

# **Install EMS in Building 102**

VA Contract No.: VA69D-16-D-0173

Project # 695-17-108

For the  
Department of Veterans Affairs  
Clement J. Zablocki VA Medical Center  
5000 W. National Ave.  
Milwaukee, WI 53295

## **PROJECT MANUAL**

DIVISIONS 00 - 32

100% CONSTRUCTION DOCUMENTS

July 24, 2017

**GUIDON DESIGN INC.**

RING & DUCHATEAU, LLP

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ISSUE DATE: July 24, 2017

## CERTIFICATION PAGE

### Architecture



Guidon Design Inc.

### Electrical/Telecommunications Engineering



Ring & DuChateau

### Mechanical/HVAC Engineering



Ring & DuChateau

**DEPARTMENT OF VETERANS AFFAIRS  
VHA MASTER SPECIFICATIONS**

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**SECTION 00 01 15**  
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| Drawing No.          | Title   |
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| <b>GENERAL</b>       |   |
| GI000                | Cover Sheet   |
| GI101                | Life Safety Plan                                    |
| GI102                | Life Safety Plan                                    |
| GI103                | Infection Control/Phasing Plan                      |
| <b>ARCHITECTURAL</b> |   |
| AS001                | Architectural Symbols and Abbreviations             |
| AS101                | Floor Plans   |
| AS102                | Reflected Ceiling Plans                             |
| AS501                | Details   |
| <b>MECHANICAL</b>    |   |
| MI000                | Mechanical General Notes, Abbreviations and Symbols |
| MH100                | Second Floor and High Roof Plans - Mechanical       |
| MM500                | Mechanical Details and Schedules                    |
| MM501                | Control Diagrams                                    |
| <b>ELECTRICAL</b>    |   |
| ES000                | Electrical Symbols, Abbreviations and Sheet Index   |
| ES010                | Site Plan - Electrical                              |
| ED100                | Basement Floor Plan - Electrical Demolition         |
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| ES100                | Basement Floor Plan - Electrical                    |
| ES101                | First Floor Plan - Electrical                       |
| ES102                | Second Floor Plan - Electrical                      |
| ES103                | High Roof Plan - Electrical                         |
| ES400                | One-Line Symbols and Abbreviations                  |
| ES401                | One-Line Diagram                                    |

Milwaukee VAMC  
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|                   |                      |
|-------------------|----------------------|
| ES402             | One-Line Diagram     |
| ES500             | Electrical Details   |
| ES600             | Electrical Schedules |
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**SECTION 01 00 00**  
**GENERAL REQUIREMENTS**

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**SECTION 01 00 00**  
**GENERAL REQUIREMENTS**

**1.1 SAFETY REQUIREMENTS**

Refer to section 01 35 26, SAFETY REQUIREMENTS for safety and infection control requirements.

**1.2 GENERAL INTENTION**

- A. This project includes the removal of the existing rooftop unit on Building 102 roof that currently serves the second floor and replace with a new package DX cooling rooftop unit. The project includes ducting the new unit into a modified inlet on the existing AHU-135-1 in a manner to avoid loss of cooled air from the new AHU, while still ducted and capable of providing air to the second floor mezzanine space below. This project includes programmable unit controls and a new transformer for the building. There will be no change to the life safety or architectural layout of any of the support spaces inside the building.
- C. Offices of Guidon Design Inc., as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.
- D. Before placement and installation of work subject to tests by testing laboratory retained by Department of Veterans Affairs, the Contractor shall notify the COR in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the COR.
- E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access. Refer to the section 01 01 10 SN SPECIAL NOTES for fingerprint, badging, construction door access and parking requirements.

F. Prior to commencing work, general contractor shall provide proof that a OSHA designated "competent person" (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.

G. Training:

- a. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA Construction Safety course and other relevant competency training, as determined by COR acting as the Construction Safety Officer with input from the facility Construction Safety Committee.
- b. Submit training records of all such employees for approval before the start of work.

H. VHA Directive 2011-36, Safety and Health during Construction, dated 9/22/2011 in its entirety is made a part of this section.

I. Routine Inspections and Maintenance During Construction

1. Provide routine inspections and maintenance services as prescribed in Operations & Maintenance manuals required under this contract.
2. Provide services during construction and until items below are completed:
  - a) VA Inspection Complete
  - b) Successful commissioning
  - c) Training of VA Maintenance staff
  - d) Acceptance by VA of each system described in other specifications related to this contract.
  - e) O&M Manual submittals received, reviewed, and approved by VA
3. Systems included in this contract are:
  - a) Architectural Roofing
  - b) Structural
  - c) Electrical Systems
  - d) HVAC

- J. Submit with O&M manuals at substantial completion of work phases and update upon completion of final phase one spreadsheet based comprehensive summary schedule of routine inspection and maintenance for systems. List: specification section, article, and paragraph; description of systems/subsystems; O&M manual reference; frequency.

### **1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR**

- A. All drawings and specifications (contract documents) may be obtained from the FedBizOps website where the solicitation is posted. Additional copies will be the responsibility and expense of the contractor(s).

### **1.4 CONSTRUCTION SECURITY REQUIREMENTS**

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. A Special Agreement SAC form is required for every contract employee. See Special Notes specification for an example of this SAC form which will need to be filled out for each employee and submitted to the COR for signature. Even if the contractor has an active badge, a SAC form is needed for the COR's records.
3. Before starting work the General Contractor shall give one week's notice to the Contracting Officer so that security arrangements can

be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.

4. No photography of VA premises is allowed without written permission of the Contracting Officer.
5. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.

C. Document Control:

1. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
2. These documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.
3. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
4. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".

D. Motor Vehicle Restrictions

1. Vehicle authorization request shall be required for any vehicle entering the site and such request shall be submitted 24 hours before the date and time of access. Access shall be restricted to picking up and dropping off materials and supplies.
2. A limited number of (2 to 5) permits shall be issued for General Contractor and its employees for parking in designated areas only.

**1.5 OPERATIONS AND STORAGE AREAS**

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the

Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.
- D. Working space and space available for storing materials shall be as determined by the COR.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.
- E. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied, during construction, jointly

by patients or medical personnel, and Contractor's personnel, except as permitted by COR where required by limited working space.

1. Do not store materials and equipment in other than assigned areas.
2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days. Provide unobstructed access to Medical Center areas required to remain in operation.
3. Where access by Medical Center personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements.

G. Utilities Services: Where necessary to cut existing pipes, electrical wires, conduits, cables, etc., of utility services, or of fire protection systems or communications systems (except telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR. All such actions shall be coordinated with the COR or Utility Company involved.

1. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

H. Phasing:

The Medical Center must maintain its operation 24 hours a day 7 days a week. Therefore, any interruption in service must be scheduled and coordinated with the COR to ensure that no lapses in operation occur. It is the CONTRACTOR'S responsibility to develop a work plan and schedule detailing, at a minimum, the procedures to be employed, the equipment and materials to be used, the interim life safety measure to be used during the work, and a schedule defining the duration of the work with milestone subtasks.

To insure such executions, Contractor shall furnish the COR with a schedule of approximate phasing dates based upon the Phasing Plan as shown in the Contract Documents. This plan shall show how the

Contractor intends to accomplish work in each specific area of site, building or portion thereof. In addition, Contractor shall notify the COR two weeks in advance of the proposed date of starting work in each specific area of site, building or portion thereof. Arrange such phasing dates to insure accomplishment of this work in successive phases mutually agreeable to Medical Center Director, COR and Contractor, as follows:

1. The project is to be completed in one phase with specific sequences that ensure the least amount of outages to the facility. Contractor is expected to perform all work with the minimal amount of outages and interruptions to VA facilities and operations. Refer to the Contract Documents for specific information on project sequencing.
  2. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.
  3. Immediate areas of alterations not mentioned in preceding Subparagraph 1 will be temporarily vacated while alterations are performed.
  4. The project will be executed in one phase. Sequencing of events for the singular phase are described within the Contract Documents
- J. Building No. 102 will be occupied during performance of work.

Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not

be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. These routes whether access or egress shall be isolated from the construction area by temporary partitions and have walking surfaces, lighting etc to facilitate patient and staff access. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

- K. Construction Fence (if required): Before construction operations begin, Contractor shall provide a chain link construction fence, six feet minimum height, around the construction area indicated on the drawings. Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by COR.
- L. When a building and/or construction site is turned over to Contractor, Contractor shall accept entire responsibility including upkeep and maintenance therefore:
1. Contractor shall maintain a minimum temperature of 4 degrees C (40 degrees F) at all times, except as otherwise specified.
  2. Contractor shall maintain in operating condition existing fire protection and alarm equipment. In connection with fire alarm equipment, Contractor shall make arrangements for pre-inspection of site with Department of Veterans Affairs Fire Marshall.
- M. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR.



1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of COR. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without a detailed work plan, the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY for additional requirements.
  2. Contractor shall submit a request to interrupt any such services to COR, in writing, two (2) weeks in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption. Outage request form can be found in section 01 01 10 SN Special Notes
  3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
  4. Major interruptions of any system must be requested, in writing, at least 21 calendar days prior to the desired time and shall be performed as directed by the COR.
  5. In case of a contract construction emergency, service will be interrupted on approval of COR. Such approval will be confirmed in writing as soon as practical.
  6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.
- N. Abandoned Lines: All services lines that are indicated to be removed are to be removed in their entirety unless indicated as abandoned on

Contract Documents. All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged at the main, branch or panel they originate from. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.

- O. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
  - 1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
  - 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COR.
- P. Coordinate the work for this contract with other construction operations as directed by COR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

#### **1.6 ALTERATIONS**

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the COR of areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both the COR and the Contractor. This report shall list by rooms and spaces:
  - 1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
  - 2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.

3. Shall note any discrepancies between drawings and existing conditions at site.
  4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and COR.
- B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of COR to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and COR together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
  2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.

3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

#### **1.7 RETENTION**

- A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows and meet the requirements as dictated in specification section 01 74 19 Construction Waste Management:
  1. Reserved items which are to remain property of the Government are noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by COR.
  2. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.
  3. PCB Transformers and Capacitors: The Contractor shall be responsible for disposal of the Polychlorinated Biphenyl (PCB) transformers and capacitors. The transformers and capacitors shall be taken out of service and handled in accordance with the procedures of the Environmental Protection Agency (EPA) and the Department of Transportation (DOT) as outlined in Code of Federal Regulation (CFR), Titled 40 and 49 respectively. The EPA's Toxic Substance Control Act (TSCA) Compliance Program Policy Nos. 6-PCB-6 and 6-PCB-7 also apply. Upon removal of PCB transformers and capacitors for disposal, the "originator" copy of the Uniform Hazardous Waste Manifest (EPA Form 8700-22), along with the Uniform Hazardous Waste

Manifest Continuation Sheet (EPA Form 8700-22A) shall be returned to the Contracting Officer who will annotate the contract file and transmit the Manifest to the Medical Center's Chief.

a. Copies of the following listed CFR titles may be obtained from the Government Printing Office:

40 CFR 261.....Identification and Listing of Hazardous Waste

40 CFR 262.....Standards Applicable to Generators of Hazardous Waste

40 CFR 263.....Standards Applicable to Transporters of Hazardous Waste

40 CFR 761.....PCB Manufacturing, Processing, Distribution in Commerce, and use Prohibitions

49 CFR 172.....Hazardous Material tables and Hazardous Material Communications Regulations

49 CFR 173.....Shippers - General Requirements for Shipments and Packaging

49 CFR 173.....Subpart A General

49 CFR 173.....Subpart B Preparation of Hazardous Material for Transportation

49 CFR 173.....Subpart J Other Regulated Material; Definitions and Preparation

TSCA.....Compliance Program Policy Nos. 6-PCB-6 and 6-PCB-7

#### **1.8 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS**

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs

or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

**(FAR 52.236-9)**

- C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

**1.9 RESTORATION**

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the COR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COR before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched,

repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are not scheduled for discontinuance or abandonment.
- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

#### **1.10 AS-BUILT DRAWINGS**

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. The contractor will submit on a monthly basis, up-to date as-built drawings in PDF format to Buzzsaw.
- C. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the COR's review, as often as requested.
- D. Contractor shall deliver two approved completed sets of as-built drawings in the electronic version (scanned PDF) to the COR within 15 calendar days after each completed phase and after the acceptance of the project by the COR.
- E. Paragraphs A, B, & C shall also apply to all shop drawings.
- F. Contractors shall update (as work is completed) the VA electrical, medical gas, domestic plumbing and mechanical piping master schematic books. These books are located in the FM Office.

#### **1.11 USE OF ROADWAYS**

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the COR, such temporary roads

which are necessary in the performance of contract work. Temporary roads shall be constructed and restoration performed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

#### **1.12 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT**

- A. Use of newly installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to written approval and compliance with the following provisions:
1. Permission to use each unit or system must be given by COR in writing. If the equipment is not installed and maintained in accordance with the written agreement and following provisions, the COR will withdraw permission for use of the equipment.
  2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Installation of temporary electrical equipment or devices shall be in accordance with NFPA 70, National Electrical Code, (2014 Edition), Article 590, *Temporary Installations*. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
  3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
  4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
  5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be



- replaced at completion of construction and prior to testing and balancing of system.
6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government. Boilers, pumps, feedwater heaters and auxiliary equipment must be operated as a complete system and be fully maintained by operating personnel. Boiler water must be given complete and continuous chemical treatment.
- B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.
- C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.
- D. Any damage to the equipment or excessive wear due to prolonged use will be repaired replaced by the contractor at the contractor's expense.
- E. All warranties on newly installed mechanical and electrical equipment will not commence until both the contractor has stopped temporary use of the equipment and after final inspection.

#### **1.13 TEMPORARY USE OF EXISTING ELEVATORS**

- A. Use of existing elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:
1. Contractor makes all arrangements with the COR for use of elevators. The COR will ascertain that elevators are in proper condition. Personnel for operating elevators will not be provided by the Department of Veterans Affairs.
  2. Contractor covers and provides maximum protection of following elevator components:
    - a. Entrance jambs, heads soffits and threshold plates.

- b. Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
  - c. Finish flooring.
- 3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes at the contractor's expense.
  - 4. If brake lining of elevators are excessively worn or damaged during temporary use, they shall be removed and replaced by new brake lining at the contractor's expense.
  - 5. All parts of main controller, starter, relay panel, selector, etc., worn or damaged during temporary use shall be removed and replaced with new parts at the contractor's expense, if recommended by elevator inspector after elevator is released by Contractor.
  - 6. Place elevator in condition equal, less normal wear, to that existing at time it was placed in service of Contractor as approved by Contracting Officer.

#### **1.14 AVAILABILITY AND USE OF UTILITY SERVICES**

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner, in compliance with code and as satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia and repair restore the infrastructure as required.
- C. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any

temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:

1. Obtain heat by connecting to Medical Center heating distribution system.

- a. Steam is available at no cost to Contractor.

D. Electricity (for Construction and Testing): Furnish all temporary electric services.

1. Obtain electricity by connecting to the Medical Center electrical distribution system. Electricity is available at no cost to the contractor.

E. Water (for Construction and Testing):

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection as per code. Water is available at no cost to the Contractor.

2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at COR's discretion) of use of water from Medical Center's system.

F. Steam: Furnish steam system for testing required in various sections of specifications.

1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.

2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at COR's discretion), of use of steam from the Medical Center's system.

#### **1.15 TESTS**

- A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.
- B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.
- C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire system which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a system which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.
- D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonable period of time during which operating and environmental conditions remain reasonably constant and are typical of the design conditions.
- E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

#### **1.16 INSTRUCTIONS**

- A. Contractor shall furnish Maintenance and Operating manuals (hard copies and electronic) and verbal instructions when required by the various sections of the specifications and as hereinafter specified.

B. Manuals: Maintenance and operating manuals (after approval, one hard copies each) for each separate piece of equipment shall be delivered to the COR coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.

C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed instructions to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment during a formal start-up and training session. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the COR and shall be considered concluded only when the COR is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the COR, does not

demonstrate sufficient qualifications in accordance with requirements for instructors above.

#### **1.17 RELOCATED EQUIPMENT**

- A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in new location, all existing equipment indicated to be relocated by the Contractor.
- B. Perform relocation of such equipment or items at such times and in such a manner as directed by the COR.
- C. Suitably cap existing service lines, such as steam, condensate return, water, drain, gas, air, vacuum and/or electrical, at the main whenever such lines are disconnected from equipment to be relocated. Remove abandoned lines in finished areas and cap as specified herein before under paragraph "Abandoned Lines".
- D. Provide all mechanical and electrical service connections, fittings, fastenings and any other materials necessary for assembly and installation of relocated equipment; and leave such equipment in proper operating condition.

#### **1.18 TEMPORARY INTERIOR SIGNAGE**

- A. When the contractor's work blocks doors and/or exists, changes paths, etc., the General Contractor is to provide all temporary signage to reroute personnel and block the doors or exits. Locations to be determined based on the ILSM.

#### **1.19 HISTORIC PRESERVATION**

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor shall immediately notify the COR verbally, and then with a written follow up.

#### **1.20 CONSTRUCTION COORDINATION DRAWINGS**

- A. Prepare and provide coordination drawings showing the location of openings through slabs, the pipe sleeves and hanger inserts, as well as the location and elevation of utility lines, including, but not limited to, conveyor systems, pneumatic tubes, ducts, all existing utilities,

and conduits and pipes 50 mm (2 inches) and larger in diameter. Drawings required for all areas being remodeled or new and ancillary areas required by such utility runs. Ancillary area drawings to include equal space on each side of main runs from main source to final location.

- B. These drawings, including plans, elevations, and sections as appropriate shall clearly show the manner in which the utilities fit into the available space and how they relate to each other and to existing building elements and controls for maintenance operations. Drawings shall be of appropriate scale to satisfy the previously stated purposes, but not smaller than 9 mm (3/8 inch) scale. Drawings must be composite (with distinctive colors for the various trades) including but not limited to HVAC equipment, HVAC ductwork, mechanical piping, plumbing, fire protection, electrical, medical gases, telecommunications, etc..

- - - E N D - - -

**SECTION 01 01 10-1HR**  
**1-HOUR FIRE-RATED CONSTRUCTION BARRIER**  
**11/2016**

**1. DESCRIPTION**

- A. The Contractor will reference adhere to NFPA 241 (Standard for Safeguarding Construction, Alteration and Demolition Operations) in following this specification.
- B. This section clarifies and further specifies the Contractor's responsibility in the construction and/or maintenance of the 1-hour fire-rated construction barrier surrounding the construction area(s). The General Contractor must provide a 1-hour fire-rated barrier for all construction & renovation projects in the medical facility and surrounding buildings on the VAMC campus.
- C. The construction barrier may consist of both existing walls and new construction walls. The intent of the barrier is to provide a fire-rated and smoke tight 1-hour construction partition between the construction area and other occupied portions of the building. The Contractor must coordinate the erection of any new walls for construction barriers with the Milwaukee Specification 01 01 10-IC and any additional infection control requirements.
  - i. By definition, a 1-hour fire-rated barrier is also a smoke tight partition.
  - ii. If the Contractor intends to use existing walls as part of his 1-hour fire-rated construction barrier, he assumes the responsibility for ensuring those walls are fully 1-hour fire-rated in every location.
  - iii. Demolition cannot begin until the entire 1-hour fire-rated construction barrier is inspected and approved by the Resident Engineer/COR.
- D. This Milwaukee specification includes the precautionary management of various types of construction activities, including "Inspections and Non-Invasive", "Small-Scale or Short-Duration", "Moderate" and "Major" demolition/construction activities as detailed in the below TABLE.
- E. Type "A" and "B" activities are those in which the fire/smoke hazard risks are MINIMAL. Type "C" and "D" activities are those in which the fire/smoke hazard risks are HIGH. The General Contractor is obligated to consider the specified containment measures with the costs included within the various contract items of work. A **Construction Barrier and Fire Risk Assessment Matrix of Precautions** for construction and renovation for activities follows.



|  |   |
|--|---|
| <p><b>TYPE A</b></p> <p><b>Minimal<br/>Fire Risk</b></p>     | <p><b>Inspection and Non-Invasive Activities.</b><br/>         Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet</li> <li>▪ Painting (but not sanding)</li> <li>▪ Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.</li> <li>▪ Removal of floor tile less than 25 square feet, non-ACM and no grinding or dust generating activities</li> </ul>  |
| <p><b>TYPE B</b></p> <p><b>Limited<br/>Fire Risk</b></p>     | <p><b>Small scale, short duration activities that can be completed within 3 calendar days. Work that requires a moderate level of demolition and does not pose a potential fire hazard. Cutting/burning operations that require a burn permit are prohibited. No electrical corded power tools permitted.</b><br/>         Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Installation of telephone and computer cabling</li> <li>▪ Access to chase spaces</li> <li>▪ Asbestos abatement of flooring tile/mastic removal, glove bag operations, Transite panel removals</li> <li>▪ HVAC duct, electrical, plumbing, or piping work above ceiling within a 50 square foot area.</li> <li>▪ Cutting of walls or ceiling where fire hazard is minimal.</li> <li>▪ Sanding of walls for painting or wall covering</li> <li>▪ Removal of floor coverings, ceiling tiles and casework</li> </ul> |
| <p><b>TYPE C</b></p> <p><b>Moderate<br/>Fire Risk</b></p>    | <p><b>Work that requires a moderate to high level of demolition, cutting/burning operations or requires demolition or removal of any fixed building components or assemblies. Work includes the use of power-corded tools and any work that poses a potential fire hazard.</b><br/>         Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Removal of building components or elements requiring use of open flame or power chisel</li> <li>▪ New construction or renovations over 3 days duration</li> <li>▪ Major duct work, plumbing, piping, or electrical work</li> <li>▪ Soldering or brazing operations</li> <li>▪ ANY activity that requires a burn permit</li> </ul>   |
| <p><b>TYPE D</b></p> <p><b>Significant<br/>Fire Risk</b></p> | <p><b>Major demolition and construction projects involving cutting/burning operations or requires demolition or removal of any fixed building components or assemblies. Work includes the use of power-corded tools and any work that poses a potential fire hazard.</b><br/>         Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Activities which require consecutive work shifts</li> <li>▪ Requires heavy demolition or removal of a complete building system</li> <li>▪ New construction or renovations over three days duration</li> </ul>   |

**2. TEMPORARY CONSTRUCTION PARTITIONS (NEW ANTE-ROOM OR OTHER CONSTRUCTION BARRIER WALL CONSTRUCTION)**

- A. Type A: Provide authority to proceed with work in area, includes a ceiling permit as required, when working above ceilings.
- B. Type B:
- i. Coordinate temporary construction partition installation with Section 01 01 10-IC.
  - ii. Provide plastic from floor to ceiling above and seal joints and penetrations. All plastic will be labeled with the VA ILSM TEMPORARY BARRIER orange tag once installed indicating the start of the three days. At openings, install z-wall overlapping plastic flap barriers or equivalent.

| ILSM TEMPORARY BARRIER TAG |  |
|----------------------------|--|
| PROJECT:                   |  |
| PRIME CONTRACTOR:          |  |
| SUB CONTRACTOR:            |  |
| EMERGENCY CONTACT NO.      |  |
| BARRIER INSTALLATION DATE: |  |
| BARRIER EXPIRATION DATE:   |  |
| (MAX 3 DAYS)               |  |

- C. Type C:
- i. Coordinate temporary construction partition installation with Section 01 01 10-IC.
  - ii. Ante-room construction (**as part of 1-hour fire-rated construction barrier**):
    - a) Ante-room shall be a 1-hour fire-rated temporary construction partition and shall be full height, extending through suspended ceilings to the floor slab or roof deck above.
    - b) Ante-room shall be constructed from 1-hour fire-rated 5/8-in type "X" gypsum board both sides of metal stud wall, mudded and taped in accordance with ASTM C840.
      - 1. "Double" gypsum board installation on one side (exterior) of the ante-room is authorized to achieve the 1-hour fire-rated smoke-tight temporary construction partition requirement with prior COR approval.
    - c) The ante-room 1-hour fire-rated temporary construction partition barrier shall also comply with necessary infection control barrier requirements as set forth in 01 01 10-IC.

Contractor shall add appropriate infection control measures (e.g., plastic sheeting between metal studs and gypsum board). Refer to 01 01 10-IC for more information.

- d) Ante-room gypsum board walls shall be taped to the existing floors utilizing 2-in wide glass foil tape: 7.3 mil aluminum foil laminated glass cloth silver tape with silicone adhesive backing. Where the ante-room walls meet the existing deck or a 1-hour fire-rated existing wall, the seams shall be firecaulked.
- e) The ante-room must also have a dedicated heat detector installed. See paragraph (iv.) below for heat detector requirements.
- f) Ante-room outer construction door opening requires a Class C, 45-minute fire-rated door with self-closing and self-latching devices.
- g) Ante-room inner door must at least be plastic Z-Type door.

iii. Ante-room construction (**for infection control purposes only**):

- a) Ante-room **need not** be a 1-hour fire-rated smoke-tight temporary construction partition. Its walls **do not need** to go to the concrete deck above, nor is a hard ceiling required. At a minimum, the contractor must tape the top of the ante-room walls to the underside of the existing acoustical tile ceiling to achieve the smoke tight and infection control requirements.
- b) Ante-room shall be constructed from 1-hour fire-rated 5/8-in type "X" gypsum board **one** side of metal stud wall, mudded and taped in accordance with ASTM C840.
- c) Contractor shall add appropriate infection control measures (e.g., plastic sheeting between metal studs and gypsum board). Refer to 01 01 10-IC for more information.
- d) Ante-room gypsum board walls shall be taped to the existing floors, walls or ceilings utilizing 2-in wide glass foil tape: 7.3 mil aluminum foil laminated glass cloth silver tape with silicone adhesive backing. Where the ante-room walls meet the existing deck or a 1-hour fire-rated existing wall, the seams shall be firecaulked.
- e) The ante-room **does not** require a dedicated heat detector.
- f) Ante-room outer construction door opening requires a Class C, 45-minute fire rated door with self-closing and self-latching devices.
- g) Ante-room inner construction door opening requires a Class C, 45-minute fire rated door with self-closing and self-latching devices.

iv. Provide heat detectors and notification devices (i.e., audio-visual devices) tied into the Building Siemens Pyrotronics System at the rate of one (1) detector per 1000 square foot of clear construction area. Heat detectors to be FTP-11 Addressable, Tri-Color LED, 135°F, Combination Fixed or Rate of Rise. The Contractor shall provide certification documentation once the heat detectors and notification devices (i.e., audio-visual devices) are installed and/or moved and tested prior to any construction work taking place

in the space. Inside the construction space, existing units can be used if they are moved to the floor deck above.

- v. Other than ante-room, all other temporary construction partitions shall be full height, extending through suspended ceilings to the floor slab or roof deck above and shall be one-hour fire rated 5/8-in type "X" gypsum board both sides of metal stud wall, mudded and taped in accordance with ASTM C840. If sprinklers are installed per a hydraulically calculated stamped and certified system and sprinklers are operational on both sides of the temporary partition and ceilings are fully intact and complete, then the partition indicated above may be permitted to terminate at the ceiling in accordance with NFPA 241.
- vi. Coordinate with Section 01 01 10-SN Section 1.10 for Card Reader and Physical Access Control System (PACS) requirements at ante-room outer construction door.

**D. Type D:**

- i. All requirements for Type C construction activities above are required for Type D construction activities.
- ii. When required by the project, install 1-hour fire-rated temporary construction partitions to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings and other enclosures as required by the current Life Safety Code NFPA 101. This may include new horizontal egress tunnels, exit stairs, etc. Coordinate these activities with the COR.

**3. EXISTING WALLS TO BE USED FOR CONSTRUCTION PARTITIONS AND PHASING**

- A. The construction site must be completely surrounded by 1-hour fire-rated gypsum board, smoke-tight, and fire-stopped construction partitions. Infection control procedures (as required) shall be initiated prior to any other construction activities.
- B. All existing walls surrounding the construction area are to be inspected, repaired, patched, and fire-stopped as required to bring them up to current 1-hour fire-rated and/or smoke barrier construction requirements.
- C. Construction cores made through the construction barriers or any other rated assembly need to have an ILSM firestop (mineral wool filling) and an "ILSM FIRESTOP" orange tag label as indicated below. All penetrations are to be made temporarily smoke resistant (mineral wool filling) by the end of the construction day, and all penetrations are to be permanently fire caulked/sealed within 30 days of being made.

Milwaukee VAMC  
695-17-108 Install EMS in Building 102  
Milwaukee, WI 53295

100% Construction Documents  
July 24, 2017



**ILSM FIRESTOP**

**PROJECT:** \_\_\_\_\_

**PRIME CONTR:** \_\_\_\_\_

**CORE CONTR:** \_\_\_\_\_

**PENETRATION DATE:** \_\_\_\_\_

**EXPIRATION DATE:** \_\_\_\_\_

(MAX 30 DAYS)

**SECTION 01 01 10 (FSS)  
FIRE SAFETY AND CONTROL**

**12/2016**

**PART 1 - GENERAL**

1.1 DESCRIPTION: This section covers safety precautions required by all contractor personnel to safeguard patients, visitors, and Department of Veterans Affairs employees.

1.2 RELATED SECTION

A. Section 01 00 00 - GENERAL REQUIREMENTS

1.3 APPLICABLE PUBLICATIONS






- A. NFPA standard No. 241 - Safeguarding Construction, Alteration, and Demolition Operations.
- B. NFPA Standard No. 51B - Fire Protection in use of cutting and welding Processes.
- C. NFPA Standard No. 101 - Life Safety Code (Current Edition)
- D. OSHA Regulations 29CFR1926 - Construction Industry Standards.
  - 1. Sub-part P- Fire Protection and Prevention
  - 2. Sub-part J- welding and Cutting






**PART 2 - PRODUCTS**

2.1 PRODUCTS:

- A. See table F-1 for which fire extinguishers are required for various combustibile materials.

TABLE F-1

| TYPE OF AGENT<br>TYPE OF FIRE   |                               |  |  |  |  |
|---|--|---|---|---|---|
| CLASS "A"<br>Fires in ordinary combustibile materials - paper, wood, and many plastics. | Yes-excellent adheres to burning materials and forms a coating which will smother the fire and minimize reflash. | NO  | Yes-excellent Halon 1211 leaves no residue. May not normally affect equipment.      | NO  | Yes-water saturates materials and prevents rekindling.                                |

| <div>TYPE OF AGENT</div> <div>TYPE OF FIRE</div>   | <br>Multi-Purpose<br>Dry Chemical<br>Monoammonium<br>Phosphate | <br>Regular<br>Dry Chemical<br>Sodium<br>Phosphate | <br>Halon 1211<br>Bromochlorodi-<br>fluoromethane | <br>Carbon Dioxide<br>(CO <sub>2</sub> ) | <br>Water |
|--|---|---|--|---|--|
| <b>CLASS "B"</b><br><br>Fires in flammable liquids such as gasoline, oils, grease, tars, paints, lacquers and flammable gases. | Yes-excellent Dry chemical agent smothers fire. Screen of agent shields user from heat.   | Yes-excellent Dry chemical agent smothers fire. Screen of agent shields user from heat.   | Yes-excellent Halon 1211 leaves no residue. May not normally affect equipment.   | Yes-excellent Carbon Dioxide leaves no residue, may not normally affect or damage equipment.                                | NO   |
| <b>CLASS "C"</b><br><br>Fires in electrical equipment incl. motors, generators, switches and appliances.                       | Yes-excellent Dry chemical agent is non-conductive. Screen of agent shields user from heat.   | Yes-excellent Dry chemical agent is non-conductive. Screen of agent shields user from heat.   | Yes-excellent Halon 1211 is non-conductive, leaves no residue, may not normally affect or damage electrical equipment.             | Yes-excellent Carbon Dioxide is non-conductive, leaves no residue, may not normally affect or damage electrical equipment.  | NO   |
| <b>Range</b>   | 5-20 feet   | 5-20 feet   | 8-18 feet  | 3-8 feet  | Up to 40 feet  |
| <b>Discharge Time</b>  | 10-25 seconds   | 10-25 seconds   | 8-18 seconds   | 8-30 seconds  | Up to 60 seconds   |

### PART 3 - EXECUTION

- 3.1 Construction offices and trailers used as storage are required to a located minimum distance from permanent structures. Veterans Administration approval of location does not relieve the contractor at this ultimate responsibility of meeting OSHA and NFPA Regulation.
- 3.2 Contractor is required to obtain a permit from the office of the Chief Engineer prior to start of each welding/cutting operation. The Chief Engineer reserves the right to delegate the Project Manager as approving official. The following form is acceptable for obtaining approval and may be reproduced at contractor's expense. Other form must be submitted for approval by the Project Engineer prior to use.
- 3.3 The following checklist is provided to the contractor as a reference. NFPA 513 should be consulted for official requirements for protection of the area.

### REQUEST FOR SPRINKLER SYSTEM SHUTDOWN

|                                     |             |                              |                 |
|-------------------------------------|-------------|------------------------------|-----------------|
| Date Closed:                        | _____       | Time Closed:                 | _____           |
| Planned Date Restored:              | _____       | Time Restored:               | _____           |
| Location of System:                 | Bldg: _____ | Floor: _____                 | Wing: _____     |
| Area this will affect:              | _____       |                              |                 |
| Impact on adjacencies:              | _____       |                              |                 |
| Reason for shutdown:                | _____       |                              |                 |
| If Construction, Give Project#:     | _____       | Generic Maintenance Contract | _____           |
| Sprinkler Contractor:               | _____       | General Contractor:          | _____           |
| Phone:                              | _____       | Phone:                       | _____           |
| Remarks:                            | _____       | Approval [ x ]               | Disapproval [ ] |
| Approving Authority Comments: _____ |             |                              |                 |

\_\_\_\_\_  
Signature/Approval Authority

**Copy one (1) VAMC, Form No 138-S1**

**Revised 2/05**

|                                     |  |
|-------------------------------------|--|
| Location of System: Building: _____ | Date Valve Reopened: _____                   |
| Wing: _____                         | Time Valve Reopened: _____                   |
| Floor: _____                        | Date Closed: _____                           |
|                                     | Time Closed: _____                           |
| Print Name _____                    | Signature of Requestor _____                 |
|                                     | Signature of FM Divisional Manager _____     |
| REQUESTOR OF SHUTDOWN ID: O-001391  |  |
| Copy two (2) VAMC, Form No 138-S2   | Copy three (3) VAMC, Form No 138-S3<br>1,421 |



## PERMIT FOR CUTTING AND WELDING WITH PORTABLE GAS, ELECTRICAL, OR ARC EQUIPMENT

Date Disabled: \_\_\_\_\_ Time Disabled: \_\_\_\_\_  
Planned Date Restored: \_\_\_\_\_ Time Restored: \_\_\_\_\_  
Location of System: Bldg: \_\_\_\_\_ Floor: \_\_\_\_\_ Wing: \_\_\_\_\_  
Area this Will Affect: \_\_\_\_\_ Impact on Adjacencies: \_\_\_\_\_  
*The location where the work is to be done had been examined, necessary precautions taken, and permission is granted for this work.*  
Work to Be Accomplished: \_\_\_\_\_  
Construction Project#: \_\_\_\_\_ Generic Maintenance Contract \_\_\_\_\_  
Subcontractor: \_\_\_\_\_ General Contractor: \_\_\_\_\_  
Phone: \_\_\_\_\_ Phone: \_\_\_\_\_  
Approval [ ] Disapproval [ ]  
Signature/Approval Authority \_\_\_\_\_ Approving Authority Comments: \_\_\_\_\_

### ATTENTION

Before approving any cutting and welding permit, the Contractor's fire safety supervisor or his appointee and/or the PAI or his designee shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with NFPA 51B. Contractor is responsible to check off each item below that applies or indicate N/A.

### PRECAUTIONS

☐ Sprinklers in service. Fully charged and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area.  
☐ The hot work equipment to be used shall be in satisfactory operating condition and in good repair.  
☐ The following shall apply to hot work done in close proximity to a sprinkler head:  
(a) A wet rag shall be laid over the sprinkler head and then removed at the conclusion of the welding or cutting operation.  
(b) During hot work, special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems (e.g., special extinguishing systems or sprinklers).  
☐ Nearby personnel shall be suitably protected against dangers such as heat, sparks, and slag.  
  
☐ Floors swept clean of combustibles  
☐ WITHIN 35 FT. OF WORK  
If relocation is impractical, combustibles shall be protected with fire-retardant covers or otherwise shielded with metal or fire-retardant guards or curtains.  
☐ Combustible floors (except wood on concrete) shall be kept wet, covered with damp sand, or protected by noncombustible or fire-retardant shields.  
☐ Where floors have been wet down, personnel operating arc welding equipment or cutting equipment shall be protected from possible shock.  
☐ Openings or cracks in walls, floors, or ducts within 11 m (35 ft) of the site shall be tightly covered with fire-retardant or noncombustible material to prevent the passage of sparks to adjacent areas.  
☐ Covers suspended beneath work to collect sparks  
  
☐ WORK ON WALLS OR CEILINGS  
Construction noncombustible and without combustible covering  
☐ Combustibles moved away from opposite side of wall  
☐ If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire-retardant shields or guards shall be provided to prevent ignition.  
☐ If hot work is done on one side of a wall, partition, ceiling, or roof, one of the following criteria shall be met:  
(a) Precautions shall be taken to prevent ignition of combustibles on the other side by relocating the combustibles.  
(b) If it is impractical to relocate combustibles, a fire watch shall be provided on the side opposite from where the work is being performed.  
  
☐ WORK ON ENCLOSED EQUIPMENT  
(Tanks, containers, ducts, dust collectors, etc.)  
☐ Containers purged of flammable vapors  
☐ Ducts and conveyor systems that might carry sparks to distant combustibles shall be shielded, or shut down, or both.  
  
☐ FIRE WATCH  
☐ To be provided during and 30 minutes after operation  
☐ Supplied with extinguisher  
☐ Trained in use of equipment and in sounding fire alarm

### FINAL CHECK-UP

☐ Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found fire safe.

Signed: \_\_\_\_\_  
(Supervisor of Fire Watcher)

**SECTION 01 01 10 (IC)**  
**INFECTION CONTROL**

**PART 1 - DEFINITIONS**

1. This specification section identifies and describes the control of environmental infection control and risk assessment that the Contractor must consider for construction & renovation projects in the medical facility and on campus. The below matrix describes four types of construction activities and their potential for creating airborne contaminants.
2. The Contractor is obligated to consider and include in their plan the specified control measures as well as the costs included within the various contract items of work. An **Infection Control Risk Assessment Matrix of Precautions** for construction and renovation for activities follows.
3. Infection Control Risk and damage is defined as the presence of chemical, physical or biological elements or agents which:
  - A. Adversely affect human health or welfare, or
  - B. Unfavorably alter the ecological balances of importance to human life.
4. The plans will identify the Construction Activity, Patient Risk Group and Construction Classification of Precautions based upon the IC Risk Assessment Matrix. This specification gives the contractor the understanding the step-by-step process behind that classification.
  - A. Step 1 - Identify the **Construction Activity Type** (A, B, C or D)
    - a. See Table 1
  - B. Step 2 - Identify the **Patient Risk Group** (Low, Med, High, Highest)
    - a. See Table 2
    - b. If more than one Patient Risk Group will be affected, select the higher risk group
  - C. Step 3 - Match the Construction Activity Type with the Patient Risk Group on the **Classification of Precautions Matrix** to determine the contractor's required infection control activities.
    - a. See Table 3
    - b. Infection Control prior approval will be required when the Construction Activity Type and the Patient Risk Group indicate that **Class III** or **Class IV** control procedures are necessary. Contact the VA Project COR and the infection control nurse before proceeding.
    - c. The contractor's Infection Control Plan will be a submittal for approval.

**Table 1 - Construction Activity Types**

|  |   |
|--|---|
| <p><b>TYPE A - Inspection and Non-Invasive Activities.</b><br/>Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet.</li> <li>▪ Painting (but not sanding).</li> <li>▪ Wall covering install, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.</li> <li>▪ Removal of floor tile less than 25 square feet, non-ACM and no grinding or dust generating activities.</li> </ul>  | <p><b>TYPE A</b> activities have a <b>minimal</b> FIRE and infection risk.</p> <p>Consult IC if work activity occurs in any of the highest patient risk groups.</p>             |
| <p><b>TYPE B - Small scale, short duration activities which create minimal dust.</b> Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Installation of telephone and computer cabling.</li> <li>▪ Access to chase spaces.</li> <li>▪ Cutting of walls or ceiling where dust migration can be controlled.</li> </ul>  | <p><b>TYPE B</b> activities have a <b>limited</b> FIRE and infection risk.</p> <p>Consult IC if work activity occurs in any of the highest patient risk groups.</p>             |
| <p><b>TYPE C - Medium scale work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies.</b> Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Sanding of walls for painting or wall covering.</li> <li>▪ Removal of floor coverings, ceiling tiles and casework.</li> <li>▪ New construction or renovations over 3 days' duration.</li> <li>▪ Major duct work, cabling activity, plumbing, piping, or electrical work.</li> <li>▪ Soldering or brazing operations.</li> <li>▪ ANY activity that requires a burn permit.</li> <li>▪ Any activity that cannot be completed within a single work shift.</li> </ul> | <p><b>TYPE C</b> activities have a <b>moderate</b> FIRE and infection risk.</p> <p>Consult IC if work activity occurs in any and all of the highest patient risk groups.</p>    |
| <p><b>TYPE D - Major demolition and construction projects.</b><br/>Includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>▪ Activities which require consecutive work shifts.</li> <li>▪ Requires heavy demolition or removal of a complete building/cabling system.</li> <li>▪ New construction or renovations over 3 days' duration.</li> </ul>   | <p><b>TYPE D</b> activities have a <b>significant</b> FIRE and infection risk.</p> <p>Consult IC if work activity occurs in any and all of the highest patient risk groups.</p> |

**Table 2 - Patient Risk Groups**

| Low Risk     | Medium Risk        | High Risk               | Highest Risk                                    |
|--------------|--------------------|-------------------------|---|
| Office Areas | Cardiology         | Emergency Room          | Any area caring for immune-compromised patients |
| Warehouse    | Echocardiography   | Laboratories (specimen) | Pharmacy  |
|              | Endoscopy          | Linen                   | Cardiac Cath / EP Labs                          |
|              | Phys. Therapy      | Kitchen & Canteen       | Logistics Supply                                |
|              | Resp. Therapy      | Radiology/MRI           | Central Sterile Supply                          |
|              | Outpt. Mental Hlth | Nuclear medicine        | Intensive Care Units                            |
|              | Outpt. Clinics     | Phys. Therapy Tank Area | Medical/Mental Health Unit                      |
|              | Simulation Labs    |                         | Negative Pressure Isolation Rooms               |
|              | Comp & Pen         |                         | Oncology / Radiation Oncology                   |
|              |                    |                         | Inpatient and Outpatient Operating Rooms        |
|              |                    |                         | Dialysis  |
|              |                    |                         | Surgical Units                                  |
|              |                    |                         | Post Anesthesia Care Unit                       |
|              |                    |                         | APC Unit  |
|              |                    |                         | Sterile Processing Services                     |

**Table 3 - Classification of Precautions Matrix**

| Patient Risk Group | Construction Project Type |        |        |        |
|--------------------|---------------------------|--------|--------|--------|
|                    | TYPE A                    | TYPE B | TYPE C | TYPE D |
| LOW Risk Group     | I                         | II     | II     | III/IV |
| MEDIUM Risk Group  | I                         | II     | III    | IV     |
| HIGH Risk Group    | I                         | II     | III/IV | IV     |
| HIGHEST Risk Group | II                        | III/IV | III/IV | IV     |

**Table 4 - Description of Required Infection Control Precautions by Class**

|                  | DURING CONSTRUCTION PROJECT  | UPON COMPLETION OF PROJECT   |
|------------------|--|--|
| <b>CLASS I</b>   | <ol style="list-style-type: none"> <li>1. Execute work by methods to minimize raising dust from construction operations.</li> <li>2. Immediately replace a ceiling tile displaced for visual inspection</li> </ol>   | <ol style="list-style-type: none"> <li>1. Terminal cleaning upon project completion.</li> </ol>  |
| <b>CLASS II</b>  | <ol style="list-style-type: none"> <li>1. Provide active means to prevent airborne dust from dispersing into atmosphere.</li> <li>2. Water mist work surfaces to control dust while cutting.</li> <li>3. Seal unused doors with duct tape.</li> <li>4. Block off and seal air vents.</li> <li>5. Place dust mat at entrance and exit of work area</li> <li>6. Remove or isolate HVAC system in areas where work is being performed.*</li> </ol>  | <ol style="list-style-type: none"> <li>1. Wipe work surfaces with disinfectant.</li> <li>2. Contain construction waste before transport in tightly covered containers.</li> <li>3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.</li> <li>4. Remove isolation of HVAC system in areas where work is being performed.</li> <li>5. Terminal cleaning as needed and/or upon project completion.</li> </ol>  |
| <b>CLASS III</b> | <ol style="list-style-type: none"> <li>1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system.*</li> <li>2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins.</li> <li>3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</li> <li>4. Contain construction waste before transport in tightly covered containers.</li> <li>5. Cover transport receptacles or carts. Tape covering unless solid lid.</li> </ol> <p>* Use window for negative HEPA air exhaust when accessible. Obtain V.A, resident engineer approval for exhausting in existing exhaust ductwork.</p> | <ol style="list-style-type: none"> <li>1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and/or Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.</li> <li>2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.</li> <li>3. Vacuum work area with HEPA filtered vacuums.</li> <li>4. Wet mop area with disinfectant.</li> <li>5. Remove isolation of HVAC system in areas where work is being performed.</li> <li>6. Terminal cleaning as needed and/or upon project completion.</li> </ol> |

|          |   |  |
|----------|---|--|
| CLASS IV | <ol style="list-style-type: none"> <li>1. Isolate HVAC system in area where work is being done to prevent contamination of duct system.</li> <li>2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins.</li> <li>3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</li> <li>4. Seal holes, pipes, conduits, and punctures appropriately.</li> <li>5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.</li> <li>6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.</li> <li>7. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.</li> </ol> | <ol style="list-style-type: none"> <li>1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction.</li> <li>2. Contain construction waste before transport in tightly covered containers.</li> <li>3. Cover transport receptacles or carts. Tape covering unless solid lid</li> <li>4. Vacuum work area with HEPA filtered vacuums.</li> <li>5. Wet mop area with disinfectant.</li> <li>6. Remove isolation of HVAC system in areas where work is being performed.</li> </ol> |
|----------|---|--|

D. Step 4 - Identify the areas surrounding the project area, assessing potential impact.

| Unit Below | Unit Above | Lateral    | Lateral    | Behind     | Front      |
|------------|------------|------------|------------|------------|------------|
| Risk Group | Risk Group | Risk Group | Risk Group | Risk Group | Risk Group |

*Appendix: Identify and communicate the responsibility for project monitoring that includes infection control concerns and risks. The ICRA may be modified throughout the project Revisions must be communicated to the Project Manager.*

(Note: Renovation/construction area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)

E. Step 5 - Identify specific site of activity (patient rooms, medication room, etc.

- F. Step 6 - Identify issues related to ventilation, plumbing, electrical in terms of the occurrence of probable outages.
- G. Step 7 - Identify containment measures using prior assessment. What types of barriers are needed (plastic barrier or hard drywall)? Will HEPA filtration be required?
- H. Step 8 - Consider potential risk of water damage. Is there a risk due to compromising structural integrity of an existing wall, ceiling or roof partition?
- I. Step 9 - Can or will the work be done during non-patient care hours?
- J. Step 10 - Do plans allow for an adequate number of isolation/negative airflow rooms?
- K. Step 11 - Do the plans allow for the required number and type of handwashing sinks?
- L. Step 12 - Does the infection control staff agree with the minimum number of sinks for this project? (Verify against AIA guidelines for types and area.)
- M. Step 13 - Does the infection control staff agree with the plans relative to clean and soiled utility rooms?
- N. Step 14 - Plan to discuss the following containment issues with the project team: traffic flow, housekeeping, and debris removal (how/when).

