

JACK C. MONTGOMERY  
VA MEDICAL CENTER  
1011 HONOR HEIGHTS DRIVE  
MUSKOGEE, OKLAHOMA 74401

SPECIFICATIONS  
REPLACE BUILDING 1 WINDOWS

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Project No: 623-12-102

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## DEPARTMENT OF VETERANS AFFAIRS

### Replace Windows Building 1

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**SECTION 00 01 15**  
**LIST OF DRAWING SHEETS**

The drawings listed below accompanying this specification form a part of the contract.

<b>PROJECT #</b>	<b>DRAWING #</b>	<b>DRAWING TITLE</b>	<b>DRAWING PAGE #</b>
623-12-102	T-1	Title Block	Page 1
623-12-102	SP-1	Site Plan	Page 2
623-12-102	A1.1	A and B East Elevation	Page 3
623-12-102	A1.2	South Elevation	Page 4
623-12-102	A1.3	North Elevation	Page 5
623-12-102	A1.4	West Elevation	Page 6
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623-12-102	A2.1	A and B 1 <sup>st</sup> Floor Plan	Page 9
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623-12-102	A9.1B	Sections and Details	Page 28
623-12-102	A9.2	Window Details	Page 29
623-12-102	A9.3B	New Window Details	Page 30
623-12-102	M1.1	Mechanical	Page 31

## **SECTION 01 00 00**

### **GENERAL REQUIREMENTS**

#### **1.1 GENERAL INTENTION**

##### **A. PREPARE SITE FOR BUILDING-OPERATIONS:**

Contractor shall completely prepare site for building operations, including demolition and other items as indicated herein. The Contractor shall furnish all necessary equipment, labor, materials, temporary equipment and items, tools, specialty services, supervision, and perform work for Project No. 623-12-102, " Window Replacement Building 1 at the Jack C. Montgomery VA Medical Center located in Muskogee, Oklahoma as required by drawings and specifications.

##### **B. BIDDERS PRE-SITE APPOINTMENT:**

Visits to the site by Bidders are highly recommended and may be made only by appointment with the Contracting Officer. All bidders must attend a pre-bid conference where all questions will be answered and onsite tour of all five floors will be conducted. Any additional question will be submitted in writing to the contracting officer. It is the responsibility of the contractor to review the entire job site footprint and existing site conditions prior to bid submission. Offices of Proud Veterans LLC, as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory in behalf of the government and shall not be construed as expressing or implying a contractual act of the Government without affirmation by the Contracting Officer.

##### **C. STATEMENT OF WORK:**

###### **1. CONTRACTOR SPECIFICATIONS:**

Contractor shall furnish labor and materials and perform work as required by drawings and specifications. Building 1 shall remain open for hospital operations during the entire construction periods.

###### **2. U VALUE OF WINDOW RATING:**

Broad Scope, All new hospital blast resistant windows and storefront to be triple glazed with a U value of .32 or better and blast resistant sliding storefront doors and mechanical rooms to be double glazed with a U value of .37 or better. All work is to be completed within 270 calendar days after receipt of notice to proceed.

###### **3. RESOURCES AND PROVISIONS:**

Provide all labor, materials, tools, and supervision necessary to perform the requirements. The scope is removal and installation of Building 1 exterior Windows, Louvers, Exhaust Fans, Storefront Doors, Storefront glazing, painting of adjacent metal doors and railing to Color. Match and repair of damaged or leaking lintel areas and brick repair in C Wing East Side first floor. The vents and louvers shall be replaced with new aluminum matching finish of the new windows. Interior or exterior damage caused by the demolition and installation of new windows shall be repaired under this project. The contractor shall be responsible for matching all existing exterior and interior finishes around the windows and doors. These Windows and Exterior Doors & frame, louvers & vents shall follow the new desired almond color scheme. Railings shall be painted Dark Bronze. During preparation for installation of new updated blast resist windows with an AFTP stand-off distance of 84 lineal feet. Only a qualified installer of the Window manufacturer shall be allowed to install blast resistant windows and storefronts. Once installation has started a qualified representative of the manufacturer shall be present to certify the installation of the windows for all warranty purposes. The energy efficient blast resistant storefront and triple glazed window minimum requirements will meet the specifications included in this package.

4. CONSTRUCTION CLEANUP PLAN:

Architect will perform multiple reviews during construction. After installation of all of building one A,B and C wings storefronts, windows and windows with louvers, louvers & vents the construction site must be cleared of all construction debris including removal and disposal of pre-existing Windows and Exterior Doors & frame, louvers & vents. Finally, after installation a walk through with COR of this project and the contractor will be completed to finalize all installation requirements and punch out required for the project.

5. DESIGNATION OF TEMPORARY LOCATION:

The set-up and activation of this project shall be phased to allow the systematic relocation of VA patients and staff from the designated construction area of that phase to a temporarily location or non-use of that area until that phase is completed. No more than two phases may be activated at a time for this project unless

authorized by the COR. Each phase must be completed and finalized before starting the next phase. The contractor will be responsible for providing a detailed schedule showing installation locations and timelines needed for those installations. This schedule must be approved by the COR before any work can start. The project does contain upper window panels that contain small amounts of Asbestos please refer to the environment specification section.

D. COMPLY WITH VA SECURITY AND POLICE:

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.

E. GENERAL CONTRACTOR'S PROOF OF OSHA CERTIFICATION:

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

F. SPECIFICATION SECTIONS OF RELATED WORK:

This specification section applies to ALL Divisions (0 through 34) of work under ALL other specification sections. G. Normal Operation: Jack C. Montgomery VA Hospital hours are 7:00 AM to 4:30PM, Monday through Friday, with the exception of Federal Holidays. Work will be performed primarily after hours. Requests to work shall be submitted in writing to the Contracting Officer Representative (COR) for approval and will include a description of work to be performed. Approval is subject to availability of the COR, type of work to be performed, and the specific hours requested. Approval to work beyond this time will also include an evaluation of the anticipated noise level generated by the contractor. Under no circumstances will the contractor proceed without express, written approval of either the contracting officer or the COR.

1.2 STATEMENT OF BID ITEM(S)

A. ITEM I, GENERAL CONSTRUCTION:

Provide all necessary equipment, labor, materials, specialty services, supervision, and tools to complete. Work includes removal and installation of Building 1 Exterior Store- fronts, Windows, Windows with Louvers, Louvers and Exhausters and Painting of Steel doors and railing to match new color choice.

### 1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

#### A. DRAWING SPECIFICATIONS:

Contractor will be provided 3 sets of drawings and specifications and 3 CDs.

#### B. ADDITIONAL DRAWINGS:

Additional sets of drawings and specifications may be made by the Contractor, at Contractor's expense, from supplied PDF document.

### 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.
3. The General Contractor shall furnish to the Contracting Officer and COR lists of employees that will be or may be on the construction site(s). The List shall be on Company letter head that provides all of the company contact information, shall provide the project number and title, locations of work, names of the employees, their titles, their job types, and personal contact numbers (i.e. cell phone). All sub-contractors, vendors and suppliers for the project shall furnish the same listing on their individual company letter heads to the GC whom will provide the lists to the COR and Contracting Officer. These lists shall be updated as necessary during the entire duration of the project. These lists may be used to provide a check list record of personnel on-site each day to be provided with the contractors Daily Log reports. These lists may be used to provide a check list record of personnel on-site each day to be provided to the VA Police Department and their Dispatch Office where normal sign in and sign out occurs.

#### 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. For working outside the "regular hours" as defined in the contract: The General Contractor shall provide a request for approval 7

calendar days prior to the requested date, to the Contracting Officer and COR, so that security, escort and other appropriate arrangements can be provided for the employees.

3. No photography of VA premises is allowed without written permission of the Contracting Officer.
4. 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.
5. Key Control: 1. The General Contractor shall be issued keys for construction through the Contracting Officer. 2. All keys must be turned in at the end of Contract.

## 1.5 FIRE SAFETY

### A. APPLICABLE PUBLICATIONS:

Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
  - E84-2008.....Surface Burning Characteristics of Building Materials.
2. National Fire Protection Association (NFPA):
  - 10-2006.....Standard for Portable Fire Extinguishers
  - 30-2007.....Flammable and Combustible Liquids Code
  - 51B-2003.....Standard for Fire Prevention During Welding,
  - 70-2007.....National Electrical Code
  - 241-2004.....Standard for Safeguarding Construction, Alteration, and Demolition Operations
3. Occupational Safety and Health Administration (OSHA):
  - 29 CFR 1926.....Safety and Health Regulations for Construction
4. Hospital Policy Memorandums:
  - HPM 138-03.....Safety and Health during Construction Activities
  - HPM 138-04.....Lockout / Tag-out Program
  - HPM 138-15.....Interim Life Safety Measures (ILSM) HPM 138-
  - 17.....Notification of Fire Alarm Shutdown HPM 138-
  - 23.....Utility Shutdown Procedures



HPM 138-24.....Infection Control during Construction and  
Renovation

B. FIRE SAFETY PLAN:

Establish and maintain a 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 for compliance with contract requirements in accordance with Section 0133 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the COR and Contracting Officer which individuals have undergone contractor's safety briefing.

C. 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.

D. TEMPORARY FACILITIES:

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 6.1 m (20 feet) exposing overall length, separate by 3.0 m (10 feet). All to be coordinated and approved before placed.

E. TEMPORARY CONSTRUCTION PARTITIONS:

Install and maintain temporary construction partitions to provide smoke-tight Separations (not just dust resistant) between, construction areas, the Areas that are described in phasing requirements, and adjoining areas. Construct partitions of gypsum board (flame spread rating of 25 or less in accordance with ASTM E84). Seal joints and penetrations. At door openings, provide double plastic accommodations or install Class C, ¾ hour fire/smoke rated doors with self-closing devices.

F. MEANS OF EGRESS:

Do not block exiting of occupied buildings, including paths from exits to roads, minimize disruptions.

G. FIRE EXTINGUISHERS: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

H. HOT WORK (BURN PERMIT):

Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with COR and Contracting Officer. Obtain permits from facility COR and Contracting Officer at least seventy-two (72) hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.

I. SMOKING:

Smoking is prohibited in and adjacent to construction areas inside and outside of existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited, except in designated smoking rest areas.

J. WASTE DISPOSAL:

Dispose of waste and debris in accordance with NFPA 241. Remove from buildings and site daily. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the COR and 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.

## 1.6 OPERATIONS AND STORAGE AREAS

A. DAMAGE CONTROLL:

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.

B. STORAGE AND WORKING SPACE:

Working space and space available for storing materials shall be as determined by the COR and Contracting Officer. The Contractor shall keep work areas, storage areas, staging areas, and access areas and routes clean and neat. The Contractor shall provide sufficient trash containers so there is no debris lying around. The containers shall be emptied at the least daily and trash disposed of by the contractor.

C. VA CONDUCT AND AUTOMOBILE RULES:

Workmen are subject to rules of the Medical Center applicable to their conduct. All personal automobiles and contractor vehicles shall be parked off-site, as there is no available parking on-site.

D. UNPERMITTED STORAGE AREAS:

Do not store materials and equipment in other than assigned areas.

1. 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 (2) work days. Provide unobstructed access to the Medical Center areas required to remain in operation.
2. Where access by the 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.

E. PHASING:

To insure such executions, Contractor shall furnish the COR and Contracting Officer with a schedule of approximate phasing dates on which the Contractor intends to accomplish work in each specific area of site, building or portion thereof. In addition, Contractor shall notify the COR and Contracting Officer twenty-one (21) calendar days 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 the Medical Center Director, COR and Contracting Officer and Contractor.

1. The contractor is to submit his phasing schedule in writing to the Contracting Officer for review and approval no later than twenty-one calendar days after issuance of the Notice to Proceed. All work, such as corridor work, which is outside the main construction area, shall be done on evenings or weekends, so as not to disrupt the normal operations.
2. The contractor shall have submittals completed and turned in to the Government for review by the A/E firm no later than thirty (30) calendar days from the date of the signed Notice to Proceed. The government will return submittals within twenty-one (21) calendar days from acceptance from the contractor.
3. All materials shall be approved by the Government prior to delivery to the job site and start of work. NO WORK SHALL BE STARTED UNTIL ALL RELATED SUBMITTALS ARE APPROVED.

4. All renovation activities will take place at a busy Medical Center. The contractor shall not interfere with existing, on-going functions, or normal activity of the hospital. The contractor will provide walk-off mats for dust control, appropriate construction barriers, and certain portions of the work will be confined to evenings, and/or weekends, as identified on the drawings.
5. No work shall start until the preconstruction survey and inspection is completed.

F. OCCUPIED BUILDINGS:

Building(s) will be occupied during performance of work; but immediate areas of alterations will be vacated.

1. Certain areas of Building(s) will be occupied by Medical Center personnel for various periods. 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's 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 Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

G. ROADS, PARKING LOTS, DOCKS AND GROUNDS:

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 storefront entrances and window must be approved by the COR and Contracting Officer. Interruptions of these areas must be requested, in writing, at least twenty-one (21) calendar days prior to the desired time and shall be performed as directed by the COR and Contracting Officer.

H. COORDINATION OF CONSTRUCTION WITH MEDICAL CENTER DIRECTOR:

The activities at a Medical Center shall take precedence over construction activities. The Contractor must cooperate and coordinate with the Medical Center, through the COR and Contracting Officer, in arranging Construction schedule to cause the least possible interference with facility activities on the campus. Construction noise during the events or services shall not disturb the events or service.

1. The Contractor is required to discontinue his work sufficiently in advance of Easter Sunday, Mother's Day, Father's Day, Memorial Day, Veteran's Day and/or Federal holidays, to permit him to clean up all areas of operation adjacent to existing event or service areas before these dates.
2. The Medical Center observes the following Federal Holidays: New Year's Day, Labor Day, Martin Luther King Junior Day, Columbus Day, and President's Day, Veteran's Day, Memorial Day, Thanksgiving, Independence Day, and Christmas Day.
3. Clean-up shall include the removal of all equipment, tools, materials and debris and leaving the areas in a clean, neat condition.

I. REPORTS:

1. Daily Logs: In conjunction with the contractor's daily report, Contractor shall furnish a daily report for each day from the date of Notice to Proceed until Final Acceptance, including those days that no work is performed. The report shall have attached there to a copy of inspections conducted by the VA, a list of all employees on site that day, however, this does not relieve the Contractor of the responsibility to conduct and report inspections.
2. Payrolls: Contractor shall submit two (2) copies of certified payrolls required by VAAR 852.236-85 - Supplementary Labor Standard Provision. Payrolls shall be submitted to the Contracting Officer no later than Wednesday for the previous week.
3. Payment Requests: Every two weeks payment requests from the contractor will not be processed unless all paperwork is current, including daily reports, asbestos reports, and certified payrolls for the prime and all subs.
4. Requests for Information and/or Clarification: All RFI's and RFC's shall be submitted to the Contracting Officer to ensure timely response. The Government will answer RFI's and RFC's within twenty-one (21) calendar days from acceptance from the contractor.

5. Submittal Log: The contractor shall utilize the specifications and drawings to prepare and provide a submittal log. The Submittal Log shall list all submittals by specification section, paragraph and drawing numbers from the beginning to the end of the documents. The Submittal Log shall be provided to Contracting Officer and COR within ten (10) calendar days after receipt of Notice To Proceed. The Government may require additional submittals at its discretion at no additional cost. All submittals shall be approved, by the Contracting Officer prior to beginning related work.

J. MATERIAL SAFETY DATA SHEETS (MSDS'S):

Contractor shall provide two (2) YELLOW Loose-leaf binders, permanently labeled "MSDS Sheet for Project" with copies of each Material Safety Data Sheets for each and every product, chemical, and other required materials to be used on this project.

1. All instructions for use shall be compiled with.
2. Products will not be used until MSDS's are submitted to the COR. These shall be provided for any material no later than the day before those materials arrive on VA property.
3. The contractor shall maintain a current binder on the job site at all times, readily available for viewing by the COR, Contracting Officer, or Safety Officer.
4. At no time shall the Contractor have, or permit the sub-contractors to have, materials on VA property/station without MSDS sheets.

K. FIRE RETARDANT MATERIALS:

All materials used on this project, including temporary barriers, plywood, poly, and other required materials shall be fire retardant. All polies shall be 6 mil-minimum. The semi-permanent construction barriers shall be smoketight.

L. SMOKE FREE FACILITY:

The Jack C. Montgomery VA Hospital is a SMOKE FREE facility. There is NO SMOKING allowed in any interior or exterior spaces, including all Mechanical Spaces and roofs. Smoking is only permitted in designated exterior smoking areas.

## 1.7 ALTERATIONS

A. SURVEY:

Before any work is started, the Contractor shall make a thorough survey with the COR and Contracting Officer of buildings, grounds, areas of

buildings and grounds in which alterations occur, and areas which are anticipated routes of access. The contractor shall furnish a report, signed by all three, which lists any deficiencies noted at that time. This report shall be approved by the VA prior to the start of any work. The inspection shall include a 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(s) and grounds.
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 shall note any discrepancies between drawings and existing conditions at site(s).
3. 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, COR and Contracting' Officer.

