. Name of Transporter.
 - j. Disposal site name, location and EPA identification number.
 - k. Copies of the manifest signed by the generator, transporter and disposal site shall be maintained by each entity.

3.7 ABATEMENT AIR MONITORING

- A. Personal Monitoring: The Contractor is responsible for Personal Samples required in accordance with OSHA. An independent American Industrial Hygiene Association accredited laboratory shall be used to analyze air samples in accordance with OSHA. Copies of the results of the air samples shall be furnished within 3 days following the day in which they were collected and shall notify monitored employees.
- B. Environmental Monitoring: Environmental monitoring for lead shall be under a separate contract to the FAA as a third party monitoring contractor.
 1. Clearance Monitoring: No clearance monitoring is anticipated for the seismic project.

END OF SECTION 02 82 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

1.2 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.
1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 3. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.
- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:
1. Power source (constant current or constant voltage).

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and fabricator
- B. Welding certificates.

- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural steel, including chemical and physical properties.
- E. Product Test Reports: For the following:
 - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 2. Shop primers.
 - 3. Nonshrink grout.
- F. Source quality-control reports.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Shop-Painting Applicators: Qualified according SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
- E. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 341 and AISC 341s1.
 - 3. AISC 360.
 - 4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- F. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. WT-Shapes: ASTM A 992/A 992M, Grade 50.
- B. Channels, Angles: ASTM A 36/A 36M or ASTM A 572/A 572M, Grade 50 (345).
- C. Plate and Bar: ASTM A 36/A 36M, ASTM A 572/A 572M, Grade 36.
 - 1. Weight Class: Standard.
 - 2. Finish: Black except where indicated to be galvanized.
- D. Welding Electrodes: E 70XX comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class 8S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; all with plain finish.

2.3 PRIMER

- A. Primer: Comply with Division 09 painting Sections.

2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
 - 1. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
 - 2. Mark and match-mark materials for field assembly.
 - 3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."

- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces..

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces to be field welded.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 2 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 2 mils.

2.8 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.

2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow curing. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- 3.4 FIELD CONNECTIONS
- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
 - 1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
- B. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

END OF SECTION 05 12 00

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

1.2 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479:
 - 1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 - 2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - a. Penetrations located outside wall cavities.
 - b. Penetrations located outside fire-resistance-rated shaft enclosures.
 - 3. L-Rated Systems: Provide through-penetration firestop systems with L-ratings of not more than 3.0 cfm/sq. ft at both ambient temperatures and 400 deg F.
- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

- D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.
 - 1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
 - 2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
- C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:
 - 1. Types of penetrating items.
 - 2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
 - 3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.
- D. Qualification Data: For Installer.
- E. Product Certificates: For through-penetration firestop system products, signed by product manufacturer.
- F. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."

- B. **Installer Qualifications:** A firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
- C. **Installation Responsibility:** Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.
- D. **Source Limitations:** Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.
- E. **Fire-Test-Response Characteristics:** Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
 - 1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, OPL, ITS, or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
 - 2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems complying with the following requirements:
 - a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
 - b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."
 - 2) OPL in its "Directory of Listed Building Products, Materials, & Assemblies."
 - 3) ITS in its "Directory of Listed Products."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
- C. Notify FAA's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by FAA's inspecting agency and building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, through-penetration firestop systems that may be incorporated into the Work include, but are not limited to, those systems indicated in the Through-Penetration Firestop System Schedule on Drawings.

2.2 FIRESTOPPING, GENERAL

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

- B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:
1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-/rock-wool-fiber insulation.
 - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - c. Fire-rated form board.
 - d. Fillers for sealants.
 2. Temporary forming materials.
 3. Substrate primers.
 4. Collars.
 5. Steel sleeves.

2.3 FILL MATERIALS

- A. General: Provide through-penetration firestop systems containing the types of fill materials indicated in the Through-Penetration Firestop System Schedule at the end of Part 3 by referencing the types of materials described in this Article. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.
- B. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.
- E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives.

- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
 - 2. Grade for Horizontal Surfaces: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces.
 - 3. Grade for Vertical Surfaces: Nonsag formulation for openings in vertical and other surfaces.

2.4 MIXING

- A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.

- B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
 - 1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.