**LIFE SAFETY AND STANDARDS (APIC) AND THE FOLLOWING CRITERIA WOULD NEED TO BE ASSURED IN ORDER TO MAINTAIN THE SUPPLY AIR SIDE OPEN DURING CLASS IV CONSTRUCTION ACTIVITY:**

- The air supply is 100% fresh air and the site and adjacent areas can be kept under negative pressure at all times.
- There is no re circulated air in this section
- There is no duct work involved in this section of the demolition
- The site can never be positive to the adjacent areas (i.e. keep the negative air machines on at all times or for 1-2 hours post site work until the negative action can be maintained.
- A log is maintained to document that the negative pressure is checked and has been maintained during those hours when the negative air machines are turned off. (An alarmed device is recommended for this purpose and should be maintained and monitored by the construction personnel).

| Infection Control Construction Permit |    |   |  |                           |
|---------------------------------------|----|---|--|---------------------------|
|                                       |    |   |  | Permit No:                |
| Location of Construction:             |    |   | Project Start Date:                                    |                           |
| Project Coordinator:                  |    |   | Estimated Duration:                                    |                           |
| Contractor Performing Work            |    |   | Permit Expiration Date:                                |                           |
| Supervisor:                           |    |   | Telephone:   |                           |
| YES                                   | NO | CONSTRUCTION ACTIVITY   | YE NO  | INFECTION CONTROL, RISK   |
|                                       |    | TYPE A: Inspection, non-invasive  |  | GROUP 1: Low Risk         |
|                                       |    | TYPE B: Small scale, short moderate to high levels  |  | GROUP 2: Medium Risk      |
|                                       |    | TYPE C: Activity generates dust, requires 1 work  |  | GROUP 3: Medium/high Risk |
|                                       |    | TYPE D: Major duration and requiring consecutive work   |  | GROUP 4: Highest Risk     |
| CLASS I                               |    | 1. Execute work by methods to construction operations.<br>2. Immediately replace any ceiling inspection.<br>3. Minor Demolition for   |  |                           |
| CLASS                                 |    | 1. Provides active means to dispersing into atmosphere<br>2. Water mist work surfaces to<br>3. Seal unused doors with duct<br>4. Block off and seal air vents.<br>5. Wipe surfaces with<br>6. Contain construction waste covered containers.<br>7. Wet mop and/or vacuum with before leaving work area.<br>8. Place dust mat at entrance<br>9. Remove or isolate HVAC system is being performed.  |  |                           |
| CLASS                                 |    | 1. Obtain infection control permit<br>2. Isolate HVAC system in area prevent contamination of the<br>3. Complete all critical barriers method before construction<br>4. Maintain negative air pressure HEPA equipped air filtration<br>5. Do not remove barriers from project is thoroughly cleaned<br>6. Vacuum work with HEPA<br>7. Wet mop with disinfectant<br>8. Remove barrier materials spreading of dirt and debris construction.<br>9. Contain construction waste tightly covered containers.<br>10. Cover transport receptacles<br>11. Remove or isolate HVAC system is being performed/  |  |                           |
| Class<br><br>Date<br>Initial          |    | 1. Obtain infection control permit<br>2. Isolate HVAC system in area prevent contamination of duct<br>3. Complete all critical barriers method before construction<br>4. Maintain negative air pressure HEPA equipped air filtration<br>5. Seal holes, pipes, conduits,<br>6. Construct anteroom and require through this room so they can vacuum cleaner before leaving cloth or paper coveralls that leave the work site.<br>7. All personnel entering work shoe covers<br>8. Do not remove barriers from project is thoroughly cleaned Service Dept.<br>9. Vacuum work area with HEPA<br>10. Wet mop with disinfectant.<br>11. Remove barrier materials spreading of dirt and debris construction.<br>12. Contain construction waste covered containers.<br>13. Cover transport receptacles<br>14. Remove or isolate HVAC system being done. |  |                           |
| Additional Requirements:              |    |   |  |                           |
|                                       |    |   |  |                           |
| Date Initials                         |    |   | Exceptions/Additions to Initials are noted by attached |                           |
| Permit Request By:                    |    |   | Permit Authorized By:                                  |                           |
| Date:                                 |    |   | Date   |                           |



## **PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT**

### **2.1 MATERIALS AND EQUIPMENT**

#### **GENERAL REQUIREMENTS**

- A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable). When transporting new materials & equipment through the hospital use 4 mil Poly sheeting encasing materials, tools and equipment or use a totally enclosed cart.
- B. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated/work area until construction is completed.
- C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the VA in partially occupied buildings by placing materials/equipment in any unauthorized place.
- D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.
- E. Demolition materials must be transported in totally enclosed containers.
  - 1) Demolition on above ground floors may use a window debris chute to convey materials to an enclosed dumpster that provides dust and noise control. The contractor is responsible to maintain the original appearance of the building fascia.

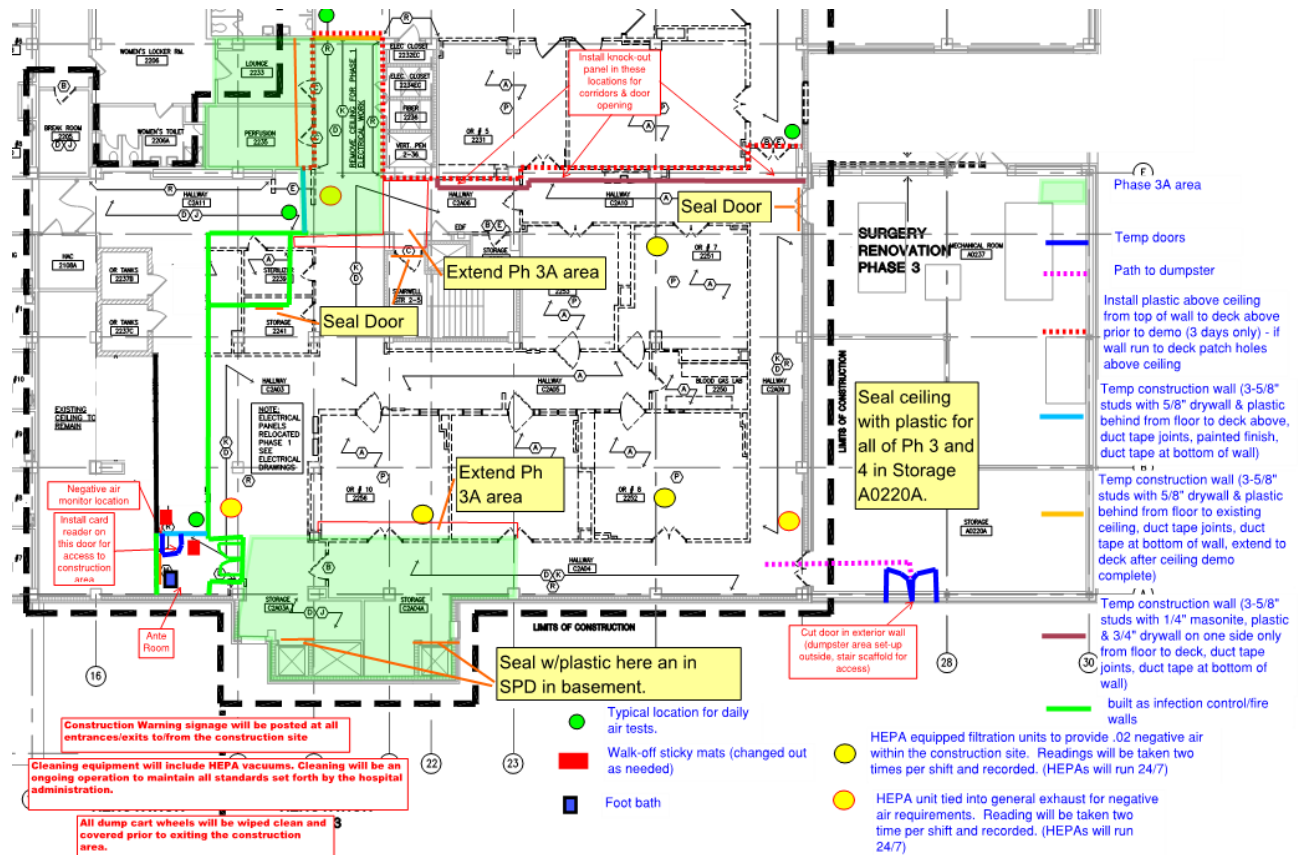
#### **2.1.2 NEGATIVE PRESSURE FILTRATION SYSTEM**

- A. When required, the Contractor shall provide enough negative air machines to completely exchange the regulated area air volume 4 actual times per hour. The Competent Person shall determine the number of units needed for each regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the actual cubic feet per minute (cfm) for each unit to determine the number of units needed to effect 4 air changes per hour. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.

#### **2.1.3 DESIGN AND LAYOUT**

- A. **Before start of work for each phase of the project**, the contractor is to submit for approval, an infection control plan which will include the design and layout of the regulated area to include the type and location of infection control construction barriers to be used, access points, ante room location, etc. The submittal shall indicate the number of, location of and size of negative air machines and exhaust route & location of the windows to be used. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:
  - 1) Manufacturer's information on the negative air machine(s).
  - 2) Method of supplying power to the units and designation/location of the panels.

- 3) Descriptions of testing method(s) for correct air volume and pressure differential. Provide manufacturer's product data on the pressure differential measuring device used.
- 4) If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.
- 5) Location of (Triatek) isolation negative air pressure monitor.
- 6) The following is a SAMPLE plan:



**SAMPLE INFECTION CONTROL PLAN**

#### 2.1.4 NEGATIVE AIR MACHINES

- A. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent dust from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.
- B. Negative Air Machine Fan: The rating capacity of the fan must be the air moving capacity under actual operating conditions. Manufacturer's

typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

C. Negative Air Machine Final Filter:

- 1) When exhausting directly to the outside from a window or penetration the filter shall be a minimum MERV 8 pleated filter media completely sealed on all edges within a structurally rigid frame.
- 2) When exhausting to an exhaust duct: the final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each **HEPA** filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3 µm dioctylphthalate (DOP) particles. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

D. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 µm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 µm or larger. Pre-filters shall be installed either on or in the intake grid of the unit and held in place with a special housing or clamps.

F. Negative Air Machine Safety and Warning Devices: An electrical/mechanical lockout must be provided to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

G. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriter's Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

#### 2.1.1.5 PRESSURE DIFFERENTIAL

- A. The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of **-0.01"** water column. Before any disturbance of any material or building system, this shall be demonstrated to the VA by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing and maintaining the negative pressure and air changes as required by OSHA and this specification.

#### **2.1.6 TESTING THE SYSTEM**

- A. The negative pressure system must be tested before any disturbance. After the regulated area has been completely prepared, the decontamination units set up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Testing must also be done at the start of each work shift.

#### **2.1.7 DEMONSTRATION OF THE NEGATIVE AIR PRESSURE SYSTEM**

- A. The demonstration of the operation of the negative pressure system to the VA shall include, but not be limited to, the following:
  - 1) Contractor to install **Triatek** (Web site [www.Ttk.com](http://www.Ttk.com)) negative air isolation monitoring stations at the sites access doors or at opposite sides of the construction area check with COR for number of units and location.
  - 2) Curtains of the decontamination units move in toward regulated area.
  - 3) Use smoke tubes to demonstrate air is moving air across all areas in which work is to be done.
  - 4) Plastic barriers and sheeting move lightly in toward the regulated area.

#### **2.1.8 USE OF SYSTEM DURING CONSTRUCTION OPERATIONS**

- A. Start units before beginning any disturbance occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of 5.0 Pa (**-0.01"**) water column, for the duration of the work until a final visual clearance and final air clearance has been completed.
- B. The negative air machines shall not be shut down for the duration of the project unless authorized by the VA, in writing.
- C. Construction work shall begin at a location closest from the units and proceed away from them. If an electric failure occurs, the Competent Person shall stop all work and not resume until power is restored and all units necessary are operating properly again.
- D. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air, clearance has been completed for that regulated area.

### **2.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA**

#### **2.2.1 GENERAL**

- A. Infection Control and the establishment of a 1-hour fire-rated construction barrier are mutually exclusive activities. The Contractor must maintain both a 1-hour fire-rated construction partition around each construction area as well as the appropriate infection control measures as dictated by this specification.
- B. Seal off the perimeter of each regulated area to completely isolate the regulated area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated, immediately stop work and clean up the contamination at no additional cost to the Government.

### **2.2.3 CONTROLLING ACCESS TO THE REGULATED AREA**

- A. Access to the regulated area is allowed only through the ante-room or personnel decontamination facility (PDF). All other means of access shall be eliminated and OSHA warning signs posted as required by OSHA. If the regulated area is adjacent to or within view of an occupied area, provide a visual barrier of opaque fire retardant poly sheeting at least 4 mils thick to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure.

### **2.2.4 CRITICAL BARRIERS**

- A. Completely separate the regulated area from adjacent areas using fire retardant poly at least 6 mils thick and duct tape. Individually seal with two layers of 6 mil poly and duct tape all HVAC openings, cap off exhaust into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects in the regulated area. Use care with hot/warm surfaces see fig 1.

### **2.2.5 PRIMARY BARRIERS**

- A. Temporary Construction Partitions:
  - 1. Refer to 01 01 10 1-HR for requirements for establishing a fully 1-hour fire-rated construction partition. Meet all the requirements of NFPA 241.
  - 2. Install and maintain temporary construction partitions to provide separations between construction areas and adjoining areas. Construct partitions of 1-hr fire-rated 5/8-in gypsum board (flame spread rating of 25 or less in accordance with ASTM E84) on one side of metal steel studs. Seal penetrations at door openings and install tight-fitting yellow construction doors with self-closing devices. See fig. 2 for barrier construction. Contractor to provide the construction(s) door for the project.

### **2.2.6 CONTRACTOR SPILL RESPONSE KIT**

- A. The kit is required in every construction area and should include the following:
  - 1. Shop Vacuum.
  - 2. Multi-Purpose Spill Control Sorbents to absorb nonaggressive liquids up to 30 gallons.
  - 3. Sorbents pillows.
  - 4. Pipe leak clamps for copper & steel pipe in sufficient size range and quantity base on project piping scope.
  - 5. Bucket & mop and water resistant duct tape.

FIG. 1

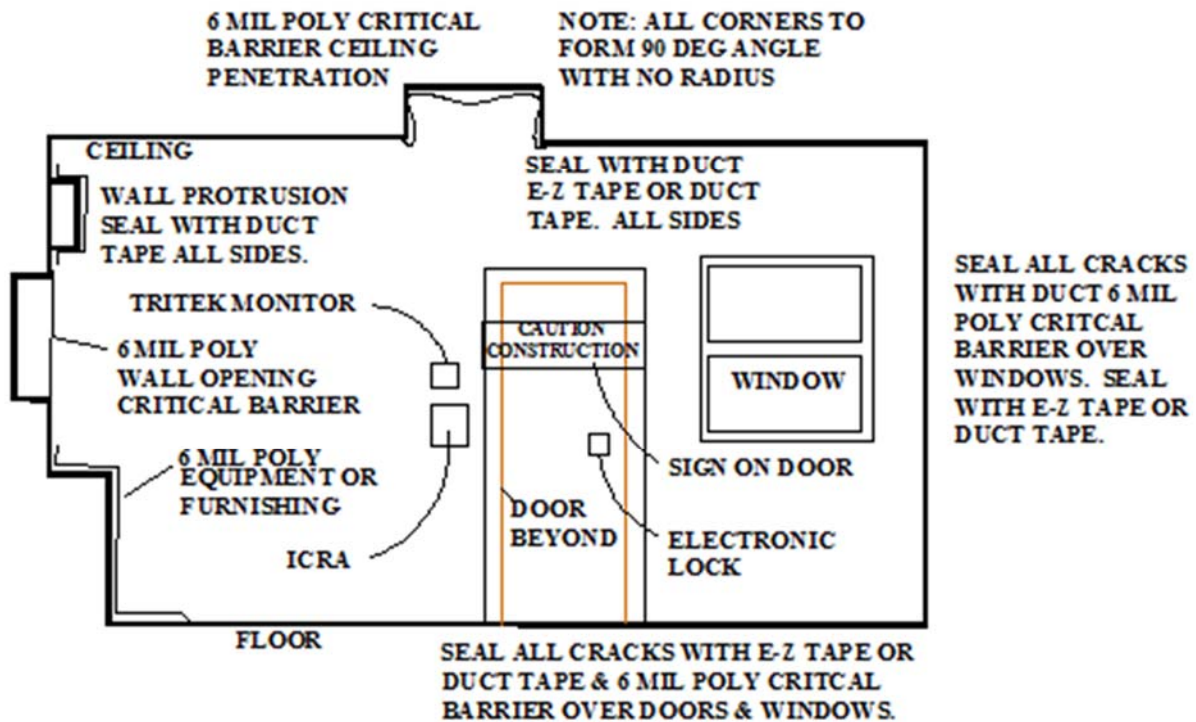
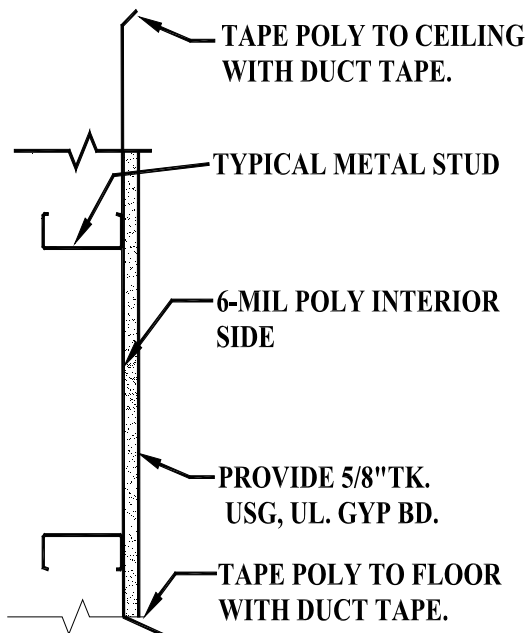
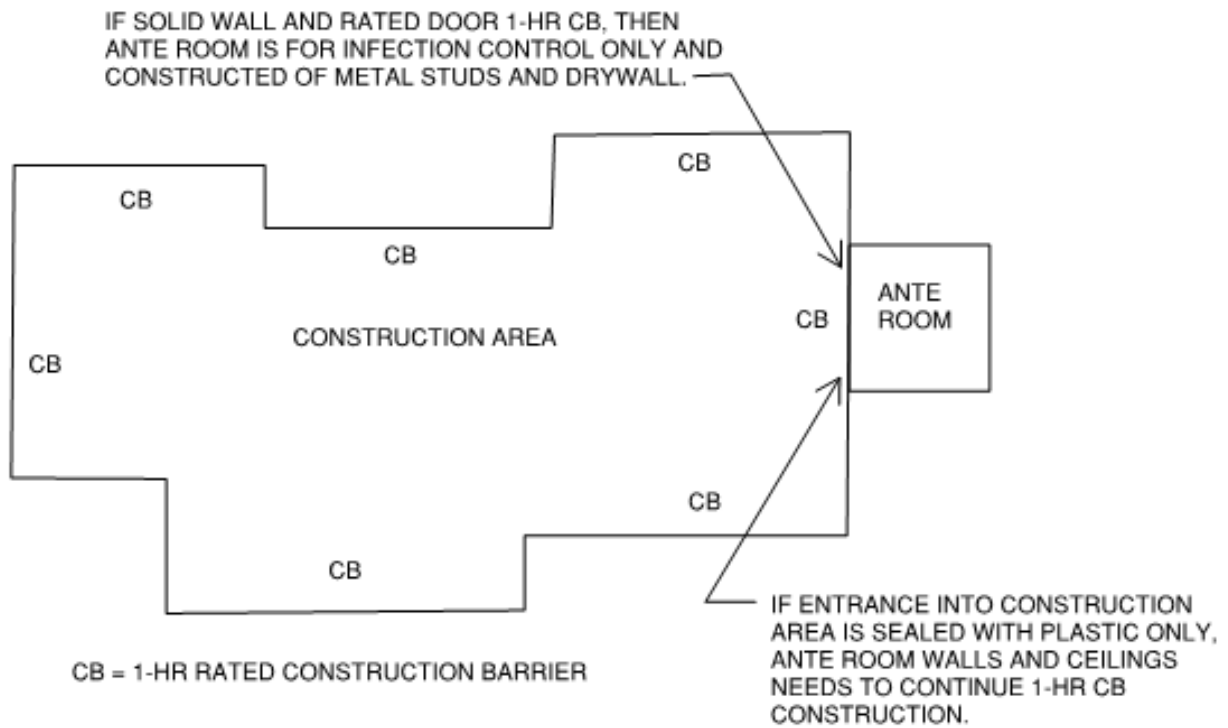


Figure 1



## TEMPORARY IC BARRIER WALL CONSTRUCTION

Figure 2



### CONSTRUCTION AREA TYPICAL PLAN

Figure 3

**SECTION 01 01 10 (SN)**  
**SPECIAL NOTES**  
**11/2016**

**PART 1: GENERAL**

**1.1 Not Used.**

**1.2 FIRE ALARM SYSTEM:**

- A. FIRE/SECURITY ALARM SYSTEMS:** Contractor shall advise the Graphic Control Center and/or the Police Desk at extension 41010/42222 respectively, prior to any work which might result in the Fire Alarm System or Security System (this includes but is no limited to: Smoke Detectors, Water Flow Switches, Pull Stations, Sprinkler Heads, Motion Detectors, Door Contacts, Security Door Controls, etc.) being activated, in addition to having an approved outage form from the Facility Management Department. Notification to Graphics and/or the Police Desk and having an outage form, does not absolve the contractor from following the proper procedures to prevent the system from activating, i.e. covering the smoke heads with paper bags, closing valves, containing dust, monitoring and controlling security devices, etc.). **If any system activates due to the contractor's failure to notify the Graphic Control Center, the Contractor's failure to follow proper procedures, or the Contractor's failure to obtain an outage form, a Modification/Settlement by Determination deduction of \$2,500.00 per alarm/event or notice from the Police that a construction area was left unsecured will be issued to the contractor.**

**1.3 SCHEDULING OF WORK:**

- A. Contractor shall verbally schedule work areas with COR not less than fifteen (15) calendar days in advance of commencement of work. Verbal notification shall be backed up and verified in writing.
- B. Contractor shall verbally schedule outages or service interruptions with COR not less than fifteen (15) calendar days in advance of intended commencement of work. Notification does not guarantee the date of scheduled outage or service interruption however COR/COR will schedule such dates and inform the contractor. Date will be scheduled with medical center personnel when service interruption will minimize affect to hospital patients and operations. Contractor to submit VA System Outage Request form to COR not less than fifteen (15) calendar days in advance of intended commencement of outage work. Contractor to attend two (2) weekly pre-outage meetings with Engineering and staff to coordinate actual date of outage, duration, time of outage, phasing, and affected services. In addition, contractor to attend the pre-outage meeting one hour prior to outage to coordinate communications, readiness, pre-outage checklist, document requirements, temporary measures, lock out tag out and other outage requirements and procedures.
- C. Contractor to attend weekly construction meetings.

**1.4 PROTECTION OF WORK AREAS:**

- A. Contractor to provide drop cloths when working in occupied areas to avoid staining or damaging existing carpets or vinyl tile floors.

**1.5 HOURS OF WORK:**



- A. The hours of contract work shall be from 7:00 am until 4:30 pm the normal work shift for hospital employees. The contractor shall verify shift or shifts required for construction areas. Other than normal, after (off) hours, including federal holidays shall be scheduled two days prior to starting with the Project Manager. These off hours will be required to complete the project in the time allotted for the contract at no additional cost to the Department of Veterans Affairs. Upon approval of the Department of Veterans Affairs, the contractor will propose the scope or extent of off hour work due to individual contractor resources available to accomplish this project in the time allotted. In addition, these off hours will be required for utility/service interruptions, and any/other work that may interrupt the operation of the occupied space, i.e., some road construction, demolition, work in occupied areas, work affecting occupied areas, etc. Some noise producing demolition operations will be required to be scheduled for off work hours as directed by COR and described on drawings.
- B. Certain work items, which require off-hour work, have been identified. These items are indicated on the drawings. Refer, in particular, to Phasing Notes on Drawings. All drawings shall be reviewed for off-hour work requirements and items creating disturbance to the hospital staff or patient care must be performed during off-hour working periods as established and approved by the VA Engineer.
- C. Building will be occupied during performance of work, but areas of alterations will be vacated. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas, which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by the VA so that Medical Center operations will continue during the construction period. Contractor to construct 7 feet tall by 5 feet wide metal stud and drywall tunnels through occupied space as deemed necessary by the VA for access by Medical Center personnel and maintaining construction operations.

#### 1.6 SUBMITTALS:

- A. Start of Construction: The contractor's submittals must be forwarded in sufficient time to permit proper consideration and approval by the government and be timed to permit adequate lead time for procurement of contract required items. Delivery of submittals to the COR or verbal acknowledgement of receipt by the Project Manager **does not** constitute approval.
- B. Sole Source Items: There will be no substitutions for the products and services listed below. Sole source items to be in accordance with VAAR 852.236-90 Restriction on submission and use of equal products. This clause applies to the following items:

| System / Equipment  | Manufacturer and Model  | In Contract |
|---|---|-------------|
| Fire Alarm System   | Siemens Cerberus Pyrotronics System   | Yes         |
| Security System & Code Blue                                 | Johnson Controls Pegasys/P2000 System   | No          |
| Pneumatic Tube System                                       | Swiss Translogic  | No          |
| Medical Gas Alarms  | Puritan Bennett Medical Gas alarms  | No          |
| Nurse Call  | Jeron Health Care Call System Provider 790 Nurse Call System  | No          |
| Isolation Room Controls                                     | Employ Critical Room Control  | No          |
| Doors, Hardware, Locks and Keying                           | Employ Sargent cylindrical and mortise sets with Medeco 7-pin interchangeable cylindrical cores, LCN Closers (Mechanical, Electronic Hold-Open, Electromagnetic), Von Duprin Exit Devices, Hager Hinges | No          |
| Automatic Door Operator                                     | Tormax 1301 Super HD Automatic Door Operator (Low Energy)   | No          |
| Building Automation and HVAC Controls                       | Johnson Controls Metasys control system   | Yes         |
| Refrigerator Temperature Controls                           | Cooper Atkins Temp Trak Refrigeration Temperature Control System  | No          |
| Wander Guard  | Accutech ES2200 Patient Wandering Prevention System   | No          |
| Modular Furniture   | Herman Miller Products  | No          |
| Patient Ceiling Lifts                                       | Guldmann GH3+ Ceiling   | No          |
| Modular Brick   | Belden Brick (County Materials) Seal Brown Velour A, Modular Brick  | No          |
| Automatic Transfer Switches                                 | Eaton Magnum Transfer Switches  | No          |
| Electrical Metering   | Eaton/Cutler Hammer PowerXpert system   | No          |
| Interiors   | Reference Interior Schedule   | No          |
| Tile Grout Sealant  | Microguard Inorganic Protective Barrier   | No          |
| Firestop Systems  | HILTI Firestop Systems  | Yes         |
| Prefabricated Modular Wall/Partition Systems and Enclosures | DIRTT Environmental Solutions   | No          |
| Stone Flex Aggregate Panels                                 | CEP Panels, Inc., Bermuda White SN 100, Fine Grade Aggregate Finish   | No          |
| Curtain Track Rail Support System (CTRSS)                   | Barrier Free Lift RX-6001/Architex Speed Fabric   | No          |
| Interior Signage  | 2/90 Sign Systems   | No          |

**1.7 EMERGENCY SERVICE:**

- A. All offerors, if successful, must be able to respond to all contract and contractor created emergency services resulting from contractor actions and installations, as determined by the Department of Veterans Affairs COR, with qualified staff personnel within one (1) hour of verbal notification during construction stages and warranty period. Bidders must be prepared to show proof, in writing, that they can satisfy this requirement prior to award.

**1.8 KEYS:**

- A. Keys for access to construction/work areas may be issued to the contractor at the discretion of the COR. Up to three sets of keys will be provided at no cost. All keys will be assigned through the SAMS box and the contractor will be given access based on their VA ID Card. Upon completion of the work, failure to return all issued keys to the Project Manager will result in the issuance of a Settlement by Determination in the amount of \$100.00 for each outstanding key. In addition, a \$50.00 fee will be paid to VA for each outstanding key. Keys are to be picked up and returned daily. If keys are not returned by the end of the day, a modification of \$50.00/key per day will be assessed against the contractor.

**1.9 SAFETY ITEMS:**

A. Training:

1. All employees of contractor and subcontractor shall be aware of the egress routes from the construction areas. It is the contractor's responsibility to ensure all employees are aware of the fire alarm codes for the building they are working in and participate in fire alarm drills and actual fire alarms.
2. Project Site Superintendent shall have the 30-hour OSHA certified Construction Safety course.
3. All employees of general contractor or subcontractors shall have the 10-hour OSHA certified Construction Safety course.
4. Submit training records of all such employees for approval before the start of any work onsite.

- B. Barricades: The contractor is responsible to erect barricades, construction and safety signs, ILSMs, and new egress routes. The barricades will be erected to restrict areas where hazardous operations are performed. The construction and safety signs shall consist of caution signs as determined and approved by VA; egress signs, where egress has been altered for construction; and any applicable hazardous warning signs. If the egress is changed due to construction, the contractor shall provide temporary directional signs for changes as determined by VA and for construction of any walkways, steps, or overhead protection scaffolding or the like as required providing a new means of egress. **Emergency egress plan shall be developed by the contractor and submitted for approval by the designated VA safety manager before egress routes are altered.**

- C. Fire Extinguishers: The contractor and subcontractors shall provide fully charged and fully operational fire extinguishers as required and in accordance with section FSS on the job site(s) at all times.

Reference section 01 01 10 FSS. NFPA 10 requires the bottom of the extinguisher to be at least 4-inches above finished floor and the top of the extinguisher shall be no higher than 60-inches above finished floor.

- D. Debris: Combustible storage and debris shall be kept to the lowest level necessary for required daily operations. The construction area shall be kept clean as indicated in general requirements and conditions
- E. Gasoline Powered Equipment: Gasoline powered equipment shall not be used within the confines of any building on the Medical Center without specific written permission from the Chief, Engineering Service.
- F. Fire/Smoke Doors: Fire and/or smoke doors shall not be propped open or prevented from closing and latching. This includes mechanical equipment rooms and utility closet doors.
- G. Construction Site Phone: Contractor to run wiring from telephone closet to the construction space for the installation of a VA phone in the constitution space. Installation of the phone is required prior to construction can begin. The VA will determine if the phone is necessary.
- H. Construction Hard Hats: General Contractor to provide (4) sets of hard hats and safety glasses for each worksite for VA staff use.
- I. Exit Signs:
  - 1. Inside Construction Space: Contractor to provide luminescent Exit Signs throughout the construction space such that while standing in any place within the construction space, an Exit sign is visible and the path of egress can be followed.
  - 2. Outside Construction Space: Contractor will cover, relocate, etc. Exit signs impacted due to their construction operations as directed by the ILSM and the VA Safety Officer.

#### 1.10 SECURITY OF CONSTRUCTION SITES

- A. All construction sites must be secured to prevent inappropriate access by patients, visitors, and employees. While such security fences, doors, and barricades are temporary, they must be substantially installed to control access to the site. The existing security (Pegasys by Johnson Controls) system must be extended to each construction access door. Each construction door must be provided with card reader programmed to the existing VA security system. Construction sites and all security measures must be monitored daily to ensure that security is maintained. Local VA Police must be alerted about the construction project. At the close of activity daily, before securing the site or portions of the site, the contractor must ensure that there are no patients, visitors, or staff in the area. If construction site problems arise, the Contracting Officer and COR will take appropriate action to correct any and all safety and security conditions.
- B. VA engineering, safety/fire department, and police staff must have the right to access the construction site as needed to perform their assigned responsibilities.
- C. Lock up the worksite at all times to prevent patients and other unauthorized people from entering the site.

- D. The need for job site security is much greater when work is being conducted in psychiatric areas to protect the safety of the patients. All job boxes, tools, etc., must be locked up even when workers are on site unless there's enough activity to assure that patients cannot access tools or site. Verify that no one is in the construction area upon locking up the site for the evening.
- E. Two evacuation routes from the worksite must be maintained at all times.
- F. Contractors may lock up their tools etc., with personal locks.
- G. The VA locksmith will provide the construction core for the contractor's door.

#### **1.11 PENETRATIONS**

##### **A. WALL**

- 1. All wall and/or floor penetrations created by work on this contract, whether by demolition or new construction, shall be patched by the general contractor or as assigned by the general contractor. All patching materials shall be of like kind or a suitable substitute approved by NFPA or UL.
- 2. If the permit is for other than inspection, a Follow-Up Inspection page will need to be filled out by the person performing the installation/removal work, which then needs to be signed and returned to whoever originally issued the permit. The permit initiator is then responsible for checking the areas listed on the permit to ensure firestopping was completed according to Facility standards and penetrations sealed with an approved fire/smoke sealant compound so as to maintain fire and smoke separation integrity. Documentation of the sealant or system used in the penetration must be made available at the affected penetration by the permit requestor at the time of permit completion inspection. The program or person completing the follow up inspection must validate that the sealant compound or system is properly rated and installed for maintaining the rating of the affected smoke or firewall. Photo-documentation in lieu of interim inspections can be performed to validate work.
- 3. ONLY (1) one type of fire sealant is permissible per hole.
- 4. The permit will be in this person's possession while all inspections and/or work are being performed.

##### **B. CEILINGS**

- 1. To ensure that proper ceiling penetrations are sealed, all internal departments and contractors doing any cabling, wiring, plumbing, etc., must obtain a ceiling access permit from Facilities Services prior to installation.
- 2. All wall penetrations must be located, marked, and sealed by contractor responsible for penetration. As penetrations are sealed, Facilities Service must be contacted to inspect penetrations for proper sealing.
- 3. If the permit is for other than inspection, a Follow-Up Inspection page will need to be filled out by the person performing the

installation/removal work, which then needs to be signed and returned to whoever originally issued the permit. The permit initiator is then responsible for checking the areas listed on the permit to ensure firestopping was completed according to Facility standards and penetrations sealed with an approved fire/smoke sealant compound so as to maintain fire and smoke separation integrity. Documentation of the sealant or system used in the penetration must be made available at the affected penetration by the permit requestor at the time of permit completion inspection. The program or person completing the follow up inspection must validate that the sealant compound or system is properly rated and installed for maintaining the rating of the affected smoke or firewall. Photo-documentation in lieu of interim inspections can be performed to validate work.

4. The permit will be in this person's possession while all inspections and/or work are being performed.
5. At the end of each work day and prior to leaving work site, the contractor shall replace all ceiling tiles temporarily removed to do work above finished ceilings in corridors.
6. If it is not practical to replace all ceiling tiles on a daily basis the contractor is to construct 7 feet tall by 5 feet wide metal stud and drywall tunnels through occupied spaces as deemed necessary by the VA for access by Medical Center personnel and maintaining construction operations. Upon the first incident of the contractor not replacing the ceiling tiles, this tunnel construction will have to commence immediately prior to any further construction on the project.

C. Reference section 01 01 10 - 1HR for additional information.

#### **1.12 PHASING AND UNUSUALLY SEVERE WEATHER CONDITIONS:**

- A. Phasing on this contract is critical as portions of the area to be remodeled shall remain occupied throughout the construction work. Contractor will be working in operational and business-occupancy buildings. The contractor will share the corridors, stairwells, etc. with staff. Each phase shall be as described on the drawings and/or specifications shall be completed in the sequence described. Also refer to Section 01 00 00, Article 1.5.H. Phasing.
- B. Unusually Severe Weather Conditions: The contractor is expected to understand the seasonal conditions affecting the work and to take into account normal weather variations at the site location during the planned period of performance. Before a determination that the contractor is entitled to additional time extension (excused delay) for unusually severe weather, the contractor must demonstrate (1) that the weather was unforeseeable and unusually severe and (2) that critical path work was actually delayed by the weather. Risk allocation for unusually severe weather conditions is the responsibility of the contractor and is not compensable.

#### **1.13 PROTECTION OF PROPERTY**

- A. The contractor is required to preserve and protect all structures, equipment, and vegetation on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under the contract. The contractor will be required to repair

any damage to facilities resulting from failure to exercise reasonable care in performing the work.

**1.14 SCAFFOLDING:**

- A. All scaffolds and other work platforms construction activities shall comply with 29 CFR 1926. Contractor is to provide copies of daily scaffolding inspections with daily logs.

**1.15 ENERGY EFFICIENCY REQUIREMENTS:**

- A. Federal Executive Order #13423/#13514 requires all energy efficiency materials, equipment, and systems to be evaluated and if feasible incorporated into VA Projects. The A/E, prime contractor, and all subcontractors shall cooperate with the Federal Government in specifying, evaluating, documenting, purchasing, and installing energy efficient equipment that meet basic energy efficiency criteria established by the VA.
- B. All design and installation will be in accordance with current VAMC, HVAC design guides, NEC, NFPA, ASHRAE 90.1, state, local and all VA and federal codes.
- C. The VA intends to provide energy savings equipment and design modifications for current energy usage to the most efficient and economical level possible.

**1.16 INSPECTIONS:**

- A. All mechanical and electrical work shall be inspected by Engineering Service (Shop & COR) personnel prior to being put into operation or closing up if work will be hidden by walls, ceilings, drop ceilings, cover plates, access panels, etc. Contractor shall notify the VA RE a minimum of two days prior to the inspection date, times and dates shall be scheduled and agreed upon by VA. Installations will be inspected by these VA personnel for work in compliance with State, Federal, Local, Dept. of Veterans Affairs Codes, regulations and contract specifications. If corrections, alterations, adjustments, new construction etc. is required, the VA will be notified within 48 hours of completion of such items. These inspections and corrections, alterations, etc. will be made at no additional time or cost to VA.

**1.17 CONTRACTOR'S AGREEMENT: RULES AND REGULATIONS FOR ALL CONTRACTORS**

- A. The following is the contractor's agreement required to be signed at the pre-construction meeting and updated monthly when new subcontractors start working on the job site. The agreement is the general contractor's responsibility to ensure all subcontractor personnel are trained and acknowledge (sign) the agreement.
  - 1. STANDARD POLICY: All outside General contractors and Sub-contractors will coordinate all work within the hospital with Facilities Management before beginning work.
  - 2. PURPOSE: General Contractor will ensure that each individual General Contractor and Sub-Contractor employee is responsible for complying with established hospital standards, applicable OSHA Safety Requirements, federal, state and local environmental regulations, wearing prescribed safety equipment, and preventing avoidable accidents.

3. PROCEDURE: The contractor will ensure that each individual contractor and sub-contractor employee review, understand and acknowledge (sign) the following information prior to the commencement of work scheduled at this facility. General Contractor will forward copies of signed acknowledgements to Project Engineer/COR of all new employees on a monthly basis.
- B. The following building rules and regulations affect all contractor personnel, suppliers, and vendors:
1. Access to Construction Areas
    - a. Access is limited to areas such as critical care and surgical units, as well as mechanical/electrical rooms, etc. Access can be obtained through Facilities Service.
    - b. Access to any floors of the facility after normally scheduled work hours (Monday-Friday, 7:00 a.m.-5:00 p.m.) must be scheduled in advance with the Project section of Facilities Service. Police and Security reserves the right to refuse access to anyone without prior authorization and identification.
    - c. Ready access for the Engineering, Safety, Police and (the Fire Department) shall be maintained to all areas under construction at all times.
    - d. Areas under construction shall be locked during off-hours. Keys and cylinders for this purpose are obtained through Facilities Service. Contractors will not put their locks on any doors without VA approval.
  2. Accidents and Injuries
    - a. First Aid/Medical Aid/Emergency Treatment for workers: The contractor must post emergency phone numbers and treatment facilities if any contractor employees are injured on the job, or need medical treatment
    - b. Work site injuries must be reported to the VA. The VA has an accident reporting form (form number 2162). The COTS/ Safety/ or Security and Police Service will initiate the 2162. Once the VA has completed the supervisor's portion the injured individual will be required to complete the narrative portion of the report. The service chief responsible for the contract is also required to sign the report and forward the original report to the Safety Section.
  3. Asbestos
    - a. There are both friable and non-friable asbestos-containing materials located within the hospital complex. Inspection reports are located in the Facilities Service Department. Contractors are required to be aware of the asbestos materials located in the vicinity of their work. Further, all contractors are expressly forbidden to disturb any asbestos-containing materials unless specifically authorized in writing by VA. Under no circumstances are any materials supplied or installed by the contractor to contain asbestos in any form or quantity.
    - b. Asbestos removal contractors will be trained and licensed, and will follow all OSHA rules, VA specifications, state and local regulations from notification to disposal.
    - c. A VA representative will verify the adequacy of the barriers and ventilation before any asbestos removal work is conducted.



- d. The contractor is responsible for monitoring his own employees' exposure to asbestos.
  - e. Additional specific asbestos removal specifications will apply.
  - f. Contractor to provide a Fiscal Year breakdown of Asbestos Costs on the project.
4. ACM TRACE WORK OPERATIONS:
- a. ACM TRACE RESULTS - Should renovation activities deem the material friable due to cutting, grinding or other mechanical means of removal, an employer is bound by OSHA 29 CFR regulations 1926.1200 (d) (5) (iv) to protect their employees. This may determine that removal of the materials be performed by asbestos abatement workers trained in 29 CFR 1926.1101.
  - b. *OSHA regulation 1910.1200 HAZARDOUS COMMUNICATION Section (d)(5) Hazard determination "...employer shall determine the hazards of mixture of chemicals as follows: (iv) "If the...employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent...could be released in concentrations which would exceed an established OSHA permissible exposure limit...or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard."*
  - c. General Summary:
    - (1) Employees, contractors, etc. must be warned about the presence of asbestos.
    - (2) The contractor must have a competent person on site during work. (At a minimum, it should be a trained, certified asbestos supervisor).
    - (3) Personal exposure assessments (negative exposure assessment) are required (PCM analysis) and workers should begin work with PPE.
    - (4) Wet methods and daily clean up and sealing waste in leak tight containers are required. The following is a list of references from OSHA guides. Note: The reference to the word "sheet rock" is based on trace (<1%) of asbestos being present in the "sheet rock."
  - d. The contractor will be responsible for proper work practices and prohibitions for all construction activities involving material that contains any amount of asbestos regardless of the exposure levels. And the standard has exposure-based requirements, consisting of a 0.1 fiber/cc 8-hour TWA PEL and a 1 fiber/cc 30-minute excursion limit, and other requirements that apply whenever worker exposures exceed either or both of the limits, regardless of the amount of asbestos contained in the materials involved.
  - e. If some of the items associated with the installed sheetrock contain some asbestos but none of them contain >1% asbestos, then removal of the sheetrock is considered unclassified asbestos work. This means that only certain ones of the standard's work practice and engineering control obligations, and prohibitions pertain. Some of the general ones do not pertain because they apply to installed building materials containing >1% asbestos (ACM). How many of the eligible general work practice and engineering control obligations, and prohibitions are applicable depends on whether the employee levels of exposure to airborne

asbestos exceed either of the asbestos PELs. In further explanation: These OSHA references are specific to this issue.

- f. If the employees' asbestos exposures exceed neither asbestos PEL, then only two of standard's general work practice control procedures and three of the standard's general prohibitions pertain to the sheetrock removal operation; none of the standard's engineering control methods pertain to the sheetrock removal operation. Those general work practice procedures and general prohibitions the employer must observe under such a condition are those presented at:
- g. 29 CFR 1926.1101(g)(1)(ii), which requires: wet methods, or wetting agents, to control employee exposures during asbestos handling, ... removal, cutting, ... and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to for example, the creation of electrical hazards ... [and] equipment malfunction...; 29 CFR 1926.1101(g)(1)(iii), which requires: prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers...; 29 CFR 1926.1101(g)(3)(i), which prohibits: high-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air; 29 CFR 1926.1101(g)(3)(ii), which prohibits: compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air; and 29 CFR 1926.1101(g)(3)(iv), which prohibits: employee rotation as a means of reducing employee exposure to asbestos.

5. Clean-Up:

- a. All work activity within occupied portions of the facility shall be immediately cleaned and restored to its original finished condition upon completion of the activity. If the activity continues into the next workday, the area shall be left safe, clean, and presentable.
- b. Public restrooms are not to be used for the cleaning of tools or equipment, i.e., paintbrushes, rollers, finishing tools, etc. Janitor's slop sinks are available for this purpose. If janitor's closets are used, they must be cleaned.
- c. Trash, combustible waste, and excess construction materials must be removed daily to prevent accumulation. Contractors must arrange for the removal of their debris and waste.
- d. All work for an area must be confined within that space. Public corridors, stairwells, equipment rooms, and vacant floors are not to be used for the storage of materials or as a workshop. Tracking of construction dirt into the public corridors or stairwells must be prevented. The contractor will provide dampened walk-off mats at all entrances and exits from the construction area.
- e. If smoke detectors are covered during dust-producing activities, they must be uncovered daily.

6. Compressed Gas Cylinders:

- a. Compressed gas cylinders are very dangerous if not treated properly.