B. RELOCATED ITEMS:

Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of the COR and Contracting Officer, 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. PROTECTION:

Provide the following protective measures:

1. 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.
2. Once the contractor is notified by the VA of problems or damage to VA property, the contractor shall take immediate corrective action

to protect and restore said property. The Daily Log for that day shall explain the problem(s) and corrective action(s) taken.

3. Dampen debris to keep down dust and provide temporary construction, dust-proof, asbestos containment, smoke rated, and/or fire rated barriers where specified, where indicated on the drawings, and as directed by the COR. Access doors in barriers shall be hinged and secured with locks. Walk-off mats shall be provided at all access doors.
4. Block off all ducts and diffusers to prevent circulation of dust into occupied areas during construction. Provide Negative Air Machines as specified, to maintain negative pressure within the construction area(s).

#### 1.8 INFECTION PREVENTION MEASURES

##### A. INFECTION CONTROL:

Certain portions of the work will be confined to evenings, and/or weekends, as identified on the drawings or in the specification sections.

##### B. MONITOR DUST:

Implement the requirements of VAMC's Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.

##### C. DUST CONTROL PROGRAM :

Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the guidelines provided by ICRA Group and as specified here. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to the COR and Contracting Officer and Facility ICRA team for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the Medical Center.

##### D. MONITOR AIRBORNE DISEASES:

Medical Center Infection Control personnel shall monitor for airborne disease (e.g. aspergillosis) as appropriate during construction. A



baseline of conditions may be established by the Medical Center prior to the start of work and periodically during the construction stage to determine impact of construction activities on indoor air quality. In addition: In general, following preventive measures shall be adopted during construction to keep down dust and prevent mold.

1. Dampen debris to keep down dust and provide temporary construction partitions in existing structures where directed by COR. Block off ducts and diffusers to prevent circulation of dust into occupied areas during construction.
2. Do not perform dust producing tasks within occupied areas without the approval of the COR and Contracting Officer. For construction in any areas that will remain jointly occupied by the Medical Center and Contractor's workers, the Contractor shall:
  - a. Provide dust proof, smoke tight, one-hour and/or two-hour fire-rated temporary drywall construction barriers, as required, to completely separate construction from the operational areas of the hospital in order to contain dirt debris and dust. Barriers shall be sealed and made presentable on hospital occupied side. Install a self-closing rated door in a metal frame, commensurate with the partition, to allow worker access. Maintain negative air at all times. A fire retardant polystyrene, 6-mil thick or greater plastic barrier meeting local fire codes may be used where dust control is the only hazard, and an agreement is reached with the COR, Contracting Officer and Medical Center.
  - b. HEPA filtration is required where the exhaust dust may reenter the breathing zone. Contractor shall verify that construction exhaust to exterior is not reintroduced to the medical center through intake vents, or building openings. Install HEPA (High Efficiency Particulate Accumulator) filter vacuum system rated at 98% capture of 0.3 microns including pollen, mold spores and dust particles. Insure continuous negative air pressures occurring within the work area. HEPA filters should have ASHRAE 85 or other pre-filter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Exhaust hoses shall be heavy duty, flexible steel reinforced and exhausted so that dust is not reintroduced to the medical center.

- c. Adhesive Walk-off/Carpet Walk-off Mats, minimum 610mm x 914mm 24" x 36"), shall be used at all interior transitions from the shall be changed as often as required to maintain clean work areas directly outside construction area at all times.
- E. Vacuum and wet mop all transition areas from construction to the utilize HEPA filtration. Maintain surrounding area frequently. Remove debris as they are created. Transport these outside the construction area in containers with tightly fitting lids.
- F. FINAL CLEANUP:
  - 1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
  - 2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
  - 3. All new air ducts shall be cleaned prior to final inspection.

#### 1.9 DISPOSAL AND RETENTION

##### A. RELOCATION OF HOSPITAL EQUIPMENT:

Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows and/or in accordance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT:

- 1. 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.
- 2. During above ceiling work, the contractor will have to clear rooms, protect VA property and finishes, and move furnishings as necessary to protect the area an items from dust and debris, in the performance of the work above the ceiling.

#### 1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

##### A. PRESERVE THE VA HOSPITAL AND THE ENVIRONMENT:

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

B. PRESERVE THE SURROUNDING AND ADJACENT ENVIRONMENT:

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 resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the facilities, including those that are the property of a third party, 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.

C. PROVIDE MATERIALS TO PREVENT DAMAGE:

Contractor shall take all measures and provide all materials necessary for protecting and preserving existing equipment and property in affected areas of construction against dust, debris and physical damage, so that equipment and affected areas to be used in Medical Center operations will not be hindered. Contractor shall permit access to VA personnel through construction areas as required for maintenance and normal Medical Center operations.

D. EQUIPMENT BECOMES THE PROPERTY OF THE GOVERNMENT:

Items of equipment and furnishings located in rooms in which work is to be done under this contract shall remain the property of the Government. During the alteration period when rooms and space are vacated by Veterans' Affairs, such items which are not required by drawings and specifications to be either relocated or reused, will be removed or protected by the Contractor as directed by the COR has extensive responsibility for compliance with permit requirements. VA will make the permit application available at the (appropriate medical office. The apparent low bidder, contractor and affected subcontractors shall furnish all information and certifications that are required to comply with the permit process and permit requirements. Many of the

permit requirements will be satisfied by completing construction as shown and specified. Some requirements involve the Contractor's method of operations and operations planning and the Contractor is responsible for employing best management practices. The affected activities often include, but are not limited to the following:

#### 1.11 RESTORATION

##### A. REPAIR CONSTRUCTION IMPAIRMENT:

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, gas, or electric work without approval of the COR and Contracting Officer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COR and Contracting Officer 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. NEW FABRICATION SHOULD BE IN GOOD CONDITION:

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. RESTORE DAMAGE:

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 indicated on drawings and which are not scheduled for discontinuance or abandonment.

##### D. INFORMATION FROM THE DRAWINGS:

Data and information furnished or referred to below, in the contract specification sections, on the contract drawings, and/or in other VA furnished documentation is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor. The contractor shall be responsible for conducting a thorough site

investigation, before bidding, to satisfy themselves as to actual conditions.

#### 1.12 PHYSICAL DATA

##### A. PERMITTED MATERIALS:

Government does not guarantee that other materials will not be encountered nor that proportions, conditions or character of several materials will not vary from those indicated by explorations and investigations. Bidders are expected to examine site of work; and, after investigation, decide for themselves character of materials and make their bids accordingly. Upon proper application to Department of Veterans Affairs, bidders will be permitted to make explorations or site investigations of their own at the work sites.

#### 1.13 AS-BUILT DRAWINGS

##### A. DRAWING CLARIFICATIONS

The contractor shall maintain two (2) full size sets of as-built (working) drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.

##### B. ADDITIONAL SKETCHES

All variations shall be shown in the same general detail as used in the contract drawings. Additional sketches will be required where original detail is changed, site conditions differ, and where required to clarify mark-ups. To insure compliance, as-built drawings shall be made available for the COR and Contracting Officer's review, as often as requested.

##### C. DRAWING TIMELINE:

Upon completion of the project and before final settlement, Contractor shall deliver two (2) approved completed detailed sets of as-built drawings to the COR and Contracting Officer within fifteen (15) calendar days. These drawings shall be in AutoCAD version 2010, unless otherwise approved by the COR and Contracting Officer.

#### 1.14 USE OF ROADWAYS, PARKING LOTS AND GROUNDS

##### A. HAULING EQUIPMENT:

For hauling, use only established public roads. For hauling, use Roads, Parking Lots and Grounds, and such temporary roads which are necessary

in the performance of contract work on Medical Center property, when authorized by the COR and Contracting Officer. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed temporary bridging.

B. MINIMIZE INTERFERENCE OF CONSTRUCTION:

To minimize interference of construction activities with the flow of Medical Center Traffic and Parking, comply with the following: Keep roads, walks, entrances to grounds, parking, and occupied areas of buildings, clear of all construction materials, debris, vehicles, and standing equipment.

1.15 COR AND CONTRACTING OFFICER OFFICES

A. LOCATION OF COR'S FIELD OFFICE:

The COR's field office is physically located in Building #18 of the Main Campus/Facility.

B. ADDRESS OF CONTRACTING SECTION:

The mailing address of the Contracting Section is 623 Muskogee VAMC (90C), 1011 Honor Heights Drive, Muskogee, Oklahoma 74401

1.16 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

A. ELECTRICAL USAGE:

Contractor is allowed to use the VA Electricity.

B. COVER AIR EXHAUST DUCTS:

Contractor shall cover intake and exhaust air ducts during demolition and installation in areas of performance.

1.17 TEMPORARY USE OF EXISTING ELEVATORS

A. UN-PERMITTED ELEVATOR USAGE:

Contractor will not be allowed the use of existing Medical Center elevators for handling building materials and equipment and personnel, unless approved in writing by the COR and Contracting Officer. Outside type hoist, crane, and/or elevator shall be used by Contractor for transporting materials and equipment and personnel.

B. PERMITTED ELEVATOR USAGE:

Use of existing Medical Center elevators for handling building materials, equipment and Contractor's personnel will be permitted subject to following provisions:

1. Contractor makes all arrangements with the COR and Contracting Officer for use of elevators. The COR and Contracting Officer will ascertain that elevators are in proper condition. The Contractor may, if approved by the COR and the Contracting Officer, have exclusive use or daily use of the designated elevator(s), except for Facilities Maintenance & Operations. 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 as well as entrance columns, canopy, return panels and inside surfaces of car enclosure walls.

#### 1.18 TEMPORARY TOILETS

##### A. PROVISION OF TOILETS:

Provide where directed, (for use of all Contractor's workmen) ample temporary sanitary toilet (port potties) units of 1 per each eight workers. Keep such places clean and free from flies and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

##### B. CONTRACTORS WORKMAN:

Contractor may have for use of Contractor's workmen, such toilet accommodations as may be assigned to Contractor by the Medical Center's COR and Contracting Officer. Contractor shall keep such places clean and be responsible for any damage done thereto by Contractor's workmen. Failure to maintain satisfactory condition in toilets will deprive Contractor of the privilege to use such toilets.

#### 1.19 AVAILABILITY AND USE OF UTILITY SERVICES

##### A. GOVERNMENT UTILITY REQUIREMENTS

The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and water hose bibs. The Contractor shall carefully conserve any utilities furnished without charge.

##### B. 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 the Medical Center heating distribution system.
2. Steam is available at no cost to Contractor. The Contractor may connect to existing systems at their own expense.

C. ELECTRICITY (FOR CONSTRUCTION AND TESTING):

Furnish all temporary electric services.

D. WATER (FOR CONSTRUCTION AND TESTING):

Furnish temporary water service.

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. 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 the COR and Contracting Officer discretion) of use of water from the Medical Center's system.

E. FUEL :

LP gas and/or burner fuel oil required for heating job trailer at all the contractor expense. Furnish temporary sewer service.

1. Sewer/sanitary waste service cannot obtained (site dependent) by connecting to the Medical Center sewer/sanitary waste distribution system. Contractor must provide self-contained system.
2. Contractor will need to obtain a storage tank for sewer services and have it pumped out as necessary, at their own expense.

F. CONNECTIONS:

ALL connections to and disconnections from existing VA utility services shall be coordinated and paid for by the contractor.

1.20 NEW TELEPHONE EQUIPMENT

A. TELEPHONE SERVICE:

The contractor shall coordinate and pay for all of his own telephone equipment and service.

1.21 TESTS / COMMISSIONING

A. PRETEST SWITCHING AND ELECTRICAL EQUIPMENT:



Pre-test exhaust fans and dis-connect' automated switching electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests.

B. TEST SECTIONS:

Conduct final tests required in various sections of specifications in presence of the COR and/or an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

C. SUBMIT REPORTS:

A copy of the testing agency field reports shall be submitted with the Daily Log report for the day the testing was conducted.

1.22 INSTRUCTIONS

A. MAINTENANCE AND OPERATING MANUALS:

Contractor shall furnish Maintenance and Operating manuals, verbal instructions, video instructions, and computer based instructions when required by the various sections of the specifications and as hereinafter specified.

B. MANUALS:

Provide Maintenance and Operating manuals (three [3] copies each) for each separate piece of equipment and system shall be delivered to the COR and Contracting Officer coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment and system. They shall include complete information necessary for starting, adjusting, programming, maintaining in continuous operation for long periods of time, and dismantling and reassembling of the complete units and sub-assembly components

1.23 GOVERNMENT-FURNISHED PROPERTY - - NONE

1.24 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT

A. COORDINATE RENOVATION PLANS:

Contractor shall complete areas and/or rooms to be renovated and coordinate with the COR and Contracting Officer the use of elevators and areas/rooms for storage of certain materials and equipment by Department of Veterans Affairs.

#### 1.25 CONSTRUCTION SIGN

A. PROVIDE CONSTRUCTION SIGNS:

Provide a Construction Sign where directed by the COR and Contracting Officer. All wood members shall be of framing lumber. Cover sign frame with 0.7 mm (24 gage) galvanized sheet steel nailed securely around edges and on all bearings. Provide three 102 x 102 mm (4 inch x 4 inch) posts (or equivalent round posts) set 1219 mm (four feet) into ground. Set bottom of sign level at 914 mm (three feet) above ground and secure to posts with through bolts. Make posts full height of sign. Brace posts with 51 x 102 mm (two x four inch) material as directed.

B. PAINT DESCRIPTIONS:

Paint all surfaces of sign and posts two coats of white gloss paint. Border and letters shall be of black gloss paint, except project title which shall be blue gloss paint.

C. REMOVE SIGNAGE:

Maintain signs and remove when directed by the COR and Contracting Officer.

D. CONSTRUCTION SIGN:

Provide a Detail Drawing of construction sign showing required legend and other characteristics of sign to the COR and Contracting Officer for approval. Upon written approval, the contractor will construct and install the construction sign.

#### 1.26 SAFETY SIGN

A. SAFETY CONSTRUCTION SIGNS:

Provide two (2) construction signs at each entrance to the construction areas. Signs shall be constructed of a durable material, twelve (12) inches high and thirty (30) inches wide with yellow background and blue Helvetica lettering two (2) inches high.

B. LOCATIONS FOR SAFETY CONSTRUCTION SIGNS:

Provide a Safety Sign where directed by COR and Contracting Officer. Face of sign shall be 19 mm (3/4 inch) thick exterior grade plywood. Provide two 102 mm x 102 mm (four x four inch) posts extending full height of sign and 914 mm (three feet) into ground. Set bottom of sign level at 1219 mm (four feet) above ground.

DANGER - KEEP OUT CONSTRUCTION AREA

AUTHORIZED PERSONNEL ONLY

EXCUSE THE INCONVENIENCE

C. PAINT SIGNAGE:

Paint all surfaces of Safety Sign and posts with one prime coat and two coats of white gloss paint. Letters and design shall be painted with gloss paint of colors noted.

D. REMOVE SIGNAGE:

Maintain signs and remove when directed by COR and Contracting Officer.

E. DETAIL CONSTRUCTION SIGN:

Provide a Detail Drawing of construction sign showing required legend and other characteristics of sign to the COR and Contracting Officer for approval. Upon written approval, the contractor will construct and install the construction sign.

F. REPORT NUMBERS OF ACCIDENTS:

Post the number of accident free days on a daily basis.

1.27 CONSTRUCTION DIGITAL IMAGES

- A. Provide digital camera to COR for project documentation. Camera shall be a Canon Power Shot A480 digital camera or approved equal compatible with approved IT interface at Medical Center. Camera shall remain property of Medical Center following contract. Camera to be provided at Pre-Construction Meeting.

1.28 FINAL PAYMENT

A. PENDING OF PAYMENT:

Final payment under this contract shall be withheld pending receipt of all test, close out documents, all equipment manuals, staff training, specialty tools, start-up supplies, as built drawings and certifications. These tests and certifications shall include: sprinkler certification, fire alarm certification, plumbing system leak tests - to include hot - cold - waste - vents, medical gas certifications, fire/smoke wall certification, vibration analysis of motor driven equipment, motor -shaft - base - pulley alignment certifications, HVAC TAB, Air Handler control demonstration/training of VA personnel, and other required information, and the return of all keys.

## 1.29 WARRANTY CALLS

### A. CONTACT THE CONTRACTOR ABOUT WARRANTY SERVICES:

The Government may contact the contractor for warranty services by telephone, fax, e-mail, letter or in person. The Contractor shall respond with actual physical repair activity (labor, equipment, materials, etc.) within three (3) business days of a routine warranty call, within eight (8) hours for emergencies.

### B. EMERGENCY CALLS

Please note that emergency calls may occur during other than normal work hours. A representative from the Facilities Management Service will identify the emergency calls.

## 1.30 VA CODES AND STANDARDS

### A. STANDARDS AND CODES:

The VA has adopted the latest editions of the following codes and standards as a minimum for all projects performed in the modernization, alteration, addition, or improvement of its real property and the construction of new structures. VA design Manuals and Master Specifications specify other codes and standards that VA follows on its projects: VA Directives, Design Manuals, Master Specifications, VA National CAD Standard Application Guide, and other Guidance on the Technical Information Library (TIL) (<http://www.cfm.va.gov/til/>).