4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: FAA will engage a qualified, independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
- B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

END OF SECTION 07 84 13

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Interior gypsum board.
 - 2. Gypsum board patching for fire-rated and non-rated assemblies.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

1.4 STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. American Gypsum Co.
- b. BPB America Inc.
- c. G-P Gypsum.
- d. Lafarge North America Inc.
- e. National Gypsum Company.
- f. PABCO Gypsum.
- g. Temple.
- h. USG Corporation.

- B. Regular Type:

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

- C. Type X:

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

- D. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
 - 2. Shapes:
 - a. Cornerbead.
 - b. Expansion (control) joint.

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. Acoustical Sealant: As specified in Section 09 51 13 "Acoustical Panel Ceilings."
 - 1. Provide sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Thermal Insulation: As specified in Section 07 21 00 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
1. Regular Type: As indicated on Drawings.
 2. Type X: As indicated on Drawings.
 3. Ceiling Type: Ceiling surfaces.
- B. Where patching existing gypsum board, match type and thickness of adjacent board.
- C. Single-Layer Application:
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
 4. Where patching existing gypsum board, cut existing board back to supports on two opposite sides, making a square or rectangular opening; cut patch to fit tightly in opening.
- D. Multilayer Application:
1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
 2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by COTR for visual effect.

- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners, unless otherwise indicated.

3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, including joints around patches, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in other Division 09 Sections.

3.6 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Remove ceiling panels and suspension systems where needed to install seismic upgrade. Reinstall to fit new structural steel. Replaced damaged or deteriorated panels and grid with identical new materials.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Match existing ceiling panels and grid.
- B. Samples for Initial Selection: For components with factory-applied color finishes.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- long Samples of each type, finish, and color.
- D. Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor and fastener type.
- E. Maintenance Data: For finishes to include in maintenance manuals.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
 - 1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
 - a. Smoke-Developed Index: 450 or less.

- C. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
 - 1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 - 2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
 - 3. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."
- D. Preinstallation Conference: Conduct conference at Project site.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.5 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
 - 2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated. Match existing.
- B. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

- A. Basis-of-Design Product: Subject to compliance with requirements, provide ceiling panels to match existing
- B. Antimicrobial Treatment: Broad spectrum fungicide and bactericide based.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635. Match existing.
- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: Postinstalled bonded anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch- diameter wire.

2.4 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

A. Basis-of-Design Product: Subject to compliance with requirements, provide ceiling grid to match existing.

2.5 METAL EDGE MOLDINGS AND TRIM

A. Basis-of-Design Product: Subject to compliance with requirements, provide moldings and trim matching suspension system

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.6 ACOUSTICAL SEALANT

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
2. Acoustical Sealant for Concealed Joints:
 - a. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant.
 - b. Pecora Corporation; BA-98.
 - c. Tremco, Inc.; Tremco Acoustical Sealant.

- B. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- C. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.

6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 7. Do not attach hangers to steel deck tabs.
 8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.3 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 91 00 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and field painting of exposed interior and exterior items and surfaces that are impacted by structural upgrades, or as indicated, including, but not limited to the following:
1. Horizontal and vertical wall and ceiling surfaces.
 2. Metal doors and door frames.
 3. Metal access doors and frames, non-stainless steel surfaces.
 4. Exterior elements, including ductwork, pipes, conduits, hand-railings where indicated.
 5. Interior ductwork which is exposed in occupied spaces and which is not externally insulated where indicated to be painted.
 6. Exposed interior metal piping, not externally insulated, in occupied spaces where indicated. Do not paint copper or PVC pipe.
 7. Concrete wall and floor surfaces.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, COTR will select from standard colors and finishes available.
- C. When painting impacted items and surfaces, paint entire item or surface. At a minimum, paint from natural boundary to natural boundary, such as corner to corner and ceiling to floor for a wall. Prepare surface and match adjacent paint in color and gloss.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork.
 - b. Acoustical wall panels.
 - c. Metal lockers.
 - d. Finished mechanical and electrical equipment.
 - e. Light fixtures.
 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums.
 - d. Pipe spaces.

- e. Duct shafts.
3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.2 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Pearl is a Benjamin Moore designation for a low-luster (satin) finish.