- b. Employees who work with compressed gas cylinders must have specific training.
  - c. Make sure that they are secured properly when in use or in storage.
  - d. Always keep the caps on the cylinders when they are not in use.
  - e. See also Hot Work section.
7. Confined Space:
- a. Confined Space Entries. All Confined Spaces are clearly marked on campus. NO ENTRY is allowed in the areas without prior approval by the Project Engineer. NO ONE will be allowed to enter these areas without the proper qualifications, equipment and training as required by the OSHA Standards (29 CFR 1910.147)
  - b. Identify storm sewers, underground electrical vaults, and all other areas that require confined space permits. (e.g., a map showing the locations of all the confined spaces located in the Facilities Service Department).
  - c. All hospital personnel that would require entry into these spaces must abide by the Confined Space Program Procedure.
  - d. It is the sole responsibility of any outside contractor doing work on a VA Medical Center campus to coordinate entry into any of these spaces or any other marked permit required confined spaces with the medical center.
  - e. Anyone entering a permit-required confined space must follow Occupational Safety and Health Administration (OSHA) Regulations, 29 CFR 1910.120.
  - f. Contractor to submit as a formal submittal the Confined Space Entry program (and CSE Permit if needed).
8. Contractor Room/Space Guidelines:
- a. Materials will be kept on the job site, in the contractor's room or in storage space provided by the Contractor via trailer located in the VA corporation yard on the North East section of the VA grounds.
  - b. Any shared space within storage room(s) must be accessible to Facilities Service. Do not block access to electric panels or fire protection equipment.
  - c. Hallways are not to be used for storage.
  - d. Contractors will manage the area and assure the site is kept clean and safe. (OSHA standards apply.)
  - e. Any disputes or concerns will be directed to the Facilities Service Manager.
9. Damage by Contractors:
- a. Any damage caused by the contractor's employees is to be reported to the COR or Facilities Service Project Section immediately.
10. Deliveries:
- a. All material deliveries at the loading dock must be coordinated with the Receiving Department in advance.
11. Dress Code:
- a. All personnel must be appropriately dressed for their work. T-shirts or garments with obscene or suggestive messages are not permitted. Personnel found improperly dressed will be asked to leave the facility. No construction staff is allowed to remove

shirts or other clothing. No articles may include offensive statements/graphics.

12. Dust Barriers and Ventilation Requirements:

- a. Reference section 01 01 10 IC and Safety Specification 01 35 26.
- b. Dust barriers are needed to protect occupied areas on any portion of the job that has potential to create dust.

13. Elevator Usage:

- a. Contractors shall not hold or block from use any public elevators in any building unless authorized by the COR.

14. Emergencies:

- a. Fire Plan: The contractor must submit a fire plan for his construction site. Within the VAMC, note that there is no difference between a fire drill and an actual fire.
- b. General Contractor will ensure that each employee on the worksite knows where the pull stations are in the areas you are working.
- c. If you are in the area of the fire:
  - (1) Rescue anyone from the area if necessary
  - (2) Pull the nearest Pull Station
  - (3) Contain the fire by closing all doors in the area
  - (4) Extinguish if possible or Evacuate the area immediately
- d. If you are NOT in the area of the fire:
  - (1) *Construction Workers* are to cease activities, stay in place, and wait for further instructions or cancellation of the fire drill.
  - (2) DO NOT move through the hospital. DO NOT use the elevators or stairwells.
- e. Medical Emergencies - Any contractor who witnesses a medical emergency is to pick up a nearest phone and dial "911" or the operator and describe the condition of the emergency.
- f. Accidents/Injuries - The contractor must post emergency phone numbers and treatment facilities for any injured employee.
- g. Worksite injuries must be reported to the VA immediately using the VA accident reporting form (Number 2162). The COR/Safety/or Security and Police Service will initiate the 2162.
- h. Patients and visitors may be anxious or irritated because of their situation. If you are faced with any patient or visitor that gets aggressive with you, simply call Ext. 42222 and say "Code Green" and describe the situation. Security will respond immediately.

15. Equipment Safety:

- a. Ladders are not to be left unattended in public areas during breaks and lunch hours. Ladders shall be laid down and placed out of traffic areas during these periods.
- b. No tools, carts, ladders or other equipment are to be left unattended outside a secure area.
- c. Yellow safety barricades must be used when working in public areas.
- d. Use of hospital equipment is permitted only if the contractor receives permission from Facilities Service and is properly trained on the USC of the equipment.

16. Equipment and Supplies:

- a. Caution must be used with all flammable materials, i.e., adhesives, thinners, varnishes, etc.
- b. All paints shall be low odor latex paint. The contractor will use odor reducing agents in all paints and solvents. Ventilation will be required if toxic or foul-smelling materials have to be applied.
- c. Only a one-day supply of paints, oils, and gas cylinders is permitted within the facility, unless it's properly stored in a flammable liquid storage cabinet.

17. Fire Alarm System:

- a. Care must be exercised to prevent the accidental tripping of smoke detectors or fire alarms.
- b. Notify Facilities Service of your activities and location.
- c. Cover and protect the smoke alarms with paper bags when raising dust or creating smoke in short duration (less than 3 days) ancillary work areas. All other construction areas to follow section 01 01 10 - 1HR. (You must inform Facilities Service Fire Department when bagging smoke alarms.)
- d. Remove the paper bag upon completion of your work and at the end of each workday.
- e. If you accidentally trip an alarm, notify Facilities Service (Fire Department) immediately.

18. Hazardous Materials and Waste:

- a. A listing of all hazardous materials that will be used on the job and their material safety data sheets (SDS) will be available to the VA upon request before the chemicals are used.
- b. SDS are available to the General Contractor for all materials used in the medical center. Contact the COR if you need an SDS for a VA owned material.
- c. The VA GEMS Coordinator is responsible for this program and will brief the contractor during construction kickoff.
- d. SDS data sheets must be on the job site.
- e. The contractor may subscribe to a SDS online SDS service where the sheets are readily available online in lieu of hard copies on the job site.
- f. Any excess or used chemicals will be removed from the hospital promptly and properly disposed of by the contractor in accordance with federal, state and local regulations.
- g. Any hazardous waste generated at the facility must be properly contained and labeled and stored in accordance with local, state, federal and hospital regulations.
- h. Do not store flammable materials in the facility unless stored in an approved non-combustible storage cabinet or prior approval by the Project Engineer and Safety Office.
- i. Coordinate all hazardous materials issues and concerns with the COR and the GEMS Coordinator.

19. Heavy Lifting:

- a. Hoisting heavy materials/items require prior review by the COR.

20. Housekeeping:

- a. Housekeeping in public areas of the hospital will be maintained at the highest level, even while work is ongoing.

- b. In secured areas, housekeeping will be performed as needed, but at a minimum at the end of each job task, and at the end of the workday.
  - c. Debris and waste will not be allowed to accumulate on the work site and disposal must be arranged to keep the amounts low.
21. Hot Work Permits:
- a. Hot work permits are required before cutting, soldering, welding operations begin. Before any cutting, soldering or welding is conducted, the contractor or sub-contractor shall obtain permission through a hot work permit. The contractor shall be responsible for obtaining the hot work permits from the COR.
  - b. Gas and oxygen canisters shall be properly chained and protected and two 10-pound fire extinguishers shall be present.
  - c. A fire watch shall be maintained on the worksite during the hot work operations, and for 30 minutes after the hot work is completed.
  - d. All burn permits will be completed, signed and scanned within 48 hours and posted to Buzzsaw.
22. Identification Badges:
- a. All contractors working at the Milwaukee VA will be finger printed and the finger prints processed prior to obtaining a VA badge. ID Badges are required for ALL contractor employees working at the V.A.
  - b. Before beginning work on any project, every contractor shall complete the VA SAC FORM (request for fingerprints/badges) from the COR and submit to the COR through the Superintendent. SAC form is included as an appendix to this specification.
  - c. The GC Superintendent shall email the completed SAC form to the COR, who will forward to the PIV office.
  - d. The contractor will stop at the PIV 1-2 days later to complete the badge process.
  - e. There is an approximate 5 day wait once finger prints are given to when processed and the contractor can return to obtain the photo ID badge. Badges will be active for only 90 days at a time.
  - f. General Contractor will be required to request, thru the COR, for reactivation/continued activation of all contractor badges every 90 days.
  - g. Lost badges require the process in its entirety.
23. Infection Control:
- a. Reference section 01 01 10 IC and Safety Specification 01 35 26.
  - b. Sensitive/High Risk areas of the hospital require extra precautions to assure patient safety. These areas include but are not limited to the operating rooms, intensive care units, chemotherapy and transplant units. Contact infection control for other areas that may require special precautions.
  - c. When working in patient care areas, please be sure to read and follow the directions listed on any Infection Control Precaution sheets posted outside of a patient's room. Generally this means permission must be obtained from Nursing staff before entry.
  - d. Temporary walls or dust barriers are required to enclose areas under construction.

- e. Under some circumstances it may be necessary to block return and supply ducts, and install special HEPA exhaust ventilation from the worksite. There should be no re-circulation of air from construction area to rest of hospital.
  - f. Dampened walk-off mats must be located outside of construction area.
  - g. Dust mops/wet mops must be available to remove any dust tracked outside barriers.
  - h. *Standard Precautions* assumes that any person may carry a contagious disease. In order to protect you from these diseases always assume blood, non-intact skin, mucous membranes and all other body fluids and excretions are infectious. Do not touch any such materials but contact a VA employee immediately. Needle container boxes are provided for the disposal of syringes and other sharps used in the medical center. These must be properly disposed of and should be moved only by VA personnel. The VA Medical Center provides written guidelines, education, and personal protective equipment (PPE) for anyone working at VA Medical Center campus to prevent their exposure to bloodborne pathogens.
24. Interim Life Safety:
- a. The hospital will document whether and to what extent Interim Life Safety Measures (ILSMs) will be implemented for each project.
  - b. VA Safety will ensure what ILSMs are required by the General Contractor to temporarily compensate for the hazards posted by existing Life Safety Code (LSC) deficiencies or construction activities in areas of the Medical Center.
  - c. Implementation of ILSMs will be required in or adjacent to all construction areas and throughout buildings with existing LSC deficiencies. ILSMs apply to both construction workers and affected hospital employees, and will be implemented upon construction development and continuously enforced through construction completion.
  - d. Interim Life Safety Measures will require walkthrough inspections by the job foreman, the project manager, and safety staff at daily intervals.
  - e. Training of workers and any affected staff will always be a significant part of the Interim Life Safety Measures procedures.
25. Life Safety:
- a. Any life safety code violations incurred during construction or renovation must be resolved and will result in close coordination with Project Engineer and Safety Section to implement the hospital's Interim Life Safety Measures. These measures are required by JCAHO and NFPA.
26. Lock Out/Tag Out:
- a. Lock Out/Tag Out - No contract worker is allowed to change the status/position of ANY switch, valve or any other energy source without prior approval from the Project Engineer. All Lock out/Tag Out activities need approval prior to being implemented. Any activity requiring a Lockout/Tagout process must comply with the hospital policy.

- b. Per OSHA Regulation 29 CFR 1910.147, all contractors must comply with OSHA's Safety Lockout/Tagout procedures.
  - c. Coordinate all shut downs with Hospital Personnel.
  - d. Only VA staff is authorized to shut down utilities unless permission is specifically granted.
  - e. Contractor to submit as a formal submittal the Lock Out / Tag Out Program policies and procedures.
27. Noise:
- a. All core drilling, chipping, and hole drilling shall be done at a time and day determined by occupants on that floor and the floors above and below. The COR shall coordinate and approve it.
  - b. The patients, visitors, and staff deserve consideration and the quiet enjoyment of their premises. Anyone found being loud, rude, or otherwise annoying to the patients, their guests, or staff will be asked to leave the facility. Use of vulgar language will not be tolerated.
  - c. All work activity within occupied portions of the facility shall be accomplished with minimal disruption to the patients, physicians, visitors, and staff.
  - d. The playing of radios, tapes, and CD players is not permitted in any occupied area. "Walk-man" radios/tapes/CD players are not permitted anywhere.
  - e. The playing of radios, tapes, and CD players is permitted in vacant areas but shall not be heard outside the vacant area.
  - f. In inpatient areas, coordinate construction activities and debris removal with the Nurse Manager or Charge Nurse to minimize disruption.
28. OSHA Compliance:
- a. All contractors are subject to Occupational Safety and Health Administration (OSHA) regulations, these standards and are expected to enforce these standards in the performance of their work, OSHA regulations can be found in chapter 29 of the Code of Federal Regulations (CFR). Failure on the part of any contractor employee to comply with these standards and/or conduct their work in a safe fashion will result in an interruption in the work schedule for which the contractor will be solely responsible, Any contractor found deviating from regulatory standards and/or policy and SOPS will immediately be issued a stop work order and will be responsible for contractual conflicts related to the work stoppage.
29. Parking:
- a. Contractors may not block fire lanes or other roadways. Contractors may not park in any patient, staff or visitor parking lot or structure. Violators will be ticketed. During large construction projects, a staging site may be available for parking to contractors.
  - b. All Contractors who need parking must contact Facilities Service for a parking permit.
  - c. If special parking is required, permission shall be granted and coordinated through Facilities Management. Contractors should park in the designated Contractor Parking Lot. Limited loading and unloading will be permitted at the loading dock area,



afterwards contractor employees will be required to park in designated areas.

30. Patient/Visitor Privacy:
  - a. No construction staff is allowed to review, acknowledge or move any patient information or records.
  - b. No construction staff may acknowledge any patient or visitor unless spoken to - even if the individual is known on a personal basis.
  - c. Radios are NOT allowed on campus.
  - d. Cell phones are to be used only in designated areas.
31. Personal Protective Equipment:
  - a. There are many situations that require specific personal protective equipment for worker safety according to OSHA. It is the responsibility of the individual contractor to know when it is to be used and is responsible to wear them.
32. Restroom Usage:
  - a. Contractors are to use public restroom unless otherwise instructed to specific restrooms or portable facilities.
33. Requests for Information:
  - a. All contractor requests for assistance and information shall be addressed to the Facilities Service Project Section or Facilities Service Department.
34. Safety Regulations:
  - a. Contractors are expected to comply with all Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1926 and 1910.
  - b. Contractors are required to adhere to the VA Safety Specification 01 35 26.
  - c. Work that is performed within a corridor or occupied space must be confined by dust barriers or non-combustible partitions.
  - d. Appropriate job signs and barricades are to be placed in the area of construction to prevent occupants from straying into the job site.
  - e. Stairwell doors shall not be propped open or blocked at any time. Equipment cannot be stored in the stairwells.
  - f. All contractors are encouraged to frequently review these guidelines with their employees and/or subcontractors on site (e.g., during weekly Tool Box Safety Meetings).
  - g. All contractors and their subcontractors are responsible for complying with these guidelines and all other conditions, OSHA requirements, and safety regulations.
35. Smoking:
  - a. The Smoking policy of the hospital is no smoking in any building or within 50 feet of any the building entrance and only in areas designated for smoking. All construction employees must comply with this policy. A copy of the hospital smoking policy will be supplied at the pre-construction conference.
  - b. Violation of the smoking policy will result in the worker being removed from the worksite for the duration of the project.

- c. The designated smoking areas are: Smoking Shelter located outside the East entrance
  - d. Job site supervisors will enforce this smoking policy.
36. Stop Work:
- a. The hospital Safety Officer and COR have the Director's permission and authority to stop work whenever conditions pose an imminent threat to life and health or threaten damage to equipment or buildings.
37. Subcontractors:
- a. The general contractor has the responsibility to assure that all the subcontractors and their workers are properly trained and follow these safety guidelines. Assistance from VA staff will be providing on a case by case basis on technical issues.
  - b. The VA reserves the right to approve of any subcontractor being used to complete a project.
  - c. A worker on-site must be designated "in charge" at all times during the project.
38. Traffic Control:
- a. Contractors shall provide trained personnel and/or equipment, signage, barricades etc., to regulate traffic whenever construction operations affect traffic patterns.
39. Trenching:
- a. OSHA regulations must be followed during trenching operations.
40. Waste Management:
- a. Reference section 01 74 19.
  - b. Trash, combustible waste, and excess construction materials must be removed daily to prevent accumulation. Contractors must arrange for the removal of their debris and waste. The building's dumpster shall not be used unless appropriate arrangements are made with Facilities Service.
  - c. The contractor is encouraged to contact utilize our recycling program for the disposal of recyclables.
  - d. The contractor is expected to comply with all environmental regulations.
  - e. Contractor to provide a Fiscal Year breakdown of Waste Management/Recycling Costs on the project.
41. Work Site Requirements:
- a. Contractor to provide a list of emergency contacts at the entrance to construction site.
  - b. All contractors are to maintain their work area as clean as possible while working and cleanup thoroughly every day.
  - c. Prior to any utilities or critical systems being interrupted, a two weeks written notification to Facilities Management COR is mandatory. Only Facilities Management personnel will shut off a utility.
  - d. All contractors are expected to use courtesy. Loud, vulgar, abusive language, sexual harassment and aggressive behavior will not be tolerated.
  - e. All contractors working above the ceiling are required to replace all disturbed ceiling tile by the end of each day.

- f. Prior to making any penetrations in walls, floors or ceilings, it is the contractor's responsibility to identify rated systems and be verified through review of as-builts, line diagrams, etc.
  - g. All repaired penetrations on rated systems must be completed using a fire rated material matching the rating of the system and must be inspected by the Project Engineer before ceiling tiles are replaced or area is concealed.
  - h. Temporary construction partitions of non-combustible materials shall be installed as required to provide a smoke tight separation between the areas undergoing renovation and/or construction and adjoining areas that are occupied by the facility.
  - i. Exits for occupied areas of the building including rooms, suites, corridors and floors shall not be blocked by the construction or by construction materials. Exit may be blocked temporarily if it is unavoidable and adequate alternative measures are provided, such as signage, instructions to occupants and approved in advance by the Project Engineer.
  - j. Existing fire protection systems including fire alarm systems, smoke detection systems, and sprinkler systems shall not be altered except as required for the alteration and/or renovation project. Any alteration to the system shall be coordinated with Project Engineer. When sprinkler or fire and smoke detector systems are out of service for more than eight hours general contractor shall be responsible to institute a Fire Watch till systems are operational.
  - k. At the end of each workday, combustible packaging and crating materials for building products and equipment to be installed shall be removed from the occupied building.
  - l. It is the responsibility of each contractor to know exactly where the fire extinguishers and pull stations are in the areas they are working.
  - m. Fire hazard inspections shall be conducted daily by the contractor once construction starts and until the work is turned back over to the facility.
  - n. All temporary electrical wiring and equipment used for construction shall be installed and used in accordance with pertinent provisions of NFPA 70 and National Electrical Code.
  - o. Contractor shall maintain construction site to permit access by the fire department as necessary. Clear building construction areas of obstructions so that all portions are accessible for fire department apparatus and permit emergency egress of patients and other personnel.
  - p. All necessary precautions shall be taken by the contractor to prevent accidental operation of any existing smoke detectors by minimizing the amount of dust generated in the vicinity of any smoke detectors. Any activity that may generate dust or smoke shall be reviewed with the Project Engineer and the infectious control nurse.
42. Apprentices Working on Project:
- a. Apprentices are authorized to work on all projects disciplines providing the following requirements are met:
    - (1) Completion of OHSA-10 training and certification turned in as required for all other workers.

- (2) Apprenticeship documentation turned in to contracting and continued direct supervision by a journeyman.
- (3) Apprentices are not allowed to work at the Clement J Zablocki VA Medical Center on their own nor without continuous direct supervision.

#### 1.18 IDENTIFICATION AND LABELING

A. Identify devices located above ceiling.

- a. Provide markers on all removable ceiling and ceiling access panels to indicate locations of valves, dampers, smoke detectors, etc. and other mechanical items that may need servicing or adjustment.
- b. Use access panel markers (metal tack style) for acoustical tile ceilings, or engraved plastic style, 3/4in square, for mounting on panel door or equipment nameplates.
- c. Color code and annotate markers as follows:

| <u>Color</u>          | <u>Notation</u>  |
|-----------------------|--|
| Red                   | D - Fire Damper<br>V - Valve (sprinkler shutoff)<br>S - Smoke Detector<br>H - Heat Detector  |
| Yellow                | V - Valve (steam, radiation, reheat and chilled water)   |
| Gold                  | V - Valve (HVAC)<br>D - Damper (HVAC)  |
| Blue<br>(valves only) | O - Oxygen<br>V - Vacuum<br>A - Medical Air<br>N - Nitrogen<br>NO - Nitrous Oxide<br>EV - Anesthesia Evacuation<br>T - Temperature control air |

- d. Where fire protection devices are located inside ductwork, provide an additional tag on the duct access door identifying device inside with letter size equal to or greater than 1-1/2 inches high.

#### 1.19 STANDARD REQUIRED FORMS

A. The following forms are required as noted below:

- a. Contractor's Checklist - Completed and signed by General Contractor prior to start of construction.
- b. Contractor's Impact Statement - Completed and signed by every contractor / subcontractor working on the project prior to start of their construction.

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- c. Daily Log of Construction - Completed daily by General Contractor and scanned in and *posted* to Buzzsaw weekly.
- d. Daily Intermediate Life Safety Measures (ILSM) Inspection Form - Completed daily by General Contractor and scanned in and *posted* to Buzzsaw weekly (as required).

CONTRACTOR CHECKLIST

This agreement is between \_\_\_\_\_ and \_\_\_\_\_  
Project Name (ref. #) \_\_\_\_\_  
Project Start \_\_\_\_\_; Work Allowed Between \_\_\_\_\_ and \_\_\_\_\_

Before performing any work on facility premises, outside contractors must read this checklist and comply with all local, state, federal and facility safety policies.

|     |  |
|-----|--|
| 1.0 | <b>Life Safety</b> Will the contractor compromise <u>any</u> part during the Life Safety System of this facility (ceiling tiles, penetrations in smoke or fire walls, blocking exits, shutting down fire/smoke detection or fire suppression, etc.)? |
| Y N | If yes, describe in detail:  |
| 1.1 | <b>ILSM</b> Are Interim Life Safely Measures necessary?  |
| Y N | If yes, provide plan/sketch for review/approval.   |
| 2.0 | <b>Services</b> Will there be <u>any</u> compromises to patient services during the work performed?  |
| Y N | If yes, describe in detail:  |
| 2.1 | What adjustments need to be implemented to minimize impact to residents, visitors and staff?   |
|     | <b>Describe:</b>   |
| 3.0 | <b>Chemical</b> Will hazardous chemicals (liquids or gases) be used on-site?   |
| Y N | If yes, what risks do they create for facility staff? Is there any chance of exposure?   |
| 3.1 | Are there any facility chemicals being used, stored or handled where the contractor will be working?   |
| Y N | If yes, has the contractor been informed by issuing SDS's?   |
| 4.0 | <b>Hot Work</b> Will the contractor use equipment which will generate open flames, sparks or other ignition sources?   |
| Y N | If yes, a <b>Fire Watch</b> will be necessary to be posted during all Hot Work activities.   |

|            |  |
|------------|--|
| <b>4.1</b> | Will flammable chemicals be in the area?   |
| <b>Y N</b> | If yes, describe in detail:  |
| <b>5.0</b> | <b><u>Confined Spaces</u></b> Does the work involve entry into a confined space?   |
| <b>Y N</b> | If yes, retain a copy of contractor's Confined Space Entry program (and CSE Permit if needed).   |
| <b>6.0</b> | <b><u>Lockout/Tagout</u></b> Does the work involve maintenance on energized equipment or systems?  |
| <b>Y N</b> | If yes, retain a copy of the contractor's LOCKOUT/TAGOUT program.  |
| <b>6.1</b> | Is there any impact to residents, visitors, or staff during this procedure?  |
| <b>Y N</b> | If yes, describe the impact, ways to minimize the impact and who has been notified.  |
| <b>7.0</b> | <b><u>Unsafe Conditions/ Impact to Residents, Visitors and Staff</u></b> Are there any unusual or unsafe conditions which need to be addressed and/or communicated to facility staff, visitors or residents? |
| <b>Y N</b> | If yes, describe.  |
| <b>8.0</b> | <b><u>List the departments/areas</u></b> in which you will be working.   |
| <b>8.1</b> | <b><u>List the potential hazards</u></b> to you/your workers in the areas in which you are working:  |
| <b>8.2</b> | <b><u>List the specific problems</u></b> that can arise if the wrong actions are taken the area(s) in which you are working.   |
| <b>9.0</b> | <b>Safety Officer Contact Person:</b>  |

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|      |  |
|------|--|
|      | <b>Facility Project Manager:</b>   |
|      | <b>First Aid Plan:</b>   |
|      | <b>Fire Plan:</b>  |
|      | <b>Disaster Plan:</b>  |
|      | <b>Restricted Access:</b>  |
| 10.0 | <b>Restricted Areas</b> Construction workers are allowed in the following areas of the hospital. |

\_\_\_\_\_  
(Contractor Representative)

\_\_\_\_\_  
(Facility Project Manager)

Date: \_\_\_\_\_

Date: \_\_\_\_\_



**Contractor's Impact**

| System   | Possible Interruption   | Possible Effect to Patients  |
|--|---|--|
| Electrical   | <ul style="list-style-type: none"> <li>- Changing position of switches and breakers</li> <li>- Cutting or splicing into wires</li> <li>- Disconnecting wires or terminals</li> <li>- Disturbing Junction Boxes/Electrical Panels</li> <li>- Core Drilling</li> <li>- Demolition of walls</li> <li>- Excavation</li> </ul> | Electrical Systems provides LIFE SUPPORT (Directly and Indirectly) <ul style="list-style-type: none"> <li>- Can cause DEATH to critical patients</li> </ul>  |
| Water Lines  | <ul style="list-style-type: none"> <li>- Turning valves</li> <li>- Cutting into lines</li> <li>- Demolition &amp; Excavation</li> </ul>   | Dialysis, OR, HVAC, ICU, X Ray, etc<br>Can cause DEATH to critical patients<br>Infection Control issues<br>Major Cleanup issues  |
| Medical Gases:<br>Oxygen<br>Air<br>Vacuum<br>Nitrous Oxide<br>Nitrogen | <ul style="list-style-type: none"> <li>- Cutting or disturbing into lines (labeled, unlabeled)</li> <li>- Changing valve positions</li> <li>- Deactivating alarms</li> <li>- Demolition &amp; Excavation</li> </ul>   | Oxygen, vacuum, air, etc.<br>ICU, OR, Med/Surg.<br>Can cause DEATH to critical patients  |
| HVAC   | <ul style="list-style-type: none"> <li>- Shutting down</li> <li>- Modifying</li> <li>- Changing controls</li> <li>- Cutting into the roof</li> <li>- Producing foul odors near intakes</li> <li>- Cutting into chilled water lines</li> <li>- Obstruct fresh air intake</li> </ul>  | Temperature is critical in OR, ICU, etc. Infection Control issues<br>Major Air Quality Issues  |
| Fire Alarm and Sprinklers  | <ul style="list-style-type: none"> <li>- ANY modifications</li> <li>- covering or removing smoke heads</li> <li>- Demolition &amp; Excavation utilities</li> <li>- Damage or set off sprinkler heads</li> <li>- Duct work modifications</li> </ul>  | <ul style="list-style-type: none"> <li>- Compromising Fire Safety</li> <li>- False Alarms</li> <li>- Floods</li> <li>- Major disruptions and distractions</li> </ul> ALL THE ABOVE CAN RESULT IN DEATH |
| Code Alarms<br>Nurse Call<br>Wander Guards                             | <ul style="list-style-type: none"> <li>- Demolition &amp; Excavation</li> <li>- Unplugging</li> <li>- Changing position of switches/breakers</li> </ul>   | Lack of communicating system can result in patient death or injury   |

IF THERE IS ANY QUESTION REGARDING ANY OF THE INFORMATION ON THIS DOCUMENT, IMMEDIATELY CONTACT FACILITY MANAGEMENT OR SAFETY OFFICE TO RESOLVE ISSUES PRIOR TO WORK COMMENCEMENT.

Contract Company: \_\_\_\_\_

Milwaukee VAMC  
695-17-108 Install EMS in Building 102  
Milwaukee, WI 53295

100% Construction Documents  
July 24, 2017

Receipt Acknowledged: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Milwaukee VAMC  
695-17-108 Install EMS in Building 102  
Milwaukee, WI 53295

100% Construction Documents  
July 24, 2017

**DAILY LOG OF CONSTRUCTION**

M T W Th Pkg. No  
F

PROJECT:

BUILDING

CONTRACT NO.

DATE

V69DC-

CONTRACTOR

CONTRACTOR REPRESENTATIVE ON JOB

WEATHER (Rain, Snow, Cloudy, Windy,  
etc., OR NA if all indoors)

TEMP.

SITE CONDITIONS (CLEAN, DEBRIS, DUST,  
ETC.)

High Low

NO. CONTRACTOR'S MEN BY JOB CATEGORIES

NO. SUBCONTRACTOR'S MEN BY JOB  
CATEGORIES

EQUIPMENT ON JOB

Brief description of size

No.

Units

Working

Yes

MATERIALS DELIVERED

OFFICIAL VISITORS TO JOB SITE

**STATUS OF WORK**

ITE Brief description of work in progress, questionable performance, unforeseen  
M developments on job etc. Include tests made and samples taken.  
NO.

STATUS OF INFECTIOUS CONTROL MEASURES (NEGATIVE AIR FLOW, CLEAN WALK OFF MAT, ANTE-  
ROOM SECURE,...)

NEGATIVE AIR FLOW PRESSURE READING: \_\_\_\_\_

SAFETY COMMENTS

DIFFICULTIES WITH CONTRACTOR OR REPRESENTATIVE

UNFORESEEN DEVELOPMENTS ON JOB CONTINUED (Describe conditions, action taken; person

*contacted, recommended actions)*

|           |                        |
|-----------|------------------------|
| SIGNATURE | TITLE                  |
|           | PROJECT SUPERINTENDENT |

FORM QCA-01A

**Daily Intermediate Life Safety Measures (ILSM) Inspection Form**

**INSTRUCTIONS:** This form is to be utilized when significant hazards posed by existing NFPA 101 deficiencies or construction activities are in progress. ILSM must be implemented upon project start and continuously enforced through project completion to provide a level of life safety comparable to that described in Chapter 1-7, 31 and applicable occupancy chapters of the Life Safety Code. WHERE APPLICABLE NOTE EXCEPTIONS ONLY OF AREA IDENTIFIED AS BEING DEFICIENT DURING INSPECTION AND EXPLAIN IN SUFFICIENT DETAIL IN THE COMMENTS SECTION OF THIS FORM. TURN COMPLETED FORMS INTO THE LHS SAFETY OFFICER.

| PROJECT:   | DATE | MON | TUE | WED | THR | FRI | SAT | SUN |
|--|------|-----|-----|-----|-----|-----|-----|-----|
| 1. Are exits readily accessible and provide unobstructed egress?   |      |     |     |     |     |     |     |     |
| 2. If required, due to inaccessibility of existing, have alternate exits been established?   |      |     |     |     |     |     |     |     |
| 3. If alternate exists have been established, are personnel in the area informed and aware of their relocation and existence?                            |      |     |     |     |     |     |     |     |
| 4. Are the existing and relocation exits clearly identified and able to be seen in the event of an emergency or fire?                                    |      |     |     |     |     |     |     |     |
| 5. Are fire evacuation routes posted and do they reflect up-to-date changes and alternate escape routes due to construction deficiencies?                |      |     |     |     |     |     |     |     |
| 6. Are written procedures and guidelines posted in the immediate and adjacent areas for what to do and who to call in the event of fire or emergency?    |      |     |     |     |     |     |     |     |
| 7. Are personnel in the immediate and adjacent areas aware and informed as to the procedures and guidelines to follow in the event of fire or emergency? |      |     |     |     |     |     |     |     |
| 8. Do fire alarms, detection, and suppression equipment and systems appear to be operational?  |      |     |     |     |     |     |     |     |

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| 9. If the fire alarm or suppression systems are impaired or temporarily made nonfunctional has a fire watch, as required or necessary, of the area been established?  |  |  |  |  |  |  |  |  |
| 10. If the existing fire alarm or suppression systems/equipment are impaired, have measures been taken to provide equivalent equipment/systems for adequate protection? Note date of installation for equivalent measures to the right. |  |  |  |  |  |  |  |  |
| 11. If the fire alarm or suppression systems are impaired, are the temporary equipment/systems being inspected and tested at least monthly?   |  |  |  |  |  |  |  |  |
| 12. If temporary fire alarm or suppression systems are installed, are personnel in the area aware and informed on how to operate or utilize in the event of fire or emergency?  |  |  |  |  |  |  |  |  |
| 13. Has the LHS "No Smoking" policy been posted, implemented and enforced in the construction area?   |  |  |  |  |  |  |  |  |
| 14. Are construction/remodel area storage, waste and debris being maintained to minimize potential for fire or safety hazards during daily operations?  |  |  |  |  |  |  |  |  |

**Daily Intermediate Life Safety Measures (ILSM) Inspection Form (Continued)**

| PROJECT:   | DATE | MON | TUE | WED | THR | FRI | SAT | SUN |
|--|------|-----|-----|-----|-----|-----|-----|-----|
| 15. Are temporary partitions built to be smoke tight and of noncombustible/fire retardant materials to minimize spread of smoke or fire within the building? |      |     |     |     |     |     |     |     |
| 16. Do electrical panels, temporary wiring, extension cords, tools and equipment appear to be installed, utilized, and functioning in a safe manner?         |      |     |     |     |     |     |     |     |
| 17. In general, are the exterior construction site, buildings, and ground free of hazard and potential safety violations?                                    |      |     |     |     |     |     |     |     |

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| 18. If there is any gas/arc welding or cutting being performed within the building or on site, have additional fire safety precautions been taken and the necessary equipment provided and utilized? |  |  |  |  |  |  |  |  |
| 19. If there is any gas/arc welding or cutting being performed within the building or on site, has the Plant Operations department been notified?  |  |  |  |  |  |  |  |  |
| 20. If there are hand and safety rails required, are they in place and maintained in good condition?   |  |  |  |  |  |  |  |  |
| 21. Are extension cords that are being used a 3 wire grounded type?  |  |  |  |  |  |  |  |  |
| 22. If there are temporary electrical outlets provided, do they have ground fault protection at the receptacle or at the panel?  |  |  |  |  |  |  |  |  |
| 23. If hazardous chemicals are present and/or being used, are they being limited to the amount needed and used daily?  |  |  |  |  |  |  |  |  |
| 24. Are MSDS sheets readily available for any hazardous chemicals that are present or being used?  |  |  |  |  |  |  |  |  |
| 25. Do ladders and scaffolds appear to be in satisfactory condition and being utilized in a safe manner?   |  |  |  |  |  |  |  |  |
| 26. Is personnel protective equipment, such as safety glasses, hard hats and etc. needed or required and being used?   |  |  |  |  |  |  |  |  |
| 27. If infection control is required, are the appropriate policies and procedures known and being followed?  |  |  |  |  |  |  |  |  |
| 28. If electrical equipment needs to be de-energized, are applicable "Lockout/Tagout" procedures being followed?   |  |  |  |  |  |  |  |  |
| PLACE INITIALS OF PERSON PERFORMING DAILY INSPECTION TO THE RIGHT.   |  |  |  |  |  |  |  |  |

INSPECTION COMMENTS/FINDINGS:

DATE PROJECT STARTED \_\_\_\_\_ DATE PROJECT COMPLETED \_\_\_\_\_  
PROJECT CE #: \_\_\_\_\_ GENERAL CONTRACTOR \_\_\_\_\_  
AREAS(S) OF PROJECT/JOB INSPECTED \_\_\_\_\_

# SAC-SPECIAL AGREEMENT CHECK

## For Construction Contractors

NAME: \_\_\_\_\_  
(Last Name) (First Name) (Middle Name/none)

SSN: \_\_\_\_\_ DOB: \_\_\_\_\_

ALIAS/none: \_\_\_\_\_ RACE: \_\_\_\_\_ SEX: \_\_\_\_\_

EYE COLOR: \_\_\_\_\_ HAIR COLOR: \_\_\_\_\_ HT: \_\_\_\_\_ ft. \_\_\_\_\_ in. WT: \_\_\_\_\_ lbs.

PLACE OF BIRTH: \_\_\_\_\_  
(City / State / Country)

RESIDENT ADDRESS: \_\_\_\_\_

CITIZENSHIP: \_\_\_\_\_

SCARS, MARKS, TATTOO(S)/none: \_\_\_\_\_

TRADE/DISCIPLINE: \_\_\_\_\_ APPRENTICE / JOURNEYMAN / MASTER / NA  
Circle one

### Contractor Information

PO#: 695-\_\_\_\_\_ Contract Expiration Date: \_\_\_\_\_

Project Name: \_\_\_\_\_ Contract#: VA69D-\_\_\_\_\_

Prime Contractor: \_\_\_\_\_

Prime Address: \_\_\_\_\_

Employing Sub-Contractor: \_\_\_\_\_

Sub-Contractor Address: \_\_\_\_\_

If privately owned vehicle is or will be, even once, parked on grounds  
Driver's License#: \_\_\_\_\_ Plate#: \_\_\_\_\_ (\_\_\_\_\_)\_\_\_\_  
(state)

Vehicle: Make: \_\_\_\_\_ Model: \_\_\_\_\_ Year: \_\_\_\_\_ Color: \_\_\_\_\_

Computer Access Required for Contract? \_\_ Y / N \_\_ Construction Door Access Needed? \_\_ Y / N \_\_

Location of Construction Door & Construction Door Name/Address:  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
*Printed COR Name / COR Signature / Date*

**SECTION 01 12 16**  
**WORK SCHEDULE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

Work Sequence requirements for 695-17-108 Install EMS in Building 102.

**1.2 GENERAL REQUIREMENTS**

- A. Contractor is responsible to prepare and maintain a construction schedule describing the sequencing, means-and-methods of construction, installation and removal of temporary facilities and protections and their impact and coordination with the Owner's continued occupation and operations.
  - 1. Master Production Schedule shall be in the form of a bar graph (Gantt chart) using Critical Path Method (CPM), see [Section 01 32 16.15 Project Schedules](#).
  - 2. Schedule shall be submitted to the Resident Engineer / COR for review not later than 30 days after issuance of NTP.
  - 3. For each Construction Progress Meeting, submit a 3-Week Short-Interval Production Schedule (SIPS) or Construction Activity Plan (CAP) to show current work in process. Schedule is to reflect trades on sight, days for each trade on site during the period, and list any and all issues/concerns/delays. Milestone dates shall be in agreement with the Master Production Schedule.
- B. Sequencing, means-and-methods of construction, safety, and all temporary items remain the responsibility of the Contractor.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

--- END ---



**SECTION 01 32 16.15**  
**PROJECT SCHEDULES**  
(SMALL PROJECTS - DESIGN/BID/BUILD)

**PART 1- GENERAL**

**1.1 DESCRIPTION:**

- A. The Contractor shall develop a Critical Path Method (CPM) plan and schedule demonstrating fulfillment of the contract requirements (Project Schedule), and shall keep the Project Schedule up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) technique shall be utilized to satisfy both time and cost applications. The contractor's CPM shall be submitted within 30 days of the Notice to Proceed. Contractor can mobilize, however physical work on contract cannot start until project schedule is approved by the VA. The Contractor's representative shall engage the services of an outside consultant to complete the CPM. Consultants deemed pre-approved by VA: CCS/OS, Chicago, IL; Spire Consulting Group, Austin, TX.

**1.2 CONTRACTOR'S REPRESENTATIVE:**

- A. The Contractor shall designate an authorized representative responsible for the Project Schedule including preparation, review and progress reporting with and to the Contracting Officer's Representative (COR).
- B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification section.
- C. The Contractor's representative shall have the option of developing the project schedule within their organization or to engage the services of an outside consultant. If an outside scheduling consultant is utilized, Section 1.3 of this specification will apply.
- D. If the Contractor chooses not to designate an authorized representative responsible for the project schedule and will take those tasks on themselves, they must notify the COR in writing within 10 days of the bid acceptance (See 1.3 below).

**1.3 CONTRACTOR'S CONSULTANT:**

- A. The Contractor shall submit a qualification proposal to the COR, within 10 days of bid acceptance. The qualification proposal shall include:
1. The name and address of the proposed consultant.
  2. Information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
  3. A representative sample of prior construction projects, which the proposed consultant has performed complete project scheduling services. These representative samples shall be of similar size and scope.

- B. The Contracting Officer has the right to approve or disapprove the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of the qualification proposal. In case of disapproval, the Contractor shall resubmit another consultant within 10 calendar days for renewed consideration. The Contractor shall have their scheduling consultant approved prior to submitting any schedule for approval.

#### **1.4 COMPUTER PRODUCED SCHEDULES**

- A. The contractor shall provide monthly, to the Department of Veterans Affairs (VA), all computer-produced time/cost schedules and reports generated from monthly project updates. Contractor will also submit an Earned Value report with the monthly schedule update and request for payment. This monthly computer service will include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of the scheduling software approved by the Contracting Officer; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data; and the resulting monthly updated schedule in both PDF and CSV format. These must be submitted with and substantively support the contractor's monthly payment request and the signed look ahead report. The COR shall identify the five different report formats that the contractor shall provide.
- B. The contractor shall be responsible for the correctness and timeliness of the computer-produced reports. The Contractor shall also responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.
- C. The VA will report errors in computer-produced reports to the Contractor's representative within ten calendar days from receipt of reports. The Contractor shall reprocess the computer-produced reports and associated diskette(s), when requested by the Contracting Officer's representative, to correct errors which affect the payment and schedule for the project.

#### **1.5 THE COMPLETE PROJECT SCHEDULE SUBMITTAL**

- A. Within 30 calendar days after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; digital PDF file (30x42), and an electronic file in the previously approved CPM schedule program. The submittal shall also include one copy of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, activity/event description, duration, budget amount, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start or start-to-start without lead or lag constraints. Activity/event date constraints, not required by the contract, will not be accepted unless submitted to and approved by the Contracting Officer. The contractor

shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer's written approval before incorporating them into the network diagram. The Contracting Officer's separate approval of the Project Schedule shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events (i.e. VA and A/E inspections, but must have zero duration. The complete working schedule shall reflect the Contractor's approach to scheduling the complete project. **The final Project Schedule in its original form shall contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the entire contract duration as defined in the bid documents.** These changes/delays shall be entered at the first update after the final Project Schedule has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

- D. Within 30 calendar days after receipt of the complete project interim Project Schedule and the complete final Project Schedule, the Contracting Officer or his representative, will do one or both of the following:
  - 1. Notify the Contractor concerning his actions, opinions, and objections.
  - 2. A meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 14 calendar days after the joint review, the Contractor shall revise and shall submit three blue line copies of the revised Project Schedule, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the Contracting Officer. The revised submission will be reviewed by the Contracting Officer and, if found to be as previously agreed upon, will be approved.
- E. The approved baseline schedule and the computer-produced schedule(s) generated there from shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.

F.

#### **1.6 WORK ACTIVITY/EVENT COST DATA**

- A. The Contractor shall cost load all work activities/events except procurement activities. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the Contracting Officer to assist him in determining

approval or disapproval of the cost loading. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.

- B. The Contractor shall cost load work activities/events for services, test, balance and adjust various systems in accordance with the provisions in Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS).
- C. In accordance with FAR 52.236 - 1 (PERFORMANCE OF WORK BY THE CONTRACTOR) and VAAR 852.236 - 72 (PERFORMANCE OF WORK BY THE CONTRACTOR), the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events of the project for which the Contractor's forces will perform the work.
- D. The Contractor shall cost load work activities/events for all BID ITEMS including ASBESTOS ABATEMENT. The sum of each BID ITEM work shall equal the value of the bid item in the Contractors' bid.

#### **1.7 PROJECT SCHEDULE REQUIREMENTS**

- A. Show on the project schedule the sequence of work activities/events required for complete performance of all items of work. The Contractor Shall:
  - 1. Show activities/events as:
    - a. Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
    - b. Contracting Officer's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
    - c. Interruption of VA Facilities utilities, rough-in drawings, project phasing and any other specification requirements.
    - d. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.
    - e. VA inspection and acceptance activity/event with a minimum duration of five work days at the end of each phase and immediately preceding any VA move activity/event required by the contract phasing for that phase.
  - 2. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.
  - 3. Break up the work into activities/events of a duration no longer than 20 work days each or one reporting period, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the COR may approve the showing of a longer duration. The duration for VA approval of any required

- submittal, shop drawing, or other submittals will not be less than 20 work days.
4. Describe work activities/events clearly, so the work is readily identifiable for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
  5. The schedule shall be generally numbered in such a way to reflect either discipline, phase or location of the work.
- B. The Contractor shall submit the following supporting data in addition to the project schedule:
1. The appropriate project calendar including working days and holidays.
  2. The planned number of shifts per day.
  3. The number of hours per shift.
- Failure of the Contractor to include this data shall delay the review of the submittal until the Contracting Officer is in receipt of the missing data.
- C. To the extent that the Project Schedule or any revised Project Schedule shows anything not jointly agreed upon, it shall not be deemed to have been approved by the COR. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the COR's approval of the Project Schedule.
- D. The follow are a list of required inspections to be included in the project schedule. These inspections are to be included if the relevant trades are present in the project scope. See attached schedule at end of section.
1. Pre-site inspection of existing conditions.
  2. ACM containment
  3. Demo Completion
  4. After ACM Clearance (prior to tear down)
  5. Chaulk line
  6. Stud wall
  7. MEP outlet box
  8. MEP & Backing in-wall
  9. MEP Insulation
  10. Completion of Drywall
  11. Above Ceiling
  12. Penetration inspection before ceiling grid
  13. Wall Hung Items; cabinets, mirrors, handrails
  14. Finishes and trim
  15. Flooring Seam Layout
  16. Hardware
  17. Final finishes and flooring
  18. Commissioning
  19. After punch list completion

**1.8 PAYMENT TO THE CONTRACTOR:**

- A. Monthly, the contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 82 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS). The Contractor shall be entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated project schedule and Earned Value Report. Monthly payment requests shall include: a listing of all agreed upon project schedule changes and associated data; and an electronic file (s) of the resulting monthly updated schedule.
- B. Approval of the Contractor's monthly Application for Payment shall be contingent, among other factors, on the submittal of a satisfactory monthly update of the project schedule.

**1.9 PAYMENT AND PROGRESS REPORTING**

- A. Monthly schedule update meetings will be held on dates mutually agreed to by the COR and the Contractor. Contractor and their CPM consultant (if applicable) shall attend all monthly schedule update meetings. The Contractor shall accurately update the Project Schedule and all other data required and provide this information to the COR three work days in advance of the schedule update meeting. Job progress will be reviewed to verify:
  - 1. Actual start and/or finish dates for updated/completed activities/events.
  - 2. Remaining duration for each activity/event started, or scheduled to start, but not completed.
  - 3. Logic, time and cost data for change orders, and supplemental agreements that are to be incorporated into the Project Schedule.
  - 4. Changes in activity/event sequence and/or duration which have been made, pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.
  - 5. Completion percentage for all completed and partially completed activities/events.
  - 6. Logic and duration revisions required by this section of the specifications.
  - 7. Activity/event duration and percent complete shall be updated independently.
- B. After completion of the joint review, the contractor shall generate an updated computer-produced calendar-dated schedule and supply the Contracting Officer's representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified.
- C. After completing the monthly schedule update, the contractor's representative or scheduling consultant shall rerun all current period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule

logic agreed upon by the contractor and Project Manager/CORContracting Officer's Representative for the contract change(s). When there is a disagreement on logic and/or durations, the Contractor shall use the schedule logic and/or durations provided and approved by the Project Manager/CORContracting Officer's Representative. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the Project Manager/CORContracting Officer's Representative within fourteen (14) calendar days of completing the regular schedule update. **Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.**

- D. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Consultant, RE office representatives, and all subcontractors needed, as determined by the SRE, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

#### **1.10 RESPONSIBILITY FOR COMPLETION**

- A. If it becomes apparent from the current revised monthly progress schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
  2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
  3. Reschedule the work in conformance with the specification requirements.
- B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the COR for the proposed schedule

changes. If such actions are approved, the representative schedule revisions shall be incorporated by the Contractor into the Project Schedule before the next update, at no additional cost to the Government.