International Building Code (IBC), including International Mechanical and Plumbing Codes

NFPA 101, Life Safety Code (see NOTES below)

FPA National Fire Codes, with the exception of NFPA 5000 NFPA 900 Occupational, Safety and Health Administration (OSHA) Standards

NFPA 70, National Electrical Code (NEC)

National Standard Plumbing Code (NSPC)

Safety Code for Elevators and Escalators, American Society of Mechanical Engineers (ASME) A 17.1

Uniform Federal Accessibility Standards (UFAS) including VA Supplement, Barrier Free Design

Building Code Requirements for Reinforced Concrete, American Concrete Institute and Commentary (ACI 318)

Manual of Steel Construction, Load and Resistance Factor Design  
Specifications for Structural Steel Buildings, American Institute  
of Steel Construction (AISC)

Energy policy Act of 2005 (EPACT)

American Society of Heating and Refrigeration Engineers (ASHRAE)

90.1, Energy Standards for Buildings Except Low-Rise Buildings

American Society of Heating and Refrigeration Engineers (ASHRAE),

Ventilation for Acceptable Indoor Air Quality - ASHRAE 62.1

B. LOCAL CODES:

As an agency of the federal government, VA is not subject to local  
imposition of code enforcement procedures (drawing reviews, building  
permits, inspections, fees, etc.). VA must function as the Authority  
Having Jurisdiction (AHJ) and thus has the responsibility to guard  
public health and safety through enforcing its adopted codes.

--- END OF SECTION ---

## **SECTION 01 32 16**

### **PROJECT SCHEDULES**

#### **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 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 will be utilized to satisfy both time and cost applications. All schedule data and reports required under this specification section shall be based upon regular total float, not relative total float schedules.

##### **1.2 CONTRACTOR'S REPRESENTATIVE:**

- A. The Contractor shall designate an authorized representative in the firm who will be responsible for the preparation of the Project Schedule, review and report progress of the project with and to the Contracting Officer's representative.
- 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 and such authority shall not be interrupted throughout the duration of the project.
- 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.

##### **1.3 COMPUTER PRODUCED SCHEDULES**

- A. The contractor shall provide to the VA monthly computer processing of all computer-produced time/cost schedules and reports generated from monthly project updates. 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 Microsoft Project Planner 2003 compatible to the contracting officer's representative; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data in Microsoft Project Planner 2003 compatible format; and the

resulting monthly updated schedule in an electronic file in Microsoft Project Planner 2003 compatible 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 based upon the monthly schedule updates.

- B. The contractor is responsible for the correctness and timeliness of Computer-produced reports. The Contractor is 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 shall report errors in computer-produced reports to Contractor's representative within ten calendar days from receipt of reports. The Contractor will reprocess the computer-produced reports, when requested by the Contracting Officer's representative to correct errors which affect the payment and schedule for the project.

#### 1.4 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; three copies of the complete Project Schedule on sheets of paper 279 x 432 mm (11 x 17 inches) and an electronic file in a Microsoft Project Planner 2003 compatible format. The submittal shall also include three copies 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, duration, predecessor and successor relationships, trade code, area code, description, 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 and start-to-start, only, 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 Project Schedule. 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, but must have zero duration. The complete working network diagram shall reflect the Contractor's approach to scheduling the complete project. The final network diagram 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 Contractors as bid schedule. These changes/delays shall be entered at the first update after the final network diagram 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.

B. Within 15 calendar days after receipt of the complete 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 7 calendar days after the joint review, the Contractor shall revise and shall submit three 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.

#### 1.5 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 test, Balance and adjust various systems.
- C. The Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required, 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 ASBESTOS ABATEMENT. The sum of asbestos abatement work activity/event costs shall equal the value of the asbestos bid item in the Contractors' bid.
- E. The Contractor shall cost load work activities/events for all BID ITEMS. The sum of the cost loading for each bid item work activities/events shall equal the value of the item in the Contractors' bid.
- F. Work activities/events for Contractor bond shall have a trade code and area code of BOND.

#### 1.6 PROJECT SCHEDULE REQUIREMENTS

- A. Show on the project schedule the sequence and interdependence of work activities/events required for complete performance of all items of work. In preparing the network diagram, the Contractor shall:
  - 1. Show the following on each work activity/event:
    - a. Activity/Event ID number.
    - b. Concise description of the work represented by the activity or event. (35 characters or less including spaces preferred).
    - c. Performance responsibility or trade code (five alpha characters or less): GEN, MECH, ELEC, CARP, PLAST, or other acceptable abbreviations.
    - d. Duration (in work days.)
    - e. Cost
    - f. Work location (five characters or less), descriptive of the area involved.
    - g. Manpower required (average number of men per day).
  - 2. 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 Medical Center utilities, delivery of Government furnished equipment, and 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. Schedule these activities/events so that only one phase is scheduled for completion within the same 30 consecutive calendar day period (except for those phases immediately preceding the final acceptance). Maintain this scheduling condition throughout the length of the contract unless waived by the Contracting Officer's representative in writing.
  - f. Work activities/events for the asbestos abatement bid item shall have a trade code of ASB.
  - g. Bid items other than the Base Bid (ITEM 1) and asbestos abatement item shall have trade codes corresponding to the appropriate bid item number (e.g., ITM 3, ITM 4 and other items).
3. 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.
  4. Break up the work into activities/events of a duration no longer than 20 work days each, 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 Contracting Officer may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals shall not be less than 20 work days. The construction time as determined by the CPM schedule from early start to late finish for any sub-phase, phase or the entire project shall not exceed the contract time(s) specified or shown.

5. 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.
6. Uniquely number each activity/event with numbers ranging from 1 to 99998 only.

B. Submit the following supporting data in addition to the activity/event ID schedule and electronic file (s). Failure of the Contractor to include this data will delay the review of the submittal until the Contracting Officer is in receipt of the missing data:

1. The proposed number of working days per week.
2. The holidays to be observed during the life of the contract (by day, month, and year).
3. The planned number of shifts per day.
4. The number of hours per shift.
5. List the major construction equipment to be used on the site, describing how each piece relates to and will be used in support of the submitted work activities/events.
6. Provide a typed, doubled spaced, description, at least one page in length, of the plan and your approach to constructing the project.

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 Contracting Officer. 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 Contracting Officer's approval of the Project Schedule.

- D. Requirements and CPM Activity/Event Record Specifications: Submit to the VA an electronic file(s) containing one file of the data required to produce a Microsoft Project Planner 2003 compatible, (PDM) produced schedule, reflecting all the activities/events of the complete project network diagram being submitted.

1.7 PAYMENT TO THE ONTRACTOR:

- A. Monthly, the contractor shall submit the certificate for payment reflecting updated schedule activities and cost. The Contractor is entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated computer-produced calendar-dated schedule unless, in special situations, the Contracting Officer permits an exception to this requirement. Monthly payment requests shall include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of Microsoft Project Planner 2003 compatible, to the contracting officer's representative; a listing of all project schedule changes, and associated data, made at the update; and an electronic file(s) of the resulting monthly updated schedule in a compressed Microsoft Project Planner 2003 compatible, format. These must be submitted with and substantively support the contractor's monthly application and certificate for payment request documents.
- B. When the Contractor fails or refuses to furnish to the Contracting Officer the information and the associated updated Microsoft Project Planner 2003 compatible, schedule in electronic format, which, in the sole judgment of the Contracting Officer, is necessary for processing the monthly progress payment, the Contractor shall not be deemed to have provided an estimate and supporting schedule data upon which progress payment may be made.

1.8 PAYMENT AND PROGRESS REPORTING

- A. Monthly job site progress meetings may be held on dates mutually agreed to by the Contracting Officer (or Contracting Officer's representative) and the Contractor. Contractor and the CPM consultant should be required to attend all monthly progress meetings. Presence of Subcontractors during progress meeting is optional unless required by the Contracting Officer (or Contracting Officer's representative). The Contractor shall update the project schedule and all other data required by this section shall be accurately filled in and completed prior to the monthly progress

meeting. The Contractor shall provide this information to the Contracting Officer or the VA representative in completed form three work days in advance of the progress meeting. Job progress will be reviewed to verify:

1. Actual start and/or finish dates for updated/completed activities/events.
  2. Remaining duration, required to complete 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 network diagram and computer-produced schedules.
  4. Percentage for completed and partially completed activities/events.
  5. Logic and duration revisions required by this section of the specifications.
  6. Activity/event duration and percent complete shall be updated independently.
- B. The Contractor shall submit a narrative report as a part of his Monthly review and update, in a form agreed upon by the Contractor and the Contracting Officer. The narrative report shall include a description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities/events and completion dates; and an explanation of corrective action taken or proposed. This report is in addition to the daily reports required elsewhere.
- C. After completion of the joint review and the Contracting Officer's approval of all entries, the contractor will generate an updated computer-produced calendar-dated schedule and supply the Contracting Officer's representative with reports.
- D. After completing the monthly schedule update, the contractor's scheduling specialist 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 resident engineer for the contract change(s). When there is a disagreement on logic and/or durations, the specialist shall use the schedule logic and/or durations provided and approved by the COR. 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 resident engineer 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 project schedule is approved, the contractor must recreate all manual progress payment updates on this approved project schedule 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.

- E. After VA acceptance and approval of the Project Schedule, and after each monthly update, the contractor shall submit to the Contracting Officer three copies of a revised Project Schedule showing all completed and partially completed activities/events, contract changes and logic changes made on the intervening updates or at the first update.
- F. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Specialist, COR, and all subcontractors needed, as determined by the Contracting Officer, 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.

#### 1.9 RESPONSIBILITY FOR COMPLETION

- A. Whenever it becomes apparent from the current monthly progress review meeting or the monthly computer-produced calendar-dated

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 Contracting Officer for the proposed schedule changes. If such actions are approved, the CPM revisions shall be incorporated by the Contractor into the project schedule before the next update, at no additional cost to the Government.

#### 1.10 CHANGES TO THE SCHEDULE

A. Within 30 calendar days after VA acceptance and approval of any updated computer-produced schedule, the Contractor will submit a revised network diagram, the associated diskette(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 Activities events, indicate an extension of the project completion by 20 working days or 10 percent of the remaining project duration, whichever is less. Such delays 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 of the network diagram regardless of the cause for these revisions.
  - B. CPM revisions made under this paragraph which affect the Previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Medical Center, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, must be furnished in writing to the Contracting Officer for approval.
  - C. Contracting Officer's approval for the revised network diagram 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, 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.
- 1.11 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 Contracting Officer 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, 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 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.

1.12 ATTACHMENT ONE DRAFT SCHEDULE

DRAFT SCHEDULE		
0	Days	Contract Award
0	Days	Mobilization Meeting / Design Analysis
0	Days	Construction Bond Pre Construction Meeting and Schedule
1	Days	Notice to Proceed
1- 30	Days	Submittals and Blast Calculations and Shop Drawings
30-35	Days	Starting with 1C141, 1C143B, 1C144, 1C145 and C100 Replacing Brick and Lintel C Wing West Side
36-40	Days	5 Windows 1C168B, 1C168A, 1C166, 1C165 and 1C164
41-43	Days	4 windows in Surgery Corridor during weekend
44-45	Days	3 windows in Elevator Corridor 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> floor
46-47	Days	3 windows with bars in West 2 <sup>nd</sup> floor C Storage
47-52	Days	Surgery Locker Room and Stairwell (Weekend)
53-60	Days	10 windows second floor C Wing West Side
61-66	Days	7 Windows with Exhausters
60-80	Days	Painting Steel Doors, Louvers, Railing and Stairs

67-90	Days	Replacing Emergency Room Storefront Slider Doors
80-85	Days	6 Small Steel Windows Building A
91-105	Days	Penthouse Windows
106-135	Days	Windows West A & B
136-168	Days	Windows South A A Wing Exam Rooms must be done on Only one of three clinical offices at a time.
169-192	Days	Windows A East Ladies area in B wing weekend, Hearing lab weekend
193-215	Days	Primary Care Storefront and Slider Door
216-224	Days	Pharmacy area in C Wing Storefront only remove door
216-224	Days	Above and Around Chapel Area
224-235	Days	Windows A&B North and East MRI area must be done on weekend, Dental Chair area must be done on Weekend Dental Lab must be done on weekend
235- 257	Days	A & B Main Entrance Storefront and Sliding Door
258-260	Days	Mylar Coating onto the Building A West side rear entrance.
260-270	Days	Remaining Windows and Punch List.

\*\* THIS SCHEDULE IS AS AN EXAMPLE NOT ACTUAL TIMELINE. CONTRACTOR WILL DETERMINE ORDER FOR INSTALLATION AND COMPLETION ON HIS OWN WAY OF CONDUCTING BUSINESS AND AMOUNT OF INSTALLATION THAT COMPLETED PER DAY.

- - - END OF SECTION - - -

## **SECTION 01 33 23**

### **PRODUCT DATA, SAMPLES AND SHOP DRAWING SUBMITTALS**

- 1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.
- 1-2. For the purposes of this contract, samples, test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.
- 1-3. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:
  - A. Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;
  - B. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
  - C. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.
- 1-4. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable to untimely and rejected submittals will not serve as a basis for extending contract time for completion.
- 1-5. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by Resident Engineer on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, Architect-Engineer will assign a file number thereto. Contractor, in any subsequent correspondence,

shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.

- 1-7. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional submittals beyond those required by the contract are furnished pursuant to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.
- 1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.
- 1-9. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.
  - A. Submit samples in single units unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.
  - B. Submittals will receive consideration only when covered by a transmittal letter signed by Contractor. Letter shall be sent via first class mail and shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.
    1. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.

2. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center, name of Contractor, manufacturer, brand, contract number and ASTM or Federal Specification Number as applicable and location(s) on project.
  3. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.
- C. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.
- D. Approved samples will be kept on file by the Resident Engineer at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.
- E. Submittal drawings (shop, erection or setting drawings) and schedules required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
1. For each drawing required, submit one legible photographic paper or vellum reproducible.
  2. Reproducible shall be full size.
  3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
  4. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.

5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
  6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.
  7. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.
- 1-10. Samples shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to:

COR  
Engineering Service  
Jack C. Montgomery VA Med Center  
Muskogee, Oklahoma 74403

\*\* NOTE: Submittals will be conducted / transacted through automated system named - Submittal Exchange. Contractor will receive free training on the use of the system.

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## SUBMITTAL LOG

SECTION	DESCRIPTION	ONCE	WEEKLY	MONTHLY
00-01-00	CONTRACTOR EMPLOYEE LIST	X		
00-01-00	CERTIFIED PAYROLL		X	
00-01-00	MSDS BINDER	X		
01-32-16	WORK FLOW DIAGRAM			X
01-32-16	MONTHLY NARRATIVE REPORT			X
01-74-19	WASTE MANAGEMENT PLAN	X		
02-41-00	DEMOLITION PLAN	X		
02-82-13	TRANSITE REMOVAL PLAN	X		
02-82-13	CERTIFICATE OF WORKERS AACKNOWLEDGEMENT	X		
02-82-13	ACCEPTANCE of VA ASBESTOS SPECIFICATION	X		
02-83-33	LEAD BASED PAINT REMOVAL PLAN	X		
04-05-13	MASONARY CEMENT	X		
05-12-00	STRUCTURAL STEEL SHOP DRAWING	X		
06-20-00	SOLID SURFACE SAMPLE 4" BY 4"	X		
07-21-13	FIBERGLASS INSULATION MANUFACTURER DATA	X		
07-60-00	WINDOW SILL PANNING	X		
07-92-00	INTERIOR CAULKING COMPOUND	X		
07-92-00	EXTGERIOR CAULKING COMPOUND	X		
08-41-13	STOREFRONT SHOP DRAWINGS	X		
08-41-13	STOREFRONT MANUFACTURER DATA	X		
08-41-13	STOREFRONT PAINTED CORNER SECTION	X		
08-41-13	STOREFRONT WARRANTY	X		
08-51-13	BLAST WINDOW SHOP DRAWINGS	X		
08-51-13	BLAST WINDOW MANUFACTURER DATA	X		
08=51-13	BLAST RESISTANCE CERTIFICATION	X		
08-51-13	WINDOW INFILTRATION DATA	X		
08-51-13	WINDOW WATER PENETRATION	X		
08-51-13	PAINTED WINDOW CORNER SAMPLE	X		
08-51-13	BLAST WINDOW WARRANTY	X		
08-71-13	DOOR OPENER MANUFACTURER DATA	X		
08-71-13	DOOR OPENER SHOP DRAWINGS	X		
08-71-13	DOOR OPENER WARRANTY	X		
08-00-00	GLAZING SHADING COEFFICENT	X		
08-00-00	GLAZING R VALUE	X		
08-00-00	GLAZING SAMPLE	X		
08-00-00	GLAZING WARRANTY	X		
08-80-01	SECURITY WINDOW FILM MANUFACTURER DATA	X		
08-90-01	INTEGRATED WINDOW ALUMINUM LOUVER	X		
09-29-00	WATER RESISTANT SHEETROCK SAMPLE	X		
09-30-13	CERAMIC TILE COLOR SAMPLES	X		
09-91-00	INTERIRO LATEX COLORS	X		
09-91-00	EXTERIRO ALKYD COLORS	X		
12-24-00	WINDOW SHADE SAMPLE	X		
23-34-00	EXHAUST FAN PRODUCT DATA	X		
26-05-21	PRODUCT DATA ELECTRICAL CABEL	X		
26-29-21	PRODUCT DATA DISCONNECT SWITCH	X		