1.3 SUBMITTALS

- A. Product Data: For each paint system indicated. Include block fillers and primers.
 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
 4. MSDS for each paint product used.
- B. Qualification Data: For Applicator.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.
 - 4. Contents by volume, for pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
 - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.6 PROJECT CONDITIONS

- A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
- B. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to FAA.

1. Quantity: Furnish FAA with extra paint materials in quantities indicated below:
 - a. Interior, Low-Luster Acrylic Finish: 1 gallon of each color applied.
 - b. Interior, Semigloss Acrylic Enamel: 1 gallon of each color applied.
 - c. Exterior, Direct To Metal Acrylic: 1 gallon.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:
 1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
 2. Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
 3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 4. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.

- h. Di-n-butyl phthalate.
- i. Di-n-octyl phthalate.
- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

D. Provide "Zero VOC", odorless, latex-based primers and paints as manufactured by Pittsburgh Paints (PPG) or other manufacturer's product that has been approved with "Green Seal Class A Certification" from the LEED Certification Program.

- 1. Known Available Product: Pure Performance™ PPG Paint, Pittsburgh, PA.

E. Colors: Provide color selections as specified in Material and Finish Schedule. If not on Material and Finish Schedule, provide colors and glosses to match adjacent surfaces.

2.3 INTERIOR PRIMERS

A. Interior Concrete and Masonry Primer: Factory-formulated alkali-resistant acrylic-latex interior primer for interior application.

- 1. Benjamin Moore; Regal FirstCoat Interior Latex Primer & Underbody No. 216: Applied at a dry film thickness of not less than 1.0 mil.
- 2. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil.
- 3. Sherwin-Williams; PrepRite Masonry Primer B28W300: Applied at a dry film thickness of not less than 3.0 mils.

B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

- 1. Benjamin Moore; Regal FirstCoat Interior Latex Primer & Underbody No. 216: Applied at a dry film thickness of not less than 1.0 mil.
- 2. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil.
- 3. Sherwin-Williams; PrepRite 200 Latex Wall Primer B28W200 Series: Applied at a dry film thickness of not less than 1.6 mils.

- C. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.
 - 1. Benjamin Moore; IronClad Alkyd Low Lustre Medal and Wood Enamel No. 163: Applied at a dry film thickness of not less than 1.3 mils.
 - 2. Pittsburgh Paints; 7-858 Pittsburgh Paints Industrial Rust Inhibitive Steel Primer: Applied at a dry film thickness of not less than 1.5 mils.
 - 3. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils.

- D. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
 - 1. Benjamin Moore; IronClad Latex Low Lustre Metal and Wood Enamel No. 363: Applied at a dry film thickness of not less than 1.6 mils.
 - 2. Pittsburgh Paints; 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 3.0 mils.
 - 3. Sherwin-Williams; Galvite Paint B50W3: Applied at a dry film thickness of not less than 2.0 mils.

2.4 INTERIOR FINISH COATS

- A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application.
 - 1. Benjamin Moore; Regal Wall Satin No. 215 Premium Interior Finishes Flat Finish: Applied at a dry film thickness of not less than 1.3 mils.
 - 2. Pittsburgh Paints; 80-Line Wallhide Interior Wall Flat Latex Paint: Applied at a dry film thickness of not less than 1.2 mils.
 - 3. Sherwin-Williams; SuperPaint Interior Latex Flat Wall Paint, A86 Series: Applied at a dry film thickness of not less than 1.5 mils.

- B. Interior Latex Enamel: Factory-formulated, proprietary latex enamel interior paint.
 - 1. Benjamin Moore; Aqua Pearl No. 310. Applied at a dry film thickness of not less than 1.3 mils.

- C. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
 - 1. Benjamin Moore; Moore's Regal AquaVelvet No. 319: Applied at a dry film thickness of not less than 1.4 mils.
 - 2. Pittsburgh Paints; 89-Line Manor Hall Interior Eggshell Wall and Trim: Applied at a dry film thickness of not less than 1.4 mils.
 - 3. Sherwin-Williams; SuperPaint Interior Latex Satin Wall Paint A87 Series: Applied at a dry film thickness of not less than 1.6 mils.