#### **1.11 CHANGES TO THE SCHEDULE**

- A. Within 30 calendar days after VA acceptance and approval of any updated project schedule, the Contractor shall submit a revised electronic file (s) and a list of any activity/event changes including predecessors and successors for any of the following reasons:
  - 1. Delay in completion of any activity/event or group of activities/events, which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.
  - 2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.
  - 3. The schedule does not represent the actual prosecution and progress of the project.
  - 4. When there is, or has been, a substantial revision to the activity/event costs regardless of the cause for these revisions.
- B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for vacating of areas by the VA Facility, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, shall be furnished in writing to the Contracting Officer for approval.
- C. Contracting Officer's approval for the revised project schedule and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.
- D. The cost of revisions to the project schedule resulting from contract changes will be included in the proposal for changes in work as specified in FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental), and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.
- E. The cost of revisions to the Project Schedule not resulting from contract changes is the responsibility of the Contractor.

#### **1.12 ADJUSTMENT OF CONTRACT COMPLETION**

- A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the COR may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly



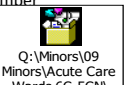
display that the Contractor has used, in full, all the float time available for the work involved in this request. The Contracting Officer's determination as to the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information.

- B. Actual delays in activities/events which, according to the computer- produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer's decision.
- C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental). The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in work days) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.
- D. All delays due to non-work activities/events such as RFI's, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis.

#### **1.13 REQUIRED INSPECTIONS**

See next page for included inspections.

- - - E N D - - -

| #  | Inspections                                    | Procedures / Comments  | Attendees   |
|----|--|--|---|
| 1  | Pre-site inspection of existing conditions     | Inspect and identify what is to be salvaged to be turned over to the VA, demo'd, etc. Equipment to be tagged that will be turned over to the VA. Ensure easily removed items are removed and turned over to the VA.  | User, contractor, PM, FM maintenance staff (all shops), FM Div Mgr, EMS Interior Designers  |
| 2  | ACM containment                                | Inspect the containment barrier, ensure wall, floor and ceiling penetrations are sealed, decon containment set up, signage is installed, etc.  | VA's ACM monitoring persons, contractor, contractor's ACM subcontractor, PM, VA FM A-team member  |
| 3  | Demo completion                                | Inspect demolition to ensure no damage to areas/things not to be demolished, penetrations sealed, etc.   | Contractor, PM, FM maintenance (all shops)  |
| 4  | After ACM clearance (prior to tear down)       | Inspect the ACM removal to ensure everything has been removed. Identify additional ACM that may require an RFP or the A-team to remove.  | VA's ACM monitoring persons, contractor, contractor's ACM subcontractor, PM, VA FM A-team member  |
| 5  | Chalk line                                     | Contractor has the walls marked in chalk on the floor. Attendees walk around and look at the layout, beds, carts, equipment that may be moved in and out should be brought to ensure the corners are not too tight, etc. Additionally, ensure chases are created only for utilities, not empty spaces.   | User, contractor, PM, FM maintenance staff (all shops), FM Div Mgr  |
| 6  | Stud wall                                      | Inspect for installation of correct materials, location, etc.  | Contractor, PM, FM maintenance staff (all shops)  |
| 7  | MEP outlet box                                 | Contractor and subcontractors walk around with the attendees and identify normal and emergency outlets, phone, data, card readers, push plates for doors, wall phones, etc with the drawings to ensure everything is marked. This includes the height above the floor, location on the wall, quantity, etc. Contractor should have all of these marked on the studs with tape or marker prior to the inspection. These devices can under most circumstances be moved a stud or two at no cost since the conduit is not installed. Additionally, the user may identify additional requirement not know during design and RFP will need to be issued to add these. | User, contractor, PM, FM maintenance staff (all shops), FM Div Mgr  |
| 8  | MEP & Backing in-wall                          | Inspect utilities in the walls for seals, joints, etc. Inspect backing for location where items will be hung on the wall.  | User, Contractor, PM, FM maintenance staff (all shops)  |
| 9  | MEP insulation                                 | Inspect pipe and ductwork insulation, floor/ceiling penetrations for fire stopping, labeling, etc.   | Contractor, PM, FM maintenance staff (all shops)  |
| 10 | Completion of Drywall                          | Inspect installation, mudding/taping, surface preparation/smoothness, etc.   | Contractor, PM, FM maintenance staff (all shops)  |
| 11 | Above Ceiling                                  | Inspect for valve and equipment tags, pipe labeling, junction boxes, pneumatic tube, conduit supports and cable trays, sprinkler piping, etc.  | Contractor, PM, FM maintenance staff (all shops)  |
| 12 | Penetration inspection before ceiling grid     | Inspect all smoke and fire walls for sealed penetrations. To identify the penetrations, can abbreviate on the drawing (d=duct, p=pipe, c=conduit, l=label, w=wall, etc.,). Send the inspection to the contractor to correct. Re-inspection is needed.  | Contract, PM, FM Maintenance (all shops), A-team member<br> |
| 13 | Wall Hung Items; cabinets, mirrors, handrails, | Inspect for location, installed correctly, level, trims, etc.  | User, contractor, PM, FM maintenance staff (all shops)  |
| 14 | Finishes and Trim                              |  | Contractor, PM, FM Arch Shop, EMS Interior Designers, AE  |
| 15 | Flooring Seam Layout                           |  | Contractor, PM, Arch Shop, EMS Interior Designers, AE   |
| 16 | Hardware                                       | This is after installation. During submittals, there should be a meeting with the AE's hardware person, the contractor's hardware supplied, the user and the PM to review every door and the hardware specified. There are usually changes and an RFP is required, but that is easier that changing hardware after installation.   | Contractor, PM, Locksmith, FM maintenance shops (for automatic doors)   |
| 17 | Final finishes and flooring                    | Inspect seams, flatness, pattern, etc. for floors, wall smoothness, painting, corner guards, vinyl base, etc.  | Contractor, PM, FM maintenance staff, FM Div Mgr  |
| 18 | Commissioning/Equipment Testing                | Contractor should have controls drawings, O&Ms, panel schedules, etc. Additionally, equipment should be reading at Graphics and there needs to be training with the Graphics operators as to where this equipment is, the settings and alarms, etc.  | Contractor, PM, FM maintenance staff, EMS Interior Designers, FM Div Mgr  |
| 19 | Pre-Final Inspection (Punchlist)               |  | AE, user, contractor, PM, FM maintenance staff (all shops), FM Div Mgr  |
| 20 | Final Inspection (Punchlist Verification)      |  | Contractor, PM, FM maintenance staff (All shops)  |

**Additional Inspection and testing depending on the project**

|                                      |  |                                |
|--------------------------------------|--|--------------------------------|
| Floor Leveling and Floor Preparation | Prior to full floor leveling, the contractor should be providing elevations and then after the leveling to ensure the leveling is complete and within the tolerance allowed in the specifications. Also, prior to any floor installation, the floor should be inspected to ensure dust, debris, etc have been removed. | Contractor, PM, Arch Shop      |
| Paint Prime Coat                     | Inspect the prime coat installed by the contractor prior to the additional paint layers being applied.   | Contractor, PM, Arch Shop      |
| Paint Color                          | Per specification 09 91 00, paragraph 1.6 Mock-up Panel, the contractor is to paint a 10 ft area for each paint color for inspection prior to painting the space. The AE should not be removing this from the specification.   | Contractor, PM, Arch Shop      |
| Duct Static Pressure Test            | Per specification 23 31 00, paragraph 3.2 Duct Leakage Tests, the contractor is to perform leakage testing of the new ductwork prior to insulation being added. PM should witness this test and the contractor should be submitting a report.  | Contractor, PM, AC Shop        |
| Ceiling grid equipment tags          | Inspect the ceiling grid for the color coded dots identifying equipment above the ceiling prior to installation of the acoustic ceiling tile. Also, this can be another check for equipment installation and labeling above the ceiling.   | Contractor, PM, FM maintenance |

**SECTION 01 33 23**

**SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This specification defines the general requirements and procedures for submittals. A submittal is information submitted for VA review to establish compliance with the contract documents.
- B. Detailed submittal requirements are found in the technical sections of the contract specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective technical specifications.
- C. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.

**1.2 DEFINITIONS**

- A. Preconstruction Submittals: Submittals which are required prior to issuing contract notice to proceed or starting construction. For example, Certificates of insurance; Surety bonds; Site-specific safety plan; Construction progress schedule; Schedule of values; Submittal register; List of proposed subcontractors.
- B. Shop Drawings: Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be integrated and coordinated.
- C. Product Data: Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, and brochures, which describe and illustrate size, physical appearance, and other characteristics of materials, systems, or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.

- D. Samples: Physical examples of materials, equipment, or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project. Field samples and mock-ups constructed to establish standards by which the ensuing work can be judged.
- E. Design Data: Calculations, mix designs, analyses, or other data pertaining to a part of work.
- F. Test Reports: Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- G. Certificates: Document required of Contractor, or of a manufacturer, supplier, installer, or subcontractor through Contractor. The purpose is to document procedures, acceptability of methods, or personnel qualifications for a portion of the work.
- H. Manufacturer's Instructions: Pre-printed material describing installation of a product, system, or material, including special notices and (MSDS) concerning impedances, hazards, and safety precautions.
- I. Manufacturer's Field Reports: Documentation of the testing and verification actions taken by manufacturer's representative at the job site on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must indicate whether the material, product, or system has passed or failed the test.
- J. Operation and Maintenance Data: Manufacturer data that is required to operate, maintain, troubleshoot, and repair equipment, including manufacturer's help, parts list, and product line documentation. This data shall be incorporated in an operations and maintenance manual.
- K. Closeout Submittals: Documentation necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a phase of construction on a multi-phase contract.

### **1.3 SUBMITTAL REGISTER**

- A. The submittal register will list items of equipment and materials for which submittals are required by the specifications. This list may not be all inclusive and additional submittals may be required by the specifications. The Contractor is not relieved from supplying submittals required by the contract documents but which have been omitted from the submittal register.
- B. The submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period.
- C. The VA will provide the initial submittal register in electronic format. Thereafter, the Contractor shall track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the VA.
- D. The Contractor shall update the submittal register as submittal actions occur and maintain the submittal register at the project site until final acceptance of all work by Contracting Officer.
- E. The Contractor shall submit formal monthly updates to the submittal register in electronic format. Each monthly update shall document actual submission and approval dates for each submittal.

### **1.4 SUBMITTAL SCHEDULING**

- A. Submittals are to be scheduled, submitted, reviewed, and approved prior to the acquisition of the material or equipment.
- B. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow time for potential resubmittal.
- C. No delay costs or time extensions will be allowed for time lost in late submittals or resubmittals.

### **1.5 SUBMITTAL PREPARATION**

- A. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.
- B. Collect required data for each specific material, product, unit of work, or system into a single submittal. Prominently mark choices, options, and portions applicable to the submittal. Partial submittals will not be

accepted for expedition of construction effort. Submittal will be returned without review if incomplete.

- C. If available product data is incomplete, provide Contractor-prepared documentation to supplement product data and satisfy submittal requirements.
- D. Provide a transmittal form for each submittal with the following information:
  - 1. Project title and location.
  - 2. Construction contract number.
  - 3. Date of the drawings and revisions.
  - 4. Name, address, and telephone number of subcontractor, supplier, manufacturer, and any other subcontractor associated with the submittal.
  - 5. List paragraph number of the specification section and sheet number of the contract drawings by which the submittal is required.
  - 6. When a resubmission, add alphabetic suffix on submittal description. For example, submittal 18 would become 18A, to indicate resubmission.
  - 7. Product identification and location in project.
- E. The Contractor is responsible for reviewing and certifying that all submittals are in compliance with contract requirements before submitting for VA review. Proposed deviations from the contract requirements are to be clearly identified. All deviations submitted must include a side by side comparison of item being proposed against item specified. Failure to point out deviations will result in the VA requiring removal and replacement of such work at the Contractor's expense.
- F. Stamp, sign, and date each submittal transmittal form indicating action taken.
- G. Stamp used by the Contractor on the submittal transmittal form to certify that the submittal meets contract requirements is to be similar to the following:

|   |
|---|
| CONTRACTOR  |
| (Firm Name)   |
| _____ Approved  |
| _____ Approved with corrections as noted on submittal data and/or<br>attached sheets(s) |
| SIGNATURE: _____  |
| TITLE: _____  |
| DATE: _____   |

#### 1.6 SUBMITTAL FORMAT AND TRANSMISSION

- A. Provide submittals in electronic format, with the exception of material samples. Use PDF as the electronic format, unless otherwise specified or directed by the Contracting Officer.
- B. Compile the electronic submittal file as a single, complete document. Name the electronic submittal file specifically according to its contents.
- C. Electronic files must be of sufficient quality that all information is legible. Generate PDF files from original documents so that the text

included in the PDF file is both searchable and can be copied. If documents are scanned, Optical Character Resolution (OCR) routines are required.

- D. Provide electronic submittal documents through VAMC Milwaukee's electronic FTP file sharing system (Buzzsaw).
- F. Provide hard copies of submittals when requested by the Contracting Officer. Up to 3 additional hard copies of any submittal may be requested at the discretion of the Contracting Officer, at no additional cost to the VA.

#### **1.7 SAMPLES**

- A. Submit two sets of physical samples showing range of variation, for each required item.
- B. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified.
- C. When color, texture, or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.
- D. Before submitting samples, the Contractor is to ensure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.
- E. The VA reserves the right to disapprove any material or equipment which previously has proven unsatisfactory in service.
- F. Physical samples supplied maybe requested back for use in the project after reviewed and approved.

#### **1.8 OPERATION AND MAINTENANCE DATA**

- A. Submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.
- B. In the event the Contractor fails to deliver O&M Data within the time limits specified, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data are applicable.



## **1.9 TEST REPORTS**

SRE may require specific test after work has been installed or completed which could require contractor to repair test area at no additional cost to contract.

## **1.10 VA REVIEW OF SUBMITTALS AND RFIS**

- A. The VA will review all submittals for compliance with the technical requirements of the contract documents. The Architect-Engineer for this project will assist the VA in reviewing all submittals and determining contractual compliance. Review will be only for conformance with the applicable codes, standards and contract requirements.
- B. Period of review for submittals begins when the A/E receives submittal from the Contractor. A/E reviews and forwards to the VA for review and approval/rejection.
- C. Period of review for each resubmittal is the same as for initial submittal.
- D. A/E review period is 15 working days for submittals. VA review period is 15 working days for submittals.
- E. A/E review period is 10 working days for RFIs. VA review period is 10 working days for RFIs.
- F. The VA will return submittals to the Contractor with the following notations:
  - 1. "Approved": authorizes the Contractor to proceed with the work covered.
  - 2. "Conditionally Approved: no re-submittal required": authorizes the Contractor to proceed with the work covered provided the Contractor incorporates the noted comments and makes the noted corrections.
  - 3. "Conditionally Approved: re-submittal required": Authorizes the contractor to proceed with the work noted in the submittal as approved. Other items in the submittal will be clearly NOT approved and will require re-submittal or approval.
  - 4. "Disapproved, revise and resubmit": indicates noncompliance with the contract requirements or that submittal is incomplete. Resubmit with appropriate changes and corrections. No work shall proceed for this item until resubmittal is approved.
  - 5. "Not reviewed": indicates submittal does not have evidence of being reviewed and approved by Contractor or is not complete. A submittal

marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals after taking appropriate action.

#### **1.11 APPROVED SUBMITTALS**

- A. The VA approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.
- B. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.
- C. After submittals have been approved, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.
- D. Retain a copy of all approved submittals at project site, including approved samples.

#### **1.12 WITHHOLDING OF PAYMENT**

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

- - - E N D - - -

**SECTION 01 35 26  
SAFETY REQUIREMENTS**

**4/2015**

**1.1 APPLICABLE PUBLICATIONS:**

- A. Latest publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.
- B. American Society of Safety Engineers (ASSE):
  - A10.1-2011.....Pre-Project & Pre-Task Safety and Health Planning
  - A10.34-2012.....Protection of the Public on or Adjacent to Construction Sites
  - A10.38-2013.....Basic Elements of an Employer's Program to Provide a Safe and Healthful Work Environment  
American National Standard Construction and Demolition Operations
- C. American Society for Testing and Materials (ASTM):
  - E84-2013.....Surface Burning Characteristics of Building Materials
- D. The Facilities Guidelines Institute (FGI):
  - FGI Guidelines-2010Guidelines for Design and Construction of Healthcare Facilities
- E. National Fire Protection Association (NFPA):
  - 10-2013.....Standard for Portable Fire Extinguishers
  - 30-2012.....Flammable and Combustible Liquids Code
  - 51B-2014.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work
  - 70-2014.....National Electrical Code
  - 70B-2013.....Recommended Practice for Electrical Equipment Maintenance
  - 70E-2012 .....Standard for Electrical Safety in the Workplace
  - 99-2012.....Health Care Facilities Code
  - 241-2013.....Standard for Safeguarding Construction, Alteration, and Demolition Operations
- F. The Joint Commission (TJC)
  - TJC Manual .....Comprehensive Accreditation and Certification Manual
- G. U.S. Nuclear Regulatory Commission
  - 10 CFR 20 .....Standards for Protection Against Radiation
- H. U.S. Occupational Safety and Health Administration (OSHA):

|             |  |
|-------------|--|
| 29 CFR 1904 | .....Reporting and Recording Injuries & Illnesses            |
| 29 CFR 1910 | .....Safety and Health Regulations for General Industry      |
| 29 CFR 1926 | .....Safety and Health Regulations for Construction Industry |
| CPL 2-0.124 | .....Multi-Employer Citation Policy                          |

I. VHA Directive 2005-007

**1.2 DEFINITIONS:**

A. Critical Lift. A lift with the hoisted load exceeding 75% of the crane's maximum capacity; lifts made out of the view of the operator (blind picks); lifts involving two or more cranes; personnel being hoisted; and special hazards such as lifts over occupied facilities, loads lifted close to power-lines, and lifts in high winds or where other adverse environmental conditions exist

B. OSHA "Competent Person" (CP). One who is capable of identifying existing and predictable hazards in the surroundings and working conditions which are unsanitary, hazardous or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them (see 29 CFR 1926.32(f)).

C. "Qualified Person" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

D. High Visibility Accident is any mishap which may generate publicity or high visibility.

E. 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.

F. 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; or,
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.
8. any incident that leads to major equipment damage (greater than \$5000).

These incidents must be investigated and are required to be reported to the VA; Major incident/impact - Any mishap that leads to fatalities, hospitalizations, amputations, and losses of an eye as a result of contractors' activities. Or any incident which leads to major property damage (greater than \$20,000) and/or may generate publicity or high visibility. These incidents must be investigated and are required to be reported to the VA as soon as practical, but not later than 2 hours after the incident.

E. 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.

### **1.3 REGULATORY REQUIREMENTS:**

A. In addition to the detailed requirements included in the provisions of this contract, comply with 29 CFR 1926, comply with 29 CFR 1910 as incorporated by reference within 29 CFR 1926, comply with ASSE A10.34, and all applicable federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern except with specific approval and acceptance by the Contracting Officer Representative.

### **1.4 ACCIDENT PREVENTION PLAN (APP):**

- A. The APP (aka Construction Safety & Health Plan) shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and ensure it is site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all worksite safety and health of each subcontractor(s). Contractors are responsible for informing their subcontractors of the safety provisions 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.
- B. The APP shall be prepared as follows:
1. Written in English by a qualified person who is employed by the Prime Contractor articulating the specific work and hazards pertaining to the contract (model language can be found in ASSE

A10.33). Specifically articulating the safety requirements found within these VA contract safety specifications.

2. Address both the Prime Contractors and the subcontractors work operations.
3. State measures to be taken to control hazards associated with materials, services, or equipment provided by suppliers.
4. Address all the elements/sub-elements and in order as follows:
  - a. **SIGNATURE SHEET.** Title, signature, and phone number of the following:
    - (1) Plan preparer (Qualified Person such as corporate safety staff person or contracted Certified Safety Professional with construction safety experience);
    - (2) Plan approver (company/corporate officers authorized to obligate the company);
    - (3) Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional). Provide concurrence of other applicable corporate and project personnel (Contractor).
  - b. **BACKGROUND INFORMATION.** List the following:
    - (1) Contractor;
    - (2) Contract number;
    - (3) Project name;
    - (4) Brief project description, description of work to be performed, and location; phases of work anticipated (these will require an AHA).
  - c. **STATEMENT OF SAFETY AND HEALTH POLICY.** Provide a copy of current corporate/company Safety and Health Policy Statement, detailing commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract should be provided.
  - d. **RESPONSIBILITIES AND LINES OF AUTHORITIES.** Provide the following:
    - (1) A statement of the employer's ultimate responsibility for the implementation of his SOH program;
    - (2) Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes.
    - (3) The names of Competent and/or Qualified Person(s) and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached;

- (4) Requirements that no work shall be performed unless a designated competent person is present on the job site;
- (5) Requirements for pre-task Activity Hazard Analysis (AHAs);
- (6) Lines of authority;
- (7) Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;
- e. **SUBCONTRACTORS AND SUPPLIERS.** If applicable, provide procedures for coordinating SOH activities with other employers on the job site:
  - (1) Identification of subcontractors and suppliers (if known);
  - (2) Safety responsibilities of subcontractors and suppliers.
- f. **TRAINING.**
  - (1) Site-specific SOH orientation training at the time of initial hire or assignment to the project for every employee before working on the project site is required.
  - (2) Mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, crane operator, rigger, crane signal person, fall protection, electrical lockout/NFPA 70E, machine/equipment lockout, confined space, etc...) and any requirements for periodic retraining/recertification are required.
  - (3) Procedures for ongoing safety and health training for supervisors and employees shall be established to address changes in site hazards/conditions.
  - (4) OSHA 10-hour training is required for all workers on site and the OSHA 30-hour training is required for Competent Persons (CPs).
- g. **SAFETY AND HEALTH INSPECTIONS.**
  - (1) Specific assignment of responsibilities for a minimum daily job site safety and health inspection during periods of work activity: Who will conduct (e.g., "Site Safety and Health CP"), proof of inspector's training/qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures.
  - (2) Any external inspections/certifications that may be required (e.g., contracted CSP or CSHT)
- h. **ACCIDENT INVESTIGATION & REPORTING.** The Contractor shall conduct mishap investigations of all OSHA Recordable Incidents. The APP shall include accident/incident investigation procedure & identify person(s) responsible to provide the following to the Contracting Officer Representative :
  - (1) Exposure data (man-hours worked);
  - (2) Accident investigations, reports, and logs.

(3) Project site injury and illness logs.

- i. **PLANS (PROGRAMS, PROCEDURES) REQUIRED.** Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational risks in site-specific compliance and accident prevention plans. These Plans shall include but are not be limited to procedures for addressing the risks associates with the following:

- (1) Emergency response ;
- (2) Contingency for severe weather;
- (3) Fire Prevention;
- (4) Medical Support;
- (5) Posting of emergency telephone numbers;
- (6) Prevention of alcohol and drug abuse;
- (7) Site sanitation (housekeeping, drinking water, toilets);
- (8) Night operations and lighting;
- (9) Hazard communication program;
- (10)Welding/Cutting "Hot" work;
- (11)Electrical Safe Work Practices (Electrical LOTO/NFPA 70E);
- (12)General Electrical Safety;
- (13)Hazardous energy control (Machine LOTO);
- (14)Site-Specific Fall Protection & Prevention;
- (15)Excavation/trenching (AHA review & approval required, see checklist in appendix)
- (16)Asbestos abatement;
- (17)Lead abatement;
- (18)Crane Permits and inspections(see appendix);
- (19)Respiratory protection;
- (20)Health hazard control program;
- (21)Radiation Safety Program;
- (22)Abrasive blasting;
- (23)Heat/Cold Stress Monitoring;
- (24)Crystalline Silica Monitoring (Assessment);
- (25)Demolition plan (to include engineering survey);
- (26)Formwork and shoring erection and removal;
- (27)PreCast Concrete.



- C. Submit the APP to the Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.
- D. Once accepted by the Contracting Officer Representative, 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.
- E. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer Representative. Should any severe hazard exposure, i.e. imminent danger, become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSE/SAFE A10.34) and the environment.

#### **1.5 ACTIVITY HAZARD ANALYSES (AHAS):**

- A. AHAs are also known as Job Hazard Analyses, Job Safety Analyses, and Activity Safety Analyses. Before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or sub-contractor is to perform the work, the Contractor(s) performing that work activity shall prepare an AHA (Example electronic AHA forms can be found on the US Army Corps of Engineers web site).
- B. AHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.
- C. Work shall not begin until the AHA for the work activity has been accepted by the Contracting Officer Representative and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.
  - 1. The names of the Competent/Qualified Person(s) shall be identified and included in the AHA. Certification of their competency/qualification shall be submitted to the Government Designated Authority (GDA) for acceptance prior to the start of that work activity.
  - 2. The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).
    - a. If more than one Competent/Qualified Person is used on the AHA activity, a list of names shall be submitted as an attachment to the AHA. Those listed must be Competent/Qualified for the type of work involved in the AHA and familiar with current site safety issues.

- b. If a new Competent/Qualified Person (not on the original list) is added, the list shall be updated (an administrative action not requiring an updated AHA). The new person shall acknowledge in writing that he or she has reviewed the AHA and is familiar with current site safety issues.
3. Submit AHAs to the Contracting Officer Representative for review for compliance with contract requirements in accordance with [Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES](#) for review at least 15 calendar days prior to the start of each phase. Subsequent AHAs as shall be formatted 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.
4. 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.
5. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. All 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 review and approval and then submitted to the Contracting Officer Representative .

#### **1.6 PRECONSTRUCTION CONFERENCE:**

- A. Contractor representatives who have a responsibility or significant role in implementation of the accident prevention program, as required by [29 CFR 1926.20\(b\)\(1\)](#), on the project shall attend the preconstruction conference to gain a mutual understanding of its implementation. This includes the project superintendent, subcontractor superintendents, and any other assigned safety and health professionals.
- B. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- C. Deficiencies in the submitted APP will be brought to the attention of the Contractor within 14 days of submittal, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Do not begin work until there is an accepted APP.

#### **1.7 "SITE SAFETY AND HEALTH OFFICER" (SSHO) AND "COMPETENT PERSON" (CP):**

- A. The Prime Contractor shall designate a minimum of one SSHO at each project site that will be identified as the SSHO to administer the Contractor's safety program and government-accepted Accident Prevention Plan. The Prime Contractor shall designate a minimum of one CP in compliance with [29 CFR 1926.20 \(b\)\(2\)](#) that will be identified as a CP to administer their safety program.
- B. These Competent Persons can have collateral duties as the subcontractor's superintendent and/or work crew lead persons.

- C. The SSHO or an equally-qualified Designated Representative/alternate will maintain a presence on the site during construction operations in accordance with FAR Clause 52.236-6: *Superintendence by the Contractor*. CPs will maintain presence during their construction activities in accordance with above mentioned clause. A listing of the designated SSHO and all the CPs shall be submitted prior to the start of work as part of the APP with the training documentation and/or AHA as listed in Section 1.8 below.
- D. The repeated presence of uncontrolled hazards during a contractor's work operations will result in the designated CP as being deemed incompetent and result in the required removal of the employee in accordance with FAR Clause 52.236-5: Material and Workmanship, Paragraph (c).

#### **1.8 TRAINING:**

- A. The designated Prime Contractor SSHO must meet the requirements of all applicable OSHA standards and be capable (through training, experience, and qualifications) of ensuring that the requirements of **29 CFR 1926.16** and other appropriate Federal, State and local requirements are met for the project. As a minimum the SSHO must have completed the OSHA 30-hour Construction Safety class and have five (5) years of construction industry safety experience or three (3) years if he/she possesses a Certified Safety Professional (CSP) or certified Construction Safety and Health Technician (CSHT) certification or have a safety and health degree from an accredited university or college.
- B. All designated CPs shall have completed the OSHA 30-hour Construction Safety course within the past 5 years.
- C. All other construction workers shall have the OSHA 10-hour Construction Safety Outreach course and any necessary safety training to be able to identify hazards within their work environment.
- D. Submit training records associated with the above training requirements to the Contracting Officer Representative /for review for compliance with contract requirements in accordance with **Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES** 15 calendar days prior to the date of the preconstruction conference for acceptance.
- E. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the SSHO or his/her designated representative. As a minimum, this briefing shall include information on the site-specific hazards, construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, emergency procedures, accident reporting etc... Documentation shall be provided to the COR that individuals have undergone contractor's safety briefing.
- F. Ongoing safety training will be accomplished in the form of weekly documented safety meeting.

#### **1.9 INSPECTIONS:**

- A. The SSHO shall conduct frequent and regular safety inspections (daily) of the site and each of the subcontractors CPs shall conduct frequent and regular safety inspections (daily) of their work operations as required by **29 CFR 1926.20(b)(2)**. Each week, the SSHO shall conduct a formal documented inspection of the entire construction areas with the

subcontractors' present in their work areas. Coordinate with, and report findings and corrective actions weekly to Contracting Officer Representative.

- B. A Certified Safety Professional (CSP) with specialized knowledge in construction safety or a certified Construction Safety and Health Technician (CSHT) shall randomly conduct a monthly site safety inspection. The CSP or CSHT can be a corporate safety professional or independently contracted. The CSP or CSHT will provide their certificate number on the required report for verification as necessary.
  - 1. Results of the inspection will be documented with tracking of the identified hazards to abatement.
  - 2. The Contracting Officer Representative will be notified immediately prior to start of the inspection and invited to accompany the inspection.
  - 3. Identified hazard and controls will be discussed to come to a mutual understanding to ensure abatement and prevent future reoccurrence.
  - 4. A report of the inspection findings with status of abatement will be provided to the Contracting Officer Representative within one week of the onsite inspection.

**1.10 ACCIDENTS, OSHA 300 LOGS, AND MAN-HOURS:**

- A. Notify the Contracting Officer Representative as soon as practical, but no more than four hours after any accident meeting the definition of OSHA Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$5,000, or any weight handling equipment accident. Within notification include 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, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Contracting Officer Representative determine whether a government investigation will be conducted.
- B. Conduct an accident investigation for recordable injuries and illnesses, for Medical Treatment defined in paragraph DEFINITIONS, and property damage accidents resulting in at least \$20,000 in damages, to establish the root cause(s) of the accident. Complete the VA Form 2162, and provide the report to the Contracting Officer Representative within 5 calendar days of the accident. The Contracting Officer Representative will provide copies of any required or special forms.
- C. A summation of all man-hours worked by the contractor and associated sub-contractors for each month will be reported to the Contracting Officer Representative monthly.
- D. A summation of all OSHA recordable accidents experienced on site by the contractor and associated sub-contractors for each month will be provided to the Contracting Officer Representative monthly. The contractor and associated sub-contractors' OSHA 300 logs will be made available to the Contracting Officer Representative as requested.

#### **1.11 PERSONAL PROTECTIVE EQUIPMENT (PPE):**

- A. PPE is governed in all areas by the nature of the work the employee is performing. For example, specific PPE required for performing work on electrical equipment is identified in NFPA 70E, Standard for Electrical Safety in the Workplace.
- B. Mandatory PPE includes:
  - 1. Hard Hats - unless written authorization is given by the Contracting Officer Representative in circumstances of work operations that have limited potential for falling object hazards such as during finishing work or minor remodeling. With authorization to relax the requirement of hard hats, if a worker becomes exposed to an overhead falling object hazard, then hard hats would be required in accordance with the OSHA regulations.
  - 2. Safety glasses - unless written authorization is given by the Contracting Officer Representative, appropriate safety glasses meeting the ANSI Z.87.1 standard must be worn by each person on site.
  - 3. Appropriate Safety Shoes - based on the hazards present, safety shoes meeting the requirements of ASTM F2413-11 shall be worn by each person on site unless written authorization is given by the Contracting Officer Representative.
  - 4. Hearing protection - Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks.

#### **1.12 INFECTION CONTROL**

- A. Infection Control is critical in all medical center facilities. Interior construction activities causing disturbance of existing dust, or creating new dust, must be conducted within ventilation-controlled areas that minimize the flow of airborne particles into patient areas. Exterior construction activities causing disturbance of soil or creates dust in some other manner must be controlled. [Refer to Specification Section 01 01 10 IC for more detailed information regarding Infection Control.](#)

#### **1.13 FIRE SAFETY**

- A. Fire Safety Plan: Establish and maintain a site-specific fire protection program in accordance with [29 CFR 1926](#). Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Contracting Officer Representative for review for compliance with contract requirements in accordance with [Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES](#). This plan may be an element of the Accident Prevention Plan. [Refer to Specification Section 01 01 10 FSS for more detailed information regarding Fire Safety.](#)
- B. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- C. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in

accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).

D. Temporary Construction Partitions:

1. Install and maintain temporary construction partitions to provide smoke-tight separations between construction areas, the areas that are described in phasing requirements, and adjoining areas. Construct partitions of gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install Class C, ¾ hour fire/smoke rated doors with self-closing devices.
2. Install one-hour, two-hour fire-rated temporary construction partitions as shown on drawings to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with [Section 07 84 00, FIRESTOPPING](#).

E. Temporary Heating and Electrical: Install, use and maintain installations in accordance with [29 CFR 1926](#), NFPA 241 and NFPA 70.

F. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Contracting Officer Representative.

G. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Contracting Officer Representative.

H. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with [29 CFR 1926](#), NFPA 241 and NFPA 10.

I. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with [29 CFR 1926](#), NFPA 241 and NFPA 30.

J. Standpipes: Install and extend standpipes up with each floor in accordance with [29 CFR 1926](#) and NFPA 241. Do not charge wet standpipes subject to freezing until weather protected.

K. Sprinklers: Install, test and activate new automatic sprinklers prior to removing existing sprinklers.

L. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Contracting Officer Representative. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed

shall be recorded by the medical center and copies provided to the Contracting Officer Representative.

- M. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Contracting Officer Representative.
- N. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Contracting Officer Representative at least 10 days in advance.
- O. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Contracting Officer Representative.
- P. Smoking: Smoking is prohibited in and adjacent to construction areas inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited except in designated smoking rest areas.
- Q. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- R. If required, submit documentation to the Contracting Officer Representative that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

#### **1.14 ELECTRICAL**

- A. All electrical work shall comply with NFPA 70 (NEC), NFPA 70B, NFPA 70E, 29 CFR Part 1910 Subpart J - General Environmental Controls, 29 CFR Part 1910 Subpart S - Electrical, and 29 CFR 1926 Subpart K in addition to other references required by contract.
- B. All qualified persons performing electrical work under this contract shall be licensed journeyman or master electricians. All apprentice electricians performing under this contract shall be deemed unqualified persons unless they are working under the immediate supervision of a licensed electrician or master electrician.
- C. All electrical work will be accomplished de-energized and in the Electrically Safe Work Condition (refer to NFPA 70E for Work Involving Electrical Hazards, including Exemptions to Work Permit). Any Contractor, subcontractor or temporary worker who fails to fully comply with this requirement is subject to immediate termination in accordance with FAR clause 52.236-5(c). Only in rare circumstance where achieving an electrically safe work condition prior to beginning work would increase or cause additional hazards, or is infeasible due to equipment design or operational limitations is energized work permitted. The Contracting Officer Representative with approval of the Medical Center Director will make the determination if the circumstances would meet the exception outlined above. An AHA specific to energized work activities will be developed, reviewed, and accepted prior to the start of that work.
  - 1. Development of a Hazardous Electrical Energy Control Procedure is required prior to de-energizing. A single Simple Lockout/Tagout Procedure for multiple work operations can only be used for work involving qualified person(s) de-energizing one set of conductors or

circuit part source. Task specific Complex Lockout/Tagout Procedures are required at all other times.

2. Verification of the absence of voltage after de-energizing and lockout/tagout is considered "energized electrical work" (live work) under NFPA 70E, and shall only be performed by qualified persons wearing appropriate shock protective (voltage rated) gloves and arc rate personal protective clothing and equipment, using Underwriters Laboratories (UL) tested and appropriately rated contact electrical testing instruments or equipment appropriate for the environment in which they will be used.
3. Personal Protective Equipment (PPE) and electrical testing instruments will be readily available for inspection by the Contracting Officer Representative.
- D. Before beginning any electrical work, an Activity Hazard Analysis (AHA) will be conducted to include Shock Hazard and Arc Flash Hazard analyses (NFPA Tables can be used only as a last alternative and it is strongly suggested a full Arc Flash Hazard Analyses be conducted). Work shall not begin until the AHA for the work activity has been accepted by the Contracting Officer Representative and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.
- E. Ground-fault circuit interrupters. All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites shall have approved ground-fault circuit interrupters for personnel protection. "Assured Equipment Grounding Conductor Program" only is not allowed.

#### **1.15 FALL PROTECTION**

- A. The fall protection (FP) threshold height requirement is 6 ft (1.8 m) for ALL WORK, unless specified differently or the OSHA 29 CFR 1926 requirements are more stringent, to include steel erection activities, systems-engineered activities (prefabricated) metal buildings, residential (wood) construction and scaffolding work.
  1. The use of a Safety Monitoring System (SMS) as a fall protection method is prohibited.
  2. The use of Controlled Access Zone (CAZ) as a fall protection method is prohibited.
  3. A Warning Line System (WLS) may ONLY be used on floors or flat or low-sloped roofs (between 0 - 18.4 degrees or 4:12 slope) and shall be erected around all sides of the work area (See 29 CFR 1926.502(f) for construction of WLS requirements). Working within the WLS does not require FP. No worker shall be allowed in the area between the roof or floor edge and the WLS without FP. FP is required when working outside the WLS.
  4. Fall protection while using a ladder will be governed by the OSHA requirements.

#### **1.16 SCAFFOLDS AND OTHER WORK PLATFORMS**

- A. All scaffolds and other work platforms construction activities shall comply with 29 CFR 1926 Subpart L.



- B. The fall protection (FP) threshold height requirement is 6 ft (1.8 m) as stated in Section 1.16.
- C. The following hierarchy and prohibitions shall be followed in selecting appropriate work platforms.
  - 1. Scaffolds, platforms, or temporary floors shall be provided for all work except that can be performed safely from the ground or similar footing.
  - 2. Ladders less than 20 feet may be used as work platforms only when use of small hand tools or handling of light material is involved.
  - 3. Ladder jacks, lean-to, and prop-scaffolds are prohibited.
  - 4. Emergency descent devices shall not be used as working platforms.
- D. Contractors shall use a scaffold tagging system in which all scaffolds are tagged by the Competent Person. Tags shall be color-coded: green indicates the scaffold has been inspected and is safe to use; red indicates the scaffold is unsafe to use. Tags shall be readily visible, made of materials that will withstand the environment in which they are used, be legible and shall include:
  - 1. The Competent Person's name and signature;
  - 2. Dates of initial and last inspections.
- E. Mast Climbing work platforms: When access ladders, including masts designed as ladders, exceed 20 ft (6 m) in height, positive fall protection shall be used.

#### **1.17 EXCAVATION AND TRENCHES**

- A. All excavation and trenching work shall comply with 29 CFR 1926 Subpart P.
- B. All excavations and trenches 5 feet in depth or greater shall require a written trenching and excavation permit (NOTE - some States and other local jurisdictions require separate state/jurisdiction-issued excavation permits). The permit shall be completed and provided to the Contracting Officer Representative prior to commencing work for the day. At the end of the day, the permit shall be closed out and provided to the Contracting Officer Representative and/or other Government Designated Authority. The permit shall be maintained onsite and include the following:
  - 1. Determination of soil classification.
  - 2. Indication that utilities have been located and identified. If utilities could not be located after all reasonable attempt, then excavating operations will proceed cautiously.
  - 3. Indication of selected excavation protective system.
  - 4. Indication that the spoil pile will be stored at least 2 feet from the edge of the excavation and safe access provided within 25 feet of the workers.
  - 5. Indication of assessment for a potential toxic, explosive, or oxygen deficient atmosphere.

- C. If not using an engineered protective system such as a trench box, shielding, shoring, or other Professional Engineer designed system and using a sloping or benching system, soil classification cannot be Solid Rock or Type A. All soil will be classified as Type B or Type C and sloped or benched in accordance with Appendix B of 29 CFR 1926.

#### 1.18 CRANES

- A. All crane work shall comply with 29 CFR 1926 Subpart C.
- B. Prior to operating a crane, the operator must be licensed, qualified or certified to operate the crane. Thus, all the provisions contained with Subpart CC are effective and there is no "Phase In" date of November 10, 2014.
- C. A detailed lift permit shall be submitted 14 days prior to the scheduled lift complete with route for truck carrying load, crane load analysis, siting of crane and path of swing. The lift will not be allowed without approval of this document.
- D. Crane operators shall not carry loads
  - 1. Over the general public or VAMC personnel
  - 2. Over any occupied building unless
    - a. The top two floors are vacated
    - b. Or overhead protection with a design live load of 300 psf is provided

#### 1.19 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

- A. All installation, maintenance, and servicing of equipment or machinery shall comply with 29 CFR 1910.147 except for specifically referenced operations in 29 CFR 1926 such as concrete & masonry equipment 1926.702(j), heavy machinery & equipment 1926.600(a)(3)(i), and process safety management of highly hazardous chemicals (1926.64). Control of hazardous electrical energy during the installation, maintenance, or servicing of electrical equipment shall comply with Section 1.15 to include NFPA 70E and other VA specific requirements discussed in the section.

#### 1.20 CONFINED SPACE ENTRY

- A. All confined space entry shall comply with 29 CFR 1910.146 except for specifically referenced operations in 29 CFR 1926 such as excavations/trenches 1926.651(g).
- B. A site-specific Confined Space Entry Plan (including permitting process) shall be developed and submitted to the Contracting Officer Representative.

#### 1.21 WELDING AND CUTTING

As specified in section 1.14, Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Contracting Officer Representative. Obtain permits from Contracting Officer Representative at least \_10\_ days in advance .

#### 1.22 LADDERS

- A. All Ladder use shall comply with 29 CFR 1926 Subpart X.

- B. All portable ladders shall be of sufficient length and shall be placed so that workers will not stretch or assume a hazardous position.
- C. Manufacturer safety labels shall be in place on ladders.
- D. Step Ladders shall not be used in the closed position.
- E. Top steps or cap of step ladders shall not be used as a step.
- F. Portable ladders, used as temporary access, shall extend at least 3 ft (0.9 m) above the upper landing surface.
  - 1. When a 3 ft (0.9-m) extension is not possible, a grasping device (such as a grab rail) shall be provided to assist workers in mounting and dismounting the ladder.
  - 2. In no case shall the length of the ladder be such that ladder deflection under a load would, by itself, cause the ladder to slip from its support.
- G. Ladders shall be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders shall be immediately tagged "DO NOT USE," or with similar wording, and withdrawn from service until restored to a condition meeting their original design.

#### **1.23 FLOOR & WALL OPENINGS**

- A. All floor and wall openings shall comply with **29 CFR 1926 Subpart M**.
- B. Floor and roof holes/openings are any that measure over 2 in (51 mm) in any direction of a walking/working surface which persons may trip or fall into or where objects may fall to the level below. See 21.F for covering and labeling requirements. Skylights located in floors or roofs are considered floor or roof hole/openings.
- C. All floor, roof openings or hole into which a person can accidentally walk or fall through shall be guarded either by a railing system with toeboards along all exposed sides or a load-bearing cover. When the cover is not in place, the opening or hole shall be protected by a removable guardrail system or shall be attended when the guarding system has been removed or other fall protection system.
  - 1. Covers shall be capable of supporting, without failure, at least twice the weight of the worker, equipment and material combined.
  - 2. Covers shall be secured when installed, clearly marked with the word "HOLE", "COVER" or "Danger, Roof Opening-Do Not Remove" or color-coded or equivalent methods (e.g., red or orange "X"). Workers must be made aware of the meaning for color coding and equivalent methods.
  - 3. Roofing material, such as roofing membrane, insulation or felts, covering or partly covering openings or holes, shall be immediately cut out. No hole or opening shall be left unattended unless covered.
  - 4. Non-load-bearing skylights shall be guarded by a load-bearing skylight screen, cover, or railing system along all exposed sides.
  - 5. Workers are prohibited from standing/walking on skylights.