## 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 VA 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.

##### 1.3 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   | Aluminium Association Inc.<br><a href="http://www.aluminum.org">http://www.aluminum.org</a>                      |
| AAMA | American Architectural Manufacturer's Association<br><a href="http://www.aamanet.org">http://www.aamanet.org</a> |
| AISC | American Institute of Steel Construction<br><a href="http://www.aisc.org">http://www.aisc.org</a>                |
| AISI | American Iron and Steel Institute<br><a href="http://www.steel.org">http://www.steel.org</a>                     |
| ANSI | American National Standards Institute, Inc.<br><a href="http://www.ansi.org">http://www.ansi.org</a>             |
| ARI  | Air-Conditioning and Refrigeration Institute<br><a href="http://www.ari.org">http://www.ari.org</a>              |



ASHRAE American Society of Heating, Refrigerating, and  
Air-Conditioning Engineers  
<http://www.ashrae.org>

ASTM American Society for Testing and Materials  
<http://www.astm.org>

BHMA Builders Hardware Manufacturers Association  
<http://www.buildershardware.com>

BIA Brick Institute of America  
<http://www.bia.org>

CISCA Ceilings and Interior Systems Construction Association  
<http://www.cisca.org>

EPA Environmental Protection Agency  
<http://www.epa.gov>

GANA Glass Association of North America  
<http://www.cssinfo.com/info/gana.html/>

GA Gypsum Association  
<http://www.gypsum.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>

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

IGMA Insulating Glass Manufacturers Alliance  
<http://www.igmaonline.org>

UBC The Uniform Building Code  
See ICBO

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

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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. 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.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, up to 50% by 2015 (FY 10 = 10%, FY 11 = 20%, FY 12 = 30%, FY 13 = 40%, FY 14 = 50%), and facilitate their salvage and recycle per executive order 13514, located at [http://www.whitehouse.gov/assets/documents/2009fedleader\\_eo\\_rel.pdf](http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf), 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.
- D. At a minimum the following waste categories shall be diverted from landfills:
  - 1. Soil and Inerts (eg, concrete, masonry and asphalt).
  - 2. Gypsum board
  - 3. Clean dimensional wood and palette wood.
  - 4. Green waste (biodegradable landscaping materials).
  - 5. Engineered wood products.
  - 6. Metal products (eg, steel, wire, beverage containers, etc).
  - 7. Cardboard, paper and packaging.
  - 8. Plastics (eg, ABS, PVC).
  - 9. Insulation.

##### **1.2 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. Weather damage.
  6. Contamination.
  7. Mishandling.
  8. 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 reuse and recycle new materials 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> 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.

#### 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. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- G. 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.
- H. 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.
- I. 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.
- J. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- K. Return: To give back reusable items or unused products to vendors for credit.
- L. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- M. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.

## 1.5 SUBMITTALS

- A. 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.

## 1.6 APPLICABLE PUBLICATIONS

- A. U.S. Green Building Council (USGBC): LEED Green Building Rating System for New Construction

## 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.
- 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.

--- END OF SECTION ---

## **SECTION 02 41 00**

### **DEMOLITION**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION:**

In general, this section specifies demolition and removal of aluminum automatic doors and frames, aluminum windows, blinds, curtains, drapes, window valances, storefront, heavy gage steel window frame, and exhaust louvers.

##### **1.2 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, 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 1.9 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 double enclosed plastic garbage bags to carry debris to truck beds and govern flow of material into truck or garbage container.
- E. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum.
- 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. 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.

3. 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 Resident Engineer. 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 Resident Engineer's approval.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.1 DEMOLITION:

- A. All debris, shall become property of Contractor and shall be properly disposed of by him daily, off the Medical Center Property. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations. All areas in the hospital receiving new windows will be completed to smoke hazard protection levels.
- B. Dampen debris to keep down dust and provide temporary construction partitions in existing structures where directed by COR. Blank off ducts and diffusers to prevent circulation of dust into occupied areas during construction. Provide dust proof, smoke tight, one-hour and/or two-hour fire- rated temporary drywall construction barriers, as required, to completely separate construction from the operational



areas of the hospital in order to contain dirt debris and dust. Barriers shall be sealed and made presentable on hospital occupied side, maintaining negative air at all times. A fire retardant polystyrene, 6-mil thick or greater plastic barrier meeting local fire codes may be used where dust control is the only hazard, and an agreement is reached with the COR, Contracting Officer and Medical Center.

- C. HEPA filtration is required where the exhaust dust may reenter the breathing zone. Contractor shall verify that construction exhaust to exterior is not reintroduced to the medical center through intake vents, or building openings. Install HEPA (High Efficiency Particulate Accumulator) filter vacuum system rated at 98% capture of 0.3 microns including pollen, mold spores and dust particles. Insure continuous negative air pressures occurring within the work area. HEPA filters should have ASHRAE 85 or other pre-filter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Exhaust hoses shall be heavy duty, flexible steel reinforced and exhausted so that dust is not reintroduced to the medical center.
- D. Adhesive Walk-off/Carpet Walk-off Mats, minimum 610mm x 914mm 24" x 36"), shall be used at all interior transitions from the shall be changed as often as required to maintain clean work areas directly outside construction area at all times.
- E. Vacuum and wet mop all transition areas from construction to the utilize HEPA filtration. Maintain surrounding area frequently. Remove debris as they are created. Transport these outside the construction area in containers with tightly fitting lids.
- F. The contractor shall not haul debris through patient-care areas without prior approval of the COR, Contracting Officer and the Medical Center. When, approved, debris shall be hauled in enclosed dust proof containers or wrapped in plastic and sealed with duct tape. No sharp objects should be allowed to cut through the plastic. Wipe down the exterior of the containers with a damp rag to remove dust. All equipment, tools, material, etc. transported through occupied areas shall be made free from dust and moisture by vacuuming and wipe down.
- G. Using a HEPA vacuum, clean inside the barrier and vacuum ceiling

tile prior to replacement. Any ceiling access panels opened for investigation beyond sealed areas shall be sealed immediately when unattended.

- H. At completion, remove construction barriers and ceiling protection carefully, outside of normal work hours. Vacuum and clean all surfaces free of dust after the removal.

### 3.2 CLEAN-UP:

- A. On completion of work of this section and after removal of all debris, leave site in newly cleaned condition satisfactory to COR. Clean-up shall include off the Medical Center Property 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.

--- END OF SECTION ---

## **SECTION 02 82 13.31**

### **ASBESTOS TRANSITE ABATEMENT**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY OF THE WORK**

###### **1.1.1 CONTRACT DOCUMENTS AND RELATED REQUIREMENTS**

Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. In the event the Asbestos Abatement Contractor discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Contracting Officer for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Contractor without obtaining guidance from the Contracting Officer shall become the sole risk and responsibility of the Asbestos Abatement Contractor. All costs incurred.

###### **1.1.2 EXTENT OF WORK**

- A. Below is a brief description of the estimated quantities of asbestos transite materials to be abated. These quantities are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy himself as the actual quantities to be abated. There are approximately 420 windows with transite. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.
- B. Removal, clean-up and disposal of ACM transite in an appropriate regulated area in the following approximate quantities: Approximately 440 windows with transite panels in the upper 1/3 of the window.
- C. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, regulated area preparations, emergency procedures arrangements, and standard operating procedures for asbestos abatement work.
- D. Abatement activities including removal and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.
- E. Cleaning and decontamination activities including final visual

inspection, air monitoring and certification of decontamination.

## 1.2 STOP ASBESTOS REMOVAL

If the Contracting Officer; their field representative; (the facility Safety Officer/Manager or their designee, or the VA Professional Industrial

Hygienist//Certified Industrial Hygienist (VPIH/CIH) presents a verbal Stop

Asbestos Removal Order, the Contractor/Personnel shall immediately stop all

asbestos removal and maintain HEPA filtered negative pressure air flow in the containment and adequately wet any exposed ACM. If a verbal Stop

Asbestos Removal Order is issued, the VA shall follow-up with a written order to the Contractor as soon as practicable. The Contractor shall not resume any asbestos removal activity until authorized to do so in writing by the VA Contracting Officer. A stop asbestos removal order may be issued at any time the VA Contracting Officer determines abatement

conditions/activities are not within VA specification, regulatory requirements or that an imminent hazard exists to human health or the environment. Work stoppage will continue until conditions have been

corrected to the satisfaction of the VA. Standby time and costs for

corrective actions will be borne by the Contractor, including the VPIH/CIH time. The occurrence of any of the following events shall be reported

immediately by the Contractor's competent person to the VA Contracting

Office or field representative using the most expeditious means (e.g., verbal or telephonic), followed up with written notification to the

Contracting Officer as soon as it is practical. The Contractor shall

immediately stop asbestos removal/disturbance activities and initiate fiber

reduction activities:

A. Airborne PCM analysis results equal to or greater than 0.01 f/cc outside

a regulated area or >0.05 f/cc inside a regulated area, breach or break in regulated area containment barrier(s), less than -0.02" WCG pressure

in the regulated area and or respiratory protection system failure.

### 1.3 CONTRACTOR RESPONSIBILITY

The Asbestos Abatement Contractor (Contractor) shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of this non friable asbestos abatement project. The Contractor is responsible for providing and maintaining training, accreditations, medical exams, medical records, personal protective equipment (PPE) including respiratory protection including respirator fit testing, as required by applicable Local regulations. The Contractor shall hold the VA and VPIH/CIH consultants harmless for any Contractor's failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The Contractor will incur all costs of the CPIH/CIH, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements related to failure to comply with the regulations applicable to the work.

### 1.4 FEDERAL REQUIREMENTS AND LOCAL REQUIREMENTS

Federal requirements which govern some aspect of asbestos abatement include, but are not limited to, the following regulations.

#### A. Occupational Safety and Health Administration (OSHA)

1. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
2. Title 29 CFR 1910 Subpart I - Personal Protective Equipment
3. Title 29 CFR 1910.134 - Respiratory Protection
4. Title 29 CFR 1926 - Construction Industry Standards
5. Title 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records

#### B. Environmental Protection Agency (EPA)

1. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos.
2. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)

#### C. LOCAL REQUIREMENTS

If local requirements are more stringent than federal or state standards, the local standards are to be followed.

### 1.5 STANDARDS

A. Standards which govern asbestos abatement activities include, but are not limited to, the following:

1. American National Standards Institute (ANSI) Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems Z88.2 Practices for Respiratory Protection.

2. Underwriters Laboratories (UL) 586-90 - UL Standard for Safety of HEPA filter Units, 7th Edition.

#### 1.65.1 EPA GUIDANCE DOCUMENTS

- A. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.
- B. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024
- C. Asbestos Waste Management Guidance EPA 530-SW-85-007
- D. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001
- E. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990

#### 1.5.2 VA RESPONSIBILITIES

Prior to commencement of work:

- A. Notify occupants adjacent to regulated areas of project dates and requirements for relocation, if needed. Arrangements must be made prior to starting work for relocation of desks, files, equipment, and personal possessions to avoid unauthorized access into the regulated area. Note: Notification of adjacent personnel is required by OSHA in 29 CFR 1926.1101(k) to prevent unnecessary or unauthorized access to the regulated area.
- B. Submit to the Contractor results of background air sampling; including location of samples, person who collected the samples, equipment utilized, calibration data and method of analysis. During abatement, submit to the Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement. This information shall not release the Contractor from any responsibility for OSHA compliance.

#### 1.5.3 PRE-CONSTRUCTION MEETING

Prior to commencing the work, the Contractor shall meet with the VA Certified Industrial Hygienist (VPCIH) to present and review, as appropriate, the items following this paragraph. The Contractor's Competent Person(s) who will be on-site shall participate in the pre-start meeting. The pre-start meeting is to discuss and determine

procedures to be used during the project. At this meeting, the Contractor shall provide:

- A. Proof the Competent Person(s) is trained and accredited and approved for working in this State. Verification of the experience of the Competent Person(s) shall also be presented.
- B. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.
- C. A copy of the Contractor's Asbestos Hazard Abatement Plan. In these procedures, the following information must be detailed, specific for this project.
  - 1. Regulated area preparation procedures;
  - 2. Notification requirements procedure of Contractor as required in 29 CFR 1926.1101 (d);
  - 3. Decontamination area set-up/layout and decontamination procedures for employees;
  - 4. Abatement methods/procedures and equipment to be used; and
  - 5. Personal protective equipment to be used.
- D. At this meeting the Contractor shall provide all submittals as required.
- E. Procedures for handling, packaging and disposal of asbestos waste.
- F. Emergency Action Plan and Contingency Plan Procedures.

## PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

### 2.1 MATERIALS AND EQUIPMENT

#### 2.1.1 GENERAL REQUIREMENTS (ALL ABATEMENT PROJECTS)

Prior to the start of work, the contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project. Work shall not start unless the following items have been delivered to the site and the

CPIH/CIH has submitted verification to the VA's representative.

- A. Polyethylene sheeting for floors and all other uses, sheeting of At least 6-mils shall be used in widths selected to minimize the frequency of joints.
- B. The method of attaching polyethylene sheeting to construct critical barriers shall be agreed upon in advance by the Contractor and the VA and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of moisture resistant duct tape furring strips, spray glue, staples, nails, screws, lumber and plywood

for enclosures or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions.

- C. Polyethylene sheeting utilized for the PDF shall be opaque white or black in color, 6 mil poly.
- D. An adequate number of HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements, fall protection devices, water hose to reach all areas in the regulated area, airless spray equipment, and any other tools, materials or equipment required to conduct the abatement project. All electrically operated hand tools, equipment, electric cords shall be connected to GFCI protection.
- E. Disposal bags - Materials shall be wrapped in 2 layers of 6 mil poly for  
transite waste and shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations. If necessary, materials may be boxed or otherwise packaged to prevent damage to transite waste materials during transport. If boxed or otherwise packaged, appropriate labels shall be affixed to the outer layer of the final container.

## 2.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

### 2.2.1 CONTAINMENT GENERAL

- A. Using critical barriers, seal off the perimeter to the 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 as a result of the work, the Contractor shall immediately stop work and clean  
up the contamination at no additional cost to the VA.
- A. Place all tools, scaffolding, materials and equipment needed for working  
in the regulated area prior to erecting any plastic sheeting. All uncontaminated removable furniture, equipment and/or supplies shall be removed by the VA from the regulated area before commencing work. Any objects remaining in the regulated area shall be completely covered with



two layers of 6-mil fire retardant poly sheeting and secured with duct tape. Lock out and tag out any HVAC/electrical systems in the regulated area.

#### 2.2.2 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area is allowed only through the personnel decontamination facility (PDF), if required. All other means of access shall be eliminated and OSHA DANGER demarcation 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 6 mil opaque fire retardant poly sheeting to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid.

#### 2.2.3 CRITICAL BARRIERS

Completely separate any operations in the regulated area from adjacent areas using 2 layers of 6 mil poly and duct tape. Individually seal with

layers of 6 mil poly and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects/openings in the regulated area. Heat must be shut off any objects covered with poly.

#### 2.2.4 SECONDARY BARRIERS:

A loose layer of 6 mil poly shall be used as a drop cloth in the work area to protect the primary layers from debris generated during the abatement. This layer shall be replaced as needed during the work and at a minimum once per work day.

### 2.3 MONITORING, INSPECTION AND TESTING

#### 2.3.1 GENERAL

- A. Perform throughout transite abatement work monitoring, inspection and testing inside and around the regulated area in accordance with the OSHA

requirements and these specifications. OSHA requires that the employee exposure to asbestos must not exceed 0.1 fibers per cubic centimeter (f/cc) of air, averaged over an 8-hour work shift. The CPIH/CIH is responsible for and shall inspect and oversee the performance of the Contractor IH Technician. The IH Technician shall continuously inspect and monitor conditions inside the regulated area to ensure compliance with these specifications.

B. The VA will employ an independent industrial hygienist (VPIH/CIH) consultant and/or use its own IH to perform various services on behalf of the VA. The VPIH/CIH will perform the necessary monitoring, inspection, testing, and other support services to ensure that VA patients, employees, and visitors will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, that the abated areas or abated buildings have been successfully decontaminated. The work of the VPIH/CIH consultant in

no way relieves the Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the VPIH/CIH and their services will be borne by the VA except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Contractor.

C. If fibers counted by the VPIH/CIH during abatement work, either inside or outside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed the specified respective limits, the Contractor shall stop work. The Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the VA's representative. Cost for the confirmation of results will be borne by the Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation. Confirmation sampling and analysis will be the responsibility of the CPIH/CIH with review and approval of the VPIH/CIH. An agreement between the CPIH/CIH and the VPIH/CIH shall be reached on the exact details of the confirmation effort, in writing, including such things as the number of samples, location, collection, quality control on-site, analytical laboratory, interpretation of results and any follow-up actions. This written agreement shall be co-signed by the IH's and delivered to the VA's representative.