- D. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.
1. Benjamin Moore; Regal AquaGlo No. 333 Premium Interior Finishes Latex Semi-Gloss: Applied at a dry film thickness of not less than 1.3 mils.
 2. Pittsburgh Paints; 88-110 Satinhide Interior Enamel Wall & Trim Lo-Lustre Semi-Gloss Latex: Applied at a dry film thickness of not less than 1.1 mils.
 3. Sherwin-Williams; SuperPaint Interior Latex Semi-Gloss Enamel A88 Series: Applied at a dry film thickness of not less than 1.6 mils.

2.5 FLOOR COATINGS

- A. Sealer, Water Based, for Concrete Floors.
1. Duron; H&C Concrete Sealer Wet Look Water Based with H&C SharkGrip Slip Resistant Additive: Applied at recommended coverage.
 2. Enviroseal Corporation; Enviroseal Duraseal Zero sealer: Applied at recommended coverage.
 3. Rainguard International; Satin-Lok Wet Look Sealer: Applied at recommended coverage.
- B. Floor Paint, Latex, Low Gloss (Maximum Gloss Level 3).
1. Benjamin Moore; Moore's Latex Floor & Patio Enamel. Applied at recommended coverage.
 2. Pratt & Lambert; WithSTAND Latex Floor Enamel. Applied at recommended coverage.
 3. Sherwin-Williams; Industrial & Marine ArmorSeal Tread Plex WB Floor Coating. Applied at recommended coverage.

2.6 EXTERIOR COATINGS

- A. Direct to Metal (DTM) Acrylic coating; semi-gloss or gloss as approved by COTR.
1. Benjamin Moore; Industrial Maintenance Coatings M29 DTM: Applied at a dry film thickness of not less than 1.5 mils.
 2. Pittsburgh Paints; Pitt-Tech DTM Industrial Enamels 90 Series: Applied at a dry film thickness of not less than 1.5 mils.
 3. Sherwin-Williams; DTM Acrylic Coating, B66-100 or B66-200 Series: Applied at a dry film thickness of not less than 2.5 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.
 - 1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
 - 3. Do not disturb surfaces known or suspected to contain lead-based paint.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify COTR about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Complete finish repairs at impacted areas as specified in other Division 09 sections. Sand or otherwise finish smooth and ready to receive paint. Match texture of adjoining surfaces.
- C. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.
 - 2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

- a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
- a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. Lightly etch surface if necessary to promote adhesion of paints.
- E. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- F. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
- B. Scheduling Painting: Coordinate with COTR application of paint. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required. Use of spray equipment in Control Wing Basement may be restricted or prohibited. Coordinate with COTR.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Mechanical Work: Painting mechanical work is limited to items exposed in occupied spaces. Mechanical items to be painted include the following:
1. Metal piping where indicated. Do not paint copper and PVC.
 2. Ductwork, non-insulated externally where indicated.
 3. Primed equipment supports where indicated.
 4. Accessory items where indicated

- F. Telecommunication items to be painted include, but are not limited to the following:
 - 1. Metal racks, which are not pre-finished and are exposed in occupied space, where indicated.
- G. Fire Alarm and Sprinkler Systems: Refer to Division 13 sections for requirements.
- H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.5 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by COTR.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 INTERIOR PAINT SCHEDULE

- A. Concrete and Masonry (Other Than Concrete Unit Masonry): Provide the following paint systems over interior concrete and brick masonry substrates:
1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- B. Concrete Unit Masonry: Provide the following finish systems over interior concrete masonry:
1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete unit masonry block filler.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- C. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
1. Flat Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 2. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- D. Ferrous Metal: Provide the following finish systems over ferrous metal:
1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- E. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:
1. Flat Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior flat acrylic paint.

F. Concrete Substrates, Traffic Surfaces:

1. Latex Floor Enamel System:

- a. Prime Coat: Floor paint, latex, low gloss (maximum Gloss Level 3).
- b. Intermediate Coat: Floor paint, latex, low gloss (maximum Gloss Level 3).
- c. Topcoat: Floor paint, latex, low gloss (maximum Gloss Level 3).

3.7 EXTERIOR PAINT SCHEDULE

A. Galvanized-Metal Substrates:

1. Semi-Gloss or Gloss Acrylic Finish. Provide two coats.
 - a. Primer: Direct to Metal product is self-priming.
 - b. Finish: Direct to Metal gloss or semi-gloss.

END OF SECTION 09 91 00