Milwaukee VAMC  
695-17-108 Install EMS in Building 102  
Milwaukee, WI 53295

11-21-2015  
100% Construction Documents  
July 24, 2017

- - - E N D - - -

**AWE Focus Program Review 2016**  
**Construction: Excavation Safety**

|  |  |                   |  |     |         |     |
|--|--|-------------------|--|-----|---------|-----|
| DATE:  |  | NAME OF REVIEWER: |  |     |         |     |
| REQUIREMENT  |  |                   |  | MET | NOT MET | N/A |
| 16.6A. Are the estimated locations of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work determined prior to opening an excavation? [OSHA 29 CFR 1926.651(b)(1)]  |  |                   |  |     |         |     |
| 16.6B. Are utility companies contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of utility underground installations up to their own meters prior to the start of actual excavation? [OSHA 29 CFR 1926.651(b)(2)]   |  |                   |  |     |         |     |
| 16.6C. On VHA property, is the proposed dig site being marked, "as built" drawings reviewed, and visual indicators (manholes, valves, meters, permanent markers, etc...) of the utilities being utilized to establish the location of utility underground installations by in-house VHA personnel or a contracted private locator service? [OSHA 29 CFR 1926.651(b)(2)]  |  |                   |  |     |         |     |
| 16.6D. On VHA property, are locations of utility underground installations being marked and maintained by use of stakes, paint, flags, or other clearly identifiable materials to show the field location of underground facilities, in accordance with the current color code standard of the American Public Works Association.? [OSHA 29 CFR 1926.651(b)(2)]  |  |                   |  |     |         |     |
| 16.6E. If utility companies or the VHA cannot locate underground utility installations or cannot establish the exact location of these installations, are excavation contractors proceeding with caution and using detection equipment or other acceptable means to locate utility installations (careful hand digging, pot-holing and vacuum excavation, hand tools that use air or water under pressure, exploratory bar, or other)? [OSHA 29 CFR 1926.651(b)(2)]  |  |                   |  |     |         |     |
| 16.6F. When excavation operations approach the estimated location (within 2 feet) of underground installations, are the exact location of the installations determined by safe and acceptable means (careful hand digging, pot-holing and vacuum excavation, hand tools that use air or water under pressure , exploratory bar, or other)? [OSHA 29 CFR 1926.651(b)(3)]  |  |                   |  |     |         |     |
| 16.6G. While the excavation is open, are underground installations protected, supported or removed (LockOut/Tagout, supports built, etc...) as necessary to safeguard employees? [OSHA 29 CFR 1926.651(b)(4)]  |  |                   |  |     |         |     |
| 16.6H. Are Activity Hazard Analyses and excavation permits being completed prior to opening excavations? (FAR 52.236-13, Accident Prevention; VA Master Specs, Div. 01, Section 01 35 26 Safety Requirements, Subtopic 1.5 & 1.18)   |  |                   |  |     |         |     |
| 16.6I. Where workers enter an excavation greater than 5 feet in depth, are soils being classified in accordance with OSHA classification system (Solid Rock, Type A, Type B, or Type C)? [OSHA Directive CPL 2-0.124; VHA Directive 2011-036, Subpar. 4(l)(7)] Note: If using an excavation protective system of sloping or benching, then the soil classification cannot be Solid Rock or Type A. Thus, the angle of repose cannot be steeper than 1 to 1 (45 degrees) (OSHA 29 CFR 1926.652 & associated Appendix A; VA Master Specs, Div. 01, Section 01 35 26 Safety Requirements, Subtopic 1.18, Par. C)? |  |                   |  |     |         |     |
| 16.6J. Where workers enter an excavation greater than 5 feet in depth, are protective systems being designed in accordance with 29 CFR 1926, Subpart P, Appendices B to E or designed by Professional Engineer [OSHA 29 CFR 1926.652(a)] Note: excavations in excess of 20 feet in depth must be designed by PE and sloping or benching systems cannot have an angle of repose steeper than 1 to 1 (45 degrees) as provided above.   |  |                   |  |     |         |     |
| Reviewer Signature:  |  |                   |  |     |         |     |

## APPENDIX P – CONTRACTOR CRANE REQUIREMENTS

| <b>CERTIFICATE OF COMPLIANCE</b>  |  |
|---|--|
| This certificate shall be signed by an official of the company that provides cranes for any application under this contract. Post a completed certificate on each crane brought on <span style="border: 1px solid red; padding: 0 2px;">VAMC</span> property.   |  |
| <b>CONTRACTING OFFICER'S POINT OF CONTACT</b><br>(Government Representative)  | <b>PHONE</b>                             |
| <b>PRIME CONTRACTOR/PHONE</b>   | <b>CONTRACT NUMBER</b>                   |
| <b>CRANE SUPPLIER/PHONE</b><br>(if different from prime contractor)   | <b>CRANE NUMBER</b><br>(i.e., ID number) |
| <b>CRANE MANUFACTURER/TYPE/CAPACITY</b>   |  |
| <b>CRANE OPERATOR'S NAME(S)</b>   |  |
| I certify that<br><br>1. The above noted crane and associated rigging gear conform to applicable OSHA regulations (host country regulations for naval activities in foreign countries) and applicable ASME B30 standards. The following OSHA regulations and ASME standards apply: _____<br>2. The operators noted above have been trained and are qualified for the operation of the above noted crane.<br>3. The operators noted above have been trained not to bypass safety devices during lifting operations.<br>4. The operators, riggers and company officials are aware of the actions required in the event of an accident as specified in the contract. |  |
| <b>COMPANY OFFICIAL SIGNATURE</b>   | <b>DATE</b>                              |
| <b>COMPANY OFFICIAL NAME/TITLE</b>  |  |
| <b>POST ON CRANE</b><br>(IN CAB OR VEHICLE)   |  |

FIGURE P-1



| CONTRACTOR CRANE OPERATION CHECKLIST               |   |  |                |    |
|--|---|--|----------------|----|
|  |   |  | YES            | NO |
| 1  | Is the Certificate of Compliance, P-1, in the operator's cab with the current operator's name listed?   |  |                |    |
| 2  | Does the operator know the weight of the load to be lifted?   |  |                |    |
| 3  | Is the load to be lifted within the crane manufacturer's rated capacity in its present configuration?   |  |                |    |
| 4  | Is the crane level and on firm ground?  |  |                |    |
| 5  | Are outriggers required?  |  |                |    |
| 6  | If so, are outriggers fully extended and down, and the crane load off the wheels?   |  |                |    |
| 7  | If blocking is required, is the entire surface of the outrigger pad supported and is the blocking material of sufficient strength to safely support the loaded outrigger pad? |  |                |    |
| 8  | If outriggers are not used, is the crane rated for on-rubber lifts by the manufacturer's load chart?  |  |                |    |
| 9  | Is the swing radius of the crane counterweight clear of people and obstructions and accessible areas within the swing area barricaded to prevent injury or damage?            |  |                |    |
| 10   | Has the hook been centered over the load in such a manner to minimize swing?  |  |                |    |
| 11   | Is the load well secured and balanced in the sling or lifting device before it is lifted more than a few inches?  |  |                |    |
| 12   | Is the lift and swing path clear of obstructions?   |  |                |    |
| 13   | If rotation of the load being lifted is hazardous, is a tag or restraint line being used?   |  |                |    |
| 14   | Are personnel prevented from standing or passing under a suspended load?  |  |                |    |
| 15   | Is the crane operator's attention diverted?   |  |                |    |
| 16   | Are proper signals being used at all times?   |  |                |    |
| 17   | Do the operations ensure that side loading is prohibited?   |  |                |    |
| 18   | Are personnel prevented from riding on a load?  |  |                |    |
| 19   | Are start and stop motions in a smooth fluid motion (no sudden acceleration or deceleration)?   |  |                |    |
| 20   | If operating near electric power lines, are the rules and guidelines understood and adhered to?   |  |                |    |
| 21   | Is the lift a critical lift?  |  |                |    |
| 22   | If so, are all regulations understood and check-off sheets initialed and signed off?  |  |                |    |
| 23   | Is rigging gear undamaged and acceptable for the application?   |  |                |    |
| Contractor:  |   |  | Subcontractor: |    |
| Location:  |   |  | Date:          |    |
| Notes:   |   |  |                |    |
| Signature of Contracting Officer's Representative: |   |  |                |    |

FIGURE P-2

**Crane Inspection Checklist**  
**VA Safety**

**Cranes: Daily/Monthly Inspections—Construction**

Department of Veterans Affairs, Clement J. Zablocki Medical Center, Milwaukee, WI

**Company Name:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Cranes: Pre-Operational Daily Inspection—Construction**

| Yes                   | No                    | N/A                   |   |
|-----------------------|-----------------------|-----------------------|---|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 1. Are all exposed moving parts guarded or isolated?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 2. Are high voltage warning signs displayed on the exterior of the crane on each side and on the counterweight of the crane?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 3. Is each component of the crane used in lifting, swinging, or lowering the load or boom free from defects?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 4. Do all swivels have freedom of rotation?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 5. Are tires free from cuts, tears, breaks, and inflated properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 6. Are exhaust pipes guarded or insulated properly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 7. Are there no fluid leaks in lines, tanks, valves, pumps, and other parts of fuel, air, or hydraulic systems?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 8. Are batteries in good shape?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 9. Is the crane properly lubricated?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 10. Are sheaves, drums, rigging, hardware, and attachments in good condition?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 11. Are all functional operating mechanisms such as locking mechanisms, limit switches, safety devices, hydraulic cylinders, instruments, and lights free from problems?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 12. Are guardrails, handholds, and steps secure?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 13. Are platform and walkway anti-skid surfaces not damaged?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 14. Are there no slippery substances on platforms and walkways?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 15. Are turntable connections in good shape (no weld cracks or loose, missing bolts)?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 16. If the crane is going to be operated in an enclosed space, are tests made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases? |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 17. Are all items unique to your vehicle (see manufacturer's manual) working properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 18. Is proper personal protective equipment available, in good condition, and used where required or needed?  |



**Crane Inspection Checklist**  
**VA Safety**

**Cranes: Pre-Operational Daily Inspection—Outriggers—Construction**

| Yes                   | No                    | N/A                   |  |
|-----------------------|-----------------------|-----------------------|--|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 19. Are neither the beams nor the cylinders distorted or cracked?                  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 20. Are all welds in good condition?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 21. Do both the beams and cylinders extend and retract smoothly and hold the load? |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 22. Are beams marked to indicate when they are fully extended?                     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 23. Are floats in good shape and securely attached?                                |

**Cranes: Pre-Start-Up Inspection—Construction**

| Yes                   | No                    | N/A                   |  |
|-----------------------|-----------------------|-----------------------|--|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 24. Are inspection and maintenance records, operator's manual, and appropriate load charts present?                          |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 25. Is the cab clean and free of clutter?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 26. Are all controls labeled as to their function?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 27. Are all gauges, warning lights, horns, and alarms working properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 28. Is the service/parking brake operating properly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 29. Is the seat securely attached?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 30. Does the cab door open safely?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 31. Is an accessible fire extinguisher of 5BC rating, or higher, available at all operator stations or cabs?                 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 32. Does the operator have a clear field of vision (no broken or cracked window glass)?                                      |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 33. Are rated load capacities, recommended operating speeds, and special hazard warnings posted and visible to the operator? |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 34. When used, are outriggers fully extended and tires off the ground?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 35. Are steering, brakes and clutches adjusted and operating properly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 36. Are boom hoist lockout and other operator aids operated and calibrated properly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 37. Are all necessary factors considered when calculating crane load capacity?   |

**Crane Inspection Checklist**  
**VA Safety**

**Cranes: Monthly Inspection—Construction**

| Yes                   | No                    | N/A                   |   |
|-----------------------|-----------------------|-----------------------|---|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 38. Do you maintain monthly inspection records of critical items in use?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 39. Does the monthly inspection record include date of inspection, signature of inspector, and serial number of equipment?                                      |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 40. Are all items that are part of the daily inspection also inspected monthly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 41. Is the entire crane free from structural damage?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 42. Are there no deformed, cracked, or corroded members in the load/stress bearing structure?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 43. Are welded connections free from cracks?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 44. Are the main chords and lacings and other structural items safe?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 45. Are hydraulic booms in safe condition (not bent, swayed, or drooped)?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 46. Are main hoists and auxiliary drums in good condition?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 47. Is all wire rope spooled evenly on the hoist drum, and the proper diameter, length, and type of construction for crane?                                     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 48. Are pins, bearings, shafts, gears, rollers, locking devices, hooks, hook roller brackets, removable outrigger attachment lugs, and welds in good condition? |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 49. Are all jib stops safe and working properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 50. Are all hydraulic and pneumatic hoses, fittings, and tubing in good condition?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 51. Is the counterweight secure and locked?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 52. Is the fuel tank filler pipe located or protected so that spills or overflow of fuel do not create a hazard?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 53. Are boom stops functioning properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 54. Are boom hoist disconnects working properly?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 55. Is the boom angle indicator operating properly?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 56. Are all anti-two-block, two-block warning, and two-block damage prevention systems operating properly?  |

**Crane Inspection Checklist**  
**VA Safety**

**Crane Operation—Construction**

| Yes                   | No                    | N/A                   |   |
|-----------------------|-----------------------|-----------------------|---|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 57. Are only qualified and properly designated people allowed to operate cranes?  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 58. Are all personnel kept clear of loads about to be lifted and suspended loads?   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 59. Are outriggers visible to the operator or a signal person during extension or setting?                                    |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 60. Are only the oiler, instructor, or competent person allowed on the crane when it is in operation?                         |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 61. Are procedures in place so that the operator does not hoist, lower, swing, or travel while anyone is on the load or hook? |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 62. Is proper personal protective equipment available, in good condition, and used where required or needed?                  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 63. Are all operational requirements and safety rules complied with?  |

**Comments:**

**No.**

|  |  |
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## CRANE OPERATOR'S DAILY CHECK LIST

|   |                                    |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
|---|------------------------------------|---------------|---|-------------------------|---|---------------------------------|---|----------------------|----|---|---|------------------------|--------------------|----|------|------------------------------------|---|---|----|
| CRANE NO.   |                                    | TYPE/CAPACITY |   | LOCATION                |   | CERTIFICATION EXPIRATION DATE   |   | SHIFT                |    |   | HOUR METER                              |                        | HRS OPERATED       |    | DATE |                                    |   |   |    |
|   |                                    |               |   |                         |   |                                 |   | 1                    | 2  | 3 | START                                   | STOP                   |                    |    |      |                                    |   |   |    |
| OPERATORS   |                                    |               |   |                         |   |                                 |   | LEGEND               |    |   |   |                        |                    |    |      |                                    |   |   |    |
|   |                                    |               |   |                         |   |                                 |   | S = SATISFACTORY     |    |   |   |                        | U = UNSATISFACTORY |    |      | NA = NOT APPLICABLE                |   |   |    |
| 1 WALK AROUND CHECK   |                                    |               |   | 2 MACHINERY HOUSE CHECK |   |                                 |   | 3 OPERATOR CAB CHECK |    |   |   | 4 OPERATIONAL CHECK    |                    |    |      |                                    |   |   |    |
|   |                                    | S             | U | NA                      |   |                                 | S | U                    | NA |   |   | S                      | U                  | NA |      |                                    | S | U | NA |
| a   | Safety Guards and Plates           |               |   |                         | a | Housekeeping                    |   |                      |    | a | Gauges                                  |                        |                    |    | a    | Area Safety *                      |   |   |    |
| b   | Carrier Frame and Rotate Base *    |               |   |                         | b | Diesel Engine and Generator *   |   |                      |    | b | Indicator and Warning Lights            |                        |                    |    | b    | Outriggers and Stabilizers *       |   |   |    |
| c   | General Hardware                   |               |   |                         | c | Leaks                           |   |                      |    | c | Visibility *                            |                        |                    |    | c    | Unusual Noises                     |   |   |    |
| d   | Wire Rope *                        |               |   |                         | d | Lubrication                     |   |                      |    | d | Load Rating Charts *                    |                        |                    |    | d    | Control Action *                   |   |   |    |
| e   | Reeving *                          |               |   |                         | e | Battery                         |   |                      |    | e | List/Trim Indicator (Floating Cranes) * |                        |                    |    | e    | Wire Rope *                        |   |   |    |
| f   | Block *                            |               |   |                         | f | Lights                          |   |                      |    | f | Boom Angle/Radius Indicator *           |                        |                    |    | f    | Brakes and Clutches *              |   |   |    |
| g   | Hook *                             |               |   |                         | g | Glass                           |   |                      |    | g | Fire Extinguisher                       |                        |                    |    | g    | Boom Angle/Radius Indicator *      |   |   |    |
| h   | Sheaves *                          |               |   |                         | h | Clutches and Brakes *           |   |                      |    | h | Level Indicator (Mobile Cranes) *       |                        |                    |    | h    | Limit Switches *                   |   |   |    |
| i   | Boom and Jib *                     |               |   |                         | i | Electric Motors *               |   |                      |    | i | Danger/Caution Tags *                   |                        |                    |    | i    | Emergency Stop *                   |   |   |    |
| j   | Gantry, Pendants, and Boom Stops * |               |   |                         | j | Auxiliary Engine and Compressor |   |                      |    |   |   |                        |                    |    | j    | Other Operational Safety Devices * |   |   |    |
| k   | Walkways, Ladders, and Handrails   |               |   |                         | k | Danger/Caution Tags *           |   |                      |    |   |   |                        |                    |    | k    | General Safety Devices             |   |   |    |
| l   | Windlocks, Stops, and Bumpers      |               |   |                         | l | Fire Extinguishers              |   |                      |    |   |   |                        |                    |    | l    | Fleeting Sheaves                   |   |   |    |
| m   | Tires, Wheels and Tracks           |               |   |                         | m | Holst Drum Pawls and Ratchets * |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
| n   | Leaks                              |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
| o   | Outriggers and Stabilizers *       |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
| p   | Load Chain *                       |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
| q   | Area Safety *                      |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
|   |                                    |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |
| INSTRUCTIONS - Check all applicable items indicated, each shift. Suspend all operations immediately when observing an unsatisfactory condition of any item indicated with an asterisk (*) unless the condition has been reviewed and continued operation has been authorized by the activity engineering organization. In addition, suspend operation when any unsafe condition is observed and immediately notify supervisor. For any unsatisfactory item, identify the specific component and describe the deficiency in the "Remarks" block. |                                    |               |   |                         |   |                                 |   |                      |    |   |   | SUPERVISOR'S SIGNATURE |                    |    |      |                                    |   |   |    |
|   |                                    |               |   |                         |   |                                 |   |                      |    |   |   | DATE                   |                    |    |      |                                    |   |   |    |
| FIRST OPERATOR'S SIGNATURE  |                                    |               |   | OPERATOR'S SIGNATURE    |   |                                 |   | OPERATOR'S SIGNATURE |    |   |   | OPERATOR'S SIGNATURE   |                    |    |      |                                    |   |   |    |
| DATE  |                                    |               |   | DATE                    |   |                                 |   | DATE                 |    |   |   | DATE                   |                    |    |      |                                    |   |   |    |
| REMARKS   |                                    |               |   |                         |   |                                 |   |                      |    |   |   |                        |                    |    |      |                                    |   |   |    |



## Critical Lift Permit

A Critical Lift Permit, including all supporting documents, must be submitted to and approved by the Safety Section 14 days prior to the planned lift. Permits must be at the lift site until the lift is complete. Permits must be reissued if conditions (equipment, weather, and/or ground) or scope of work has changed. All lifts must follow 29 CFR 1926 Subpart CC.

A critical lift is defined as any one or more of the following conditions:

Lifts involving hazardous materials  
Lifts made with more than one crane or hoist  
Hoisting Personnel  
Lifts involving submerged loads  
Lifts involving multiple or difficult rigging

Lifts with a center of gravity that could change  
The crane will "walk" with load  
Loads  $\geq 75\%$  of rated capacity of the load chart  
Lifts without the use of outriggers using rubber tire load charts  
Lifts outside the crane operator's view

| A. GENERAL  |  |                                       |  |
|---|--|---------------------------------------|--|
| Project Name & Number:  |  | Contracting Officer's Representative: |  |
| Crane Owner:  |  | Crane Lift Location (Area/Building):  |  |
| Crane Operator:   |  | Qualified Person completing permit:   |  |
| Phone:  |  | Phone:                                |  |
| B. LIFT DATA  |  |                                       |  |
| 1. Load Weight:   | 1a. Describe Load and Enter Total Load Weight: _____   |                                       |  |
|   | Estimated Weight: _____ Lbs. Actual Weight: _____ Lbs.   |                                       |  |
| 2. Rigging weight:  | 1b. Total load weight as a percentage of rated load capacity of crane from load chart: _____%  |                                       |  |
|   | 2a. Main Hoist Block, Auxiliary Boom Head / Headache Ball: _____   |                                       |  |
|   | Total Block Weight: _____ Lbs.   |                                       |  |
|   | 2b. Slings, Shackles, Hardware (list all used): _____  |                                       |  |
|   | Total Rigging Weight: _____ Lbs.   |                                       |  |
| 3. Total Lift Weight:   | 2c. Jib Weight Allowance: _____ Lbs.   |                                       |  |
|   | Check One: Erected (not used): <input type="checkbox"/> Erected (in use): <input type="checkbox"/> Jib Stowed (on boom): <input type="checkbox"/>  |                                       |  |
|   | 3a. On Sling: $1a + 2b =$ _____ Lbs.<br>3b. On Crane: $1a + 2a + 2b + 2c =$ _____ Lbs. Total Lift Weight: _____ Lbs<br><br>Example Calculation:<br>$\frac{\text{Total Load Weight}}{\text{Rated Load Capacity}} * 100 = \% \quad \text{Example Calculation: } \frac{50,000\text{lbs}}{250,000\text{lbs}} * 100 = 20\%$ |                                       |  |
| *Note: Contingency = Total Lift Weight Must be $\leq 90\%$ of Load Chart Capacity |  |                                       |  |



## Critical Lift Permit

|  |  |
|--|--|
| <b>4. Lifting Height:</b>  | Height of Load to be not greater than _____ Feet<br>Maximum Height of Crane Boom / Extension Tip _____ Feet<br><input type="checkbox"/> Elevation drawing showing load height relation to crane and any obstructions is attached   |
| <b>5. Operating Radius:</b>  | Maximum Radius of Load to be not greater than _____ Feet<br><input type="checkbox"/> Plan view of load location and crane orientation attached   |
| <b>C. CRANE DATA &amp; LIFT SET UP</b>   |  |
| <b>1. Crane Manufacturer:</b>  | Crane Manufacturer: _____ Size: _____ Model Number: _____<br>Date of Last Annual Inspection: _____ Inspected by: _____   |
| <b>2. Verify manufacturer's load chart indicates lifting capacity at stipulated load radius and boom lengths.</b><br><br>Note: If boom length and/or radius is between the stipulated or posted value on the load chart select the next lesser rating capacity. The next lesser rating capacity may be the next longer or shorter boom length. |  |
| <b>3. Counterweight:</b>   | <input type="checkbox"/> Yes Total Weight _____Lbs. Total Crane Weight _____Lbs.   |
| <b>4. Jib / Extension:</b>   | Jib Length (as extension): _____ Jib Offset: _____   |
| <b>5. Main Load Block:</b>   | Capacity Size: _____ Ton _____ # Sheaves: _____ Weight _____Lbs.   |
| <b>6. Auxiliary Boom Head/Ball:</b>  | Capacity Size: _____ Ton _____ # Sheaves: _____ Weight _____Lbs.   |
| <b>7. Outriggers, Pads, and Tires:</b>   | <input type="checkbox"/> An engineering review has determined underground utilities and structures are not at risk<br><input type="checkbox"/> Outriggers Fully Extended and Set Check One: Track <input type="checkbox"/> Tires <input type="checkbox"/><br><input type="checkbox"/> Total Outrigger Bearing Pressure has been Calculated and Soil Type, Ground, and Pavement has Capacity to Support the Total Imposed Load<br><input type="checkbox"/> Outrigger Mats are Sized to Reduce Soil Bearing Pressure to Safe PSI Levels<br><input type="checkbox"/> Construction Manager has provided site drawing with crane set up zone identified.<br><input type="checkbox"/> CM escorted utility surveyor and maintained accuracy and potential problematic areas on sketch & provided/discussed with crane firm. |



## Critical Lift Permit

### D. RIGGING DATA

|  |                                  |         |                     |                             |
|--|----------------------------------|---------|---------------------|-----------------------------|
| 1. Sling(s)/<br>Shackles   | Type of Sling:                   | Length: | Capacity (per leg): | Basket / Straight / Choker: |
|  | _____                            | _____   | _____               | _____                       |
|  | _____                            | _____   | _____               | _____                       |
|  | _____                            | _____   | _____               | _____                       |
|  | Size: _____ Capacity (ea.) _____ |         |                     |                             |
| Spreader Bar: _____ Feet _____ Lbs. Verify MFG/Eng. Stamp: _____ |                                  |         |                     |                             |

### E. LIFT COMPUTATION

|                              |                               |                               |
|------------------------------|-------------------------------|-------------------------------|
| Minimum Boom Angle:<br>_____ | Maximum Boom Length:<br>_____ | Maximum Lift Radius:<br>_____ |
|------------------------------|-------------------------------|-------------------------------|

Note: Cranes equipped with computers indicating boom length, angle, and radius are *safety devices only* and should not be used in place of the operator's responsibility to actually determine the measurements required to calculate a safe lift.

Note: Accessories, Crane Capacity, Parts of Line and Rope Capacity, and the working quadrant of the crane should be considered when calculating Net Crane Capacities.

1. Crane Capacity: (Load Chart Capacity) \_\_\_\_\_ Lbs.

2. Net Crane Capacity: (Load Chart Capacity - Block, Rigging, and Accessory Weights) = \_\_\_\_\_ Lbs.

3. Load orientation prior to lift: ☐ Front ☐ Side ☐ Rear

4. Swing orientation relative to crane: ☐ Front ☐ Side ☐ Rear

### F. SPECIAL PRECAUTIONS

- ☐ Lift will not be conducted over an occupied section of a building
- ☐ Blocked exits and building evacuations require an Interim Life Safety Measure (ILSM)
- ☐ Request ILSM from Safety Section minimum of 3 days prior to planned lift
- ☐ Coordinate road blocks or closures with the police and fire services prior to the lift
- ☐ Signal Person required when swing path takes load out of crane operator's view

### G. SUBMITTALS

- ☐ Operator license
- ☐ Rigger qualifications
- ☐ Annual crane inspection
- ☐ Crane maintenance log
- ☐ Crane lift/load chart showing weight lifted, angle and main boom length
- ☐ Elevation drawing showing load height relation to crane and any obstructions
- ☐ Plan view of load location and crane orientation to building(s), swing radius, road closure & barricades.



## Critical Lift Permit

### H. APPROVALS

*I certify the information contained on this standard lift permit is correct.*

Qualified Person:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## Critical Lift Permit

### I. LIFT OPERATIONS

Execution of the lift shall be in accordance with OSHA 29 CFR 1926 Subpart CC.

#### LIFT SUPERVISOR TO COMPLETE THIS CHECKLIST ON THE DAY OF THE LIFT

- ☐ Interim Life Safety Measure (ILSM) obtained from Safety Section as necessary (blocked exits, evacuation, etc.)
- ☐ Lift will not be conducted over an occupied section of a building
- ☐ Crane lift site has traffic and pedestrian controls in place
- ☐ An individual has been designated to observe for obstructions and unauthorized personnel
- ☐ Confirm swing radius has been barricaded and access is limited to authorized personnel
- ☐ Confirm load weight
- ☐ Ensure load hook is directly over the load center of gravity
- ☐ Confirm boom angle, boom length, lift radius, and the crane capacity
- ☐ Ensure outrigger pads are fully extended and blocking is sufficient for the load
- ☐ Ensure tires are clear of the ground and the crane is level
- ☐ Confirm all obstacles and obstructions have been identified
- ☐ Ensure lifts in proximity to power transmission lines comply with OSHA 29 CFR 1926.1407 through 1411
- ☐ Verify a signal method has been determined between the crane operator and the signalman
- ☐ Verify the crane operator meets OSHA qualifications requirements to operate the crane
- ☐ Verify the crane boom is equipped with a safety flag and/or beacon light
- ☐ Verify a "competent person" has inspected all slings, fastenings, and attachments for damage or defects.
- ☐ Verify a "competent person" has inspected all crane safety devices and operational controls prior to and during use to ensure safe operating condition. Any deficiencies shall be repaired prior to continued use
- ☐ Ensure damaged or defective equipment is immediately removed from service
- ☐ Verify all required crane manufacturer operational control procedures are available in the crane cab
- ☐ Verify the all required inspections have been completed.
- ☐ Wind Speed: Crane is equipped with anemometer: ☐ Yes ☐ No  
Lifts when wind speed > 20 mph require reassessment.  
Lifts are not allowed when wind speed exceeds 30 mph

Wind Speed at time of lift: \_\_\_\_\_mph.



## Critical Lift Permit

An on-site meeting on the day of the planned lift was conducted with the undersigned.

**Lift Supervisor:**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Contracting Officer's Representative:**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Licensed Crane Operator:**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Qualified Rigger:**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Signal Person**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### J. PERMIT DURATION

**Start Date/Time:**

**Finish Date/Time:**

**Safety Specialist:**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## Standard Lift Permit

This standard lift permit, including all supporting documents, must be completed by a qualified person and submitted to and approved by the Safety Section 14 days prior to the planned lift. Permits must be at the lift site until the lift is complete. Permits must be reissued if conditions (equipment, weather, and/or ground) or scope of work has changed. All lifts must follow 29 CFR 1926 Subpart CC.

**NOTE:** If any of the following conditions will be involved with the lift operation, a critical lift permit must be completed:

Lifts involving hazardous materials  
Lifts made with more than one crane or hoist  
Hoisting Personnel  
Lifts involving submerged loads  
Lifts involving multiple or difficult rigging

Lifts with a center of gravity that could change  
The crane will "walk" with load  
Loads  $\geq$  75% of rated capacity of the load chart  
Lifts without the use of outriggers using rubber tire load charts  
Lifts outside the crane operator's view

### A. GENERAL

|                        |                                       |                                     |                   |
|------------------------|---------------------------------------|-------------------------------------|-------------------|
| Project Name & Number: | Contracting Officer's Representative: | Start Date/Time:                    | Finish Date/Time: |
| Crane Owner:           | Crane Lift Location (Area/Building):  | Qualified Person completing permit: |                   |
| Crane Operator:        | Rigger:                               | Phone:                              |                   |
| Phone:                 | Phone:                                |                                     |                   |

### B. LIFT DATA

|                      |  |
|----------------------|--|
| 1. Load Weight:      | 1a. Describe Load and Enter Total Load Weight:<br>_____<br>Estimated Weight: _____ Lbs. Actual Weight: _____ Lbs.<br>1b. Total load weight (block, rigging, jib, etc.) as a percentage of rated load capacity of crane from load chart: _____% |
| 2. Lifting Height:   | Height of Load to be not greater than _____ Feet<br>Maximum Height of Crane Boom / Extension Tip _____ Feet  |
| 3. Operating Radius: | Maximum Radius of Load to be not greater than _____ Feet   |

### C. CRANE DATA & LIFT SET UP

|   |  |
|---|--|
| 1. Crane Manufacturer:  | Crane Manufacturer: _____ Size: _____ Model Number: _____<br>Date of Last Annual Inspection: _____ Inspected by: _____ |
| 2. Verify manufacturer's load chart indicates lifting capacity at stipulated load radius and boom lengths.<br><br>Note: If boom length and/or radius is between the stipulated or posted value on the load chart select the next lesser rating capacity. The next lesser rating capacity may be the next longer or shorter boom length. |  |



## Standard Lift Permit

### D. SPECIAL PRECAUTIONS

- ☐ Lift will not be conducted over an occupied section of a building
- ☐ Blocked exits and building evacuations require an Interim Life Safety Measure (ILSM)
- ☐ Request ILSM from Safety Section minimum of 3 days prior to planned lift
- ☐ Coordinate road blocks or closures with the police and fire services prior to the lift
- ☐ Signal Person required when swing path takes load out of crane operator's view

### E. SUBMITTALS

- ☐ Crane operator license
- ☐ Annual crane inspection
- ☐ Crane lift/load chart showing weight lifted, angle and main boom length
- ☐ Plan view of load location and crane orientation to building(s), swing radius, road closure & barricades.

### F. APPROVALS

*I certify the information contained on this standard lift permit is correct.*

Qualified Person:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### G. LIFT OPERATIONS

Execution of the lift shall be in accordance with OSHA 29 CFR 1926 Subpart CC.



## Standard Lift Permit

### LIFT SUPERVISOR TO COMPLETE THIS CHECKLIST ON THE DAY OF THE LIFT

- ☐ Interim Life Safety Measure (ILSM) obtained from Safety Section as necessary (blocked exits, evacuation, etc.)
- ☐ Lift will not be conducted over an occupied section of a building
- ☐ Crane lift site has traffic and pedestrian controls in place
- ☐ An individual has been designated to observe for obstructions and unauthorized personnel
- ☐ Confirm swing radius has been barricaded and access is limited to authorized personnel
- ☐ Confirm load weight
- ☐ Ensure load hook is directly over the load center of gravity
- ☐ Confirm boom angle, boom length, lift radius, and the crane capacity
- ☐ Ensure outrigger pads are fully extended and blocking is sufficient for the load
- ☐ Ensure tires are clear of the ground and the crane is level
- ☐ Confirm all obstacles and obstructions have been identified
- ☐ Ensure lifts in proximity to power transmission lines comply with OSHA 29 CFR 1926.1407 through 1411
- ☐ Verify a signal method has been determined between the crane operator and the signalman
- ☐ Verify the crane operator meets OSHA qualifications requirements to operate the crane
- ☐ Verify the crane boom is equipped with a safety flag and/or beacon light
- ☐ Verify a "competent person" has inspected all slings, fastenings, and attachments for damage or defects.
- ☐ Verify a "competent person" has inspected all crane safety devices and operational controls prior to and during use to ensure safe operating condition. Any deficiencies shall be repaired prior to continued use
- ☐ Ensure damaged or defective equipment is immediately removed from service
- ☐ Verify all required crane manufacturer operational control procedures are available in the crane cab
- ☐ Verify the all required inspections have been completed.
- ☐ Wind Speed: Crane is equipped with anemometer: ☐ Yes ☐ No  
Lifts when wind speed > 20 mph require reassessment.  
Lifts are not allowed when wind speed exceeds 30 mph

Wind Speed at time of lift: \_\_\_\_mph.



## Standard Lift Permit

An on-site meeting on the day of and prior to the planned lift was conducted with the undersigned.

Lift Supervisor:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Contracting Officer's Representative:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Licensed Crane Operator:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Qualified Rigger:

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### H. PERMIT DURATION

Start Date/Time:

Finish Date/Time:

**SECTION 01 42 19**  
**REFERENCE STANDARDS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies the availability and source of references and standards specified in the project manual under paragraphs APPLICABLE PUBLICATIONS and/or shown on the drawings.

**1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29 (FAR 52.211-1) (AUG 1998)**

- A. The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29 and copies of specifications, standards, and commercial item descriptions cited in the solicitation may be obtained for a fee by submitting a request to - GSA Federal Supply Service, Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.
- B. If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.

**1.3 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-4) (JUN 1988)**

The specifications and standards cited in this solicitation can be examined at the following location:

DEPARTMENT OF VETERANS AFFAIRS  
Office of Construction & Facilities Management  
Facilities Quality Service (00CFM1A)  
425 Eye Street N.W, (sixth floor)  
Washington, DC 20001  
Telephone Numbers: (202) 632-5249 or (202) 632-5178  
Between 9:00 AM - 3:00 PM

**1.4 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-3) (JUN 1988)**

The specifications cited in this solicitation may be obtained from the associations or organizations listed below.

|        |  |
|--------|--|
| AA     | Aluminum Association Inc.<br><a href="http://www.aluminum.org">http://www.aluminum.org</a>   |
| AABC   | Associated Air Balance Council<br><a href="http://www.aabchq.com">http://www.aabchq.com</a>  |
| AAMA   | American Architectural Manufacturer's Association<br><a href="http://www.aamanet.org">http://www.aamanet.org</a>                   |
| AAN    | American Nursery and Landscape Association<br><a href="http://www.anla.org">http://www.anla.org</a>                                |
| AASHTO | American Association of State Highway and Transportation<br>Officials<br><a href="http://www.aashto.org">http://www.aashto.org</a> |
| AATCC  | American Association of Textile Chemists and Colorists<br><a href="http://www.aatcc.org">http://www.aatcc.org</a>                  |
| ACGIH  | American Conference of Governmental Industrial Hygienists<br><a href="http://www.acgih.org">http://www.acgih.org</a>               |
| ACI    | American Concrete Institute<br><a href="http://www.aci-int.net">http://www.aci-int.net</a>   |
| ACPA   | American Concrete Pipe Association<br><a href="http://www.concrete-pipe.org">http://www.concrete-pipe.org</a>                      |
| ACPPA  | American Concrete Pressure Pipe Association<br><a href="http://www.acppa.org">http://www.acppa.org</a>                             |
| ADC    | Air Diffusion Council<br><a href="http://flexibleduct.org">http://flexibleduct.org</a>   |
| AGA    | American Gas Association<br><a href="http://www.aga.org">http://www.aga.org</a>  |



AGC      Associated General Contractors of America  
<http://www.agc.org>

AGMA     American Gear Manufacturers Association, Inc.  
<http://www.agma.org>

AHAM     Association of Home Appliance Manufacturers  
<http://www.aham.org>

AIA      American Institute of Architects  
<http://www.aia.org>

AISC     American Institute of Steel Construction  
<http://www.aisc.org>

AISI     American Iron and Steel Institute  
<http://www.steel.org>

AITC     American Institute of Timber Construction  
<http://www.aitc-glulam.org>

AMCA     Air Movement and Control Association, Inc.  
<http://www.amca.org>

ANLA     American Nursery & Landscape Association  
<http://www.anla.org>

ANSI     American National Standards Institute, Inc.  
<http://www.ansi.org>

APA      The Engineered Wood Association  
<http://www.apawood.org>

ARI      Air-Conditioning and Refrigeration Institute  
<http://www.ari.org>

ASAE     American Society of Agricultural Engineers  
<http://www.asae.org>

ASCE     American Society of Civil Engineers  
<http://www.asce.org>

|        |  |
|--------|--|
| ASHRAE | American Society of Heating, Refrigerating, and<br>Air-Conditioning Engineers<br><a href="http://www.ashrae.org">http://www.ashrae.org</a> |
| ASME   | American Society of Mechanical Engineers<br><a href="http://www.asme.org">http://www.asme.org</a>  |
| ASSE   | American Society of Sanitary Engineering<br><a href="http://www.asse-plumbing.org">http://www.asse-plumbing.org</a>                        |
| ASTM   | American Society for Testing and Materials<br><a href="http://www.astm.org">http://www.astm.org</a>  |
| AWI    | Architectural Woodwork Institute<br><a href="http://www.awinet.org">http://www.awinet.org</a>  |
| AWS    | American Welding Society<br><a href="http://www.aws.org">http://www.aws.org</a>  |
| AWWA   | American Water Works Association<br><a href="http://www.awwa.org">http://www.awwa.org</a>  |
| BHMA   | Builders Hardware Manufacturers Association<br><a href="http://www.buildershardware.com">http://www.buildershardware.com</a>               |
| BIA    | Brick Institute of America<br><a href="http://www.bia.org">http://www.bia.org</a>  |
| CAGI   | Compressed Air and Gas Institute<br><a href="http://www.cagi.org">http://www.cagi.org</a>  |
| CGA    | Compressed Gas Association, Inc.<br><a href="http://www.cganet.com">http://www.cganet.com</a>  |
| CI     | The Chlorine Institute, Inc.<br><a href="http://www.chlorineinstitute.org">http://www.chlorineinstitute.org</a>                            |
| CISCA  | Ceilings and Interior Systems Construction Association<br><a href="http://www.cisca.org">http://www.cisca.org</a>                          |
| CISPI  | Cast Iron Soil Pipe Institute<br><a href="http://www.cispi.org">http://www.cispi.org</a>   |

|       |   |
|-------|---|
| CLFMI | Chain Link Fence Manufacturers Institute<br><a href="http://www.chainlinkinfo.org">http://www.chainlinkinfo.org</a>               |
| CPMB  | Concrete Plant Manufacturers Bureau<br><a href="http://www.cpmc.org">http://www.cpmc.org</a>                                      |
| CRA   | California Redwood Association<br><a href="http://www.calredwood.org">http://www.calredwood.org</a>                               |
| CRSI  | Concrete Reinforcing Steel Institute<br><a href="http://www.crsi.org">http://www.crsi.org</a>                                     |
| CTI   | Cooling Technology Institute<br><a href="http://www.cti.org">http://www.cti.org</a>   |
| DHI   | Door and Hardware Institute<br><a href="http://www.dhi.org">http://www.dhi.org</a>  |
| EGSA  | Electrical Generating Systems Association<br><a href="http://www.egsa.org">http://www.egsa.org</a>                                |
| EEI   | Edison Electric Institute<br><a href="http://www.eei.org">http://www.eei.org</a>  |
| EPA   | Environmental Protection Agency<br><a href="http://www.epa.gov">http://www.epa.gov</a>  |
| ETL   | ETL Testing Laboratories, Inc.<br><a href="http://www.etl.com">http://www.etl.com</a>   |
| FAA   | Federal Aviation Administration<br><a href="http://www.faa.gov">http://www.faa.gov</a>  |
| FCC   | Federal Communications Commission<br><a href="http://www.fcc.gov">http://www.fcc.gov</a>  |
| FPS   | The Forest Products Society<br><a href="http://www.forestprod.org">http://www.forestprod.org</a>                                  |
| GANA  | Glass Association of North America<br><a href="http://www.cssinfo.com/info/gana.html/">http://www.cssinfo.com/info/gana.html/</a> |
| FM    | Factory Mutual Insurance<br><a href="http://www.fmglobal.com">http://www.fmglobal.com</a>   |

|        |  |
|--------|--|
| GA     | Gypsum Association<br><a href="http://www.gypsum.org">http://www.gypsum.org</a>  |
| GSA    | General Services Administration<br><a href="http://www.gsa.gov">http://www.gsa.gov</a>   |
| HI     | Hydraulic Institute<br><a href="http://www.pumps.org">http://www.pumps.org</a>   |
| HPVA   | Hardwood Plywood & Veneer Association<br><a href="http://www.hpva.org">http://www.hpva.org</a>   |
| ICBO   | International Conference of Building Officials<br><a href="http://www.icbo.org">http://www.icbo.org</a>                                    |
| ICEA   | Insulated Cable Engineers Association Inc.<br><a href="http://www.icea.net">http://www.icea.net</a>  |
| \ICAC  | Institute of Clean Air Companies<br><a href="http://www.icac.com">http://www.icac.com</a>  |
| IEEE   | Institute of Electrical and Electronics Engineers<br><a href="http://www.ieee.org/">http://www.ieee.org/</a>                               |
| IMSA   | International Municipal Signal Association<br><a href="http://www.imsasafety.org">http://www.imsasafety.org</a>                            |
| IPCEA  | Insulated Power Cable Engineers Association  |
| NBMA   | Metal Buildings Manufacturers Association<br><a href="http://www.mbma.com">http://www.mbma.com</a>   |
| MSS    | Manufacturers Standardization Society of the Valve and Fittings Industry Inc.<br><a href="http://www.mss-hq.com">http://www.mss-hq.com</a> |
| NAAMM  | National Association of Architectural Metal Manufacturers<br><a href="http://www.naamm.org">http://www.naamm.org</a>                       |
| NAPHCC | Plumbing-Heating-Cooling Contractors Association<br><a href="http://www.phccweb.org.org">http://www.phccweb.org.org</a>                    |
| NBS    | National Bureau of Standards<br>See - NIST   |

NBBPVI    National Board of Boiler and Pressure Vessel Inspectors  
<http://www.nationboard.org>

NEC        National Electric Code  
            See - NFPA National Fire Protection Association

NEMA       National Electrical Manufacturers Association  
<http://www.nema.org>

NFPA       National Fire Protection Association  
<http://www.nfpa.org>

NHLA       National Hardwood Lumber Association  
<http://www.natlhardwood.org>

NIH        National Institute of Health  
<http://www.nih.gov>

NIST       National Institute of Standards and Technology  
<http://www.nist.gov>

NLMA       Northeastern Lumber Manufacturers Association, Inc.  
<http://www.nelma.org>

NPA        National Particleboard Association  
            18928 Premiere Court  
            Gaithersburg, MD 20879  
            (301) 670-0604

NSF        National Sanitation Foundation  
<http://www.nsf.org>

NWWDA     Window and Door Manufacturers Association  
<http://www.nwwda.org>

OSHA       Occupational Safety and Health Administration  
            Department of Labor  
<http://www.osha.gov>

PCA        Portland Cement Association  
<http://www.portcement.org>

|        |  |
|--------|--|
| PCI    | Precast Prestressed Concrete Institute<br><a href="http://www.pci.org">http://www.pci.org</a>  |
| PPI    | The Plastic Pipe Institute<br><a href="http://www.plasticpipe.org">http://www.plasticpipe.org</a>  |
| PEI    | Porcelain Enamel Institute, Inc.<br><a href="http://www.porcelainenamel.com">http://www.porcelainenamel.com</a>                                      |
| PTI    | Post-Tensioning Institute<br><a href="http://www.post-tensioning.org">http://www.post-tensioning.org</a>   |
| RFCI   | The Resilient Floor Covering Institute<br><a href="http://www.rfci.com">http://www.rfci.com</a>  |
| RIS    | Redwood Inspection Service<br>See - CRA  |
| RMA    | Rubber Manufacturers Association, Inc.<br><a href="http://www.rma.org">http://www.rma.org</a>  |
| SCMA   | Southern Cypress Manufacturers Association<br><a href="http://www.cypressinfo.org">http://www.cypressinfo.org</a>                                    |
| SDI    | Steel Door Institute<br><a href="http://www.steeldoor.org">http://www.steeldoor.org</a>  |
| SOI    | Secretary of the Interior<br><br><a href="http://www.cr.nps.gov/local-law/arch_stnds_8_2.htm">http://www.cr.nps.gov/local-law/arch_stnds_8_2.htm</a> |
| IGMA   | Insulating Glass Manufacturers Alliance<br><a href="http://www.igmaonline.org">http://www.igmaonline.org</a>   |
| SJI    | Steel Joist Institute<br><a href="http://www.steeljoist.org">http://www.steeljoist.org</a>   |
| SMACNA | Sheet Metal and Air-Conditioning Contractors<br>National Association, Inc.<br><a href="http://www.smacna.org">http://www.smacna.org</a>              |
| SSPC   | The Society for Protective Coatings<br><a href="http://www.sspc.org">http://www.sspc.org</a>   |

STI      Steel Tank Institute  
<http://www.steeltank.com>

SWI      Steel Window Institute  
<http://www.steelwindows.com>

TCA      Tile Council of America, Inc.  
<http://www.tileusa.com>

TEMA      Tubular Exchange Manufacturers Association  
<http://www.tema.org>

TPI      Truss Plate Institute, Inc.  
583 D'Onofrio Drive; Suite 200  
Madison, WI 53719  
(608) 833-5900

UBC      The Uniform Building Code  
See ICBO

UL      Underwriters' Laboratories Incorporated  
<http://www.ul.com>

ULC      Underwriters' Laboratories of Canada  
<http://www.ulc.ca>

WCLIB      West Coast Lumber Inspection Bureau  
6980 SW Varns Road, P.O. Box 23145  
Portland, OR 97223  
(503) 639-0651

WRCLA      Western Red Cedar Lumber Association  
P.O. Box 120786  
New Brighton, MN 55112  
(612) 633-4334

WWPA      Western Wood Products Association  
<http://www.wwpa.org>

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**SECTION 01 57 19**  
**TEMPORARY ENVIRONMENTAL CONTROLS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies the control of environmental pollution and damage that the Contractor must consider for air, water, and land resources. It includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.
- B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
  - 1. Adversely effect human health or welfare,
  - 2. Unfavorably alter ecological balances of importance to human life,
  - 3. Effect other species of importance to humankind, or;
  - 4. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- C. Definitions of Pollutants:
  - 1. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
  - 2. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
  - 3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
  - 4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
  - 5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.
  - 6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.



7. Sanitary Wastes:

- a. Sewage: Domestic sanitary sewage and human and animal waste.
- b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

**1.2 QUALITY CONTROL**

- A. Establish and maintain quality control for the environmental protection of all items set forth herein.
- B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

**1.3 REFERENCES**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. U.S. National Archives and Records Administration (NARA):  
33 CFR 328.....Definitions

**1.4 SUBMITTALS**

- A. In accordance with Section, 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
  - 1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the COR to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, the Contractor shall prepare and submit to the COR and the Contracting Officer for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
    - a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
    - b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
    - c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
    - d. Description of the Contractor's environmental protection personnel training program.
    - e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's

proposed operations and the requirements imposed by those laws, regulations, and permits.

- f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
  - g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.
  - h. Permits, licenses, and the location of the solid waste disposal area.
  - i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the District Office of the U.S. Soil Conservation Service and the Department of Veterans Affairs.
  - j. Environmental Monitoring Plans for the job site including land, water, air, and noise.
  - k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.
- B. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

#### **1.5 PROTECTION OF ENVIRONMENTAL RESOURCES**

- A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the specifications and drawings.
- B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the COR. Do not fasten or attach ropes, cables, or guys to trees for

anchorage unless specifically authorized, or where special emergency use is permitted.