#### 2.4 ASBESTOS HAZARD ABATEMENT PLAN

The Contractor shall have established Asbestos Hazard Abatement Plan (AHAP) in printed form and loose leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain c

clearly the ways and procedures to be followed during all phases of the work by the contractor's personnel. The AHAP(s) must be modified as needed to address specific requirements of the project. The AHAP shall be submitted for review and approval prior to the start of any abatement

work. The minimum topics and areas to be covered by the AHAP(s) are:

Minimum Personnel Qualifications

Contingency Plans and Arrangements

Security and Safety Procedures

Respiratory Protection/Personal Protective Equipment Program and Training

Medical Surveillance Program and Recordkeeping

Regulated Area Requirements for Class II work

Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)

Monitoring, Inspections, and Testing

Removal Procedures for Class II Materials

Disposal of ACM Waste

Regulated Area Decontamination/Clean-up

Regulated Area Visual and Air Clearance

Project Completion/Closeout

## PART 3 - EXECUTION

### 3.1 REGULATED AREA PREPARATIONS

#### 3.1.1 SITE SECURITY

- A. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, VA employees and representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to commencing the project and be posted in the clean room of the decontamination unit.
- B. Entry into the regulated area by unauthorized individuals shall be reported immediately to the Competent Person by anyone observing the entry. The Competent person shall immediately notify the VA.
- B. Access to the regulated area shall be through of a critical barrier doorway. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-

Out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside; however, they shall be sealed with poly sheeting and taped until needed.

C. The Contractor will have the VA's assistance in notifying adjacent personnel of the presence, location and quantity of ACM in the regulated

area and enforcement of restricted access by the VA's employees.

D. The regulated area shall be locked during non-working hours and secured by VA Representative or Competent Person. The VA Police should be informed of asbestos abatement regulated areas to provide security checks during facility rounds and emergency response.

### 3.1.2 OSHA DANGER SIGNS

Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed the PEL. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.

### 3.1.3 CONTAINMENT BARRIERS AND COVERINGS FOR THE REGULATED AREA

#### 3.1.3.1 GENERAL

A. Using critical barriers, seal off the perimeter to the 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 as a result of the work, shall immediately stop work and clean up the contamination at no additional cost to the VA.

#### 3.1.3.2 PREPARATION PRIOR TO SEALING OFF

Place all tools, scaffolding, materials and equipment needed for working

in the regulated area prior to erecting any plastic sheeting. All uncontaminated removable furniture, equipment and/or supplies shall be removed by the VA from the regulated area before commencing work. Any objects remaining in the regulated area shall be completely covered with

2 layers of 6-mil fire retardant poly sheeting and secured with duct

tape. Lock out and tag out any HVAC/electrical systems in the regulated area.

### 3.2 REMOVAL OF TRANSITE:

- A. Windows with transite panels will be removed intact.
- B. In case of transite panel breakage during window removal, the broken materials will be cleaned using wet wiping and HEPA vacuuming.
- C. Windows must be wrapped in two layers of 6 mil poly and lowered carefully to the ground.
- D. Materials may not be dropped from any height. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist.

### 3.3 CLEANING

Carry out a first cleaning of all surfaces of the regulated area including items of remaining poly sheeting, tools, scaffolding, ladders/staging by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping/air blowing methods. Use each surface of a wetted cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible residue from abated surfaces or poly or other surfaces. Remove all filters in the air handling system and dispose of as ACM waste in accordance with these specifications. Additional cleaning(s) may be needed as determined by the CPIH/VPIH/CIH.

### 3.4 VISUAL INSPECTION AND AIR CLEARANCE TESTING

- A. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc, as measured by PCM methods.
- B. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the VPIH/CIH will secure samples and analyze them according to the following procedures:
  - 1. Fibers Counted: "Fibers" referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method.
  - 2. All final air testing samples shall be collected using aggressive sampling techniques except where soil is not encapsulated or

enclosed. Samples will be collected on 0.8μ MCE filters for PCM analysis and 0.45μ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. r air sampling pumps have been shut off, circulating fans shall be shut off. The negative pressure system shall continue to operate.

### 3.5 COMPLETION OF ABATEMENT WORK

A. After thorough decontamination, complete asbestos abatement work upon meeting the regulated area clearance criteria and fulfilling the following:

1. Remove all equipment, materials, and debris from the project area.
2. Package and dispose of all asbestos waste as required.
3. Repair or replace all interior finishes damaged during the abatement work.
4. Fulfill other project closeout requirements as specified elsewhere in  
this specification.

### ATTACHMENT #1

#### CERTIFICATE OF COMPLETION

DATE: VA Project #:

PROJECT NAME: Abatement Contractor:

VAMC/ADDRESS:

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated area or Building):  
which took place from / / to / /
2. That throughout the work all applicable requirements/regulations and the VA's specifications were met.
3. That any person who entered the regulated area was protected with the appropriate personal protective equipment and respirator and that they followed the proper entry and exit procedures and the proper operating procedures for the duration of the work.

4. That all employees of the Abatement Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.
5. That I performed and supervised all inspection and testing specified and required by applicable regulations and VA specifications.
6. That the conditions inside the regulated area were always maintained in a safe and healthy condition and the maximum fiber count never exceeded 0.5 f/cc, except as described below.
7. That all abatement work was done in accordance with OSHA requirements and the manufacturer's recommendations.

CPIH/CIH Signature/Date:

CPIH/CIH Print Name:

Abatement Contractor Signature/Date:

Abatement Contractor Print Name:

ATTACHMENT #2

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME:

DATE:

PROJECT ADDRESS:

ABATEMENT CONTRACTOR'S NAME:

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, YOUR CHANCES OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the owner for the above project requires that: You must be supplied with the proper personal protective equipment including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for

working with asbestos. These things shall be provided at no cost to you. By signing this certificate you are indicating to the owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.

TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The topics covered in the course include, as a minimum, the following:

Physical Characteristics and Background Information on Asbestos

Potential Health Effects Related to Exposure to Asbestos

Employee Personal Protective Equipment

Establishment of a Respiratory Protection Program

State of the Art Work Practices

Personal Hygiene

Additional Safety Hazards

Medical Monitoring

Air Monitoring

Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards

Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature:

Printed Name:

Social Security Number:

Witness:

ATTACHMENT #3

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND  
TRAINING/ACCREDITATION

VA PROJECT NAME AND NUMBER:



VA MEDICAL FACILITY:

ABATEMENT CONTRACTOR'S NAME AND ADDRESS:

1. I verify that the following individual

Name: Social Security Number:

who is proposed to be employed in asbestos abatement work associated with the above project by the named Abatement Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n) and 29 CFR 1910.20 are kept at the offices of the Abatement Contractor at the following address.

Address:

2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.

3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid State accreditation certificate. Documentation will be kept on-site.

4. I verify that I meet the minimum qualifications criteria of the VA specifications for a CPIH.

Signature of CPIH/CIH:

Date:

Printed Name of CPIH/CIH:

Signature of Contractor:

Date:

Printed Name of Contractor:

ATTACHMENT #4

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE VA'S ASBESTOS SPECIFICATIONS

VA Project Location:

VA Project #:

VA Project Description:

This form shall be signed by the Asbestos Abatement Contractor Owner and the Asbestos Abatement Contractor's Competent Person(s) prior to any start of work at the VA related to this Specification. If the Asbestos Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read VA's Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the VA's Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT and State/Local requirements. I have been given ample opportunity to read the VA's Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the VA's Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the VA's Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature

Date

Abatement Contractor Competent Person(s)

Date

--- END OF SECTION ---

## **SECTION 02 83 33.13**

### **LEAD-BASED PAINT REMOVAL AND DISPOSAL**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies removal and disposal of building one window building materials with lead-based paint (LBP) and controls needed to limit occupational and environmental exposure to lead hazards.

##### **1.2 APPLICABLE PUBLICATIONS**

###### **A. Code of Federal Regulations (CFR):**

CFR 29 Part 1910.....Occupational Safety and Health Standards  
CFR 29 Part 1926.....Safety and Health Regulations for Construction  
CFR 40 Part 260.....Hazardous Waste Management System: General  
CFR 40 Part 261.....Identification and Listing of Hazardous Waste  
CRF 40 Part 263.....Standards Applicable to Transporters

###### **B. National Institute for Occupational Safety And Health (NIOSH)**

NIOSH OSHA Booklet 3142.           Lead in Construction

##### **1.3 DEFINITIONS**

- A. Action Level: Employee exposure, without regard to use of respirations, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period. As used in this section, "30 micrograms per cubic meter of air" refers to the action level.
- B. Area Monitoring: Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations which may reach the breathing zone of personnel potentially exposed to lead.
- C. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area."
- D. Decontamination Room: Room for removal of contaminated personal protective equipment (PPE).
- E. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead averaged over an 8-hour workday to which an employee is exposed.
- F. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting

and retaining lead-contaminated paint dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.

- G. Lead Control Area: An enclosed area or structure with full containment to prevent the spread of lead dust, paint chips, or debris of lead-containing paint removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.
- L. Lead Permissible Exposure Limit (PEL): Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1910.1025. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula. 
$$\text{PEL (micrograms/cubic meter of air)} = 400/\text{No. of hrs worked per day}$$

#### 1.4 QUALITY ASSURANCE

- A. Before exposure to lead-contaminated dust, provide workers with a comprehensive medical examination as required by 29 CFR 1926.62 (I) (1) (i) & (ii). The examination shall not be required if adequate records show that employees have been examined as required by 29 CFR 1926.62(I) without the last year.
- B. Medical Records: Maintain complete and accurate medical records of employees in accordance with 29 CFR 1910.20.
- C. CIH Responsibilities: The Contractor shall employ a certified Industrial Hygienist who will be responsible for the following:
  - 1. Certify Training, Review and approve removal plan for building components with lead-containing paint for conformance to the applicable referenced standards.
  - 2. Inspect removal plan for building components with lead-containing paint for conformance with the approved plan.
  - 3. Ensure hazardous exposure to personnel and to the environment are adequately controlled at all times.
- D. Respiratory Protection Program:
  - 1. Furnish each employee required to wear a negative pressure respirator or other appropriate type with a respirator fit test at the time of initial fitting and at least every 6 months thereafter as required by 29 CFR 1926.62.
  - 2. Establish and implement a respiratory protection program as required by 29 CFR 1910.134, 29 CFR 1910.1025, and 29 CFR 1926.62.

- E. Hazardous Waste Management: The Hazardous Waste Management plan shall comply with applicable requirements of Federal, State, and local hazardous waste regulations and address:
1. Identification of hazardous wastes associated with the work.
  2. Estimated quantities of wastes to be generated and disposed of.
  3. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact.
  4. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
  4. Work plan and schedule for waste containment, removal and disposal. Wastes shall be cleaned up and containerized daily.
- F. Pre-Construction Conference: Along with the CIH, meet with the Contracting Officer to discuss in detail the lead-containing paint removal work plan, including work procedures and precautions for the work plan.

#### 1.6 SUBMITTALS

- A. Statements Certifications and Statements:
1. Qualifications of CIH: Submit proper documentation that the Industrial Hygienist is certified by the American Board of Industrial Hygiene, including certification number and date of certification.
  2. Records:
    - a. Certification of Medical Examinations.
    - b. Employee training certification.

#### PART 2 EXECUTION

##### 2.1 PROTECTION

- A. Notification: Notify the Contracting Officer 20 days prior to the start of any removal of components with lead-containing paint.
- B. Lead Control Area Requirements.
1. Establish a lead control area by closing the entrance to the area where window components with lead-containing paint are being removed with 2 layers of 6-mil poly.
- C. Protection of Existing Work to Remain: Perform component removal work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition.

- D. Personnel Protection: Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been given appropriate training and protective equipment.
- E. Warning Signs: Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

### 3.2 WORK PROCEDURES

- A. Perform removal of components with lead-containing paint in accordance with approved components with lead-containing paint removal plan. Components will be removed without removal of the paint, taking care to keep the paint intact. Use procedures and equipment required to limit occupational and environmental exposure to lead when components with lead- containing paint are removed in accordance with 29 CFR 1926.62, except as specified herein. Dispose of window components in compliance with Environmental Protection Agency (EPA), and VA requirements.
- B. Monitoring: Monitoring of airborne concentrations of lead shall be in accordance with 29 CFR 1910.1025 and as specified herein. Air monitoring, testing, and reporting shall be performed by a CIH or an Industrial Hygiene (IH) Technician who is under the direction of the CIH:
  - 1. The CIH or the IH Technician under the direction of the CIH shall be on the job site directing the monitoring, and inspecting the window component with lead-containing paint removal work to ensure that the requirements of the Contract have been satisfied during the entire lead-containing paint removal operation.
  - 2. Take personal air monitoring samples on employees who are anticipated to have the greatest risk of exposure as determined by the CIH to establish baseline exposures and determine PPE requirements in accordance with 29 CFR 1910.1025. Perform routine monitoring as required by 29 CFR 1910.1025.
  - 3. Submit results of air monitoring samples, signed by the CIH, after sample results are received. Notify the Contracting Officer immediately of exposure to lead at or in excess of the action level

of 30 micrograms per cubic meter of air outside of the lead control area.

### 3.3 REMOVAL OF COMPONENTS WITH LEAD-CONTAINING PAINT

- A. Remove components with lead-containing paint as intact as possible. Take whatever precautions are necessary to avoid dispersion of paint chips.

### 3.4 CLEANUP AND DISPOSAL

- A. Cleanup: Maintain surfaces of the lead control area free of accumulations of paint chips and dust. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use compressed air to clean up the area. At the end of each shift and when the component removal operation has been completed, clean the area of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet mopping the area.
- B. Disposal: Wrap window components with lead-containing paint in poly before removing from the work area.

--- END OF SECTION ---

**SECTION 04 05 13**  
**MASONRY MORTARING**

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies mortar materials and mixes.

1.2 RELATED WORK:

A. Mortar used in Section:

1.3 TESTING LABORATORY-CONTRACTOR RETAINED:

A. Engage a commercial testing laboratory approved by Resident Engineer to perform tests specified below.

1.4 TESTS:

A. Identify materials by type, brand name and manufacturer or by origin. B. Do not use materials until laboratory test reports are approved by

The Contracting officer. After tests have been made and materials approved, do not change without additional test and approval of COR.

1.5 SUBMITTALS:

A. Manufacturer's Literature and Data:

1. Cement, each kind.
2. Hydrated lime.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.
- B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.7 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
- C91-07.....Masonry Cement
- C207-06.....Hydrated Lime for Masonry Purposes
- C270-07.....Mortar for Unit Masonry

PART 2 - PRODUCTS



2.1 HYDRATED LIME:

ASTM C207, Type S.

2.2 AGGREGATE FOR MASONRY MORTAR:

A. ASTM C144 and as follows:

1. Light colored sand for mortar for laying face brick.

B. Test sand for color value in accordance with ASTM C40. Sand producing color darker than specified standard is unacceptable.

2.3 WATER:

Potable, free of substances that are detrimental to mortar, masonry, and metal.

2.4 POINTING MORTAR:

A. For Precast Concrete: Proportion by volume; One part white Portland cement, two parts white sand, and 1/5 part hydrated lime.

2.5 MASONRY MORTAR:

A. Conform to ASTM

C270. B. Admixtures:

1. Do not use mortar

admixtures. C. Colored Mortar:

1. Maintain uniform mortar color for exposed work throughout.

2. Mortar color to match existing.

3. Color of mortar for exposed work in alteration work to match color of existing mortar.

D. Color Admixtures:

1. Proportion as specified by manufacturer.

2.6 HIGH BOND MORTAR:

A. Mixture by volume, one-part Portland cement, 1/4-part hydrated lime, three-parts sand, water, and liquid acrylic resin.

B. Mortar properties when tested in accordance with referenced specifications.

1. Compressive Strength, ASTM C109: Minimum 19,305 kPa (2800 psi), using 50 mm (2 inch) cubes.

2. Tensile Strength, ASTM C307: 3861 kPa Minimum (560 psi), using the 25mm (1 inch) briquettes.

3. Flexural Strength, ASTM C348: Minimum 6067 kPa (880 psi), using flexural bar.

4. Bond Strength, ASTM C321: Minimum 2965 kPa (430 psi), using crossed

brick.

2.7 COLOR ADMIXTURE:

- A. Pigments: ASTM C979.
- B. Use mineral pigments only. Organic pigments are not acceptable.
- C. Pigments inert, stable to atmospheric conditions, nonfading, alkali resistant and water insoluble.

PART 3 - EXECUTION

3.1 MIXING:

- A. Mix in a mechanically operated mortar mixer.
  - 1. Mix mortar for at least three minutes but not more than five minutes.
- B. Measure ingredients by volume. Measure by the use of a container of known capacity
- C. Mix water with dry ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.
- D. Mortar that has stiffened because of loss of water through evaporations:
  - 1. Re-tempered by adding water to restore to proper consistency and workability.
  - 2. Discard mortar that has reached its initial set or has not been used within two hours.
- E. Pointing Mortar:
  - 1. Mix dry ingredients with enough water to produce a damp mixture of workable consistency which will retain its shape when formed into a ball.
  - 2. Allow mortar to stand in dampened condition for one to 1-1/2 hours.
  - 3. Add water to bring mortar to a workable consistency prior to application.

3.2 MORTAR USE LOCATION:

- A. Use Type M mortar for precast concrete panels.
- B. Use Type N mortar for brick laying and tuck pointing work.
- C. Use pointing mortar for items specified.