1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
  - a. Box and protect from damage existing trees and shrubs to remain on the construction site.
  - b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
  - c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
3. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
4. Temporary Protection of Disturbed Areas: Construct diversion ditches, benches, and berms to retard and divert runoff from the construction site to protected drainage areas approved under paragraph 208 of the Clean Water Act.
  - a. Reuse or conserve the collected topsoil sediment as directed by the COR. Topsoil use and requirements are specified in Section 31 20 00, EARTH MOVING.
  - b. Institute effluent quality monitoring programs as required by Federal, State, and local environmental agencies.
5. Erosion and Sedimentation Control Devices: The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's activities. Construct or install all temporary and permanent erosion and sedimentation control features. Maintain temporary erosion and sediment control measures such as berms, dikes,

- drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.
6. Manage borrow areas on Government property to minimize erosion and to prevent sediment from entering nearby water courses or lakes.
  7. Manage and control spoil areas on and off Government property to limit spoil and prevent erosion of soil or sediment from entering nearby water courses or lakes.
  8. Protect adjacent areas from despoilment by temporary excavations and embankments.
  9. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule. Transport all solid waste off Government property and dispose of waste in compliance with Federal, State, and local requirements.
  10. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
  11. Handle discarded materials other than those included in the solid waste category as directed by the COR.
- C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
  2. Control movement of materials and equipment at stream crossings during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
  3. Monitor water areas affected by construction.
- D. Protection of Fish and Wildlife Resources: Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife. Prior to beginning construction operations, list species that require specific attention along with measures for their protection.
- E. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air

resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State of Wisconsin and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency, for those construction operations and activities specified.

1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
  2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
  3. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
  4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the COR. Maintain noise-produced work at or below the decibel levels and within the time periods specified.
1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 6:00 p.m unless otherwise permitted by local ordinance or the COR. Repetitive impact noise on the property shall not exceed the following dB limitations:

| Time Duration of Impact Noise       | Sound Level in dB |
|-------------------------------------|-------------------|
| More than 12 minutes in any hour    | 70                |
| Less than 30 seconds of any hour    | 85                |
| Less than three minutes of any hour | 80                |
| Less than 12 minutes of any hour    | 75                |
  2. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract, consisting of, but not limited to, the following:

- a. Use shields or other physical barriers to restrict noise transmission.
  - b. Provide soundproof housings or enclosures for noise-producing machinery.
  - c. Use efficient silencers on equipment air intakes.
  - d. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
  - e. Line hoppers and storage bins with sound deadening material.
  - f. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
3. Where core-drilling or other loud, sound producing work is performed within the building, coordinate such events with the COR 48 hours in advance so arrangements can be made with VA personnel within the facility if required.
- G. Restoration of Damaged Property: If any direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no additional cost to the Government. Repair, rebuild, or restore property as directed or make good such damage in an acceptable manner.
- H. Final Clean-up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the COR. Cleaning shall include off the station disposal of all items and materials not required to be salvaged, as well as all debris and rubbish resulting from demolition and new work operations.

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**SECTION 01 58 16**  
**TEMPORARY INTERIOR SIGNAGE**

**PART 1 GENERAL**

**DESCRIPTION**

This section specifies temporary interior signs.

**PART 2 PRODUCTS**

**2.1 TEMPORARY SIGNS**

- A. Fabricate from 50 Kg (110 pound) mat finish white paper.
- B. Cut to 100 mm (4-inch) wide by 300 mm (12 inch) long size tag.
- C. Punch 3 mm (1/8-inch) diameter hole centered on 100 mm (4-inch) dimension of tag. Edge of Hole spaced approximately 13 mm (1/2-inch) from one end on tag.
- D. Reinforce hole on both sides with gummed cloth washer or other suitable material capable of preventing tie pulling through paper edge.
- E. Ties: Steel wire 0.3 mm (0.0120-inch) thick, attach to tag with twist tie, leaving 150 mm (6-inch) long free ends.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Install temporary signs attached to room door frame or room door knob, lever, or pull for doors on corridor openings.
- B. Mark on signs with felt tip marker having approximately 3 mm (1/8-inch) wide stroke for clearly legible numbers or letters.
- C. Identify room with numbers as designated on floor plans.

**3.2 LOCATION**

- A. Install on doors that have room, corridor, and space numbers shown.
- B. Doors that do not require signs are as follows:
  - 1. Corridor barrier doors (cross-corridor) in corridor with same number.
  - 2. Folding doors or partitions.
  - 3. Toilet or bathroom doors within and between rooms.
  - 4. Communicating doors in partitions between rooms with corridor entrance doors.
  - 5. Closet doors within rooms.
- C. Replace missing, damaged, or illegible signs.

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**SECTION 01 74 19**  
**CONSTRUCTION WASTE MANAGEMENT**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Contractor is required to restore all finishes, surfaces, items, & materials as required accommodating new finishes. For example, if wall paper, vinyl wall covering, ceramic wall tile, etc. is existing on wall, and new wall finish calls for wall to be painted, contractor is required to remove existing wall paper, vinyl wall covering, ceramic wall tile, etc. to accommodate new painted finish. These surfaces are required to be verified prior to bid, as no change to contract will be provided after award if existing finishes are clearly present.
- C. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- D. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
  - 1. Waste Management Plan development and implementation.
  - 2. Techniques to minimize waste generation.
  - 3. Sorting and separating of waste materials.
  - 4. Salvage of existing materials and items for reuse or resale.
  - 5. Recycling of materials that cannot be reused or sold.
- E. At a minimum the following waste categories shall be diverted from landfills:
  - 1. Soil.
  - 2. Inerts (eg, concrete, masonry and asphalt).
  - 3. Clean dimensional wood and palette wood.
  - 4. Green waste (biodegradable landscaping materials).
  - 5. Engineered wood products (plywood, particle board and I-joists, etc).
  - 6. Metal products (eg, steel, wire, beverage containers, copper, etc).
  - 7. Cardboard, paper and packaging.
  - 8. Bitumen roofing materials.



9. Plastics (eg, ABS, PVC).
10. Carpet and/or pad.
11. Gypsum board.
12. Insulation.
13. Paint.
14. Fluorescent lamps.

## **1.2 RELATED WORK**

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.

## **1.3 QUALITY ASSURANCE**

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction Demolition waste includes products of the following:
  1. Excess or unusable construction materials.
  2. Packaging used for construction products.
  3. Poor planning and/or layout.
  4. Construction error.
  5. Over ordering.
  6. Weather damage.
  7. Contamination.
  8. Mishandling.
  9. Breakage.
- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to recycle construction and demolition waste to a minimum of 50 percent.
- D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.
- E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole

Building Design Guide website <http://www.wbdg.org/tools/cwm.php> provides a Construction Waste Management Database that contains information on companies that haul, collect, and process recyclable debris from construction projects.

- F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.
- G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.
- H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

#### **1.4 TERMINOLOGY**

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.
- B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.
- C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.
- D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.
- E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.

- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.
- K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.
- L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
  - 1. On-site Recycling - Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
  - 2. Off-site Recycling - Materials hauled to a location and used in an altered form in the manufacture of new products.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.
- N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- O. Return: To give back reusable items or unused products to vendors for credit.
- P. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.
- R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto

other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

#### **1.5 SUBMITTALS**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:
- B. Prepare and submit to the COR a written demolition debris management plan. The plan shall include, but not be limited to, the following information:
  - 1. Procedures to be used for debris management.
  - 2. Techniques to be used to minimize waste generation.
  - 3. Analysis of the estimated job site waste to be generated:
    - a. List of each material and quantity to be salvaged, reused, recycled.
    - b. List of each material and quantity proposed to be taken to a landfill.
  - 4. Detailed description of the Means/Methods to be used for material handling.
    - a. On site: Material separation, storage, protection where applicable.
    - b. Off site: Transportation means and destination. Include list of materials.
      - 1) Description of materials to be site-separated and self-hauled to designated facilities.
      - 2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
    - c. The names and locations of mixed debris reuse and recycling facilities or sites.
    - d. The names and locations of trash disposal landfill facilities or sites.
    - e. Documentation that the facilities or sites are approved to receive the materials.
- C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.
- D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

## **1.6 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.
- B. U.S. Green Building Council (USGBC):  
LEED Green Building Rating System for New Construction

## **1.7 RECORDS**

- A. Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.
- B. Separate out materials and recycle them. Submit report from construction and demolition "recycle" facility. One such facility that can/has been used is the Waste Management C&D Recycling facility (formerly City Wide Recycling), 10700 West Brown Deer Road, Milwaukee, WI, 53224. Phone number is (414) 355 - 6500. Plant manager is Mike Miller. This Waste Management facility will give contractor estimated weight of recycled materials including LEED report identifying drywall, inert materials (bricks, concrete, etc.), metals, old cardboard, wood recycled and the approximate amount of materials that cannot be recycled --- which is then landfilled. Other facilities offering similar reporting and methods can be proposed by Contractor.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. List of each material and quantity to be salvaged, recycled, reused.
- B. List of each material and quantity proposed to be taken to a landfill.
- C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

## **PART 3 - EXECUTION**

### **3.1 COLLECTION**

- A. Provide all necessary containers, bins and storage areas to facilitate effective waste management. GC is responsible for providing a dumpster for the project. Coordinate location of dumpster with the COR prior to mobilization and indicate location on Debris Management Plan.

- B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
- C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

### **3.2 DISPOSAL**

- A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
- B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

### **3.3 REPORT**

- A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.
- B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.
- C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

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## **Introduction.**

This site based **Construction Waste Management Plan** has been developed to manage the non-hazardous building construction and demolition waste by diverting waste from the landfills through salvaging, recycling, or reusing building materials for the Department of Veterans Affairs during construction activities. The Construction Waste Management Plan has been designed to establish records to quantify construction and demolition debris diversion and disposal. Based on the work that is scheduled to be part of the contract and the engineering practices to be implemented in conjunction with the work, every effort is being made to protect the people, assets, and the environment of the Department of Veterans Affairs.

## **Contents.**

### ORGANIZATION AND RESPONSIBILITIES

- Job Site Superintendent
- General Contractor
- All Other On-site Personnel
- Construction/Renovation Area

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### PERSONNEL

### WASTE MANAGEMENT GOALS

### PLAN IMPLEMENTATION, OVERSIGHT & ENFORCEMENT

### MEETINGS & COMMUNICATION

### SITE ASSESSMENT DISPOSAL AND HANDLING

### WASTE AUDITING PROCEDURES

### WASTE MANAGEMENT DOCUMENTATION

### **Personnel Organization and Responsibilities.**

This construction project has been authorized by and is under the supervision of the Department of Veterans Affairs, Milwaukee, WI.

**Job Site Superintendent:** [Superintendent Name] will be the on-site employee responsible for the implementation and enforcement of the Construction Waste Management Plan and is so delegated by [Prime Contractor Name].

**Prime Contractor:** [Prime Contractor Name] will oversee the work of all construction staff and subcontractors. The Contractor will be responsible for instituting the measures as outlined in this Construction Waste Management Plan and ensuring their effectiveness.

**All Other On-site Personnel:** All other on-site construction personnel, including all subcontractors, will be responsible for adhering to the Construction Waste Management Plan as established by [Prime Contractor Name] as well as any additional practices, laws, and regulations for ensuring a safe work environment.

**Construction/Renovation Area:** The work will take place at the Department of Veterans Affairs Medical Center, Milwaukee Wisconsin. The main construction area is contained at the [Contract Location] as shown on the drawings.

### **Site Description.**

The worksite is an enclosed steel, concrete and masonry building structure.

### **Personnel.**

As required in Specification Section 01 74 19 Construction Waste Management: All construction workers will be aware of the Construction Waste Management Plan through the project's Pre-Construction Meeting as well as the Project Kick-Off Meeting conducted by [Prime Contractor Name]. The meetings will consist of the information contained in this Construction Waste Management Plan, including, but not limited to; the construction limits, waste management goals, plan implementation, oversight and enforcement, meetings and communication, documentation, site assessment-expected wastes, disposal and handling, trade contractor waste management plan, waste management progress report, and work area limits, as well as the safety guidelines of the VA. Upon completing this briefing [Superintendent Name] will enforce the Construction Waste Management Plan throughout the life of the project. Weekly contractor meetings will include the Construction Waste Management Plan as well as the Environmental Protection Plan in section 01 57 19 to ensure new and all workers onsite are aware of the requirements and procedures.

### **Waste Management Goals.**

This Construction Waste Management Plan is the responsibility of the Prime Contractor and to be enforced for all subcontractors by the Prime Contractor. By effectively managing this Construction Waste Management Plan, [Prime Contractor Name] will recycle or salvage (for reuse) all feasible materials to a minimum of **50 percent by weight**.

The Waste Management Plan outlines the expected wastes to be confronted on site, means of disposal and handling methods, and required documentation. The [Prime Contractor Name] will provide non hazardous waste manifest identifying weight of all waste generated per delivery (dumpster)

This Construction Waste Management Plan is in conjunction with specification section 01 74 19 Construction Waste Management.



**[Prime Contractor Name]** will monitor, implement, and document this plan throughout the construction of this project. Monitoring of on-site compliance with this plan will be performed by the **[Prime Contractor Name]** Superintendents on a daily basis. During demolition, the demolition contractor will provide one metal scrap dumpster and one mixed waste dumpster that will be used for all materials. The metal dumpster will be taken by **[Demolition Subcontractor Name, Address]** for recycling. The mixed waste dumpster will be taken to **[Company 1 Name, address]**, where it will be sorted and separated for recycling. Any non-recyclable material will be sent to landfill. Recyclable material will be weighed and recorded by **[Company 1 Name, address]**. During reconstruction there will be one dumpster provided for mixed waste. The mixed waste dumpster will be taken to **[Company 2 Name]**, where it will be sorted and separated for recycling. Records will be provided in accordance with LEED Reference Guide and LEED Template. The reports will be submitted monthly.

### **Meetings and Communication.**

Each and every trade contractor and subcontractor will be required to attend a Pre-Construction Meeting and Project Kick-Off Meeting. New construction personnel that are unable to attend are required to attend a brief safety meeting that will include a construction waste training session before being allowed to work on the site. Further, the Demolition Debris Management Plan will be on the agenda at regular construction meetings to update the project team on the status of **[Prime Contractor Name]** goals for diverted waste and what measures may need to be implemented if these goals are not being met.

### **SITE ASSESSMENT- DISPOSAL & HANDLING**

Contractor to provide dumpsters for processing recyclables and waste; Examples are: 1) Concrete materials; 2) Metal; 3) mixed waste All of these to be sorted at landfill site or recycling facility.

Upon approval, **[Prime Contractor Name]** will use the VA-provided cardboard dumpster for all cardboard materials.

The following table lists expected wastes on this project, their disposal method, and handling procedures:

#### **Hauler:**

**[Company Name, Contact, Address]**

#### **Recycling:**

**[Company Name, Contact, Address]**

| Item         | Disposal method  | Handling Procedure                         | Destination/Recipient                      |
|--------------|------------------|--|--|
| Masonry      | Recycle          | Place in concrete dumpster                 | ACME WASTE, INC.                           |
| Concrete     | Recycle          | Place in concrete dumpster                 | ACME WASTE, INC.                           |
| Scrap Metals | Recycle          | Place in Metal dumpster                    | ACME WASTE, INC.                           |
| Cardboard    | Recycle or reuse | Minimal packaging where possible, or place | VA-provided cardboard dumpster (permission |

## Attachment A – Sample Construction Waste Management Plan

|                            |                 |  |                            |
|----------------------------|-----------------|--|----------------------------|
|                            |                 | in cardboard dumpster  | required)                  |
| Drywall                    | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Wood (clean)               | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Plumbing Fixtures          | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Glass                      | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Plastics (noncontaminated) | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Plastics (contaminated)    | Landfill        | Place in mixed dumpster  | ACME WASTE, INC.           |
| Ceiling Tile               | Recycle         | Place in mixed dumpster  | ACME WASTE, INC.           |
| Wiring                     | Recycle/Salvage | Electrician will reuse or recycle                                      | [Trade Subcontractor Name] |
| Light Fixtures             | Recycle/Salvage | Electrician will reuse, salvage, or recycle                            | [Trade Subcontractor Name] |
| Lamps (Universal Waste)    | Recycle/Salvage | Electrician will reuse, salvage, or recycle                            | [Trade Subcontractor Name] |
| Ballasts                   | Recycle/Salvage | Electrician will reuse, salvage, or recycle                            | [Trade Subcontractor Name] |
| Carpet                     | Recycle         | Carpet Subcontractor place in mixed dumpster or recycle                | [Company Name]             |
| Inerts                     | Recycle         | Place in Concrete Dumpster   | [Company Name]             |
| Soil                       | Reuse           | Reuse throughout project   | [Contractor Name]          |
| All Other Wastes           | Landfill        | Reduce waste where possible, research recycling or reuse opportunities | [Company Name]             |

### **Waste Auditing.**

All subcontractors are responsible for daily site cleanup and ensuring that all recycling containers are kept free of contamination. **[Prime Contractor Name]** representatives shall be responsible for daily checks of trash and recycling containers to check for and ensure the removal of contamination. Violators will be required to re-sort any misplaced waste and, if the problem continues, pay the cost of **[Prime Contractor Name]** time to sort recyclables from the trash. **[Prime Contractor Name]** representatives shall be responsible for contacting haulers for collection service.

### **Documentation.**

Documentation of the waste management plan will consist of the following:

1. Records will be provided in accordance with LEED Reference Guide and LEED Template.

## Attachment A – Sample Construction Waste Management Plan

2. Records will include the amount of material salvaged, recycled and re-used.
3. Records will include a list of materials taken to the landfill.
4. Material tracking data shall be provided indicating receiving parties, dates, weight tickets, tipping fees, manifests and the total resulting cost or savings.

The quantities in the report will be updated by **[Prime Contractor Name]** based on information provided by each Trade Contractor and the independent hauler under contract to provide the metal dumpsters. Each Trade Contractor shall be responsible for providing the following documentation for any waste generated on site that is not deposited in the dumpsters provided by **[Prime Contractor Name]**.

1. A record of the type and quantity (by weight) of each material salvaged, reused, recycled, or disposed in a manner other than that provided by **[Prime Contractor Name]** through their independent hauler.
2. Disposal receipts: Provide copies of all receipts issued by a disposal facility for CDL waste that is disposed in a landfill.
3. Recycling Receipts: Provide copies of all receipts issued by an approved recycling facility.
4. Salvaged materials document: types and quantities (by weight) for materials salvaged for reuse on site, sold, or donated to a third party.

This documentation will then be compiled by **[Prime Contractor Name]** in monthly waste tracking reports.

Date: \_\_\_\_\_

Project Contractor: \_\_\_\_\_

[illegible]

Project Name: \_\_\_\_\_  
 COR: \_\_\_\_\_  
 Date: \_\_\_\_\_

Location: \_\_\_\_\_

Project Contractor: \_\_\_\_\_

**KEY:**

**( R ) = Recycled Content**

**(ES) = Energy Star**

**(BP) = Biobased Product**

**(FEMP) = FEMP-Designated Product**

Product: What specific product was purchased?

"Green" Content: What makes it green? % recycled, biobased, energy star, etc.

| Material  | Product | "Green" Content | Manufacturer | Comments |
|---|---------|-----------------|--------------|----------|
| Appliances ( R )                                      |         |                 |              |          |
| Bathroom Fixtures ( R )                               |         |                 |              |          |
| Building Insulation (R,ES)                            |         |                 |              |          |
| Cement and Concrete ( R )                             |         |                 |              |          |
| Composite panels (BP)                                 |         |                 |              |          |
| Doors and skylights (ES)                              |         |                 |              |          |
| Floor tiles (R)                                       |         |                 |              |          |
| Laminated paperboard (R)                              |         |                 |              |          |
| Structural fiberboard                                 |         |                 |              |          |
| Roofing materials (R, BP, ES)                         |         |                 |              |          |
| Windows (ES)  |         |                 |              |          |
| Office furniture                                      |         |                 |              |          |
| Carpet (R)  |         |                 |              |          |
| Carpet cushion (R)                                    |         |                 |              |          |
| Compact fluorescent lamps (CFLs) (ES)                 |         |                 |              |          |
| Decorative light strings (ES)                         |         |                 |              |          |
| Downlight luminaires (FEMP)                           |         |                 |              |          |
| Fluorescent ballasts (FEMP)                           |         |                 |              |          |
| Fluorescent luminaires (FEMP)                         |         |                 |              |          |
| Fluorescent tube lamps (FEMP)                         |         |                 |              |          |
| LED lighting  |         |                 |              |          |
| Light fixtures (ES)                                   |         |                 |              |          |
| Lighting controls (FEMP)                              |         |                 |              |          |
| Mats (R)  |         |                 |              |          |
| Paint -- consolidated latex paint (R)                 |         |                 |              |          |
| Paint -- reprocessed latex paint (R)                  |         |                 |              |          |
| Bike racks (R)  |         |                 |              |          |
| Plastic fencing (R)                                   |         |                 |              |          |
| Signage (R)   |         |                 |              |          |
| Adhesive and Mastic Removers (BP)                     |         |                 |              |          |
| Carpet and Upholstery Cleaners - General Purpose (BP) |         |                 |              |          |
| Carpet and Upholstery Cleaners - Spot Removers (BP)   |         |                 |              |          |
| Dust Suppressants (BP)                                |         |                 |              |          |
| Floor Strippers (BP)                                  |         |                 |              |          |
| Graffiti and Grease Removers (BP)                     |         |                 |              |          |
| Sorbents (BP)   |         |                 |              |          |
| Mats (R)  |         |                 |              |          |
| Wood and concrete sealers (BP)                        |         |                 |              |          |

**SECTION 02 41 00**  
**DEMOLITION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

This section specifies demolition and removal of buildings, portions of buildings, utilities, other structures and debris from trash dumps shown.

**1.2 RELATED WORK:**

- A. Safety Requirements: Section 01 35 26 Safety Requirements Article, ACCIDENT PREVENTION PLAN (APP).
- B. Disconnecting utility services prior to demolition: Section 01 00 00, GENERAL REQUIREMENTS.
- C. Reserved items that are to remain the property of the Government: Section 01 00 00, GENERAL REQUIREMENTS.
- D. Environmental Protection: Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- E. Construction Waste Management: Section 017419 CONSTRUCTION WASTE MANAGEMENT.
- F. Infectious Control: Section 01 00 00, GENERAL REQUIREMENTS, Article 1.7, INFECTION PREVENTION MEASURES.

**1.3 PROTECTION:**

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations. Comply with requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS.
- C. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.
- D. Provide enclosed dust chutes with control gates from each floor to carry debris to truck beds and govern flow of material into truck.

Provide overhead bridges of tight board or prefabricated metal construction at dust chutes to protect persons and property from falling debris.

- E. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily.
- F. In addition to previously listed fire and safety rules to be observed in performance of work, include following:
1. No wall or part of wall shall be permitted to fall outwardly from structures.
  2. Maintain at least one stairway in each structure in usable condition to highest remaining floor. Keep stairway free of obstructions and debris until that level of structure has been removed.
  3. Wherever a cutting torch or other equipment that might cause a fire is used, provide and maintain fire extinguishers nearby ready for immediate use. Instruct all possible users in use of fire extinguishers.
  4. Keep hydrants clear and accessible at all times. Prohibit debris from accumulating within a radius of 4500 mm (15 feet) of fire hydrants.
- G. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the Medical Center; any damaged items shall be repaired or replaced as approved by the COR. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works. Repairs, reinforcement, or structural replacement must have COR's approval.

H. The work shall comply with the requirements of Section 01 57 19,  
TEMPORARY ENVIRONMENTAL CONTROLS.

I. The work shall comply with the requirements of Section 01 00 00,  
GENERAL REQUIREMENTS, Article 1.7 INFECTION PREVENTION MEASURES.

**1.4 UTILITY SERVICES:**

A. Demolish and remove outside utility service lines shown to be removed.

B. Remove abandoned outside utility lines that would interfere with  
installation of new utility lines and new construction.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

**3.1 DEMOLITION:**

A. Debris, including brick, concrete, stone, metals and similar materials shall become property of Contractor and shall be disposed of by him daily, off the Medical Center to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the COR. Break up concrete slabs below grade that do not require removal from present location into pieces not exceeding 600 mm (24 inches) square to permit drainage. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.

B. Remove and legally dispose of all materials, other than earth to remain as part of project work, from any trash dumps shown. Materials removed shall be hauled to VA specified disposal site. All materials in the indicated trash dump areas, including above surrounding grade and extending to a depth of 1500mm (5feet) below surrounding grade, shall be included as part of the lump sum compensation for the work of this section. Materials that are located beneath the surface of the surrounding ground more than 1500 mm (5 feet), or materials that are discovered to be hazardous, shall be handled as unforeseen. The removal of hazardous material shall be referred to Hazardous Materials specifications.

C. Remove existing utilities as indicated or uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the COR. When Utility lines are encountered that are not indicated on the drawings, the COR shall be notified prior to further work in that area.



**3.2 CLEAN-UP:**

On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to COR. Clean-up shall include off the Medical Center disposal of all items and materials not required to remain property of the Government as well as all debris and rubbish resulting from demolition operations.

- - - E N D - - -

**SECTION 02 42 00**  
**CUTTING, REMOVAL, DEMOLITION, RESTORATION AND PATCHING**

**11/2015**

**PART 1 GENERAL**

**1.1 SCOPE:**

- A. Refer to SECTION 01 00 00 for special requirements, protection, constraints, timing of work, scheduling of work, enclosures and similar requirements relating to this section.
- B. This section covers cutting, demolition, removal work, patching, leveling and restoration work as necessary to accomplish and complete all work under this contract, including any relocation or reuse of existing materials, equipment, systems, or other work, as well as the disposition of salvaged materials or debris. This Section applies to all work under this contract, including general construction, mechanical and electrical work.
- C. Contractor and his subcontractors shall examine the spaces/work site themselves to determine the actual conditions and requirements. All removals, demolition, cutting, restoration, new installations and other work shall be accomplished to transform the existing spaces and conditions to the new conditions required under the Contract, as well as to accomplish all tie-in work of new to existing.
- D. It is the intent that, unless specifically shown on the schedules, or is inherent in the work to be accomplished under the general construction work of the area, that each contractor shall perform the demolition, cutting, removals, relocations, patching and leveling, and restoration as will be required to accomplish the work under their contracts. All work indicated on the schedules shall be accomplished by the General Contractor.
- E. Except for general demolition of entire areas, it is the intent that at each area or space the contractor and each subcontractor shall make removals, perform cutting or demolition and accomplish relocations of work normal to his trade (i.e., Mechanical Contractor removes or relocates piping, ductwork and similar. At areas of general demolition of entire area spaces, the Mechanical Contractor shall make removals normal to their trade or may be called for, for reuse or relocation, make any relocations and cutoffs, terminate, or otherwise discontinue services that will be abandoned, shall be removed to the nearest active main. The general contractor shall then demolish or remove all unwanted electrical or mechanical materials, items or elements in the area.
- F. Contractor is required to restore all finishes, surfaces, items, & materials as required to accommodate new finishes. For example, if wall paper, vinyl wall covering, ceramic wall tile, etc. is existing on wall, and new wall finish calls for wall to be painted, contractor is required to remove existing wall paper, vinyl wall covering, ceramic wall tile, etc. to accommodate new painted finish. These surfaces are required to be verified prior to bid, as no change to contract will be provided after award if existing finishes are clearly present.

## PART 2: MATERIALS

### 2.1 SALVAGEABLE MATERIALS TO BE STORED BY OWNER (VA):

- A. The owner shall mark or tag existing materials, equipment or other items that are to be retained during a pre-demolition walk through. Salvageable materials and items designated or marked to remain the property of the government shall be carefully removed by applicable trades, protected from damage and stored adjacent to the removal area as directed.
- B. Consult the Project Manager concerning any possible salvageable items prior to demolition thereof. Carefully remove and salvage any materials designated to be retained.
- C. Any materials not wanted by the government shall be removed from the site by the contractor, without additional cost to the government.
- D. Removal from the area and the site to the government's storage area shall be by the contractor.

## PART 3 EXECUTION:

### 3.1 TEMPORARY PROTECTION:

- A. Provide temporary bracing, shoring, needling and support during demolition, cutting, remodeling and related new construction necessary for the execution of the work and the protection of persons and property. Perform all work with appropriate supports, protection and methods to prevent collapse, settling or damage to property or persons. Provide adequate supports for the loads to be carried, with loads properly distributed, and including to lower levels and sound bearing, if necessary.
- B. Provide protective covering and enclosures necessary to prevent damage to existing spaces and materials to remain.
- C. Provide dust proof temporary enclosures (including above ceilings) separating areas under demolition and remodeling from the remainder of the buildings as well as temporary filters at ductwork. If work produces fumes or odors that impact patient care or staff operations, granulated active carbon filters shall be provided for all HVAC intake units where operations provide these odors or fumes. Provide temporary hinged doors in temporary enclosures where necessary. Temporary and permanent doors shall be completely sealed with tape or other suitable material during demolition work and shall remain sealed until dust has settled.

### 3.2 MECHANICAL AND ELECTRICAL WORK EXPOSED

- A. Where unknown mechanical piping, ductwork or electrical conduit is exposed during removal of partitions, walls, floors and ceilings, the removal or re-routing shall be by the Mechanical or Electrical Contractor as applicable. The contractor is to provide at minimum labor and materials required for one journeyman electrician or plumber 40-manhours to relocate these utilities. Re-routed piping shall be located where directed and shall be re-connected to maintain all functions in proper operation. Abandoned piping may be left in place where it is

disconnected from its source and capped or as directed by Project Manager. There shall be no "dead end" water, sewer, medical gas, or vent piping existing in the completed work.

- B. Removals, capping or otherwise terminating services which are abandoned or need to be abandoned, shall be accomplished without additional cost to the government, whether shown or noted on drawings or otherwise encountered.
- C. Contractor is to remove all old abandoned oval pneumatic tube lines, transfer boxes, and related equipment and components exposed within the construction area. The contractor is to provide at minimum labor and materials required for one electrician or laborer 40-manhours for removal.

### 3.3 WORK OF EACH CONTRACT

- A. The contractor and each subcontractor shall carefully review the contract documents, including those primarily for other trades, with respect to the coordination of demolition, removal and remodeling work and perform such removals normal to their respective trade as may be shown, noted, or otherwise required. Cutting and patching incidental to demolition, removal and/or remodeling of general construction work shall be construed as the work of the general contractor when shown or indicated on the general construction drawings or schedules or specifically noted or called for on documents primarily for other trades as being accomplished by the general contractor. Other contractors shall perform such other cutting, demolition, patching, replacement and restoration as may be required to accomplish their part of the work.

### 3.4 PAINTING

- A. Any painting to match adjacent or surrounding areas.

### 3.5 LEVELING OF FLOORS

- A. Contractor shall submit for approval - brand of latex, floor leveler to be used. Leveler shall include additive for waterproofing.

### 3.6 PATCHING

- A. Contractor shall be responsible for all patching required as a result of installation of new work.
- B. Contractor shall furnish all related components, trims, etc. required to complete the work.

- - -END- - -

**SECTION 05 12 00**  
**STRUCTURAL STEEL FRAMING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Structural steel shapes, plates, and bars.
2. Bolts, nuts, and washers.

**1.2 RELATED REQUIREMENTS**

- A. Steel Decking: Section 05 31 00, STEEL DECKING.
- B. Steel Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Painting: Section 09 91 00, PAINTING.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American Institute of Steel Construction (AISC):
  1. AISC Manual - Steel Construction Manual, 14th Ed.
  2. 303-10 - Code of Structural Steel Buildings and Bridges.
  3. 360-10: Specification for Structural Steel Buildings.
- C. The American Society of Mechanical Engineers (ASME):
  1. B18.22.1-09 - Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers.
- D. American Welding Society (AWS):
  1. D1.1/D1.1M-15 - Structural Welding Code - Steel.
- E. ASTM International (ASTM):
  1. A6/A6M-14 - General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
  2. A36/A36M-14 - Carbon Structural Steel.
  3. A53/A53M-12 - Pipe, Steel, Black and Hot-Dip, Zinc-Coated, Welded and Seamless.
  4. A123/A123M-15 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  5. A242/A242M-13 - High-Strength Low-Alloy Structural Steel.
  6. A283/A283M-13 - Low and Intermediate Tensile Strength Carbon Steel Plates.
  7. A307-14 - Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.

8. A325-14 - Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
  9. A490-14a - Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
  10. A500/A500M-13 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing and Rounds and Shapes.
  11. A501/A501M-14 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing and Rounds and Shapes.
  12. A572/A572M-15 - High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
  13. A992/A992M-15 - Structural Shapes.
  14. F2329/F2329M-15 - Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy steel Bolts, Screws, washers, Nuts, and Special Threaded Fasteners.
- F. Master Painters Institute (MPI):
1. No. 18 - Primer, Zinc Rich, Organic.
- G. Military Specifications (Mil. Spec.):
1. MIL-P-21035 - Paint, High Zinc Dust Content, Galvanizing, Repair.
- H. Occupational Safety and Health Administration (OSHA):
1. 29 CFR 1926.752(e) - Guidelines For Establishing The Components Of A Site-Specific Erection Plan.
  2. 29 CFR 1926-2001 - Safety Standards for Steel Erection.
- I. Research Council on Structural Connections (RCSC) of The Engineering Foundation:
1. Specification for Structural Joints Using ASTM A325 or A490 Bolts.

#### **1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
1. Show size, configuration, and fabrication and installation details.
  2. Scaffolding drawing submittals:
    - a. In accordance with Safety Policy & Specification, submittals are required for scaffolding. Submittal should be in the form of a shop drawing, stamped and signed by a P.E.
- C. Test Reports: Certify products comply with specifications.
1. Welders' qualifying tests.
- D. Certificates: Certify each product complies with specifications.

1. Structural steel.
  2. Steel connections.
  3. Welding materials.
  4. Shop coat primer paint.
- E. Qualifications: Substantiate qualifications comply with specifications.
1. Fabricator with project experience list
  2. Installer with project experience list
  3. Welders and welding procedures.
- F. Delegated Design Drawings and Calculations: Signed and sealed by responsible Architect/Engineer.
1. Connection calculations.
- G. Record Surveys: Signed and sealed by responsible surveyor or engineer.

#### **1.5 QUALITY ASSURANCE**

- A. Fabricator Qualifications: AISC Quality Certification participant designated as AISC Certified Plant, Category STD.
1. Regularly fabricates specified products.
  2. Fabricated specified products with satisfactory service on five similar installations for minimum five years.
    - a. Project Experience List: Provide contact names and addresses for completed projects.
- B. Installer Qualifications: AISC Quality Certification Program participant designated as AISC-Certified Erector, Category ACSE.
1. Regularly installs specified products.
  2. Installed specified products with satisfactory service on five similar installations for minimum five years.
    - a. Project Experience List: Provide contact names and addresses for completed projects.
- C. Before commencement of Work, ensure steel erector provides written notification required by OSHA 29 CFR 1926.752(e). Submit a copy of the notification to Contracting Officer's Representative.
- D. Welders and Welding Procedures Qualifications: AWS D1.1/D1.1M.

#### **1.6 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

## **PART 2 - PRODUCTS**

### **2.1 SYSTEM PERFORMANCE**

- A. Delegated Design: Prepare submittal documents including design calculations and drawings signed and sealed by registered design professional, licensed in state where project is located.

### **2.2 MATERIALS**

- A. W-Shapes:
  - 1. ASTM A992/A992M.
- B. Channel and Angles:
  - 1. ASTM A36/A36M.
- C. Bolts, Nuts and Washers: Galvanized for galvanized framing and plain finish for other framing.
  - 1. High-strength bolts, including nuts and washers: ASTM A325 or ASTM A490.
  - 2. Bolts and nuts, other than high-strength: ASTM A307, Grade A.
  - 3. Plain washers, other than those in contact with high-strength bolt heads and nuts: ASME B18.22.1.
- D. Welding Materials: AWS D1.1, type to suit application.

### **2.3 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.

### **2.4 FABRICATION**

- A. Fabricate structural steel according to Chapter M, AISC 360.
- B. Shop and Field Connections:
  - 1. Weld connections according to AWS D1.1/D1.1M. Welds shall be made only by welders and welding operators who have been previously qualified by tests as prescribed in AWS D1.1 to perform type of work required.
  - 2. High-Strength Bolts: High-strength bolts tightened to a bolt tension minimum 70 percent of their minimum tensile strength. Tightening done with properly calibrated wrenches, by turn-of-nut method or by use of direct tension indicators (bolts or washers). Tighten bolts in connections identified as slip-critical using Direct Tension Indicators. Twist-off torque bolts are not an acceptable alternate fastener for slip critical connections.



## **2.5 FINISHES**

- A. Shop Priming:
  - 1. Prime paint structural steel according to AISC 303, Section 6.
    - a. Interstitial Space Structural Steel: Prime paint, unless indicated to receive sprayed on fireproofing.
- B. Shop Finish Painting: Apply primer and finish paint as specified in Section 09 91 00, PAINTING.
- C. Do not paint:
  - 1. Surfaces within 50 mm (2 inches) of field welded joints.
  - 2. Surfaces indicated to be encased in concrete.
  - 3. Surfaces receiving sprayed on fireproofing.
  - 4. Beam top flanges receiving shear connector studs applied.
- D. Bolts, Nuts, and Washers Galvanizing: ASTM F2329, hot-dipped.

## **2.6 ACCESSORIES**

- A. General: Shop paint steel according to AISC 303, Section 6.
- B. Finish Paint System: Primer and finish as specified in Section 09 91 00, PAINTING.

## **PART 3 - EXECUTION**

### **3.1 ERECTION**

- A. Erect structural steel according to AISC 303 and AISC 360.
- B. Set structural steel accurately at locations and elevations indicated on drawings.
- C. Maintain erection tolerances of structural steel within AISC 303 requirements.
  - 1. Pour Stop Elevation Tolerance: 6 mm (1/4 inch), maximum, before concrete placement.
- D. Weld and bolt connections as specified for shop connections.

### **3.2 FIELD PAINTING**

- A. After welding, clean and prime weld areas to match adjacent finish.
- B. Touch-up primer damaged by construction operations.
- C. Finish Painting: As specified in Section 09 91 00, PAINTING.

### **3.3 FIELD QUALITY CONTROL**

- A. Record Survey:

1. Engage registered land surveyor or registered civil engineer as specified in Section 01 00 00, GENERAL REQUIREMENTS to perform survey.
2. Measure and record structural steel framing plumbness, level, and alignment after completing bolting and welding and before installation of work supported by structural steel.
3. Identify deviations from allowable tolerances specified in AISC Manual.

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**SECTION 05 31 00**  
**STEEL DECKING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Single pan fluted metal roof deck as roof substrate.

**1.2 RELATED REQUIREMENTS**

- A. Structural Steel Shapes: Section 05 12 00, STRUCTURAL STEEL FRAMING.
- B. Color: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Finish Painting: Section 09 91 00, PAINTING.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. AISI - American Iron and Steel Institute.
  1. S100-12 - Specification for the Design of Cold-formed Steel Structural Members.
- C. American Welding Society (AWS):
  1. D1.1/D1.1M-15 - Structural Welding Code - Steel.
  2. D1.3/D1.3M-08 - Structural Welding Code - Sheet Steel.
- D. ASTM International (ASTM):
  1. A36/A36M-14 - Carbon Structural Steel.
  2. A653/A653M-15 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  3. A1008/A1008M-15 - Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Baked Hardenable.
  4. C423-09a - Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
  5. E119-15 - Fire Tests of Building Construction and Materials.
- E. FM Global (FM):
  1. 1-28-15 - Wind Design.
  2. Factory Mutual Research Approval Guide.
- F. Master Painters Institute (MPI):
  1. No. 18 - Primer, Zinc Rich, Organic.
- G. Military Specifications (Mil. Spec.):
  1. MIL-P-21035B - Paint, High Zinc Dust Content, Galvanizing Repair.
- H. Steel Deck Institute (SDI):

1. No. 31-07 - Design Manual for Composite Deck, Form Decks, and Roof Decks.

I. UL LLC (UL):

1. Listed - Online Certifications Directory.
2. 580-13 - Tests for Uplift Resistance of Roof Assemblies.

**1.4 SUBMITTALS**

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submittal Drawings:

1. Show layout, connections to supporting members, anchorage, sump pans, accessories, deck openings and reinforcements.
2. Show similar information necessary for completing installation as shown and specified, including supplementary framing, ridge and valley plates, cant strips, cut openings, special jointing or other accessories.
3. Show welding, side lap, closure, deck reinforcing and closure reinforcing details.
4. Show openings required for work of other trades, including openings not shown on structural drawings. Indicate where temporary shoring is required to satisfy design criteria.

C. Manufacturer's Literature and Data:

1. Description of each product.
2. Show steel decking section properties and structural characteristics.

D. Certificates: Certify each product complies with specifications.

1. Fire Resistance Product Listing: For each metal deck type and thickness supporting concrete slab or fill.
2. Show steel decking is UL Listed for specified application.

E. Qualifications: Substantiate qualifications comply with specifications.

1. Welders and welding procedures.

F. Insurance Certification: Assist the Government in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance.

**1.5 QUALITY ASSURANCE**

A. FM Listing: Provide metal roof deck units which have been evaluated by Factory Mutual Global and are listed in "Factory Mutual Research Approval Guide" for "Class 1" fire rated construction.

B. Welders and Welding Procedures Qualifications: AWS D1.3/D1.3M.

## **1.6 WARRANTY**

A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

## **PART 2 - PRODUCTS**

### **2.1 SYSTEM PERFORMANCE**

- A. Design steel decking and accessories according to AISI S100.
1. Wind Uplift Resistance and Corner Conditions:
    - a. Other Roof Areas: 30 psf, minimum.
  2. Design side and end closures and attachment to supporting steel to safely support construction loads.
    - a. Cantilever Closure Deflection: 3 mm (1/8 inch), maximum.

### **2.2 MATERIALS**

- A. Primer for Shop Painted Sheets: Manufacturer's standard primer (2 coats). When finish painting of steel decking is specified in Section 09 91 00, PAINTING primer coating shall be compatible with specified finish painting.
- B. Steel Shapes: ASTM A36/A36M.

### **2.3 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Sustainable Construction Requirements:
1. Steel Recycled Content: 30 percent total recycled content, minimum.

### **2.4 METAL ROOF DECK**

- A. Metal Roof Deck: Single pan fluted units with flat horizontal top surfaces as permanent support for superimposed loads.
1. Deck Style:
    - a. Wide Rib (Type B) deck.
  2. Depth and Thickness: 1.5" Thick NR 18.
  3. Material: Painted sheet steel.

### **2.5 FABRICATION**

- A. Fabricate steel decking in sufficient lengths to extend over required opening.
1. Cut metal deck units to proper length in shop.
- B. Fabricate accessories required to complete installation of steel decking.

1. Exposed to View: Fabricate from sheet steel matching metal decking.
2. Concealed from View: Fabricate from galvanized sheet steel.

C. Sheet Metal Accessories:

1. Metal Cover Plates: For end-abutting decking, to close gaps at changes in deck direction, columns, walls and openings.
  - a. Sheet Steel: Minimum 1.0 mm (0.04 inch) thick.
2. Continuous Sheet Metal Edging: At openings, concrete slab edges and roof deck edges.
  - a. Sheet Steel: Minimum 1.0 mm (0.04 inch) thick.
3. Metal Closure Strips: For openings between decking and other construction. Form to configurations required to provide tight-fitting closures at open ends of flutes and sides of decking.
  - a. Sheet Steel: Minimum 1.0 mm (0.04 inch) thick.
4. Ridge and Valley Plates: Minimum 100 mm (4 inch) wide ridge and valley plates where roof slope exceeds 1/24 (1/2 inch per foot).
  - a. Sheet Steel: Minimum 1.0 mm (0.04 inch) thick.
5. Cant Strips: Provide bent metal 45 degree leg cant strips where indicated on the drawings. Fabricate cant strips with minimum 125 mm (5 inch) face width.
  - a. Sheet Steel: Minimum 0.8 mm (0.03 inch) thick.

**2.6 FINISHES**

- A. Shop prime painted sheet steel with two coats of primer.

**2.7 ACCESSORIES**

- A. Primer: Manufacturer's standard primer compatible with finish painting specified in Section 09 91 00, PAINTING.
- B. Welding Materials: AWS D1.1, type to suit application.
- C. Galvanizing Repair Paint: MPI No. 18.
- D. Touch-Up Paint: Match shop finish.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Remove contaminants from structural steel surfaces where steel decking will be welded.
- D. Verify structural steel framing installation is completed, plumbed, and aligned with temporary bracing installed where required.

- E. Coordinate with structural steel erector to prevent overloading of structural members when placing steel decking for installation.

### **3.2 ERECTION**

- A. Do not use floor deck units for storage or working platforms until permanently secured. Do not overload deck units once placed. Replace deck units that become damaged after erection and before casting concrete at no cost additional to the Government.
- B. Place steel decking at right angles to supporting members with ends located over supports.
- C. Lap end joints 50 mm (2 inches), minimum.
- D. Roof Deck Fastening:
  - 1. Fasten decking to metal steel stud members with self-tapping No 8 or larger machine screws.
  - 2. Fasten split or partial decking panels to structure in every valley.
  - 3. Fasten decking to each supporting member at ribs where side laps occur.
    - a. Power driven fasteners is acceptable in lieu of welding. Submit test data and design calculations verifying equivalent design strength.
  - 4. Mechanically fasten decking side laps with self-tapping No. 8 or larger machine screws.
    - a. Fastener Locations: Mid-span and maximum 900 mm (3 feet) on center.
- E. Cutting and Fitting:
  - 1. Field cut steel decking to accommodate columns and other penetrating items.
  - 2. Cut openings located and dimensioned on Drawings.
  - 3. Coordinate openings for other penetrations shown on approved submittal drawings but not shown on Drawings.
    - a. Cut and reinforce required opening.
  - 4. Make cuts neat and trim using metal saw, drill or punch-out device. Cutting with torches is prohibited.
  - 5. Do not make cuts in the metal deck that are not shown on the approved metal decking submittal drawings.
    - a. When additional openings are required, submit scaled drawing, locating required opening and other openings and supports in immediate area.

- b. Do not cut the opening until drawing is approved by Contracting Officer's Representative.
  - c. Provide additional reinforcing and framing required for opening.
  - d. Failure to comply with these requirements is cause for rejection of the work and removal and replacement of the affected steel decking.
6. Opening Reinforcement: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking, and support of other work.
- F. Touch up damaged factory finishes.
- 1. Apply galvanizing repair paint to damaged galvanized surfaces.
  - 2. Apply touch up paint to damaged shop painted surfaces.

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**SECTION 05 40 00**  
**COLD-FORMED METAL FRAMING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

A. This section specifies materials and services required for installation of cold-formed steel, including tracks and required accessories as shown and specified. This Section includes the following:

1. Exterior load-bearing steel stud walls.

**1.2 RELATED WORK:**

- A. Structural steel framing: Section 05 12 00, STRUCTURAL STEEL FRAMING.
- B. Non-load-bearing metal stud framing assemblies: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.

**1.3 DESIGN REQUIREMENTS:**

- A. Design steel in accordance with American Iron and Steel Institute Publication "Specification for the Design of Cold-Formed Steel Structural Members", except as otherwise shown or specified.
- B. Structural Performance: Engineer, fabricate and erect cold-formed metal framing with the minimum physical and structural properties indicated.
- C. Structural Performance: Engineer, fabricate, and erect cold-formed metal framing to withstand design loads within limits and under conditions required.
  1. Design framing systems to withstand design loads without deflections greater than the following:
    - a. Exterior Load-Bearing Walls: Lateral deflection of 1/240 of the wall height.
  3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 67 degrees C (120 degrees F).

4. Design framing system to accommodate deflection of primary building structure and construction tolerances, and to maintain clearances at openings.
5. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a qualified professional engineer to prepare design calculations, shop drawings, and other structural data.

**1.4 SUBMITTALS:**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: Shop and erection drawings showing steel unit layout, connections to supporting members, and information necessary to complete installation as shown and specified.
- C. Manufacturer's Literature and Data: Showing steel component sections and specifying structural characteristics.
- D. For cold-formed metal framing indicated to comply with certain design loadings, include structural analysis data sealed and signed by the qualified professional engineer who was responsible for its preparation.

**1.5 APPLICABLE PUBLICATIONS:**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Iron and Steel Institute (AISI):  
Specification and Commentary for the Design of Cold-Formed Steel Structural Members (1996)
- C. American Society of Testing and Materials (ASTM):  
A36/A36M-08.....Standard Specifications for Carbon Structural Steel  
A123/A123M-09.....Standard Specifications for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

- A153/A153M-09.....Standard Specifications for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- A307-10.....Standard Specifications for Carbon Steel Bolts and Studs
- A653/A653M-10.....Standard Specifications for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- C955.....Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases
- C1107/C1107M-08.....Standard Specifications for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
- E488-96(R2003).....Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
- E1190-95(R2007).....Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members
- D. American Welding Society (AWS):
- D1.3/D1.3M-08.....Structural Welding Code-Sheet Steel
- E. Military Specifications (Mil. Spec.):
- MIL-P-21035B.....Paint, High Zinc Dust Content, Galvanizing Repair

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS:**

- A. Sheet Steel for joists, studs and accessories 16 gage and heavier: ASTM A653, structural steel, zinc coated CP60, with a yield of 340 MPa (50 ksi) minimum.

### **2.2 WALL FRAMING:**

A. Steel Studs: Complying with ASTM C 955. Manufacturer's standard C-shaped steel studs of web depth indicated, with lipped flanges, and complying with the following:

1. Minimum Base-Steel Thickness(uncoated):

0.84 mm (0.0329 inch

B. Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated, with straight flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: Matching steel studs.

2. Flange Width: Manufacturer's standard deep flange where indicated, standard flange elsewhere.

#### **2.4 FRAMING ACCESSORIES:**

A. Fabricate steel framing accessories of the same material and finish used for framing members, with a minimum yield strength of 230 MPa (33 ksi).

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.

2. Bracing, bridging, and solid blocking.

3. Web stiffeners.

4. Gusset plates.

5. Deflection track and vertical slide clips.

6. Stud kickers and girts.

7. Joist hangers and end closures.

8. Reinforcement plates.

#### **2.5 ANCHORS, CLIPS, AND FASTENERS:**

A. Steel Shapes and Clips: ASTM A36, zinc coated by the hot-dip process according to ASTM A123.

B. Cast-in-Place Anchor Bolts and Studs: ASTM A307, Grade A, zinc coated by the hot-dip process according to ASTM A153.

- C. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws. Low-profile head beneath sheathing, manufacturer's standard elsewhere.

## **2.6 REQUIREMENTS:**

- A. Welding in accordance with AWS D1.3
- B. Furnish members and accessories by one manufacturer only.

## **PART 3 - EXECUTION**

### **3.1 FABRICATION:**

- A. Framing components may be preassembled into panels. Panels shall be square with components attached.
- B. Cut framing components squarely or as required for attachment. Cut framing members by sawing or shearing; do not torch cut.
- C. Hold members in place until fastened.
- D. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
  - 1. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
  - 2. Locate mechanical fasteners and install according to cold-formed metal framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
- E. Where required, provide specified insulation in double header members and double jamb studs which will not be accessible after erection.

### **3.2 ERECTION:**

- A. Handle and lift prefabricated panels in a manner as to not distort any member.
- B. Securely anchor tracks to supports as shown.
- C. At butt joints, securely anchor two pieces of track to same supporting member or butt-weld or splice together.
- D. Plumb, align, and securely attach studs to flanges or webs of both upper and lower tracks.

E. All axially loaded members shall be aligned vertically to allow for full transfer of the loads down to the foundation. Vertical alignment shall be maintained at floor/wall intersections.

F. Studs in one piece for their entire length, splices will not be permitted.

**3.3 TOLERANCES:**

A. Vertical alignment (plumbness) of studs shall be within 1/960th of the span.

B. Horizontal alignment (levelness) of walls shall be within 1/960th of their respective lengths.

C. Spacing of studs shall not be more than 3 mm (1/8 inch) +/- from the designed spacing providing that the cumulative error does not exceed the requirements of the finishing materials.

**3.4 FIELD REPAIR:**

Touch-up damaged galvanizing with galvanizing repair paint.

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**SECTION 05 50 00  
METAL FABRICATIONS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies items and assemblies fabricated from structural steel shapes and other materials as shown and specified.
- B. Items specified.
1. Support for Wall and Ceiling Mounted Items: (SD055000-01, SD055000-02, SD102113-01, SD102600-01, SD123100-01 & SD123100-02)

**1.2 RELATED WORK**

- A. Colors, finishes, and textures: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Prime and finish painting: Section 09 91 00, PAINTING.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:

|                    |                      |
|--------------------|----------------------|
| Grating, each type | Floor plate          |
| Trap door          | Wheel guards         |
| Ceiling hatch      | Sidewalk Access door |
| Manhole Covers     | Safety nosing        |

- C. Shop Drawings:
1. Each item specified, showing complete detail, location in the project, material and size of components, method of joining various components and assemblies, finish, and location, size and type of anchors.
2. Mark items requiring field assembly for erection identification and furnish erection drawings and instructions.
3. Provide templates and rough-in measurements as required.
- D. Manufacturer's Certificates:
1. Anodized finish as specified.
2. Live load designs as specified.
- E. Design Calculations for specified live loads including dead loads.

- F. Furnish setting drawings and instructions for installation of anchors to be preset into concrete and masonry work, and for the positioning of items having anchors to be built into concrete or masonry construction.

#### **1.4 QUALITY ASSURANCE**

- A. Each manufactured product shall meet, as a minimum, the requirements specified, and shall be a standard commercial product of a manufacturer regularly presently manufacturing items of type specified.
- B. Each product type shall be the same and be made by the same manufacturer.
- C. Assembled product to the greatest extent possible before delivery to the site.
- D. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

#### **1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society of Mechanical Engineers (ASME):
- B18.6.1-97.....Wood Screws
- B18.2.2-87(R2005).....Square and Hex Nuts
- C. American Society for Testing and Materials (ASTM):
- A36/A36M-12.....Structural Steel
- A47-99(R2009).....Malleable Iron Castings
- A48-03(R2012).....Gray Iron Castings
- A53-12.....Pipe, Steel, Black and Hot-Dipped, Zinc-Coated  
Welded and Seamless
- A123-12.....Zinc (Hot-Dip Galvanized) Coatings on Iron and  
Steel Products
- A240/A240M-14.....Standard Specification for Chromium and  
Chromium-Nickel Stainless Steel Plate, Sheet  
and Strip for Pressure Vessels and for General  
Applications.
- A269-10.....Seamless and Welded Austenitic Stainless Steel  
Tubing for General Service
- A307-12.....Carbon Steel Bolts and Studs, 60,000 PSI  
Tensile Strength



- A391/A391M-07(R2012)....Grade 80 Alloy Steel Chain
- A786/A786M-09.....Rolled Steel Floor Plate
- B221-13.....Aluminum and Aluminum-Alloy Extruded Bars,  
Rods, Wire, Shapes, and Tubes
- B456-11.....Electrodeposited Coatings of Copper Plus Nickel  
Plus Chromium and Nickel Plus Chromium
- B632-08.....Aluminum-Alloy Rolled Tread Plate
- C1107-13.....Packaged Dry, Hydraulic-Cement Grout  
(Nonshrink)
- D3656-13.....Insect Screening and Louver Cloth Woven from  
Vinyl-Coated Glass Yarns
- F436-11.....Hardened Steel Washers
- F468-06(R2012).....Nonferrous Bolts, Hex Cap Screws, Socket Head  
Cap Screws and Studs for General Use
- F593-13.....Stainless Steel Bolts, Hex Cap Screws, and  
Studs
- F1667-11.....Driven Fasteners: Nails, Spikes and Staples
- D. American Welding Society (AWS):
  - D1.1-10.....Structural Welding Code Steel
  - D1.2-08.....Structural Welding Code Aluminum
  - D1.3-08.....Structural Welding Code Sheet Steel
- E. National Association of Architectural Metal Manufacturers (NAAMM)
  - AMP 521-01.....Pipe Railing Manual
  - AMP 500-06.....Metal Finishes Manual
  - MBG 531-09.....Metal Bar Grating Manual
  - MBG 532-09.....Heavy Duty Metal Bar Grating Manual
- F. Structural Steel Painting Council (SSPC)/Society of Protective  
Coatings:
  - SP 1-04.....No. 1, Solvent Cleaning
  - SP 2-04.....No. 2, Hand Tool Cleaning
  - SP 3-04.....No. 3, Power Tool Cleaning
- G. Federal Specifications (Fed. Spec):
  - RR-T-650E.....Treads, Metallic and Nonmetallic, Nonskid

## **PART 2 - PRODUCTS**

### **2.1 DESIGN CRITERIA**

- A. Design fabrications to support the required dead loads.

## **2.2 MATERIALS**

- A. Structural Steel: ASTM A36.
- B. Stainless Steel: ASTM A240, Type 302 or 304.
- C. Aluminum, Extruded: ASTM B221, Alloy 6063-T5 unless otherwise specified. For structural shapes use alloy 6061-T6 and alloy 6061-T4511.

## **2.3 HARDWARE**

- A. Rough Hardware:
  - 1. Furnish rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electro-galvanizing process. Galvanized G-90 where specified.
  - 2. Use G90 galvanized coating on ferrous metal for exterior work unless non-ferrous metal or stainless is used.
- B. Fasteners:
  - 1. Bolts with Nuts:
    - a. ASME B18.2.2.
    - b. ASTM A307 for 415 MPa (60,000 psi) tensile strength bolts.
    - c. ASTM F468 for nonferrous bolts.
    - d. ASTM F593 for stainless steel.
  - 2. Screws: ASME B18.6.1.
  - 3. Washers: ASTM F436, type to suit material and anchorage.
  - 4. Nails: ASTM F1667, Type I, style 6 or 14 for finish work.

## **2.4 FABRICATION GENERAL**

- A. Material
  - 1. Use material as specified. Use material of commercial quality and suitable for intended purpose for material that is not named or its standard of quality not specified.
  - 2. Use material free of defects which could affect the appearance or service ability of the finished product.
- B. Size:
  - 1. Size and thickness of members as shown.
  - 2. When size and thickness is not specified or shown for an individual part, use size and thickness not less than that used for the same component on similar standard commercial items or in accordance with established shop methods.
- C. Connections

1. Except as otherwise specified, connections may be made by welding, riveting or bolting.
2. Field riveting will not be approved.
3. Design size, number and placement of fasteners, to develop a joint strength of not less than the design value.
4. Holes, for rivets and bolts: Accurately punched or drilled and burrs removed.
5. Size and shape welds to develop the full design strength of the parts connected by welds and to transmit imposed stresses without permanent deformation or failure when subject to service loadings.
6. Use Rivets and bolts of material selected to prevent corrosion (electrolysis) at bimetallic contacts. Plated or coated material will not be approved.
7. Use stainless steel connectors for removable members machine screws or bolts.

D. Fasteners and Anchors

1. Use methods for fastening or anchoring metal fabrications to building construction as shown or specified.
2. Where fasteners and anchors are not shown, design the type, size, location and spacing to resist the loads imposed without deformation of the members or causing failure of the anchor or fastener, and suit the sequence of installation.
3. Use material and finish of the fasteners compatible with the kinds of materials which are fastened together and their location in the finished work.
4. Fasteners for securing metal fabrications to new construction only, may be by use of threaded or wedge type inserts or by anchors for welding to the metal fabrication for installation before the concrete is placed or as masonry is laid.
5. Fasteners for securing metal fabrication to existing construction or new construction may be expansion bolts, toggle bolts, power actuated drive pins, welding, self drilling and tapping screws or bolts.

E. Workmanship

1. General:
  - a. Fabricate items to design shown.

- b. Furnish members in longest lengths commercially available within the limits shown and specified.
  - c. Fabricate straight, true, free from warp and twist, and where applicable square and in same plane.
  - d. Provide holes, sinkages and reinforcement shown and required for fasteners and anchorage items.
  - e. Provide openings, cut-outs, and tapped holes for attachment and clearances required for work of other trades.
  - f. Prepare members for the installation and fitting of hardware.
  - g. Cut openings in gratings and floor plates for the passage of ducts, sumps, pipes, conduits and similar items. Provide reinforcement to support cut edges.
  - h. Fabricate surfaces and edges free from sharp edges, burrs and projections which may cause injury.
2. Welding:
- a. Weld in accordance with AWS.
  - b. Welds shall show good fusion, be free from cracks and porosity and accomplish secure and rigid joints in proper alignment.
  - c. Where exposed in the finished work, continuous weld for the full length of the members joined and have depressed areas filled and protruding welds finished smooth and flush with adjacent surfaces.
  - d. Finish welded joints to match finish of adjacent surface.
3. Joining:
- a. Miter or butt members at corners.
  - b. Where frames members are butted at corners, cut leg of frame member perpendicular to surface, as required for clearance.
4. Anchors:
- a. Where metal fabrications are shown to be preset in concrete, weld 32 x 3 mm (1-1/4 by 1/8 inch) steel strap anchors, 150 mm (6 inches) long with 25 mm (one inch) hooked end, to back of member at 600 mm (2 feet) on center, unless otherwise shown.
  - b. Where metal fabrications are shown to be built into masonry use 32 x 3 mm (1-1/4 by 1/8 inch) steel strap anchors, 250 mm (10 inches) long with 50 mm (2 inch) hooked end, welded to back of member at 600 mm (2 feet) on center, unless otherwise shown.
5. Cutting and Fitting:

- a. Accurately cut, machine and fit joints, corners, copes, and miters.
- b. Fit removable members to be easily removed.
- c. Design and construct field connections in the most practical place for appearance and ease of installation.
- d. Fit pieces together as required.
- e. Fabricate connections for ease of assembly and disassembly without use of special tools.
- f. Joints firm when assembled.
- g. Conceal joining, fitting and welding on exposed work as far as practical.
- h. Do not show rivets and screws prominently on the exposed face.
- i. The fit of components and the alignment of holes shall eliminate the need to modify component or to use exceptional force in the assembly of item and eliminate the need to use other than common tools.

F. Finish:

1. Finish exposed surfaces in accordance with NAAMM AMP 500 Metal Finishes Manual.
2. Aluminum: NAAMM AMP 501.
  - a. Mill finish, AA-M10, as fabricated, use unless specified otherwise.
  - b. Clear anodic coating, AA-C22A41, chemically etched medium matte, with Architectural Class 1, 0.7 mils or thicker.
  - c. Colored anodic coating, AA-C22A42, chemically etched medium matte with Architectural Class 1, 0.7 mils or thicker.
  - d. Painted: AA-C22R10.
3. Steel and Iron: NAAMM AMP 504.
  - a. Zinc coated (Galvanized): ASTM A123, G90 unless noted otherwise.
  - b. Surfaces exposed in the finished work:
    - 1) Finish smooth rough surfaces and remove projections.
    - 2) Fill holes, dents and similar voids and depressions with epoxy type patching compound.
  - c. Shop Prime Painting:
    - 1) Surfaces of Ferrous metal:
      - a) Items not specified to have other coatings.
      - b) Galvanized surfaces specified to have prime paint.

- c) Remove all loose mill scale, rust, and paint, by hand or power tool cleaning as defined in SSPC-SP2 and SP3.
  - d) Clean of oil, grease, soil and other detrimental matter by use of solvents or cleaning compounds as defined in SSPC-SP1.
  - e) After cleaning and finishing apply one coat of primer as specified in Section 09 91 00, PAINTING.
- 2) Non ferrous metals: Comply with MAAMM-500 series.
4. Stainless Steel: NAAMM AMP-504 Finish No. 4.

G. Protection:

- 1. Insulate aluminum surfaces that will come in contact with concrete, masonry, plaster, or metals other than stainless steel, zinc or white bronze by giving a coat of heavy-bodied alkali resisting bituminous paint or other approved paint in shop.
- 2. Spot prime all abraded and damaged areas of zinc coating which expose the bare metal, using zinc rich paint on hot-dip zinc coat items and zinc dust primer on all other zinc coated items.

**2.5 SUPPORTS**

A. General:

- 1. Fabricate ASTM A36 structural steel shapes as shown.
- 2. Use clip angles or make provisions for welding hangers and braces to overhead construction.
- 3. Field connections may be welded or bolted.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. Set work accurately, in alignment and where shown, plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.
- B. Items set into concrete or masonry.
  - 1. Provide temporary bracing for such items until concrete or masonry is set.
  - 2. Place in accordance with setting drawings and instructions.
  - 3. Build strap anchors, into masonry as work progresses.
- C. Set frames of gratings, covers, corner guards, trap doors and similar items flush with finish floor or wall surface and, where applicable, flush with side of opening.
- D. Field weld in accordance with AWS.

1. Design and finish as specified for shop welding.
2. Use continuous weld unless specified otherwise.
- E. Install anchoring devices and fasteners as shown and as necessary for securing metal fabrications to building construction as specified.  
Power actuated drive pins may be used except for removable items and where members would be deformed or substrate damaged by their use.
- F. Spot prime all abraded and damaged areas of zinc coating as specified and all abraded and damaged areas of shop prime coat with same kind of paint used for shop priming.
- G. Isolate aluminum from dissimilar metals and from contact with concrete and masonry materials as required to prevent electrolysis and corrosion.
- H. Secure escutcheon plate with set screw.

### **3.2 INSTALLATION OF SUPPORTS**

- A. Anchorage to structure.
  1. Secure angles or channels and clips to overhead structural steel by continuous welding unless bolting is shown.
  2. Secure supports to concrete inserts by bolting or continuous welding as shown.
  3. Secure supports to mid height of concrete beams when inserts do not exist with expansion bolts and to slabs, with expansion bolts.  
unless shown otherwise.
  4. Secure steel plate or hat channels to studs as detailed.
- B. Ceiling Hung Toilet Stalls:
  1. Securely anchor hangers of continuous steel channel above pilasters to structure above.
  2. Bolt continuous steel angle at wall to masonry or weld to face of each metal stud.
  3. Secure brace for steel channels over toilet stall pilasters to wall angle supports with bolts at each end spaced as shown.
  4. Install diagonal angle brace where the suspended ceiling over toilet stalls does not extend to side wall of room.
  5. Install stud bolts in lower flange of channel before installing furred down ceiling over toilet stalls.
  6. Install support for ceiling hung pilasters at entrance screen to toilet room similar to toilet stall pilasters.
- C. Supports for Wall Mounted items:

1. Locate center of support at anchorage point of supported item.
  2. Locate support at top and bottom of wall hung cabinets.
  3. Locate support at top of floor cabinets and shelving installed against walls.
  4. Locate supports where required for items shown.
- D. Support at Ceiling for X-ray Tube Stand and Radiographic Equipment:
1. Bolt modular steel channel frames to hangers as shown, anchored to structure above.
  2. Fasten frames with modular channel manufacturers fittings, bolts, and nuts. Space modular channel supports and hangers as shown and as required to suit equipment furnished.
  3. Install closure plates in channels at ceiling where channel opening is visible. Coordinate and cut plates to fit tight against equipment anchors after equipment anchors are installed.
- E. Ceiling Support for Operating Light:
1. Anchor support to structure above as shown.
  2. Set leveling plate as shown level with ceiling.
  3. Secure operating light to leveling plate in accordance with light manufacturer's requirements.
- F. Supports for intravenous (IV) Track and Cubicle Curtain Track:
1. Install assembly where shown after ceiling suspension grid is installed.
  2. Drill angle for bolt and weld nut to angle prior to installation of tile.
- G. Support for cantilever grab bars:
1. Locate channels or tube in partition for support as shown, and extend full height from floor to underside of structural slab above.
  2. Anchor at top and bottom with angle clips bolted to channels or tube with two, 9 mm (3/8 inch) diameter bolts.
  3. Anchor to floors and overhead construction with two 9 mm (3/8 inch) diameter bolts.
  4. Fasten clips to concrete with expansion bolts, and to steel with machine bolts or welds.
- H. Supports for Trapeze Bars:
1. Secure plates to overhead construction with fasteners as shown.
  2. Secure angle brace assembly to overhead construction with fasteners as shown and bolt plate to braces.



3. Fit modular channel unit flush with finish ceiling, and secure to plate with modular channel unit manufacturer's standard fittings through steel shims or spreaders as shown.

- a. Install closure plates in channel between eye bolts.
- b. Install eyebolts in channel.

I. Support for Communion Rail Posts:

- 1. Anchor steel plate supports for posts as shown.
- 2. Use four bolts per plate, locate two at top and two at bottom.
- 3. Use lag bolts.

**3.3 STEEL COMPONENTS FOR MILLWORK ITEMS**

Coordinate and deliver to Millwork fabricator for assembly where millwork items are secured to metal fabrications.

**3.4 CLEAN AND ADJUSTING**

- A. Adjust movable parts including hardware to operate as designed without binding or deformation of the members centered in the opening or frame and, where applicable, contact surfaces fit tight and even without forcing or warping the components.
- B. Clean after installation exposed prefinished and plated items and items fabricated from stainless steel, aluminum and copper alloys, as recommended by the metal manufacture and protected from damage until completion of the project.

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**SECTION 07 01 50.19**  
**PREPARATION FOR RE-ROOFING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Roofing membrane and selective roofing system component removal for new roof membrane installation.

B. Existing Roofing System: EPDM. System components include:

1. Roofing membrane. (07 53 23 )
2. Cover board (exterior gypsum sheathing 09 29 00)
3. Roof insulation (07 22 00)

**1.2 RELATED REQUIREMENTS**

- A. New Roofing System: Section 07 53 23, ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING.
- B. Sheet Metal Counterflashing: Section 07 60 00, SHEET METAL FLASHING AND TRIM.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):
  1. FX-1-01(R2006) Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
- C. American Society for Nondestructive Testing (ASNT):
  1. SNT-TC-1A - Personnel Qualification and Certification for Nondestructive Testing.
- D. ASTM International (ASTM):
  1. C208-12 - Cellulosic Fiber Insulating Board.
  2. C578-15 - Rigid, Cellular Polystyrene Thermal Insulation.
  3. C728-15 - Perlite Thermal Insulation Board.
  4. C1177/C1177M-13 - Glass Mat Gypsum Substrate for Use as Sheathing.
  5. C1153-97(2003)e1 - Location of Wet Insulation in Roofing Systems Using Infrared Imaging.
  6. C1278/C1278M-07a(2015) - Fiber-Reinforced Gypsum Panel.
  7. D4263-83(2012) - Indicating Moisture in Concrete by the Plastic Sheet Method.

E. U.S. Department of Commerce National Institute of Standards and Technology (NIST):

1. DOC PS 1-09 - Structural Plywood.
2. DOC PS 2-04 - Performance Standard for Wood-Based Structural-Use Panels.

#### **1.4 PREINSTALLATION MEETINGS**

A. Conduct preinstallation meeting minimum 30 days before beginning Work of this section.

1. Required Participants:

- a. Contracting Officer's Representative.
- b. Contractor.
- c. Installer.
- d. Manufacturer's field representative.
- e. Other installers responsible for adjacent and intersecting work, including mechanical and electrical equipment installers.

2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.

- a. Removal and installation schedule.
- b. Removal and installation sequence.
- c. Preparatory work.
- d. Protection before, during, and after installation.
- e. Removal and installation.
- f. Temporary roofing including daily terminations.
- g. Transitions and connections to other work.
- h. Inspecting and testing.
- i. Other items affecting successful completion.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

#### **1.5 SUBMITTALS**

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submittal Drawings:

1. Show size, configuration, and installation details.

C. Manufacturer's Literature and Data:

1. Description of each product.
2. Description of temporary roof system and components.
3. List of patching materials.

4. Recover board fastening requirements.
  5. Temporary roofing installation instructions and removal instructions. preparation instructions to receive new roofing.
  6. Existing roofing warrantor's instructions.
- D. Photographs: Document existing conditions potentially affected by roofing operations before work begins.
- E. Field Inspection Reports:
1. Certify warrantor inspected completed roofing and existing warranty remains in effect.
- F. Infrared Roof Moisture Survey Report.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications:
1. Same installer as Section 07 53 23, ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING.
  2. Approved by existing roofing system warrantor when work affects existing roofing system under warranty.

#### **1.7 FIELD CONDITIONS**

- A. Building Occupancy: Perform work to minimize disruption to normal building operations.
1. Verify occupants are evacuated from affected building areas when working on structurally impaired roof decking above occupied areas.
  2. Provide notice minimum 72 hours before beginning activities affecting normal building operations.
- B. Weather Limitations: Proceed with reroofing preparation only during dry weather conditions as specified for new roofing installation in Section Section 07 53 23, ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING.
1. Remove only as much roofing in one day as can be made watertight in same day.
- C. Hazardous materials are not expected in existing roofing system.
1. Do not disturb suspected hazardous materials. When discovered, notify Contracting Officer's Representative.
  2. Hazardous materials discovered during execution of the work will be removed by Government as work of a separate contract.

#### **1.8 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

- B. Existing Warranties: Perform work to maintain existing roofing warranty in effect.
  - 1. Notify warrantor before beginning, and upon completion of reroofing.
  - 2. Obtain warrantor's instructions for maintaining existing warranty.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Patching Materials: Match existing roofing system materials.
- B. Exterior Gypsum Sheathing: See Section 09 29 00, Gypsum Board
- C. Metal Flashing: See Section 07 60 00, SHEET METAL FLASHING AND TRIM.
- D. Temporary Protection Materials:
  - 1. Expanded Polystyrene (EPS) Insulation: ASTM C578.
  - 2. Plywood: NIST DOC PS 1, Grade CD Exposure 1.
  - 3. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.
- E. Temporary Roofing System Materials: Contractor's option.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Infrared Roof Moisture Survey: Ground-based, walk-over type performed according to ASTM C1153.
  - 1. Record the entire survey on DVD and provide one copy to Contracting Officer's Representative with report.
  - 2. Include in report thermograms of suspect areas and corresponding daytime photos of same locations.
  - 3. Conduct inspection by NDT test technician certified to at least Level 2 in Thermal/Infrared test method according to ASNT SNT-TC-1A.
  - 4. Mark out roof areas determined to be wet to indicate minimum areas to be removed.

### **3.2 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing roofing system indicated to remain.
  - 1. Cover roof membrane with temporary protection materials without impeding drainage.
  - 2. Limit traffic and material storage to protected areas.
  - 3. Maintain temporary protection until replacement roofing is completed.
- C. Protect existing construction and completed work from damage.

- D. Protect landscaping from damage.
- E. Maintain access to existing walkways and adjacent occupied facilities.
- F. Coordinate use of rooftop fresh air intakes with Contracting Officer's Representative to minimize effect on indoor air quality.
- G. Ensure temporary protection materials are available for immediate use in case of unexpected rain.
- H. Ensure roof drainage remains functional.
  - 1. Keep drainage systems clear of debris.
  - 2. Prevent water from entering building and existing roofing system.
- I. Coordinate rooftop utilities remaining active during roofing work with Contracting Officer's Representative.

### **3.3 RE-ROOFING PREPARATION - GENERAL**

- A. Notify Contracting Officer's Representative of planned operations, daily.
  - 1. Identify location and extent of roofing removal.
  - 2. Request authorization to proceed.

### **3.4 PARTIAL ROOFING SYSTEM REMOVAL**

- A. Remove existing roofing completely, exposing structural roof deck at locations and to extent indicated on drawings.
  - 1. Remove cover board, roof insulation, vapor retarder, and substrate board.
  - 2. Remove or cut-off roofing system fasteners.

### **3.5 ROOFING MEMBRANE AND SELECTIVE ROOFING SYSTEM COMPONENT REMOVAL**

- A. Remove existing roofing membrane, only, in locations and to extent indicated on drawings.
- B. Visually inspect cover board, roof insulation, and substrate board for moisture immediately after roof membrane removal.
  - 1. Coordinate with Contracting Officer's Representative to observe inspections.
  - 2. Identify wet roofing system components required to be removed.
  - 3. Mark roofing system removal locations and extents.
- C. Patch selective roofing system removals immediately after inspection and repair.
- D. Install patching materials to match existing roofing system.
- E. Patch roofing membrane to maintain building watertight, unless new roofing membrane is installed same day as removal and repair.

### **3.6 DECK PREPARATION**

- A. Inspect structural roof deck after roofing system removal.
- B. Steel Roof Decks:
  - 1. Visually inspect structural roof deck installation and fasteners.
    - a. Notify Contracting Officer's Representative of unsuitable conditions and inadequate fastenings potentially affecting roof system performance.

### **3.7 TEMPORARY ROOFING**

- A. Install temporary roofing to maintain building watertight.
- B. Remove temporary roofing before installing new roofing.
- C. Prepare temporary roofing to receive new roofing.

### **3.8 EXISTING MEMBRANE PREPARATION FOR NEW ROOFING**

- A. Remove existing roofing surface projections and irregularities. Produce smooth surface to receive recover boards.
  - 1. Broom clean existing surface.

### **3.9 BASE FLASHING REMOVAL**

- A. Expose base flashings to permit removal.
  - 1. Two-Piece Counterflashings: Remove cap flashing and store for reuse.
  - 2. Single Piece Counterflashings: Carefully bend counterflashing.
  - 3. Metal Copings: Remove decorative cap and store for reuse.
- B. Remove existing base flashings.
  - 1. Clean substrates to receive new flashings.
- C. Replace counterflashings damaged during removal.
  - 1. Counterflashings: See Section 07 60 00 SHEET METAL FLASHING AND TRIM.

### **3.10 RECOVER BOARD INSTALLATION**

- A. Install recover boards over existing roof insulation with butted joints. Stagger end joints in adjacent rows.
- B. Fasten recover boards to resist wind-uplift.
  - 1. Fastening Requirements: See Section 07 53 23, ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING.
  - 2. Uplift Resistance: Base on pull out resistance determined by specified field testing.

### **3.11 FIELD QUALITY CONTROL**

- A. Field Tests: Performed by testing laboratory specified in Section 01 45 29, TESTING LABORATORY SERVICES.

1. Fastener Pull Out Tests: ANSI/SPRI FX-1.

B. Existing Roofing System Warrantor Services:

1. Inspect reroofing preparation and roofing installation to verify compliance with existing warranty conditions.
2. Submit reports of field inspections, and supplemental instructions issued during inspections.

**3.12 DISPOSAL**

- A. Collect waste materials in containers.
- B. Remove waste materials from project site, regularly, to prevent accumulation.
- C. Legally dispose of waste materials.

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**SECTION 07 21 19**  
**FOAMED IN-PLACE INSULATION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Closed-cell spray polyurethane foam.
  - 2. Open-cell spray polyurethane foam.

**1.3 ACTION SUBMITTALS**

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

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

**1.6 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

**PART 2 - PRODUCTS**

**2.1 CLOSED-CELL SPRAY POLYURETHANE FOAM**

- A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 1.5 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.2 deg F x h x sq. ft./Btu at 75 deg F
  - 1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Flame-Spread Index: 25 or less.
  - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

**2.2 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.
- B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

**3.2 INSTALLATION**

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.

- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- D. Miscellaneous Voids: Apply according to manufacturer's written instructions.

**3.3 PROTECTION**

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

**SECTION 07 22 00**  
**ROOF AND DECK INSULATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
- B. Repairs and alteration work to existing roof insulation.

**1.2 RELATED REQUIREMENTS**

None

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American Society of Heating, Refrigeration and Air Conditioning (ASHRAE):
  - 1. Standard 90.1-13 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. ASTM International (ASTM):
  - 1. C208-12 - Cellulosic Fiber Insulating Board.
  - 2. C552-15 - Cellular Glass Thermal Insulation.
  - 3. C726-05 - Mineral Fiber Roof Insulation Board.
  - 4. C728-15 - Perlite Thermal Insulation Board.
  - 5. C1177/C1177M-13 - Glass Mat Gypsum Substrate for Use as Sheathing.
  - 6. C1278/C1278M-07a(2015) - Fiber-Reinforced Gypsum Panel.
  - 7. C1289-15 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - 8. C1396/C1396M-14a - Gypsum Board.
  - 9. D41/D41M-11 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  - 10. D312-06 - Asphalt Used in Roofing.
  - 11. D1970/D1970M-15 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  - 12. D2178/D2178M-15 - Asphalt Glass Felt Used in Roofing and Waterproofing.
  - 13. D2822/D2822M-11 - Asphalt Roof Cement, Asbestos Containing.
  - 14. D4586/D4586M-07(2012)e1 - Asphalt Roof Cement, Asbestos-Free.
  - 15. E84-15a - Surface Burning Characteristics of Building Materials.
  - 16. F1667-15 - Driven Fasteners: Nails, Spikes, and Staples.

- D. National Roofing Contractors Association (NRCA):
  - 1. Manual-15 - The NRCA Roofing Manual: Membrane Roof Systems.
- E. U.S. Department of Agriculture (USDA):
  - 1. USDA BioPreferred Program Catalog.
- F. UL LLC (UL):
  - 1. Listed - Online Certifications Directory.
- G. U.S. Department of Commerce National Institute of Standards and Technology (NIST):
  - 1. DOC PS 1-09 - Structural Plywood.
  - 2. DOC PS 2-04 - Performance Standard for Wood-Based Structural-Use Panels.

#### **1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and installation details.
    - a. Nailers, cants, and terminations.
    - b. Layout of insulation showing slopes, tapers, penetrations, and edge conditions.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
- D. Samples:
  - 1. Roof insulation, each type.
  - 2. Fasteners, each type.
- E. Qualifications: Substantiate qualifications meet specifications.
  - 1. Installer.

#### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Same installer as Division 07 roofing section installer.

#### **1.6 DELIVERY**

- A. Comply with recommendations of NRCA Manual.
- B. Deliver products in manufacturer's original sealed packaging.
- C. Mark packaging, legibly. Indicate manufacturer's name or brand, type, and manufacture date.

- D. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

#### **1.7 STORAGE AND HANDLING**

- A. Comply with recommendations of NRCA Manual.
- B. Store products indoors in dry, weathertight facility.
- C. Protect products from damage during handling and construction operations.

#### **1.8 FIELD CONDITIONS**

- A. Environment:
  - 1. Install products when existing and forecasted weather permit installation according to manufacturer's instructions.

#### **1.9 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant substrate board, vapor retarder, insulation, and cover board against material and manufacturing defects as part of Division 07 roofing system warranty.

### **PART 2 - PRODUCTS**

#### **2.1 SYSTEM PERFORMANCE**

- A. Insulation Thermal Performance:
  - 1. Overall Average R-Value: RSI-57 (R-33), minimum.
  - 2. Any Location R-Value: RSI-17 (R-10), minimum.
- B. Fire and Wind Uplift Resistance: Provide roof insulation complying with requirements specified in Division 07 roofing section.
- C. Insulation on Metal Decking: UL labeled indicating compliance with one of the following:
  - 1. UL Listed.
  - 2. Insulation Surface Burning Characteristics: When tested according to ASTM E84.
    - a. Flame Spread Rating: 75 maximum.
    - b. Smoke Developed Rating: 150 maximum.

#### **2.2 PRODUCTS - GENERAL**

- A. Provide each product from one manufacturer.
- B. Sustainable Construction Requirements:

1. Insulation Recycled Content:
  - a. Mineral Fiber: 75 percent total recycled content, minimum.
  - b. Fiberglass: 20 percent total recycled content, minimum.
  - c. Cellulose: 75 percent post-consumer recycled content, minimum.
  - d. Perlite Composite Board: 23 percent post-consumer recycled content, minimum.
  - e. Rigid Foam: 9 percent total recycled content, minimum.
  - f. Glass Fiber Reinforced Rigid Foam: 6 percent total recycled content, minimum.
2. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:
  - a. Non-flooring adhesives and sealants.
  - b. Composite wood and agrifiber.
3. Bio-Based Materials: Where applicable, provide products designated by USDA and meeting or exceeding USDA recommendations for bio-based content, and products meeting Rapidly Renewable Materials and certified sustainable wood content definitions; refer to [www.biopreferred.gov](http://www.biopreferred.gov).

### **2.3 ADHESIVES**

- A. Primer: ASTM D41/D41M.
- B. Asphalt: ASTM D312, Type III or IV for vapor retarders and insulation.
- C. Modified Asphaltic Insulation Adhesive: Insulation manufacturer's recommended modified asphaltic, asbestos-free, cold-applied adhesive formulated to adhere roof insulation to substrate or to another insulation layer.
- D. Bead-Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended bead-applied, low-rise, one- or multicomponent urethane adhesive formulated to adhere roof insulation to substrate or to another insulation layer.
- E. Full-Spread Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to adhere roof insulation to substrate or to another insulation layer.
- F. Roof Cement: Asbestos free, ASTM D2822/D2822M, Type I or Type II; or, ASTM D4586/D4586M, Type I or Type II.

## **2.4 ROOF AND DECK INSULATION**

- A. Roof and Deck Insulation, General: Preformed roof insulation boards approved by roofing manufacturer.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam.
- C. Tapered Roof Insulation System:
  - 1. Fabricate of mineral fiberboard, polyisocyanurate. Use only one insulation material for tapered sections.
  - 2. Cut to provide high and low points with crickets and slopes as shown.
  - 3. Minimum thickness of tapered sections; 38 mm (1-1/2 inch).
  - 4. Minimum slope 1/48 (1/4 inch per 12 inches).

## **2.5 INSULATION ACCESSORIES**

- A. Glass (Felt): ASTM D2178/D2178M, Type VI, heavy duty ply sheet.
- B. Cants and Tapered Edge Strips:
  - 1. Wood Cant Strips: Refer to Section 06 10 00, ROUGH CARPENTRY.
  - 2. Insulation Cant Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.
  - 3. Tapered Edge Strips: 1/12 (1 inch per 12 inches), from 0 mm (0 inches), 300 mm to 450 mm (12 inches to 18 inches) wide.
    - a. Cellulosic Fiberboard: ASTM C208.
    - b. Mineral Fiberboard: ASTM C726.
    - c. Perlite Board: ASTM C728.
  - 4. 6 ng/Pa/s/sq. m (0.1 perms).
- C. Cover Board:
  - 1. Glass-Mat, Water-Resistant Gypsum Roof Board: ASTM C1177/C1177M, 13 mm (1/2 inch) thick, factory primed.

## **2.6 ACCESSORIES**

- A. Fasteners: Corrosion-resistant carbon steel fasteners and galvalume-coated steel or plastic round plates for fastening substrate board and insulation to roof deck.
- B. Nails: ASTM F1667; type to suit application.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Comply with requirements of Division 07 roofing section.

#### **3.2 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.

#### **3.3 INSTALLATION - GENERAL**

- A. Install products according to manufacturer's instructions.
  - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
- B. Comply with requirements of UL for insulated steel roof deck.
- C. Attach substrate board and other products to meet requirements of Division 07 roofing section.

#### **3.4 SUBSTRATE BOARD INSTALLATION**

- A. Fasten substrate board to top flanges of steel decking to resist uplift pressures according requirements for specified roofing system.
  - 1. Locate the long dimension edge joints solidly bearing on top of decking ribs.

#### **3.5 INSULATION INSTALLATION**

- A. Insulation Installation, General:
  - 1. Base Sheet: Where required by roofing system, install one lapped base sheet specified in Division 07 roofing section by mechanically fastening to roofing substrate before installation of insulation.
  - 2. Cant Strips: Install preformed insulation cant strips at junctures of roofing system with vertical construction.
  - 3. Use same insulation as existing for roof repair and alterations unless specified otherwise.
- B. Insulation Thickness:
  - 1. Thickness of roof insulation shown on drawings is nominal. Provide thickness required to comply with specified thermal performance.
  - 2. Insulation on Metal Decks: Provide insulation in minimum thickness recommended by insulation manufacturer to span deck flutes. Support edges of insulation on metal deck ribs.



3. When actual insulation thickness differs from drawings, coordinate alignment and location of roof drains, flashing, gravel stops, fascias and similar items.
4. Where tapered insulation is used, maintain insulation thickness at high points and roof edges shown on drawings.
  - a. Low Point Thickness: Minimum 38 mm (1-1/2 inches).
5. Use minimum two layers of insulation when required thickness is 68 mm (2.7 inch) or greater.
- C. Lay insulating units with close joints, in regular courses and with end joints staggered.
  1. Stagger joints between layers minimum 150 mm (6 inches).
- D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing felt.
- E. Seal cut edges at penetrations and at edges against blocking with bitumen or roof cement.
- F. Cut to fit tightly against blocking or penetrations.
- G. Cover all insulation installed on the same day; comply with temporary protection requirements of Division 07 roofing section.
- H. Installation Method:
  1. Adhered Insulation:
    - a. Prime substrate as required.
    - b. Set each layer of insulation firmly in solid mopping of hot asphalt.
    - c. Set each layer of insulation firmly in ribbons of bead-applied insulation adhesive.
    - d. Set each layer of insulation firmly in uniform application of full-spread insulation adhesive.
  2. Mechanically Fastened Insulation:
    - a. Fasten insulation according to requirements in Division 07 roofing section.
    - b. Fasten insulation to resist uplift pressures specified in Division 07 roofing section.
  3. Mechanically Fastened and Adhered Insulation:
    - a. Fasten first layer of insulation according to "Mechanically Fastened Insulation" requirements.

- b. Fasten each subsequent layer of insulation according to "Adhered Insulation" requirements.

### **3.6 COVER BOARD INSTALLATION**

- A. Install cover boards over insulation with long joints in continuous straight lines with staggered end joints.
- B. Offset cover board joints from insulation joints 150 mm (6 inches), minimum.
- C. Secure cover boards according to "Adhered Insulation" or "Mechanically Fastened Insulation" requirements.

- - E N D - -

**SECTION 07 53 23**  
**ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Ethylene Propylene Diene Monomer (EPDM) sheet roofing adhered to insulated metal roof deck.

**1.2 RELATED REQUIREMENTS**

- A. Preparation of Existing Membrane Roofs and Repair Areas: Section 07 01 50.19, PREPARATION FOR REROOFING.
- B. Substrate Board, Vapor Retarder, Roof Insulation, and Cover Board: Section 07 22 00, ROOF AND DECK INSULATION.
- C. Roof Membrane Color: Section 09 06 00, SCHEDULE FOR FINISHES.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):
  1. FX-1-01(R2006) - Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
  2. RP-4 2013 - Wind Design Standard for Ballasted Single-ply Roofing Systems.
- C. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):
  1. 7-10 - Minimum Design Loads For Buildings and Other Structures.
- D. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE):
  1. 90.1-13 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- E. ASTM International (ASTM):
  1. A276/A276M-15 - Stainless Steel Bars and Shapes.
  2. B209-14 - Aluminum and Aluminum-Alloy Sheet and Plate.
  3. B209M-14 - Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
  4. C67-14 - Sampling and Testing Brick and Structural Clay Tile.
  5. C140/C140M-15 - Sampling and Testing Concrete Masonry Units and Related Units.

6. C936/C936M-15 - Solid Concrete Interlocking Paving Units.
7. C1371-15 - Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
8. C1549-09(2014) - Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
9. D751-06(2011) - Coated Fabrics.
10. D1248-12 - Polyethylene Plastics Extrusion Materials for Wire and Cable.
11. D1876-08(2015)e1 - Peel Resistance of Adhesives (T-Peel Test).
12. D2103-15 - Polyethylene Film and Sheeting.
13. D2240-05(2010) - Rubber Property-Durometer Hardness.
14. D3884-09(2013)e1 - Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method).
15. D4263-83(2012) - Indicating Moisture in Concrete by the Plastic Sheet Method.
16. D4586/D4586M-07(2012)e1 - Asphalt Roof Cement, Asbestos-Free.
17. D4637/D4637M-14e1 - EPDM Sheet Used In Single-Ply Roof Membrane.
18. E96/E96M-15 - Water Vapor Transmission of Materials.
19. E408-99(2015) - Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
20. E1918-06(2015) - Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. E1980-11 - Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
22. G21-15 - Resistance of Synthetic Polymeric Materials to Fungi.
- F. Cool Roof Rating Council (CRRC):
  1. 1-15 - Product Rating Program.
- G. Federal Specifications (Fed. Spec.):
  1. UU-B-790A - Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire Resistant).
- H. Florida Department of Business and Professional Regulation (FL):
  1. Approved - Product Approval.
- I. National Roofing Contractors Association (NRCA):
  1. Manual-15 - The NRCA Roofing Manual: Membrane Roof Systems.
- J. U.S. Department of Agriculture (USDA): USDA BioPreferred Catalog.
- K. UL LLC (UL):

1. 580-06 - Tests for Uplift Resistance of Roof Assemblies.
2. 1897-15 - Uplift Tests for Roof Covering Systems.
- L. U.S. Department of Commerce National Institute of Standards and Technology (NIST):
  1. DOC PS 1-09 - Structural Plywood.
  2. DOC PS 2-04 - Performance Standard for Wood-Based Structural-Use Panels.
- M. U.S. Environmental Protection Agency (EPA):
  1. Energy Star - ENERGY STAR Program Requirements for Roof Products Version 3.0.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Conduct preinstallation meeting at the Project site minimum 30 days before beginning Work of this section.
  1. Required Participants:
    - a. Contracting Officer's Representative.
    - b. Contractor.
    - c. Installer.
    - d. Manufacturer's field representative.
    - e. Other installers responsible for adjacent and intersecting work, including roof deck, flashings, roof specialties, roof accessories, utility penetrations, rooftop curbs and equipment, lightning protection, etc.
  2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
    - a. Installation schedule.
    - b. Installation sequence.
    - c. Preparatory work.
    - d. Protection before, during, and after installation.
    - e. Installation.
    - f. Terminations.
    - g. Transitions and connections to other work.
    - h. Inspecting and testing.
    - i. Other items affecting successful completion.
    - j. Pull out test of fasteners.
    - k. Material storage, including roof deck load limitations.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

#### **1.5 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  1. Roofing membrane layout.
  2. Roofing membrane fastener pattern and spacing.
  3. Roofing membrane seaming and joint details.
  4. Roof membrane penetration details.
  5. Base flashing and termination details.
- C. Manufacturer's Literature and Data:
  1. Description of each product.
  2. Minimum fastener pull out resistance.
  3. Installation instructions.
  4. Warranty.
  5. Product Data for Federally-Mandated Bio-Based Materials: For roof materials, indicating USDA designation and compliance with definitions for bio-based products, Rapidly Renewable Materials, and certified sustainable wood content.
- D. Samples:
  1. Roofing Membrane: 150 mm (6 inch) square.
  2. Base Flashing: 150 mm (6 inch) square.
  3. Fasteners: Each type.
  4. Roofing Membrane Seam: 300 mm (12 inches) square.
- E. Certificates: Certify products comply with specifications.
  1. Fire and windstorm classification.
  2. High wind zone design requirements.
  3. Energy performance requirements.
- F. Qualifications: Substantiate qualifications comply with specifications.
  1. Installer, including supervisors with project experience list
  2. Manufacturer's field representative with project experience list.
- G. Field quality control reports.
- H. Temporary protection plan. Include list of proposed temporary materials.
- I. Operation and Maintenance Data:

1. Maintenance manuals.

#### **1.6 QUALITY ASSURANCE**

##### **A. Installer Qualifications:**

1. Approved by roofing system manufacturer as installer for roofing system with specified warranty.
2. Regularly installs specified products.
3. Installed specified products with satisfactory service on five similar installations for minimum five years.
  - a. Project Experience List: Provide contact names and addresses for completed projects.
4. Employs full-time supervisors experienced installing specified system and able to communicate with Contracting Officer's Representative and installer's personnel.