---END OF SECTION ---

## **SECTION 05 12 00**

### **STRUCTURAL STEEL FRAMING**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies structural steel shown and classified by Section 2, Code of Standard Practice for Blast Resistant Steel Buildings Construction.

##### **1.2 TOLERANCES**

Fabrication tolerances for structural steel shall be held within limits established by ASTM A6, by Section 7, Code of Standard Practice for Buildings and Bridges, and by Standard Mill Practice - General Information (AISC ASD Manual, Ninth Edition, Page 1-145 // LRFD Manual, Second Edition, Page 1-183 //), except as follows:

1. Elevation tolerance for column splice points at time member is erected is 10 mm (3/8 inch).
2. Elevation tolerance for top surface of steel beams and girders at connections to columns at time floor is erected is 13 mm (1/2 inch).
3. Elevation tolerance for closure plates at the building perimeter and at slab openings prior to concrete placement is 6 mm (1/4 inch).

##### **1.3 BLAST RESISTANT DESIGN**

- A. Connections: Design and detail all connections for each member size, steel grade and connection type to resist the loads and reactions indicated on the drawings or specified herein. Reference drawing detail 1B A8.3 the steel beam is a 52KSI one half inch steel W Beam 6 inch wide base flange with a 10" center and 6 inch wide top flange. Center column is 52 KSI three eights inch steel 4 inch wide side flange with 6" center and 4 inch wide side flange with one fourth inch plate steel welded to the each side flange for the storefront to screw into. Reference drawing detail 1B A8.3 the steel beam is a 52KSI one half inch steel W Beam 6 inch wide base flange with a 10" center and 6 inch wide top flange. Center column is 52 KSI three eights inch steel 4 inch wide side flange with 6" center and 4 inch wide side flange with one fourth inch plate steel welded to the each side flange for the storefront to screw into. Other structural engineering designs for available steel would be considered. Use details consistent with the details shown on the Drawings, supplementing where necessary.

#### 1.4 SUBMITTALS

- A. Shop and Erection Drawings: Complete
- B. Design Calculations and Drawings:
  - 1. Connection calculations, as per drawings.

#### 1.5 APPLICABLE PUBLICATIONS

- A. American Institute of Steel Construction (AISC):
  - 1. Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design (Ninth Edition, 1989)
  - 2. Load and Resistance Factor Design Specification for Structural Steel Buildings (Second Edition, 1995)
  - 3. Code of Standard Practice for Steel Buildings and Bridges (March 2000).
- B. American Society for Testing and Materials (ASTM):
  - A6/A6M-08a.....Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
  - A36/A36M-08.....Standard Specification for Carbon Structural Steel
  - A992/A992M-06a.....Standard Specification for Structural Steel Shapes
- C. American Welding Society (AWS):
  - D1.1-08.....Structural Welding Code-Steel

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

- A. Structural Steel: ASTM A572, Grade B
- B. Structural Tubing: ASTM A500, Grade B.
- C. Bolts, Nuts and Washers:
  - 1. High-strength bolts, including nuts and washers: ASTM // A325 // 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: ANSI Standard B18.22.1.

## PART 3 - EXECUTION

### 3.1 CONNECTIONS (SHOP AND FIELD)

- A. Welding: Welding in accordance with AWS D1.1. 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.
- B. High-Strength Bolts: High-strength bolts tightened to a bolt tension not less than proof load given in Specification for Structural Joints Using ASTM A325 or A490 Bolts. 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 or the turn-of-the-nut method. Twist-off torque bolts are not an acceptable alternate fastener for slip critical connections.

### 3.2 FABRICATION

- A. Reference drawing detail 1B A8.3 the steel beam is a 52KSI one half inch steel W Beam 6 inch wide base flange with a 10" center and 6 inch wide top flange. Center column is 52 KSI three eights inch steel 4 inch wide side flange with 6" center and 4 inch wide side flange with one fourth inch plate steel welded to the each side flange for the storefront to screw into.
- B. Reference drawing detail 1B A8.3 the steel beam is a 52KSI one half inch steel W Beam 6 inch wide base flange with a 10" center and 6 inch wide top flange. Center column is 52 KSI three eights inch steel 4 inch wide side flange with 6" center and 4 inch wide side flange with one fourth inch plate steel welded to the each side flange for the storefront to screw into.
- C. Other structural engineering designs for available steel would be considered.

### 3.3 SHOP PAINTING

- A. General: Shop paint steel with primer in accordance with Section 6, Code of Standard Practice for Steel Buildings and Bridges.
- B. Shop paint for steel surfaces is specified in Section 09 91 00, PAINTING.
- C. Do not apply paint to following:
  - 1. Surfaces within 50 mm (2 inches) of joints to be welded in field.
  - 2. Surfaces which will be encased in concrete.
  - 3. Surfaces which will receive sprayed on fireproofing.

- 4. Top flange of members which will have shear connector studs applied.
- D. Zinc Coated (Hot Dip Galvanized) per ASTM A123 (after fabrication):  
Touch-up after erection: Clean and wire brush any abraded and other spots worn through zinc coating, including threaded portions of bolts and welds and touch-up with galvanizing repair paint.

### 3.4 ERECTION

- A. General: Erection in accordance with Section 7, Code of Standard Practice for Steel Buildings and Bridges.
- B. Temporary Supports: Temporary support of structural steel frames during erection in accordance with Section 7, Code of Standard Practice for Steel Buildings and Bridges.

### 3.5 FIELD PAINTING

- A. After erection, touch-up steel surfaces specified to be shop painted. After welding is completed, clean and prime areas not painted due to field welding.
- B. Finish painting of steel surfaces is specified in Section 09 91 00, PAINTING.

### 3.6 INSTALLATION REPORT

Upon completion of finish bolting or welding on any part of the work, and prior to start of work by other trades that may be supported, attached, or applied to the structural steel work, submit a certified report of survey to RE/COR for approval. Reports shall be prepared by Registered Land Surveyor or Registered Civil Engineer as specified in Section 01 00 00, GENERAL REQUIREMENTS. Report shall specify that location of structural steel is acceptable for plumb, level and alignment within specified tolerances specified in the AISC Manual.

---END OF SECTION ---

## **SECTION 06 20 00**

### **FINISH CARPENTRY**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

- A. This section specifies interior millwork.

##### **1.2 SUBMITTALS**

- A. Product Samples: 4" by 4" (3 each) Solid Surface Window Sill, equal to Corian Colors of Zodiaq, Silestone Quartz Galactic Series, Formica Federal Cornerstone or an approved equal, for window sill applications.

#### **PART 2 - PRODUCTS**

##### **2.1 Dimensional Finish LUMBER**

- A. Sizes:
  - 1. Lumber Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which product is produced.
  - 2. Millwork, standing and running trim, and rails: Actual size as shown or specified.
- B. Hardwood: MM-L-736, species as specified for each item.
- C. Softwood: PS-20, exposed to view appearance grades:
  - 1. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
  - 2. Use Prime for painted or opaque finish.

##### **2.2 SOLID SURFACE COUTERTOPS / Window Sills**

- 1. Comply with AWI Section 400 and ANSI and ANSI Z124.3 equal to Corian Colors of Zodiaq, Silestone Quartz Galactic Series, Formica Federal Cornerstone or an approved equal, for window sill applications requirements for counter tops / window sills.

##### **2.3 Caulk SEALANT**

- A. Fed. Spec. A-A-1936 equal to DAP KWIK Seal tub and tile watertight adhesive sealant.

##### **2.4 STAINLESS STEEL**

ASTM A167, Type 302 or 304. For trim pieces

##### **2.5 ALUMINUM CAST / ALUMINUM EXTRUDED**

ASTM B26 / ASTM B221

## 2.6 HARDWARE

### A. Rough Hardware:

1. Exposed Hardware: BHMA A156.18
2. Concealed Hardware: BHMA A156.9
3. Fasteners:
  - a. Bolts with Nuts: FF-N-836.
  - b. Expansion Bolts: A-A-1922A.
  - c. Screws: Fed. Spec. FF-S-111.

## 2.7 SUB SURFACE FABRICATION

### A. General:

1. Provide interior woodwork complying with referenced quality standard for shimming or subsurface preparation. Plywood shall be not less than 13 mm (1/2 inch), unless otherwise shown or specified.
2. All trim shall be standard stock polished aluminum or stainless steel moldings.
3. Edges of members in contact with concrete or masonry shall have a square corner caulking rebate.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

#### A. General:

1. Intent is to install blast resistant windows into existing surfaces removing extra trim molding and installing aluminum trim moldings with sheetrock return and 1/8" caulk joint.
2. Secure trim using clip and trim system.
3. Plumb and level items unless shown otherwise.
4. Joints shall be close fitted.

- B. Install water resistant sheetrock where possible under clip and trim. When sheetrock cannot be under trim butt up against trim and provide 1/4" caulk joint.

- C. Finish all sheetrock and paint.

--- END OF SECTION ---



## **SECTION 07 21 13**

### **THERMAL INSULATION**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

- A. This section specifies thermal and acoustical insulation for window installation.

##### **1.2 SUBMITTALS**

- A. Manufacturer's Certificates / Literature: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

##### **1.4 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 basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - C553-08.....Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
  - C665-06.....Mineral Fiber Blanket Thermal Insulation for Light Frame Construction

#### **PART 2 - PRODUCTS**

##### **2.1 INSULATION - GENERAL**

- A. Pack window and storefront cavity full of fiberglass insulation equal to Owens Corning R-13 per one inch. Where thermal resistance ("R" value) is specified or shown for insulation around the entire perimeter of the window:

##### **2.2 GLASS FIBER BATT INSULATION**

- A. ASTM 665, Type I, Unfaced

#### **PART 3 - EXECUTION**

##### **3.1 INSTALLATION -WINDOW FRAME**

- A. Install batt insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.

- B. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise, pack window cavity full of insulation with a putty knife.

### 3.2 GLASS FIBER BATT STORE FRONT APPLICATION

- A. Pack insulation around door frames and windows and in building expansion joints, door soffits and other voids. Pack behind outlets around pipes, ducts, and services encased in walls. Open voids are not permitted. Hold insulation in place with pressure sensitive tape.
- B. Lap vapor retarder flanges together over face of framing for continuous surface. Seal all penetrations through the insulation.
- C. Fasten blanket insulation between metal studs or framing and exterior wall furring by continuous pressure sensitive tape along flanged edges.

--- END OF SECTION ---

## **SECTION 07 60 00**

### **FLASHING AND SHEET METAL**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

Formed sheet metal work for flashing and insulated expansion joint covers are specified in this section.

##### **1.2 SUBMITTALS**

- A. Shop Drawings: Sill Window Sill Flashings / Window Sill Panning.

#### **PART 2 - PRODUCTS**

##### **2.1 MATERIALS**

- A. Aluminum Sheet: ASTM B209, alloy 3003-H14.
- B. Fasteners: As recommended by the manufacturer.

##### **2.2 SHEET METAL THICKNESS**

- A. Exposed Locations: Panning thickness of aluminum 4 mm (0.015 inch) minimum or as determined by Blast Window Manufacturer.

##### **2.3 FABRICATION, GENERAL**

- A. General: Fabricate sheet metal flashing and trim to comply with SMACNA and Blast Window Manufacturer guidelines.
- B. Conceal all fasteners where possible.
- C. Flat and lap joints shall be made in direction of flow.

##### **2.4 FINISH**

- 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, unless otherwise specified.

##### **2.5 THROUGH-WALL FLASHINGS**

- A. Flexible flashing not exposed to exterior
  - 1. Elastomeric Thermoplastic Flashing; Composite flashing product consisting of polyester-reinforced ethylene inter polymer alloy as follows:
    - a. Monolithic Sheet: Elastomeric thermal flashing 1 mm (0.04 inch) thick.

- b. Self-Adhesive Sheet: Elastomeric thermal flashing 0.635 mm (0.025 inch) thick with 0.40 mm (0.015 inch) thick coating of rubberized asphalt adhesive.
- 2. EPDM Flashing: Sheet flashing product made from Ethylene-Propylene-Demeter polymer, 1mm (0.04 inch) thick.
- B. Comply with SMACNA guidelines for installation tolerances.
- C. Fabricate to lap base flashing a minimum of 100 mm (4 inches) with drip.
- D. One-piece Counterflashing:
  - 1. Back edge turned up and fabricates 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).
- E. Two-Piece Counter flashing: Mullion Application
  - 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.
- F. Surface Mounted Counterflashing; one or two piece:
  - 1. Use at existing or new surfaces where flashing cannot 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 counter flashing, with slotted fastener holes at 400 mm (16 inch) centers between upper and lower edge.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
  - 1. Anchor sheet metal flashing and trim and other components of the work securely in place with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings,

separators, sealants, and other miscellaneous items as required to complete flashing and trim assemblies.

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. Confine direct nailing / sheet metal screw of sheet metal to strips 300 mm (12 inch) or less wide. Nail flashing along one edge only. Space nails not over 100 mm (4 inches) on center unless specified otherwise.
7. Install bolts, rivets, and screws where indicated, specified, or required in accordance with the Window Manufacturer. 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.
8. 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.
9. Paint back side of aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of bituminous paint.

### 3.2 THROUGH-WALL FLASHING

#### A. General:

1. Install continuous through-wall flashing between top of concrete foundation walls and bottom of masonry building walls; at top of

concrete floors; under masonry, concrete, or stone copings and elsewhere as shown.

2. Where exposed portions are used as a counter flashings, lap base flashings at least 100 mm (4 inches) and use thickness of metal as specified for exposed locations.
3. Exposed edge of flashing may be formed as a receiver for two piece counter flashing as specified.
4. Terminate exterior edge beyond face of wall approximately 6 mm (1/4 inch) with drip edge where not part of counter flashing.
5. Turn back edge up 6 mm (1/4 inch) unless noted otherwise where flashing terminates in mortar joint or hollow masonry unit joint.
6. Terminate interior raised edge in masonry backup unit approximately 38 mm (1 1/2 inch) into unit unless shown otherwise.
7. Continue flashing around columns:
  - a. Where flashing cannot be inserted in column reglet hold flashing vertical leg against column.
  - b. Counter flash top edge with 75 mm (3 inch) wide strip of saturated cotton unless shown otherwise. Secure cotton strip with roof cement to column.

B. Flashing at Veneer Walls:

1. Install near line of finish floors over shelf angles or where shown.
2. Turn up against sheathing.
3. At stud framing, hem top edge 19 mm (3/4 inch) and secure to each stud with stainless steel fasteners through sheathing.
4. At concrete backing, extend flashing into reglet as specified.
5. Coordinate with installation of waterproofing or asphalt felt for lap over top of flashing.

C. Lintel Flashing when not part of shelf angle flashing:

1. Install flashing full length of lintel to nearest vertical joint in masonry over veneer.
2. Turn ends up 25 mm (one inch) and fold corners to form dam and extend end to face of wall.
3. Turn back edge up to top of lintel; terminate back edge as specified for back-up wall.

D. Window Sill Flashing:

1. Install flashing to extend not less than 100 mm (4 inch) beyond ends of sill into vertical joint of masonry or veneer.
2. Turn back edge up to terminate under window frame.

3. Turn ends up 25 mm (one inch) and fold corners to form dam and extend to face of wall.

--- END OF SECTION ---

## **SECTION 07 92 00**

### **JOINT SEALANTS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION:**

Section covers all sealant and caulking materials and their application, wherever required for complete installation of blast resistant storefront, windows and window sills.

##### **1.2 RELATED WORK:**

A. Masonry control and expansion joint:  
B. Glazing: Section 08 80 00, GLAZING.

##### **1.3 SUBMITTALS:**

- A. Cured samples of exposed sealants for each color where required to match adjacent material.
- B. Manufacturer's Literature and Data:
  - 1. Interior Caulking compound
  - 2. Exterior Caulking compound

##### **1.4 PROJECT CONDITIONS:**

- A. Environmental Limitations:
  - 1. Do not proceed with installation of joint sealants under following conditions:
    - a. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4C (40 F).
    - b. When joint substrates are wet.
- B. Joint-Width Conditions:
  - 1. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- C. Joint-Substrate Conditions:
  - 1. Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

##### **1.5 DEFINITIONS:**



- A. Definitions of terms in accordance with ASTM C717 and as specified.
- B. Back-up Rod: A type of sealant backing.
- C. Bond Breakers: A type of sealant backing.
- D. Filler: A sealant backing used behind a back-up rod.

1.6 WARRANTY:

- A. General Warranty: Special warranty specified in this Article shall not deprive Government of other rights Government may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.

1.7 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 Society for Testing and Materials (ASTM):
  - C509-06.....Elastomeric Cellular Preformed Gasket and Sealing Material.
  - C717-07.....Standard Terminology of Building Seals and Sealants.
  - C834-05.....Latex Sealants.
  - C920-05.....Elastomeric Joint Sealants.
  - C1021-01.....Laboratories Engaged in Testing of Building Sealant
  - C1193-05.....Standard Guide for Use of Joint Sealants.

PART 2 - PRODUCTS

2.1 EXTERIOR SEALANTS:

- A. S-1:
  - 1. ASTM C920, polyurethane.
  - 2. Type M.
  - 3. Class 25.
  - 4. Grade NS.
  - 5. Shore A hardness of 20-40
  - 6. Equal to: Vulkem 116, Vulkem 921, Bostik 916, Bostik 915

2.2 CAULKING  
COMPOUND:

- A. C-1: ASTM C834, acrylic latex for interior use.
- B. Equal to DAP KWIK Seal tub and tile adhesive sealant.

2.3 COLOR:

- A. Sealants used with exposed masonry shall match color of mortar joints.
- B. Sealants used with unpainted concrete shall match color of adjacent concrete.
- C. Color of sealants for around new aluminum to match aluminum window color.
- D. Caulking for sheetrock shall be clear.

2.4 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
  - 1. Type C: Closed-cell material with a surface skin.
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 32 minus 26 F). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self- adhesive tape where applicable.

2.5 PRIMER:

- A. As recommended by manufacturer of caulking or sealant material.
- B. Stain free type.

2.6 CLEANERS-NON POURIOUS SURFACES:

- A. Chemical cleaners acceptable to manufacturer of sealants and sealant backing material, free of oily residues and other substances capable of staining or harming joint substrates and adjacent non-porous surfaces and formulated to promote adhesion of sealant and substrates.

## PART 3 - EXECUTION

### 3.1 INSPECTION:

- A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.
- B. Coordinate for repair and resolution of unsound substrate materials.
- C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

### 3.2 PREPARATIONS:

- A. Prepare joints in accordance with manufacturer's instructions and SWRI.
- B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer paint, or other foreign matter that would tend to destroy or impair adhesion.
  - 1. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods.

### 3.3 EXECUTION

- A. Exterior caulk joints to be approximately  $\frac{1}{2}$ "
- B. Interior caulk joints to be approximately  $\frac{1}{4}$ "
- C. REMOVE DROPPINGS AND SMEARINGS OF COMPOUND BEFORE COMPOUND CURES BY CLEANING WITH A SOLVENT RECOMMENDED BY THE COMPOUND MANUFACTURER, FORMING A CONTINUOUS BEAD AROUND THE ENTIRE PERIMETER.
  - produce a clean, sound substrate capable of developing optimum bond with joint sealants.
- 2. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.  
Porous joint surfaces include the following:
  - a. concrete.
  - b. Masonry.
  - c. Unglazed surfaces of ceramic tile.
- 3. Remove laitance and form-release agents from concrete.
- 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
  - a. Metal.
  - b. Glass.
  - c. Porcelain enamel.

- d. Glazed surfaces of ceramic tile.
- C. Do not cut or damage joint edges.
- D. Apply masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Take all necessary steps to prevent three sided adhesion of sealants.

#### 3.4 BACKING INSTALLATION:

- A. Install back-up material, to form joints enclosed on three sides as required for specified depth of sealant.
- B. Where deep joints occur, install filler to fill space behind the back- up rod and position the rod at proper depth.
- C. Cut fillers installed by others to proper depth for installation of back-up rod and sealants.
- D. Install back-up rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm (1/8 inch) for sealant depths specified.
- E. Where space for back-up rod does not exist, install bond breaker tape strip at bottom (or back) of joint so sealant bonds only to two opposing surfaces.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

#### 3.5 SEALANT DEPTHS AND GEOMETRY:

- A. At widths up to 6 mm (1/4 inch), sealant depth equal to width.
- B. At widths over 6 mm (1/4 inch), sealant depth 1/2 of width up to 13 mm (1/2 inch) maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

#### 3.6 INSTALLATION:

- A. General:
  - 1. Apply sealants and caulking only when ambient temperature is between 5 degrees C and 38 degrees C (40 and 100 degrees F).

2. Do not use polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
  3. Do not use sealant type listed by manufacture as not suitable for use in locations specified.
  4. Apply caulking and sealing compound in accordance with manufacturer's printer instructions.
  5. Avoid dropping or smearing compound on adjacent surfaces.
  6. Fill joints solidly with compound and finish compound smooth.
  7. Tool joints to concave surface unless shown or specified otherwise.
  8. Apply compounds with nozzle size to fit joint width.
  9. Test sealants for compatibility with each other and substrate.  
Use only compatible sealant.
- B. For application of sealants, follow requirements of ASTM C1193 unless specified otherwise.
- C. Where dust proof gypsum board partitions are indicated, seal all cut-outs and intersections with the existing adjoining construction unless indicated otherwise.

3.7 FIELD QUALITY CONTROL:

- A. Field-Adhesion Testing: Field-test joint-sealant adhesion to joint substrates as recommended by sealant manufacturer:
1. Extent of Testing: Test completed elastomeric sealant joints as follows:
    - a. Perform 5 tests for first 200 feet of joint length for each type of elastomeric sealant and joint substrate.
    - b. Perform one test for each 100 feet of joint length thereafter or one test per each floor per elevation.
- B. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field adhesion test log.
- C. Inspect tested joints and report on following:
1. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
  2. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
  3. Whether sealants filled joint cavities and are free from voids.

4. Whether sealant dimensions and configurations comply with specified requirements.
- D. Record test results in a field adhesion test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
- E. Repair sealants pulled from test area by applying new sealants following same procedures used to originally seal joints. Ensure that original sealant surfaces are clean and new sealant contacts original sealant.
- F. Evaluation of Field-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements, will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements.

### 3.8 CLEANING:

- A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by the caulking or sealant manufacturer.
- B. After filling and finishing joints, remove masking tape.
- C. Leave adjacent surfaces in a clean and unstained condition.

### 3.9 LOCATIONS:

- A. Exterior Building Joints, Horizontal and Vertical:
  1. Metal to Metal: Type S-1, S-2
  2. Metal to Masonry or Precast: Type S-1
  3. Masonry to Masonry or Precast: Type S-1
  4. Precast to Precast: Type S-1
  5. Threshold Setting Bed: Type S-1, S-3, S-4
  6. Masonry Expansion and Control Joints: Type S-6
- B. Metal Reglets and Flashings:
  1. Flashings to Wall: Type S-6
  2. Metal to Metal: Type S-6
- C. Interior Caulking
  1. Perimeter of doors, windows, access panels with adjoining concrete or masonry surface: Type C-1, C-2.

2. Typical narrow joint 6 mm, (1/4 inch) or less at walls and adjacent components: Type C-1, C-2, C-3.

--- END OF SECTION ---

## SECTION 08 41 13

### ALUMINUM SLIDER ENTRANCES AND STOREFRONTS

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION:

This section specifies blast resistant aluminum entrance work including storefront construction, sliding doors, and other components to make a complete assembly.

##### 1.2 RELATED WORK:

- A. Glass and Glazing: Section 08 80 00, GLAZING.
- B. Hardware: Section 08 71 00, DOOR HARDWARE.
- C. Automatic Door Operators: Section 08 71 13, AUTOMATIC DOOR OPERATORS.

##### 1.3 SUBMITTALS:

- A. Shop Drawings: (1/2 full scale) showing construction, anchorage, reinforcement, and installation details.
- B. Manufacturer's Literature and Data:
  - 1. Doors, each type operating range minus 30F to 130F
  - 2. Entrance and Storefront construction opening force 50lb (222N).
- C. Samples:
  - 1. Door corner section, 450 mm x 450 mm (18 x 18 inches), of each door type specified, showing vertical and top hinge edges, door closer reinforcement, internal reinforcement and insulation, of flush panel door.
  - 2. Two samples of painted aluminum of each color showing finish and maximum shade angle.

##### 1.4 APPLICABLE PUBLICATIONS:

- A. American Society for Testing and Materials (ASTM):
  - B209-07.....Aluminum and Aluminum-Alloy Sheet and Plate
  - B221-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
  - E283-04.....Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen



- E331-00.....Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- F468-06e1.....Nonferrous Bolts, Hex Cap Screws, and Studs for General Use
- F593-02 (2008).....Stainless Steel Bolts, Hex Cap Screws, and Studs
- B. National Association of Architectural Metal Manufacturers (NAAMM): AMP 500-06.....Metal Finishes Manual
- C. American Architectural Manufacturer's Association (AAMA): 2604-05.....High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels
- D. American National Standards Institute ANSI / Builders Hardware BHMA ANSI/BHMA A156.10 . . .Standard for Power Operated Pedestrian Sliders

#### 1.5 BLAST RESISTANT PERFORMANCE REQUIREMENTS:

- A. Shapes and thickness of framing members shall be sufficient to withstand a design wind load required by Codes of supported area with a deflection of not more than 1/175 times the length of the member and a safety factor of not less than 1.65 (applied to overall load failure of the unit). Provide glazing beads, moldings, and trim of not less than 1.25 mm (0.050 inch) nominal thickness.
- B. Air Infiltration: When tested in accordance with ASTM E 283, air infiltration shall not exceed  $2.63 \times 10^{-50}$  cm per square meter (0.06 cubic feet per minute per square foot) of fixed area at a test pressure of 0.30 kPa (6.24 pounds per square foot) 80 kilometers (50 mile) per hour wind.
- C. Water Penetration: When tested in accordance with ASTM E 331, there shall be no water penetration at a pressure of 0.38 kPa (8 pounds per square foot) of fixed area.
- D. Sliding automatic entrances specified with automatic locking shall Be designed to function as follows: Entrances shall be normally closed and locked by automatic locking system with exterior motion activation system disabled. Interior motion activation system to remain enabled free egress, upon signal from exterior secure activation device, sliding automatic entrances will unlock and open enabling motion activation system. Entrance will be held open as

long as an object or pedestrian remains in the activation or safety zones. Once all activation and safety zones have cleared the entrance will close and re-lock, returning to normal state.

- E. Blast rating the complete system, framing, glazing, and panels designed to GSA Level C and UFC 4-010-1.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

A. Aluminum, ASTM B209 and B221:

1. Alloy 6063 temper T5 for doors, door frames, fixed glass sidelights, storefronts, and transoms.
2. Alloy 6061 temper T6 for guide tracks for sliding doors and other extruded structural members.
3. Painted color anodized finish, use aluminum alloy as required to produce specified color.

- B. Thermal Break: Manufacturer standard low conductive material retarding heat flow in the framework, where insulating glass is scheduled.

C. Fasteners:

1. Aluminum: ASTM F468, Alloy 2024.
2. Stainless Steel: ASTM F593, Alloy Groups 1, 2 and 3.

### 2.2 FABRICATION:

- A. Fabricate doors, of extruded aluminum sections not less than 3 mm (0.125 inch) thick. Fabricate glazing beads of aluminum not less than 1.0 mm (0.050 inch) thick.
- B. Accurately form metal parts and accurately fit and rigidly assemble joints, except those joints designed to accommodate movement. Seal joints to prevent leakage of both air and water.
- C. Make welds in aluminum in accordance with the recommended practice AWA D1.2. Use electrodes and methods recommended by the manufacturers of the metals and alloys being welded. Make welds behind finished surfaces so as to cause no distortion or discoloration of the exposed side. Clean welded joints of welding flux and dress exposed and contact surfaces.
- D. Make provisions in doors and frames to receive the specified hardware and accessories. Coordinate schedule and template for hardware specified under Section 08 71 00, DOOR HARDWARE. Where

concealed closers or other mechanisms are required, provide the necessary space, cutouts, and reinforcement for secure fastening.

- E. Fit and assemble the work at the manufacturer's plant. Mark work that cannot be permanently plant-assembled to assure proper assembly in the field.

## 2.3 PROTECTION OF ALUMINUM:

- A. Isolate aluminum from contact with dissimilar metals other than stainless steel, white bronze, or zinc by any of the following:
  - 1. Coat the dissimilar metal with two coats of heavy-bodied alkali resistant bituminous paint.
  - 2. Place caulking compound, or non-absorptive tape, or gasket between the aluminum and the dissimilar metal.
  - 3. Paint aluminum in contact with mortar, concrete and plaster, with a coat of aluminum paint primer.

## 2.4 FRAMES:

- A. Fabricate doors, frames, mullions, transoms, frames for fixed glass and similar members from extruded aluminum not less than 3 mm (0.125 inch) thick.
- B. Provide integral stops and glass rebates and applied snap-on type trim.
- C. Use concealed screws, bolts and other fasteners. Secure cover boxes to frames in back of all lock strike cutouts.
- D. Fabricate framework with thermal breaks in frames where insulating glass is scheduled and specified under Section 08 80 00, GLAZING.

## 2.5 STILE AND RAIL DOORS:

- A. Nominal 45 mm (1-3/4 inch) thick, with stile and head rail 90 mm (3-1/2 inches) wide, and bottom rail 250 mm (10 inches) wide.
- B. Bevel single-acting doors 3 mm (1/8 inch) at lock, hinge and meeting stile edges. Provide clearances of 2 mm (1/16 inch) at hinge stiles, 3 mm (1/8 inch) at lock stiles and top rails, and 5 mm (3/16 inch) at floors and thresholds. Form glass rebates integrally with stiles and rails. Glazing beads may be formed integrally with stiles and rails or applied type secured with fasteners at 150 mm (six inches) on centers.
- C. Construct doors with a system of welded joints or interlocking dovetail joints between stiles and rails. Clamp door together through top and bottom rails with 9 mm (3/8 inch) primed steel rod extending into

the stiles, and having a self-locking nut and washer at each end. Reinforce stiles and rails to prevent door distortion when tie rods are tightened. Provide a compensating spring-type washer under each nut to take up any stresses that may develop. Construct joints between rails and stiles to remain rigid and tight when door is operated.

- D. Weather-stripping: Provide removable, woven pile type (silicone-treated) weather-stripping attached to aluminum or vinyl holder. Make slots for applying weather-stripping integral with doors and door frame stops. Apply continuous weather-stripping to heads, jambs, bottom, and meeting stiles of doors and frames. Install weather-stripping so doors can swing freely and close positively.

## 2.6 SLIDER DOORS:

- A. Nominal 45 mm (1-3/4 inches) thick. Form from aluminum face sheets not less than 1.5 mm (0.060 inch) thick with internal impact reinforcement, laminated to the door edges and the core.
- B. Provide extruded aluminum tubular members to form the perimeter of the door. Reinforce doors internally with extruded tubular members welded in place, and extending full width of door at top, bottom, and intermediate points.
- C. Fill voids between tubular members with noncombustible mineral insulation.

## 2.7 REINFORCEMENT FOR BUILDERS HARDWARE:

- A. Fabricate from stainless steel plates.
- B. Hinge and pivot reinforcing: 4.55 mm (0.1793 inch) thick.
- C. Reinforcing for lock face, flush bolts, concealed holders, concealed or surface mounted closers: 2.66 mm (0.1046 inch) thick.
- D. Reinforcing for all other surface mounted hardware: 1.5 mm (0.0598 inch) thick.

## 2.8 COLUMN COVERS AND TRIM

- A. Fabricate column covers and trim shown from 1.5 mm (0.0625 inch) thick sheet aluminum of longest available lengths.
- B. Use concealed fasteners.
- C. Provide aluminum stiffener and other supporting members shown or as required to maintain the integrity of the components.

## 2.9 FINISH

A. In accordance with NAAMM AMP 500 series. B. Anodized Aluminum:

1. Painted Finish: Color match Painted Aluminum windows, Class I Architectural, 7 mils thick.

## 2.10 DOOR OPERATORS

- A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.
- B. Electromechanical Operators: Two (2) self-contained overhead units, 1/4 horsepower minimum, permanent-magnet DC motors with gear reduction drives, microprocessor controller; and encoder.
1. Operation: Power opening and power closing.
  2. Features:
    - a. Adjustable opening and closing speeds.
    - b. Adjustable back-check and latching.
    - c. Adjustable braking.
    - d. Adjustable hold-open time between 0 and 30 seconds.
    - e. Obstruction recycle.
    - f. On/Off switch to control electric power to operator.
    - g. Energy conservation switch that reduces door-opening width.
    - h. Variable rate open/closed speed control.
    - i. Closed loop speed control with active braking and acceleration.
    - j. Variable obstruction recycle time delay.
    - k. Self-adjusting stop position.
    - l. Self-adjusting closing compression force.
    - m. Optional Switch to open/Switch to close operation.
  3. Mounting: Concealed.
  4. Drive System: Synchronous belt type.
- C. Electrical service to door operators shall be provided under Division 16 Electrical. Minimum service to be 120 VAC, 10 amps.

## 2.11 ELECTRICAL CONTROLS

- 2.11.1 Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable. A single controller shall be capable of controlling up to two (2) operators per entrance system.
- 2.11.2 Life Cycle Data Counter: The electrical control system shall incorporate a non-re-settable counter to track door operation cycles.

2.11.3 Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:

- A. Automatic Reset Upon Power Up.
- B. Main Fuse Protection.
- C. Electronic Surge Protection.
- D. Internal Power Supply Protection.
- E. Resettable sensor supply fuse protection.
- F. Motor Protection, over-current protection.

2.11.4 Soft Start/Stop: A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling.

2.11.5 Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

2.11.6 Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be software driven and shall be utilized via Palm® handheld interface. The following parameters may be adjusted via the configuration tool.

- A. Operating speeds and forces as required to meet ANSI/BHMA A156.10.
- B. Adjustable and variable features as specified in 2.05, B., 2.
- C. Reduced opening position.
- D. Fail Safe/Secure control.
- E. Firmware update.
- F. Trouble Shooting
- G. I/O Status.