##### **B. Manufacturer's Field Representative:**

1. Manufacturer's full-time technical employee or independent roofing inspector.
2. Individual certified by Roof Consultants Institute as Registered Roof Observer.

#### **1.7 DELIVERY**

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

#### **1.8 STORAGE AND HANDLING**

- A. Comply with NRCA Manual storage and handling requirements.
- B. Store products indoors in dry, weathertight facility.
- C. Store adhesives according to manufacturer's instructions.
- D. Protect products from damage during handling and construction operations.
- E. Products stored on the roof deck must not cause permanent deck deflection.

#### **1.9 FIELD CONDITIONS**

- A. Environment:

1. Product Temperature: Minimum 4 degrees C (40 degrees F) and rising before installation.
2. Weather Limitations: Install roofing only during dry current and forecasted weather conditions.

#### **1.10 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant roofing system against material and manufacturing defects and agree to repair any leak caused by a defect in the roofing system materials or workmanship of the installer.
  1. Warranty Period: 10 years.

### **PART 2 - PRODUCTS**

#### **2.1 SYSTEM DESCRIPTION**

- A. Roofing System: Adhered roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards .

#### **2.2 SYSTEM PERFORMANCE**

- A. Design roofing system meeting specified performance:
  1. Energy Performance:
    - a. EPA Energy Star Listed for low-slope roof products.
    - b. ASTM E1980; Minimum 78 Solar Reflectance Index (SRI).
    - c. CRRC-1; Minimum 0.70 initial solar reflectance and minimum 0.75 emissivity.
    - d. Three-Year Aged Performance: Minimum 0.55 solar reflectance tested in according to ASTM C1549 or ASTM E1918, and minimum 0.75 thermal emittance tested in according to ASTM C1371 or ASTM E408.

Where tested aged values are not available:

Calculate compliance adjusting initial solar reflectance according to ASHRAE 90.1.

Provide roofing system with minimum 64 three-year aged Solar Reflectance Index calculated according to ASTM E1980 with 12 W/sq. m/degree K (2.1 BTU/h/sq. ft.) convection coefficient.



### 2.3 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide roof system components from one manufacturer.
- C. Sustainable Construction Requirements:
  - 1. Bio-Based Materials: Where applicable, provide products designated by USDA and meeting or exceeding USDA recommendations for bio-based content, and products meeting Rapidly Renewable Materials and certified sustainable wood content definitions; refer to [www.biopreferred.gov](http://www.biopreferred.gov).
  - 2. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:
    - a. Non-flooring adhesives and sealants.

### 2.4 EPDM ROOFING MEMBRANE

- A. EPDM Sheet: ASTM D4637/D4637M, Type I - non-reinforced
  - 1. Thickness: 1.5 mm (60 mils)
  - 2. Color: See Section 09 06 00, SCHEDULE OF FINISHES.
- B. Additional Properties:

| PROPERTY              | TEST METHOD   | REQUIREMENT  |
|-----------------------|---------------|--|
| Shore A Hardness      | ASTM D2240    | 55 to 75 Durometer                                   |
| Water Vapor Permeance | ASTM E96/E96M | Minimum 8 ng/Pa/s/sq. m<br>(0.14 perms) Water Method |
| Fungi Resistance      | ASTM G21      | After 21 days, no sustained growth or discoloration. |

- 1. Use fire retardant membrane when not protected by ballast or pavers. Verify for UL or approval.

### 2.5 MEMBRANE ACCESSORY MATERIALS

- A. Sheet roofing manufacturer's specified products.
- B. Flashing Sheet: Manufacturer's standard; same material, and color as roofing membrane.
  - 1. Self-curing EPDM flashing adaptable to irregular shapes and surfaces.

- 2. Minimum Thickness: 1.5 mm (0.060 inch).
- C. Factory Formed Flashings: Inside and outside corners, pipe boots, and other special flashing shapes to minimize field fabrication.
- D. Splice Adhesive or Tape: Manufacturer's standard for roofing membrane and flashing sheet.
- E. Splice Lap Sealant: Liquid EPDM rubber for exposed lap edge.
- F. Bonding Adhesive: Manufacturer's standard, solvent based, to suit substrates.
- G. Termination Bars: Manufacturer's standard, stainless steel or aluminum, 25 mm wide by 3 mm thick (1 inch wide by 1/8 inch thick) factory drilled for fasteners.
- H. Battens: Manufacturer's standard, galvanized or galvanized steel, 25 mm wide by 1.3 mm thick (1 inch wide by 0.05 inch thick), factory punched for fasteners.
- I. Pipe Compression Clamp:
  - 1. Stainless steel drawband.
  - 2. Worm drive clamp device.
- J. Fasteners: Manufacturer's standard coated steel with metal or plastic plates, to suit application.
- K. Fastener Sealer: One part elastomeric adhesive sealant.
- L. Temporary Closure Sealers (Night Sealant): Polyurethane two part sealer.
- M. Primers, Splice Tapes, Cleaners, and Butyl Rubber Seals: As specified by roof membrane manufacturer.
- N. Asphalt Roof Cement: ASTM D4586/D4586M.

## **2.6 FASTENERS**

- A. Fasteners and washers required for securing pavers together with straps and to walls or other anchorage:
  - 1. Straps for Securing Pavers Together:
    - a. Stainless Steel: ASTM A276/A276M, Type 302 or 304, minimum 0.46 mm (0.018 inch) thick.
    - b. Aluminum Strap: ASTM B209/B209M, minimum 2.39 mm (0.094 inch) thick.
    - c. Round corners on straps.
    - d. Form straps 38 mm (1-1/2 inches) wide, 3 m (10 feet) maximum length with 6 by 10 mm (1/4 by 3/8 inch) punched slotted holes

at 100 mm (4 inch) centers centered on width of strap. Punch hole size 2 mm (1/16 inch) larger than fastener shank when shank is thicker than 5 mm (3/16 inch).

## **2.7 SEPARATION SHEET**

- A. Polyethylene Film: ASTM D2103, 0.2 mm (6 mils) thick.
- B. Building Paper: Fed. Spec. UU-B-790.
  - 1. Water Vapor Resistance: Type I, Grade A, Style 4, reinforced.
  - 2. Water Vapor Permeable: Type I, Grade D, Style 4, reinforced.

## **2.8 FLEXIBLE TUBING**

- A. Closed cell neoprene, butyl polyethylene, vinyl, or polyethylene tube or rod.
- B. Diameter approximately 1-1/2 times joint width.

## **2.9 PROTECTION MAT OR SEPARATOR SHEET**

- A. Protection Mat:
  - 1. Water pervious; either woven or non-woven sheet of long chain polymeric filaments or yarns such as polypropylene, black polyethylene, polyester, or polyamide; or, polyvinylidene-chloride formed into a pattern with distinct and measurable openings.
  - 2. Filter fabric equivalent opening size (EOS): Not finer than the U.S.A. Standard Sieve Number 120 and not coarser than the U.S.A. Standard Sieve Number 100. EOS is defined as the number of the U.S.A. Standard Sieve having openings closest in size to the filter cloth openings.
  - 3. Edges of fabric selvaged or otherwise finished to prevent raveling.
  - 4. Abrasion Resistance:
    - a. After being abraded in conformance with ASTM D3884 using rubber-hose abrasive wheels with one kg load per wheel and 1000 revolutions, perform tensile strength test as specified in ASTM D1682, paragraph.
    - b. Result: 25 kg (55 lbs.) minimum in any principle direction.
  - 5. Puncture Strength:
    - a. ASTM D751 tension testing machine with ring clamp; steel ball replaced with an 8 mm (5/16 inch) diameter solid steel cylinder with a hemispherical tip centered within the ring clamp.
    - b. Result: 57 kg (125 lbs.) minimum.

6. Non-degrading under a wet or humid condition within minimum 4 degrees C (40 degrees F) to maximum 66 degrees C (150 degrees F) when exposed to ultraviolet light.
7. Minimum Sheet Width: 2400 mm (8 feet).

## **2.10 ACCESSORIES**

- A. Temporary Protection Materials:
  1. Expanded Polystyrene (EPS) Insulation: ASTM C578.
  2. Plywood: NIST DOC PS 1, Grade CD Exposure 1.
  3. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine and verify substrate suitability for product installation with roofing installer and roofing inspector present.
  1. Verify roof penetrations are complete, secured against movement, and firestopped.
  2. Verify roof deck is adequately secured to resist wind uplift.
  3. Verify roof deck is clean, dry, and in-plane ready to receive roofing system.
- B. Correct unsatisfactory conditions before beginning roofing work.

### **3.2 PREPARATION**

- A. Complete roof deck construction before beginning roofing work:
  1. Curbs, blocking, edge strips, and other components to which roofing and base flashing is attached in place ready to receive insulation and roofing.
  2. Coordinate roofing membrane installation with flashing work and roof insulation work so insulation and flashing are installed concurrently to permit continuous roofing operations.
  3. Complete installation of flashing, insulation, and roofing in same day except for the area where temporary protection is required when work is stopped for inclement weather or end of work day.
- B. Dry out surfaces including roof deck flutes, that become wet from any cause during progress of the work before roofing work is resumed. Apply materials to dry substrates, only.
- C. Broom clean roof decks. Remove dust, dirt and debris.
- D. Remove projections capable of damaging roofing materials.

E. Existing Membrane Roofs and Repair Areas:

1. Comply with Section 07 01 50.19 PREPARATION FOR REROOFING.

**3.3 TEMPORARY PROTECTION**

- A. Install temporary protection consisting of a temporary seal and water cut-offs at the end of each day's work and when work is halted for an indefinite period or work is stopped when precipitation is imminent.
- B. Install temporary cap flashing over top of base flashings where permanent flashings are not in place to protect against water intrusion into roofing system. Securely anchor in place to prevent blow off and damage by construction activities.
- C. Temporarily seal exposed insulation surfaces within roofing membrane.
  1. Apply temporary seal and water cut off by extending roofing membrane beyond insulation and securely embedding edge of the roofing membrane in 6 mm (1/4 inch) thick by 50 mm (2 inches) wide strip of temporary closure sealant. Weight roofing membrane edge with sandbags, to prevent displacement; space sandbags maximum 2400 mm (8 feet) on center.
  2. Direct water away from work. Provide drainage, preventing water accumulation.
  3. Check daily to ensure temporary seal remains watertight. Reseal open areas and weight down.
- D. Before the work resumes, cut off and discard portions of roof membrane in contact with temporary seal.
  1. Cut minimum 150 mm (6 inches) back from sealed edges and surfaces.
- E. Remove sandbags and store for reuse.

**3.4 INSTALLATION, GENERAL**

- A. Install products according to manufacturer's instructions and approved submittal drawings.
  1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
- B. Comply with NRCA Manual installation requirements.
- C. Comply with UL 580 for uplift resistance.
- D. Do not allow membrane and flashing to contact surfaces contaminated with asphalt, coal tar, oil, grease, or other substances incompatible with EPDM.

### 3.5 ROOFING INSTALLATION

- A. Install membrane perpendicular to long dimension of insulation boards.
- B. Begin membrane installation at roof low point and work towards high point. Lap membrane shingled in water flow direction.
- C. Position membrane free of buckles and wrinkles.
- D. Roll membrane out; inspect for defects as membrane is unrolled. Remove defective areas:
  - 1. Allow 30 minutes for membrane to relax before proceeding.
  - 2. Lap edges and ends minimum 75 mm (3 inches). Clean lap surfaces.
  - 3. Install seam adhesive or tape, unless furnished with factory applied adhesive strips. Apply pressure to develop full adhesion.
  - 4. Check seams to ensure continuous adhesion and correct defects.
  - 5. Finish seam edges with beveled bead of lap sealant.
  - 6. Finish seams same day as membrane is installed.
  - 7. Anchor membrane perimeter to roof deck and parapet wall as indicated on drawings.
- E. Membrane Perimeter Anchorage:
  - 1. Install batten with fasteners at perimeter of each roof area, curb flashing, expansion joints and similar penetrations on top of roof membrane as indicated on drawings.
  - 2. Mechanical Fastening:
    - a. Space fasteners maximum 300 mm (12 inches) on center, starting 25 mm (1 inch) from ends.
    - b. When battens are cut, round edge and corners before installing.
    - c. Set fasteners in lap sealant and cover fastener head with fastener sealer, including batten.
    - d. Stop batten where batten interferes with drainage. Space ends of batten 150 mm (6 inch) apart.
    - e. Cover batten with 225 mm (9 inch) wide strip of flashing sheet. Seal laps with lap seam adhesive and finish edges with lap sealant.
    - f. At parapet walls intersecting building walls and curbs, secure roofing membrane to structural deck with fasteners 150 mm (6 inches) on center or as shown in NRCA Manual.
- F. Adhered System Installation:

1. Apply bonding adhesive in quantities required by roofing membrane manufacturer.
2. Fold sheet back on itself, clean and coat the bottom side of the membrane and the top of substrate with adhesive. Do not coat the lap joint area.
3. After adhesive has set according to adhesive manufacturer's instructions, roll roofing membrane into adhesive minimizing voids and wrinkles.
4. Repeat for other half of sheet.
5. Cut voids and wrinkles to lay flat. Clean and patch cut area.

G. Mechanical Fastened System Installation:

1. Secure roofing membrane to structural deck with fasteners through battens to achieve specified wind uplift performance.
  - a. Drill pilot holes for fasteners installed into cast-in-place concrete. Drill hole minimum 10 mm (3/8 inch) deeper than fastener penetration.
2. When fasteners are installed within membrane laps, locate battens minimum 13 mm (1/2 inch) from edge of sheets.
3. Apply lap sealant under battens and anchor to deck while lap sealant is still fluid. Cover fastener head with fastener sealer.
4. Where fasteners are installed over roofing membrane after seams are welded, cover fasteners with minimum 200 mm (8 inch) diameter EPDM membrane cap centered over fasteners. Where battens are used cover battens with minimum 200 mm (8 inch) wide EPDM strip cap centered over batten. Splice caps to roofing membrane and finish edges with lap sealant.

H. Loosely Laid and Ballasted System Installation:

1. Loosely lay roofing membrane.
2. Adhere membrane to comply with ANSI/SPRI RP-4 requirements.

**3.6 FLASHING INSTALLATION**

- A. Install flashings on same day as roofing membrane is installed. When flashing cannot be completely installed in one day, complete installation until flashing is watertight and provide temporary covers or seals.
- B. Flashing Roof Drains:

1. Install roof drain flashing according to roofing membrane manufacturer's instructions.
    - a. Coordinate to set the metal drain flashing in asphalt roof cement, holding cement back from the edge of the metal flange.
    - b. Do not allow roof cement to contact EPDM roofing membrane.
    - c. Adhere roofing membrane to metal flashing with bonding adhesive.
  2. Turn metal drain flashing and roofing membrane down into drain body. Install clamping ring and strainer.
- C. Installing Base Flashing and Pipe Flashing:
1. Install flashing sheet to pipes, walls and curbs to minimum 200 mm (8 inches) height above roof surfaces and extend roofing manufacturer's standard lap dimension onto roofing membranes.
    - a. Adhere flashing with bonding adhesive.
    - b. Form inside and outside corners of flashing sheet according to NRCA Manual. Form pipe flashing according to NRCA Manual.
    - c. Lap ends roofing manufacturer's standard dimension.
    - d. Adhesively splice flashing sheets together, and adhesively splice flashing sheets to roofing membranes. Finish exposed edges with lap sealant.
  2. Anchor top of flashing to walls and curbs with fasteners spaced maximum 150 mm (6 inches) on center. Use surface mounted fastening strip with sealant on ducts. Use pipe clamps on pipes or other round penetrations.
  3. Apply sealant to top edge of flashing.
- D. Repairs to Membrane and Flashings:
1. Remove sections of roofing membrane or flashing sheet that are creased, wrinkled, or fishmouthed.
  2. Cover removed areas, cuts and damaged areas with patch extending 100 mm (4 inches) beyond damaged, cut, or removed area. Adhesively splice patch to roofing membrane or flashing sheet. Finish edge of lap with lap sealant.

### **3.7 FIELD QUALITY CONTROL**

- A. Field Tests: Performed by testing laboratory specified in Section 01 45 29, TESTING LABORATORY SERVICES.
1. Fastener Pull Out Tests: ANSI/SPRI FX-1; one test for every 230 sq. m (2,500 sq. ft.) of deck. Perform tests for each



combination of fastener type and roof deck type before installing roof insulation.

- a. Test at locations selected by Contracting Officer's Representative.
- b. Do not proceed with roofing work when pull out resistance is less than manufacturer's required resistance.
- c. Test Results:

Repeat tests using different fastener type or use additional fasteners achieve pull out resistance required to meet specified wind uplift performance.

Patch cementitious deck to repair areas of fastener tests holes.

2. Examine and probe roofing membrane and flashing seams in presence of Contracting Officer's Representative and Manufacturer's field representative.
3. Probe seams to detect marginal bonds, voids, skips, and fishmouths.
4. Cut 100 mm (4 inch) wide by 300 mm (12 inch) long samples through seams where directed by Contracting Officer's Representative.
5. Cut one sample for every 450 m (1500 feet) of seams.
6. Cut samples perpendicular to seams.
7. Failure of samples to pass ASTM D1876 test will be cause for rejection of work.
8. Repair areas where samples are taken and where marginal bond, voids, and skips occur.
9. Repair fishmouths and wrinkles by cutting to lay flat. Install patch over cut area extending 100 mm (4 inches) beyond cut.

B. Manufacturer Services:

1. Inspect initial installation, installation in progress, and completed work.
2. Issue supplemental installation instructions necessitated by field conditions.
3. Prepare and submit inspection reports.
4. Certify completed installation complies with manufacturer's instructions and warranty requirements.

### 3.8 CLEANING

- A. Remove excess adhesive before adhesive sets.

- B. Clean exposed roofing surfaces. Remove contaminants and stains to comply with specified solar reflectance performance.

### **3.9 PROTECTION**

- A. Protect roofing system from traffic and construction operations.
  - 1. Protect roofing system when used for subsequent work platform, materials storage, or staging.
  - 2. Distribute scaffolding loads to exert maximum 50 percent roofing system materials compressive strength.
- B. Loose lay temporary insulation board overlaid with plywood or OSB.
  - 1. Weight boards to secure against wind uplift.
- C. Remove protection when directed by Contacting Officer's Representative.
- D. Repair damage.

- - E N D - -

**SECTION 07 60 00  
FLASHING AND SHEET METAL**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Formed sheet metal work for wall and roof flashing, copings, roof edge metal, fasciae, drainage specialties, and formed expansion joint covers are specified in this section.

**1.2 RELATED WORK**

- A. Manufactured flashing, copings, roof edge metal, and fasciae: Section 07 71 00 ROOF SPECIALTIES.
- B. Joint Sealants: Section 07 92 00, JOINT SEALANTS.
- C. Color of factory coated exterior architectural metal and anodized aluminum items: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Integral flashing components of manufactured roof specialties and accessories or equipment: Section 07 71 00, ROOF SPECIALTIES, Section 07 72 00, ROOF ACCESSORIES and Division 23 HVAC sections.
- E. Paint materials and application: Section 09 91 00, PAINTING.

**1.3 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.
- B. Aluminum Association (AA):
  - AA-C22A41.....Aluminum Chemically etched medium matte, with clear anodic coating, Class I Architectural, 0.7-mil thick
  - AA-C22A42.....Chemically etched medium matte, with integrally colored anodic coating, Class I Architectural, 0.7 mils thick
  - AA-C22A44.....Chemically etched medium matte with electrolytically deposited metallic compound, integrally colored coating Class I Architectural, 0.7-mil thick finish
- C. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):

ANSI/SPRI ES-1-03.....Wind Design Standard for Edge Systems Used with  
Low Slope Roofing Systems

D. American Architectural Manufacturers Association (AAMA):

AAMA 620.....Voluntary Specification for High Performance  
Organic Coatings on Coil Coated Architectural  
Aluminum

AAMA 621.....Voluntary Specification for High Performance  
Organic Coatings on Coil Coated Architectural  
Hot Dipped Galvanized (HDG) and Zinc-Aluminum  
Coated Steel Substrates

E. ASTM International (ASTM):

A240/A240M-14.....Standard Specification for Chromium and  
Chromium-Nickel Stainless Steel Plate, Sheet  
and Strip for Pressure Vessels and for General  
Applications.

A653/A653M-11.....Steel Sheet Zinc-Coated (Galvanized) or Zinc  
Alloy Coated (Galvanized) by the Hot- Dip  
Process

B32-08.....Solder Metal

B209-10.....Aluminum and Aluminum-Alloy Sheet and Plate

B370-12.....Copper Sheet and Strip for Building  
Construction

D173-03(R2011).....Bitumen-Saturated Cotton Fabrics Used in  
Roofing and Waterproofing

D412-06(R2013).....Vulcanized Rubber and Thermoplastic Elastomers-  
Tension

D1187-97(R2011).....Asphalt Base Emulsions for Use as Protective  
Coatings for Metal

D1784-11.....Rigid Poly (Vinyl Chloride) (PVC) Compounds and  
Chlorinated Poly (Vinyl Chloride) (CPVC)  
Compounds

D3656-07.....Insect Screening and Louver Cloth Woven from  
Vinyl-Coated Glass Yarns

D4586-07.....Asphalt Roof Cement, Asbestos Free

F. Sheet Metal and Air Conditioning Contractors National Association  
(SMACNA): Architectural Sheet Metal Manual.

G. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500-06.....Metal Finishes Manual

H. Federal Specification (Fed. Spec):

A-A-1925A.....Shield, Expansion; (Nail Anchors)

UU-B-790A.....Building Paper, Vegetable Fiber

I. International Code Commission (ICC): International Building Code,  
Current Edition

#### 1.4 PERFORMANCE REQUIREMENTS

A. Wind Uplift Forces: Resist the following forces per FM Approvals 1-49:

1. Wind Zone 4: 2.20 to 4.98 kPa (46 to 104 lbf/sq. ft.): 9.96-kPa (208-lbf/sq. ft.) perimeter uplift force, 14.94-kPa (312-lbf/sq. ft.) corner uplift force, and 4.98-kPa (104-lbf/sq. ft.) outward force.

#### 1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: For all specified items, including:
  1. Flashings
- C. Manufacturer's Literature and Data: For all specified items, including:
  1. Two-piece counterflashing
  2. Nonreinforced, elastomeric sheeting
- D. Certificates: Indicating compliance with specified finishing requirements, from applicator and contractor.

### PART 2 - PRODUCTS

#### 2.1 FLASHING AND SHEET METAL MATERIALS

- A. Stainless Steel: ASTM A240, Type 302B, dead soft temper.
- B. Aluminum Sheet: ASTM B209, alloy 3003-H14 except alloy used for color anodized aluminum shall be as required to produce specified color. Alloy required to produce specified color shall have the same structural properties as alloy 3003-H14.
- C. Galvanized Sheet: ASTM, A653.

#### 2.2 FLASHING ACCESSORIES

- A. Solder: ASTM B32; flux type and alloy composition as required for use with metals to be soldered.

- B. Rosin Paper: Fed-Spec. UU-B-790, Type I, Grade D, Style 1b, Rosin-sized sheathing paper, weighing approximately 3 Kg/10 m<sup>2</sup>( 6 lbs/100 sf).
- C. Fasteners:
  - 1. Use stainless steel for stainless steel and aluminum alloy. Use galvanized steel or stainless steel for galvanized steel.
  - 2. Nails:
    - a. Minimum diameter for copper nails: 3 mm (0.109 inch).
    - b. Minimum diameter for aluminum nails 3 mm (0.105 inch).
    - c. Minimum diameter for stainless steel nails: 2 mm (0.095 inch) and annular threaded.
    - d. Length to provide not less than 22 mm (7/8 inch) penetration into anchorage.
  - 3. Rivets: Not less than 3 mm (1/8 inch) diameter.
- D. Sealant: As specified in Section 07 92 00, JOINT SEALANTS for exterior locations.

### **2.3 SHEET METAL THICKNESS**

- A. Except as otherwise shown or specified use thickness or weight of sheet metal as follows:
- B. Concealed Locations (Built into Construction):
  - 1. Stainless steel: 0.25 mm (0.010 inch) thick.
  - 2. Galvanized steel: 0.5 mm (0.021 inch) thick.
- C. Exposed Locations:
  - 1. Stainless steel: 0.4 mm (0.015 inch).
  - 2. Copper clad stainless steel: 0.4 mm (0.015 inch).
- D. Thickness of aluminum or galvanized steel is specified with each item.

### **2.4 FABRICATION, GENERAL**

- A. Jointing:
  - 1. In general, stainless steel joints, except expansion and contraction joints, shall be locked and soldered.
  - 2. Jointing of or stainless steel over 0.45 mm (0.018 inch) thick shall be done by lapping, riveting and soldering.
  - 3. Joints shall conform to following requirements:
    - a. Flat-lock joints shall finish not less than 19 mm (3/4 inch) wide.
    - b. Lap joints subject to stress shall finish not less than 25 mm (one inch) wide and shall be soldered and riveted.

- c. Unsoldered lap joints shall finish not less than 100 mm (4 inches) wide.
- 4. Flat and lap joints shall be made in direction of flow.
- 5. Soldering:
  - a. Pre tin both mating surfaces with solder for a width not less than 38 mm (1 1/2 inches) of stainless steel.
  - b. Treat in accordance with metal producers recommendations other sheet metal required to be soldered.
  - c. Completely remove acid and flux after soldering is completed.
- B. Cleats:
  - 1. Fabricate cleats to secure flashings and sheet metal work over 300 mm (12 inches) wide and where specified.
  - 2. Provide cleats for maximum spacing of 300 mm (12 inch) centers unless specified otherwise.
  - 3. Form cleats of same metal and weights or thickness as the sheet metal being installed unless specified otherwise.
  - 4. Fabricate cleats from 50 mm (2 inch) wide strip. Form end with not less than 19 mm (3/4 inch) wide loose lock to item for anchorage. Form other end of length to receive nails free of item to be anchored and end edge to be folded over and cover nail heads.
- C. Metal Options:
  - 1. Where options are permitted for different metals use only one metal throughout.
  - 2. Stainless steel may be used in concealed locations for fasteners of other metals exposed to view.

## **2.5 FINISHES**

- A. Use same finish on adjacent metal or components and exposed metal surfaces unless specified or shown otherwise.
- B. In accordance with NAAMM Metal Finishes Manual AMP 500, unless otherwise specified.
- C. Finish exposed metal surfaces as follows, unless specified otherwise:
  - 1. Stainless Steel: Finish No. 2B or 2D.
  - 2. Aluminum:
    - a. Clear Finish: AA-C22A41 medium matte, clear anodic coating, Class 1 Architectural, 18 mm (0.7 mils) thick.
    - b. Colored Finish: AA-C22A42 (anodized) or AA-C22A44 (electrolytically deposited metallic compound) medium matte,

integrally colored coating, Class 1 Architectural, 18 mm (0.7 mils) thick. Dyes will not be accepted.

- c. Fluorocarbon Finish: AAMA 620, high performance organic coating.
- d. Mill finish.

4. Steel and Galvanized Steel:

- a. Finish painted under Section 09 91 00, PAINTING unless specified as prefinished item.
- b. Manufacturer's finish:
  - 1) Baked on prime coat over a phosphate coating.
  - 2) Baked-on prime and finish coat over a phosphate coating.
  - 3) Fluorocarbon Finish: AAMA 621, high performance organic coating.

**2.6 BASE FLASHING**

- A. Use metal base flashing at vertical surfaces intersecting built-up roofing without cant strips or where shown.
  - 1. Use stainless steel, thickness specified unless specified otherwise.
  - 2. When flashing is over 250 mm (10 inches) in vertical height or horizontal width use either 0.5 Kg (20 oz) copper or 0.5 mm (0.018 inch) stainless steel.
  - 3. Use stainless steel at aluminum roof curbs where flashing contacts the aluminum.
- B. Fabricate metal base flashing up vertical surfaces not less than 200 mm (8 inch) nor more than 400 mm (16 inch).
- C. Fabricate roof flange not less than 100 mm (4 inches) wide unless shown otherwise. When base flashing length exceeds 2400 mm (8 feet) form flange edge with 13 mm (1/2 inch) hem to receive cleats.
- D. Form base flashing bent from strip except pipe flashing. Fabricate ends for riveted soldered lap seam joints. Fabricate expansion joint ends as specified.
- E. Pipe Flashing: (Other than engine exhaust or flue stack)
  - 1. Fabricate roof flange not less than 100 mm (4 inches) beyond sleeve on all sides.
  - 2. Extend sleeve up and around pipe and flange out at bottom not less than 13 mm (1/2 inch) and solder to flange and sleeve seam to make watertight.
  - 3. At low pipes 200 mm (8 inch) to 450 mm (18 inch) above roof:



- a. Form top of sleeve to turn down into the pipe at least 25 mm (one inch).
  - b. Allow for loose fit around and into the pipe.
4. At high pipes and pipes with goosenecks or other obstructions which would prevent turning the flashing down into the pipe:
  - a. Extend sleeve up not less than 300 mm (12 inch) above roofing.
  - b. Allow for loose fit around pipe.

## **2.7 COUNTERFLASHING (CAP FLASHING OR HOODS)**

- A. Stainless steel, unless specified otherwise.
- B. Fabricate to lap base flashing a minimum of 100 mm (4 inches) with drip:
  1. Form lock seams for outside corners. Allow for lap joints at ends and inside corners.
  2. In general, form flashing in lengths not less than 2400 mm (8 feet) and not more than 3000 mm (10 feet).
  3. Two-piece, lock in type flashing may be used in-lieu-of one piece counter-flashing.
  4. Manufactured assemblies may be used.
  5. Where counterflashing is installed at new work use an integral flange at the top designed to be extended into the masonry joint or reglet in concrete.
  6. Where counterflashing is installed at existing work use surface applied type, formed to provide a space for the application of sealant at the top edge.
- C. One-piece Counterflashing:
  1. Back edge turned up and fabricate to lock into reglet in concrete.
  2. Upper edge formed to extend full depth of masonry unit in mortar joint with back edge turned up 6 mm (1/4 inch).
- D. Two-Piece Counterflashing:
  1. Receiver to extend into masonry wall depth of masonry unit with back edge turned up 6 mm (1/4 inch) and exposed edge designed to receive and lock counterflashing upper edge when inserted.
  2. Counterflashing upper edge designed to snap lock into receiver.
- E. Surface Mounted Counterflashing; one or two piece:
  1. Use at existing or new surfaces where flashing can not be inserted in vertical surface.

2. One piece fabricate upper edge folded double for 65 mm (2 1/2 inches) with top 19 mm (3/4 inch) bent out to form "V" joint sealant pocket with vertical surface. Perforate flat double area against vertical surface with horizontally slotted fastener holes at 400 mm (16 inch) centers between end holes. Option: One piece surface mounted counter-flashing (cap flashing) may be used. Fabricate as detailed on Plate 51 of SMACNA Architectural Sheet Metal Manual.
3. Two pieces: Fabricate upper edge to lock into surface mounted receiver. Fabricate receiver joint sealant pocket on upper edge and lower edge to receive counterflashing, with slotted fastener holes at 400 mm (16 inch) centers between upper and lower edge.

F. Pipe Counterflashing:

1. Form flashing for water-tight umbrella with upper portion against pipe to receive a draw band and upper edge to form a "V" joint sealant receiver approximately 19 mm (3/4 inch) deep.
2. Fabricate 100 mm (4 inch) over lap at end.
3. Fabricate draw band of same metal as counter flashing. Use 0.33 mm (0.013 inch) thick stainless steel.
4. Use stainless steel bolt on draw band tightening assembly.
5. Vent pipe counter flashing may be fabricated to omit draw band and turn down 25 mm (one inch) inside vent pipe.

- G. Where vented edge decks intersect vertical surfaces, form in one piece, shape to slope down to a point level with and in front of edge-set notched plank; then, down vertically, overlapping base flashing.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

A. General:

1. Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, ARCHITECTURAL SHEET METAL MANUAL, except as otherwise shown or specified.
2. Apply Sealant as specified in Section 07 92 00, JOINT SEALANTS.
3. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application.

4. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate. Cover holes or cracks in wood wider than 6 mm (1/4 inch) with sheet metal compatible with the roofing and flashing material used.
5. Coordinate with masonry work for the application of a skim coat of mortar to surfaces of unit masonry to receive flashing material before the application of flashing.
6. Apply a layer of 7 Kg (15 pound) saturated felt followed by a layer of rosin paper to wood surfaces to be covered with copper. Lap each ply 50 mm (2 inch) with the slope and nail with large headed copper nails.
7. Confine direct nailing of sheet metal to strips 300 mm (12 inch) or less wide. Nail flashing along one edge only. Space nail not over 100 mm (4 inches) on center unless specified otherwise.
8. Install bolts, rivets, and screws where indicated, specified, or required in accordance with the SMACNA Sheet Metal Manual. Space rivets at 75 mm (3 inch) on centers in two rows in a staggered position. Use neoprene washers under fastener heads when fastener head is exposed.
9. Coordinate with roofing work for the installation of metal base flashings and other metal items having roof flanges for anchorage and watertight installation.
10. Nail continuous cleats on 75 mm (3 inch) on centers in two rows in a staggered position.
11. Nail individual cleats with two nails and bend end tab over nail heads. Lock other end of cleat into hemmed edge.
12. Install flashings in conjunction with other trades so that flashings are inserted in other materials and joined together to provide a water tight installation.
13. Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.
14. Isolate aluminum in contact with dissimilar metals others than stainless steel, white bronze or other metal compatible with aluminum by:
  - a. Paint dissimilar metal with a prime coat of zinc-chromate or other suitable primer, followed by two coats of aluminum paint.

- b. Paint dissimilar metal with a coat of bituminous paint.
  - c. Apply an approved caulking material between aluminum and dissimilar metal.
- 15. Paint aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of bituminous paint.
- 16. Paint aluminum in contact with absorptive materials that may become repeatedly wet with two coats of bituminous paint or two coats of aluminum paint.
- 17. Bitumen Stops:
  - a. Install bitumen stops for built-up roof opening penetrations through deck and at formed sheet metal gravel stops.
  - b. Nail leg of bitumen stop at 300 mm (12 inch) intervals to nailing strip at roof edge before roofing material is installed.

### **3.2 BASE FLASHING**

- A. Install where roof membrane type base flashing is not used and where shown.
  - 1. Install flashing at intersections of roofs with vertical surfaces or at penetrations through roofs, to provide watertight construction.
  - 2. Install metal flashings and accessories having flanges extending out on top of the built-up roofing before final bituminous coat and roof aggregate is applied.
  - 3. Set flanges in heavy trowel coat of roof cement and nail through flanges into wood nailers over bituminous roofing.
  - 4. Secure flange by nailing through roofing into wood blocking with nails spaced 75 mm (3 inch) on centers or, when flange over 100 mm (4 inch) wide terminate in a 13 mm (1/2 inch) folded edge anchored with cleats spaced 200 mm (8 inch) on center. Secure one end of cleat over nail heads. Lock other end into the seam.
- B. For long runs of base flashings install in lengths of not less than 2400 mm (8 feet) nor more than 3000 mm (ten feet). Install a 75 mm (3 inch) wide slip type, loose lock expansion joint filled with sealant in joints of base flashing sections over 2400 mm (8 feet) in length. Lock and solder corner joints at corners.
- C. Extend base flashing up under counter flashing of roof specialties and accessories or equipment not less than 75 mm (3 inch).

### **3.4 COUNTERFLASHING (CAP FLASHING OR HOODS)**

#### **A. General:**

1. Install counterflashing over and in conjunction with installation of base flashings, except as otherwise specified or shown.
2. Install counterflashing to lap base flashings not less than 100 mm (4 inch).
3. Install upper edge or top of counterflashing not less than 225 mm (9 inch) above top of the roofing.
4. Lap joints not less than 100 mm (4 inch). Stagger joints with relation to metal base flashing joints.
5. Use surface applied counterflashing on existing surfaces and new work where not possible to integrate into item.
6. When fastening to concrete or masonry, use screws driven in expansion shields set in concrete or masonry. Use screws to wood and sheet metal. Set fasteners in mortar joints of masonry work.

#### **B. One Piece Counterflashing:**

1. Where flashing is installed at new masonry, coordinate to insure proper height, embed in mortar, and end lap.
2. Where flashing is installed in reglet in concrete insert upper edge into reglet. Hold flashing in place with lead wedges spaced not more than 200 mm (8 inch) apart. Fill joint with sealant.
3. Where flashing is surface mounted on flat surfaces.
  - a. When top edge is double folded anchor flat portion below sealant "V" joint with fasteners spaced not over 400 mm (16 inch) on center:
    - 1) Locate fasteners in masonry mortar joints.
    - 2) Use screws to sheet metal or wood.
  - b. Fill joint at top with sealant.
4. Where flashing or hood is mounted on pipe.
  - a. Secure with draw band tight against pipe.
  - b. Set hood and secure to pipe with a one by 25 mm x 3 mm (1 x 1/8 inch) bolt on stainless steel draw band type clamp, or a stainless worm gear type clamp.
  - c. Completely fill joint at top with sealant.

#### **C. Two-Piece Counterflashing:**

1. Where receiver is installed at new masonry coordinate to insure proper height, embed in mortar, and lap.

2. Surface applied type receiver:
  - a. Secure to face construction in accordance, with manufacturers instructions.
  - b. Completely fill space at the top edge of receiver with sealant.
3. Insert counter flashing in receiver in accordance with fabricator or manufacturer's instructions and to fit tight against base flashing.
- D. Where vented edge occur install so lower edge of counterflashing is against base flashing.
- E. When counter flashing is a component of other flashing install as shown.

- - - E N D - - -

**SECTION 07 72 00  
ROOF ACCESSORIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

- A. This section specifies equipment supports and roof walkway systems.

**1.2 RELATED WORK:**

- A. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Sealant material and installation: Section 07 92 00, JOINT SEALANTS.
- C. General insulation: Rigid insulations for roofing: Section 07 22 00,  
ROOF AND DECK INSULATION

**1.3 QUALITY ASSURANCE:**

- A. Provide roof accessories that are the products of manufacturers regularly engaged in producing the kinds of products specified.
- B. For each accessory type provide the same product made by the same manufacturer.
- C. Assemble each accessory to the greatest extent possible before delivery to the site.

**1.4 SUBMITTALS:**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Submit representative sample panel of color anodized aluminum not less than 101 x 101 mm (4 x 4 inches). For extrusions, submit width not less than section to be installed. Show coating with integral color and texture and include manufacturer's identifying label.
- C. Shop Drawings: Each item specified showing design, details of construction, installation and fastenings.
- D. Manufacturer's Literature and Data: Each item specified.
- E. Certificates: Stating that aluminum has been given specified thickness of anodizing.
- F. Engineering Drawings and Calculations for Roof Walkway System. Signed and Sealed by responsible architect/engineer.

**1.5 APPLICABLE PUBLICATIONS:**

- A. The publications listed below form a part of this specification to the extend referenced. The publications are referenced in the text by the basic designation only.
- B. Federal Specifications (Fed. Spec.):

- RR-G-1602D.....Grating, Metal, Other Than Bar Type (Floor,  
Except for Naval Vessels)
- C. ASTM International (ASTM):
- A653/A653M-10.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-  
Iron Alloy-Coated (Galvannealed) By the Hot-Dip  
Process
- B209-14.....Aluminum and Aluminum Alloy-Sheet and Plate
- B209M-14.....Aluminum and Aluminum-Alloy Sheet and Plate  
(Metric)
- B221-14.....Aluminum-Alloy Extruded Bars, Rods, Wire,  
Shapes, and Tubes
- B221M-13.....Aluminum and Aluminum-Alloy Extruded Bars,  
Rods, Wire, Shapes, and Tubes (Metric)
- C726-12.....Mineral Wool Roof Insulation Board
- C1289-14a.....Faced Rigid Cellular Polyisocyanurate Thermal  
Insulation Board
- D1187/D1187M-97(R2011)..Asphalt-Base Emulsions for Use as Protective  
Coatings for Metal
- D. National Association of Architectural Metal Manufacturers (NAAMM):
- AMP 500 Series.....Metal Finishes Manual
- E. American Architectural Manufacturers Association (AAMA):
- 2603-13.....Performance Requirements and Test Procedures  
for Pigmented Organic Coatings on Aluminum  
Extrusions and Panels
- 2605-13.....High Performance Organic Coatings on  
Architectural Extrusions and Panels.
- 611-14.....Anodized Architectural Aluminum
- 621-02.....High Performance Organic Coatings on Coil  
Coated Architectural Hot Dipped Galvanized  
(HDG) and Zinc-Aluminum Coated Steel Substrates
- F. American Society of Civil Engineers (ASCE):
- ASCE 7-10.....Minimum Design Loads for Buildings and Other  
Structures
- G. U.S. National Archives and Records Administration (NARA):
- 29 CFR 1910.23.....Guarding Floor and Wall Openings and Holes



## **PART 2 - PRODUCTS**

### **2.1 MATERIALS:**

- A. Aluminum, Extruded: ASTM B221M (B221).
- B. Aluminum Sheet: ASTM B209M (B209).
- C. Galvanized Sheet Steel: ASTM A653/A653M; G-90 coating.

### **2.2 EQUIPMENT SUPPORTS:**

- A. Fabricate equipment supports from 1.3 mm (0.0516 inch) thick galvanized ASTM A653/A653M steel fabricate with welded corners and with seams joined by continuous water and air tight welds.
- C. Equipment supports to be internally reinforced with angles 1.22 m (48 inches) on center.
- D. Form exterior curb with integral base, and deck closures for curbs installed on steel decking.
- E. Use galvanized steel liners for curbs having inside dimension over 305 mm (12 inches).
- F. Internally insulate with 38 mm (1-1/2 inch) glass-fiber board insulation (ASTM C726).
- G. Fabricate curb with a minimum height of 203 mm (8 inches) above roof surface.
- H. Attach preservative treated wood nailers to top of curb. Provide 50 mm (2 inch) by 50 mm (2 inch) minimum nominal size on curb with openings and 50 mm (2 inch) thick, width of curb up to 305 mm (12 inches) on equipment support curbs.
- H. Make size of supports suit size of equipment furnished, with height as shown on construction documents, but not less than 203 mm (8 inches) above roof surface.
- I. Top of Equipment Supports: Level with pitch built into curb when deck slopes. Equip supports with water diverter or cricket on side that obstructs water flow.

### **2.3 METAL GRATING ROOF WALKWAY SYSTEM:**

- A. Provide metal grating roof walkway system consisting of prefabricated pans, of 14 gauge, galvanized (G-90 Coating) steel grating with slip resistant surface.
- B. Grating units to be in 610 mm (2 foot) widths and in 3048 to 3658 mm (10 to 12 foot long) sections as required.

- C. Provide complete with support framing, brackets, connectors, nosings and other accessories as required for complete roof walkway system.
  - 1. Include support stands at minimum 1524 mm (5 feet) on center to hold planks a minimum of 228 mm (9 inches) above roof surface.
  - 2. Provide wind restraint attachment to roof structure of size and spacing required to meet wind uplift requirements.
- D. Include step units, nosings framing and connectors to provide changes in elevation as required. Comply with ASCE 7 and 29 CFR 1910.23.
- E. Equip walkways with safety railings where required by 29 CFR 1910.23.
- F. Provide neoprene rubber pads having a shore A hardness of 80 to 90-Durometer under each support, or bearing surface.
- G. Finish: Galvanized steel, stainless steel or clear anodized aluminum.

#### **2.4 FINISH:**

- A. In accordance with NAAMM AMP 500 Series.
- B. Aluminum, Mill Finish: AA-MIX, as fabricated.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION:**

- A. Install roof specialties where indicated on construction documents.
- B. Secure with fasteners in accordance with manufacture's printed installation instructions and approved shop drawings unless shown otherwise.
- C. Coordinate to install insulation where shown; see Section 07 21 13, THERMAL INSULATION and Section 07 22 00, ROOF AND DECK INSULATION.
- D. Comply with section 07 92 00, JOINT SEALANTS to install sealants where required by manufactures installation instructions require sealant.
- E. Coordinate with roofing work for installation of items in sequence to prevent water infiltration.
  - 1. After completion of base flashing bend down cap flashing flange and secure to blocking with screws.
  - 2. Install expansion joint cover with 6 mm (1/4 inch) wide space at end joints and tension bars at 610 mm (24 inches) on center.
  - 3. Install cover plates with formed aluminum flashing concealed and centered on joint. Flashing to lap cover not less than 101 mm (4 inches).
- F. Equipment Supports: Do not anchor to insulating concrete or metal deck. Anchor only to building structure as per manufacturers recommendations.

**3.2 PROTECTION OF ALUMINUM:**

- A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with two (2) coats of asphalt coating (complete coverage), or by separating the contact surfaces with a preformed neoprene tape having pressure sensitive adhesive coating on side.
- B. Paint aluminum in contact with wood, concrete and masonry, or other absorptive materials, that may become repeatedly wet, with two coats of asphalt coating.

**3.3 ADJUSTING:**

- A. Adjust roof hatch hardware to operate freely and so that cover will operate without binding, close tightly at perimeter, and latch securely.

**3.4 PROTECTION:**

- A. Protect roof accessories from damage during installation and after completion of the work from subsequent construction.

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