Electrical component monitoring including parameter summary. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer's internet site.

## 2.12 ACTIVATION AND SAFETY DEVICES

2.12.1 Motion Sensors: Motion sensors shall be mounted on each side of door header to detect pedestrians in the activating zone, and to provide a signal to open doors in accordance with ANSI/BHMA A156.10. Units shall be programmable for bi-directional or uni-directional operation and

shall incorporate K-band microwave frequency to detect all motion in both directions.

2.12.2 Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with ANSI/BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.

2.12.3 Photoelectric Beams: In addition to the threshold sensor include a minimum of two (2) doorway holding beams. Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

- A. Allowable Installation Tolerances: Install work plumb and true, in alignment and in relation to lines and grades shown. Variation of 3 mm (1/8 inch) in 2400 mm (eight feet), non-accumulative, is maximum permissible for plumb, level, warp, bow and alignment.
- B. Anchor aluminum frames to adjoining construction at heads, jambs and bottom and to steel supports, and bracing. Anchor frames with stainless steel or aluminum countersunk flathead, expansion bolts or machine screws, as applicable. Use aluminum clips for internal connections of adjoining frame sections.
- C. Where work is installed within masonry or concrete openings, place no parts other than built-in anchors and provision for operating devices located in the floor, until after the masonry or concrete work is completed.
- D. Install hardware specified under Section 08 71 00, DOOR HARDWARE.
- E. Install hung door operators specified under Section 08 71 13, AUTOMATIC DOOR OPERATORS.

#### 3.2 ADJUSTING:

After installation of entrance and storefront work is completed, adjust and lubricate operating mechanisms to insure proper performance.

3.3 PROTECTION, CLEANING AND REPAIRING:

Remove all mastic smears and other unsightly marks, and repair any damaged or disfiguration of the work. Protect the installed work against damage or abuse.

--- END OF SECTION ---



## **SECTION 08 51 13**

### **ALUMINUM WINDOWS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

A. Replacement of aluminum windows of type and size shown, complete with hardware, related components and accessories.

B. Types:

1. Fixed with Openable top
2. Fixed with Louvers
3. Fixed

NOTE: Furnish all necessary materials, labor and equipment for the complete installation of blast resistant .32 U factor energy efficient blast resistant triple glazed aluminum window assembly for hospital and storefront and .37 U factor energy efficient blast resistant double glazed aluminum window assembly for sliding doors and mechanical rooms. Building #1 of the Muskogee VA Medical center is a World War One era facility. It was never designed to be a ballistics resistant structure. So as such we have specifically focused in on the glazing being charge one blast resistant of distances greater than 100 feet set-back for the entire window assembly by leaving in place the existing wood and aluminum clad head, jambs and sill and fastening the new panning around the existing and fastening the aluminum window through the new panning, through the existing cladding through wood into masonry so that it meets the prevailing AFTP guidelines.

##### **1.2 DEFINITIONS**

A. Accessories: Mullions, staff beads, casings, closures, trim, moldings, panning systems, sub-sills, clips anchors, fasteners, weather- stripping, and other necessary components required for fabrication and installation of window units.

B. Uncontrolled Water: Water not drained to the exterior, or water appearing on the room side of the window.

##### **1.3 QUALITY ASSURANCE**

A. Approval by COR is required of products or service of proposed manufacturers and installers.

B. Approval will be based on submission of certification by Contractor

1. Manufacturer regularly and presently manufactures the specified windows as one of its principal products.

2. Installer to certify he has technical qualifications, experience, trained personnel and facilities to install specified items.

Manufacturer to verify the installation of at least one window, to insure 10 year warranty installation.

- C. Provide each type of window produced from one source of manufacture.

- D. Quality Certified Labels or certificate:

1. Architectural Aluminum Manufacturers Association, "AAMA label" affixed to each window indicating compliance with specification.
2. Certificates in lieu of label with copy of recent test report (not more than 4 years old) from an independent testing laboratory and certificate signed by window manufacturer stating that windows provided comply with specified requirements and AAMA 101/I.S.2 for type of window specified.

#### 1.4 SUBMITTAL

- A. Shop Drawings:

1. Minimum of 1/2 scale for windows
2. Identifying parts of window units by name and kind of metal or material, show construction, locking systems, operators, trim, installation and anchorages.
3. Include glazing details and standards for factory glazed units.

- B. Manufacturer's Literature and Data:

Window, Frame.

Sash locks, keepers, and key.

- C. Certificates:

1. Blast Resistant Certification of .030 lami, ballistic resistant UL 752 Level 3.

- D. Test Reports:

1. Copies of U Value assembly test reports.
2. Copies of Solar capabilities equal to PPG Solar Ban 60, Guardian, or Viracon ultraviolet ray protection.
3. Thermal Movement: Provide assembly capable of withstanding thermal movements resulting from ambient range of 150 deg. F (67 deg. C). Window wall temperature may be assumed to reach ambient temperature of 180 deg. F (82 deg. C).

4. Air infiltration: Maximum rate of 9.64 cu. in./min. per sq. in. (0.0017 cu. m/min per sq. m) of window area plus 52 cu. in./linear ft. (0.0028 cu./m per linear m) of operable sash joint for inward test pressure of 6.24 psf (298.8 Pa) per ASTM E 283.
5. Water penetration: No leakage for inward test pressure of 8 pounds (3.63 kg) force, per ASTM E 331.

E. Samples:

Provide Window Corner showing thermal break characteristics, showing painted

finish equal to UC115244 Duranar Sandstone color.

1.5 WARRANTY

Warrant windows against malfunctions due to defects in window frames, glass, hardware, materials and workmanship, provide 10 year warranty period.

1.6 APPLICABLE PUBLICATIONS

A. American Architectural Manufacturers Association (AAMA):

101/I.S.2/A440-05.....Windows, Doors, and Unit Skylights  
505-98.....Dry Shrinkage and Composite Performance Thermal  
Cycling Test  
Procedures  
2605-05.....Superior Performing Organic Coatings on  
Architectural Aluminum Extrusions and Panels  
TIR-A8-04.....Structural Performance of Poured and Debridged  
Framing  
Systems

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

E 90-04.....Test Method for Laboratory Measurement of  
Airborne Sound Transmission Loss of  
Building Partitions

C. National Fenestration Rating Council (NFRC):

NFRC 100-04.....Determining Fenestration Product U-Factors

D. National Association of Architectural Metal Manufacturers

(NAAMM): AMP 500 Series.....Metal Finishes Manual

PART 2- PRODUCTS

2.1 MATERIALS

- A. Aluminum Extrusions; Sheet and Plate: Provide members complying with ASTM B 221, alloy 6063-T5, -T6, or -T52, or alloy 6061-T6, for principal framing members, with 3/16 inch (4.76 mm) minimum thickness

of walls; provide alloy 6063-T5, -T6, or -T52 for trim and stops which are not exposed to forced entry attack, of 1/16 inch (1.575 mm) minimum thickness.

B. Manufacturer: Boyd, EFCO, Manko, Old Castle Building Envelop, Peerless Product Inc., Thermal, Wojan or approved equal.

1. Any manufacturer will be acceptable, provided they comply with all requirements of the Contract Documents and receive prior approval by the COR.
2. Finish: Painted or Powder Coat Finish equal to UC115244 Duranar Sandstone color.

C. Blast Resistant Fasteners Anchorage: AAMA 101/I.S.2. Screws, bolts, nuts, rivets and other fastening devices to be non-magnetic stainless steel or zinc coated steel.

1. Fasteners to be concealed when window is closed. Where wall thickness is less than 3 mm (0.125 inch) thick, provide backup plates or similar reinforcements for fasteners.
2. Stainless steel self-tapping screws may be used to secure Venetian blind hanger clips, vent guide blocks, friction adjuster, and limit opening device.
3. Attach locking and hold-open devices to windows with concealed fasteners. Provide reinforcing plates where wall thickness is less than 3 mm (0.125 inch) thick.

D. Weather-strips: AAMA 101/I.S.2.

E. Hardware:

1. Locks: Two position locking bolts or cam type tamperproof custodial locks with a single point control located at top of the window. Locate locking devices in the vent side rail. Fastenings for locks and keepers shall be concealed or nonremovable.
2. Locking Device Strikes: Locate strikes in frame jamb. Strikes shall be adjustable for locking tension. Fabricate strikes from Type 304 stainless steel or white bronze.
3. Fabricate hinges of noncorrosive metal. Hinges may be either fully concealed when window is closed or semi-concealed with exposed knuckles. All exposed knuckle hinges shall have hospital tips, at both ends. Surface mounted hinges will not be accepted.
4. Guide Blocks: Fabricate guide blocks of injection molded nylon. Install guide block fully concealed in vent/frame sill.
5. Hardware for Emergency Ventilation of Windows:

- a. Provide windows with a hold open linkage for emergency ventilation.
- b. Hold open hardware shall provide for maximum six inches of window opening and shall include an adjustable friction shoe to provide resistance when closing the window.
- c. Handles shall be removable.

6. Hardware to open upper 25% of window by maintenance personnel only

## 2.2 THERMAL AND CONDENSATION PERFORMANCE

A. Condensation Resistance Factor (CRF): Minimum CRF of C

45. B. Thermal Transmittance:

1. Maximum U value .32 on triple glazed .37 on double glazed for the total window assembly not just the glazing.

B. Solar Heat Gain Coefficient (SHGC): equal to that of Solar Ban 60.

## 2.3 FABRICATION

A. Fabrication to exceed or meet requirements of Physical Load Tests, Air Infiltration Test, and Water Resistance Test of AAMA 01/I.S.2.

B. Glazing:

1. Factory or field glazing optional.

2. Glaze in accordance with Section 08 80 00, GLAZING. Type A glazing is for Triple glaze; Type B is for double glazed. The entire Hospital is triple glazed. The electrical, mechanical, and penthouse areas are double glazed.

- a. The triple glazing that is specified and shown on the drawing detail is as follows:

¼" tempered with Solar Ban 60 ½" air spacer using Low E ultraviolet protection and Argon gas then space with 1/8 lamination to .030 ballistic protection to 1/8" resulting in the total thickness .28 of an inch then an additional inch of window jamb space with ¼ tempered laminated pane glass to the interior. The entire window system not just glazing must equal a U value of .32 or lower.

- b. The double glazing that is specified and shown on the drawing detail is as follows:

¼" tempered with Solar Ban 60 ½" air spacer using Low E ultraviolet protection and Argon gas then space with 1/8 lamination to .030 ballistic protection to 1/8" resulting in the total thickness .28 of an inch.

3. Windows replace glass without dismantling sash framing.
4. Design rabbet to suit glass thickness and glazing method specified.
5. Glaze from interior except where not accessible.
6. Provide removable fin type glazing beads.

C. Trim:

1. Trim includes casings, closures, and panning.
  2. Fabricate to shapes shown of aluminum not less than 1.6 mm (0.062 inch) thick
  3. Extruded or formed sections, straight, true, and smooth on exposed surfaces.
  4. Exposed external corners mitered and internal corners coped; fitted with hairline joints.
  5. Reinforce 1.6 mm (0.062 inch) thick members with not less than 3 mm (1/8-inch) thick aluminum.
  6. Except for strap anchors, provide reinforcing for fastening near ends and at intervals not more than 305 mm (12 inches) between ends.
  7. Design to allow unrestricted expansion and contraction of members and window frames.
  8. Secure to window frames with machine screws or expansion rivets.
  9. Exposed screws, fasteners or pop rivets are not acceptable on exterior of the casing or trim cover system.
- D. Thermal-Break Construction:
1. Low conductance thermal plastic barrier at minimum of 1 inch not polyurethane.
  2. Capable of structurally holding sash in position and together.
  3. All Thermal Break Assemblies (Pour & Debridge, Insulbar or others) shall be tested as per AAMA TIR A8 and AAMA 505 for Dry Shrinkage and Composite Performance.
  4. Location of thermal barrier and design of window shall be such that, in closed position, outside air shall not come in direct contact with interior frame of the window.
- E. Mullions: AAMA 101.
- F. Subsills and Stools:
1. Fabricate to shapes shown of not less than 2 mm (0.080 inch) thick extruded aluminum.
  2. One piece full length of opening with concealed anchors.
  3. Sills turned up back edge not less than 6 mm (1/4-inch). Front edge provide with drip.
  4. Sill back edge behind face of window frame. Do not extend to interior surface or bridge thermal breaks.
  6. Do not perforate for anchorage, clip screws, or other requirements.
  7. Building interior sills to be solid surface laminate at all windows except the electrical, mechanical and penthouse windows.

## 2.4 FINISH

- A. In accordance with NAAMM AMP 500 series.
- B. Finish exposed aluminum surfaces as follows:
  - 1. Fluorocarbon Finish: AAMA 2605, superior performing organic coating.
- C. Hardware:

Finish hardware exposed when window is in the closed position:  
Stainless Steel, Polished Aluminum or Match window color.

## PART 3 - EXECUTION

3.1 PROTECTION (DISSIMILAR MATERIALS): AAMA 101/I.S.2. No items will be removed by the government. All items shelving, desks, storage unites, hospital equipment, tables, chairs, etc. will be moved and reinstalled by the contractor. Remove existing window glazing and transite panel. Leave existing aluminum head, jambs and sill in place.

## 3.2 INSTALLATION, GENERAL

- A. Install window units in accordance with manufacturer's specifications and recommendations for installation of window units, hardware, operators and other components of work and to meet required wind loads.
- B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, use expansion or toggle bolts or screws, as best suited to construction material.
  - 1. Provide bolts or screws minimum 6 mm (1/4-inch) in diameter.
  - 2. Sized and spaced to resist the tensile and shear loads imposed.
  - 3. Do not use exposed fasteners on exterior, except when unavoidable for application of hardware.
  - 4. Provide non-magnetic stainless steel Phillips flat-head machine screws for exposed fasteners, where required, or special tamper- proof fasteners.
  - 5. Locate fasteners to not disturb the thermal break construction of windows
- C. Set windows plumb, level, true, and in alignment; without warp or rack of frames or sash.
- D. Anchor windows on four sides with anchor clips or fin trim.
  - 1. Do not allow anchor clips to bridge thermal breaks.

2. Use separate clips for each side of thermal breaks.
  3. Make connections to allow for thermal and other movements.
  4. Leave in place the existing wood and aluminum cladded head, jambs and sill and fastening the new panning around the existing and fastening the aluminum window through the new panning, through the existing cladding through wood into masonry at 2 inches from the corner and 8 inch on center meets the prevailing AFTP guidelines See revised drawing sheet A9.3A.
  5. Use manufacturer's standard clips at corners and not over 600 mm (24 inches) on center.
  6. Where fin trim anchorage is shown build into adjacent construction, anchoring at corners and not over 600 mm (24 inches) on center.
  7. Isolate aluminum from plaster, masonry, steel by giving aluminum a heavy coat of bituminous paint.
- E. Sills and Stools:
1. Set in bed of mortar or other compound to fully support, true to line shown.
  2. Do not extend sill to inside window surface or past thermal break.
  3. Leave space for sealants at ends and to window frame unless shown otherwise.
  4. Solid surface laminate to be place to the interior of all replaced windows except those in the electrical rooms, mechanical rooms and penthouse there will be no solid surface interior window sill. The solid surface will be consistent on thickness but varies in length and width per window opening. See specification 06-20-00.
- F. Replacement Windows Build C East Wing quantity of 5:
1. Do not remove existing windows until new replacement is available, ready for immediate installation.
  2. Remove existing work carefully; avoid damage to existing exterior and interior material and finishes to that are to remain. Repair all water damaged areas both inside and outside.
  3. Perform all other operations as necessary to prepare openings for proper installation and operation of new units. The brick that is to be removed is around 5 windows in building C only.



This removal and replacement is to aid in the installation of the lintel above the new blast resistant aluminum window and to aid in creating a water resistant barrier. This then creates a new revised size for the triple glazed fixed window assembly to be installed. See Revised Drawing sheet A1.5A

4. Do not leave openings uncovered at end of working day.

### 3.3 MULLIONS CLOSURES, TRIM, AND PANNING

- A. Cut mullion full height of opening and anchor directly to window frame on each side, see revised drawing sheet A9.3A.
- B. Closures, Trim, and Panning: External corners mitered and internal corners coped, fitted with hairline, tightly closed joints.
- C. Secure to concrete or solid masonry with expansion bolts, expansion rivets, split shank drive bolts, or powder actuated drive pins.
- D. Toggle bolt to hollow masonry units. Screwed to wood or metal.
- E. Fasten except for strap anchors, near ends and corners and at intervals not more than 300 mm (12 inches) between.
- F. Seal units following installation to provide watertight system.

### 3.4 ADJUST AND CLEAN

- A. Adjust ventilating sash and hardware to provide tight fit at contact points, and at weather-stripping for smooth operation and watertight closure.
- B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.
- C. Remove excess glazing and sealant compounds, dirt, and other substances.
- D. Lubricate hardware and moving parts.
- E. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.
- E. Except when a window is being adjusted or tested, keep locked in the closed position during the progress of work on the project.

### 3.5 OPERATION DEVICES

- A. Provide wrenches, keys or removable VA approved locking operating Handles, as specified to operate windows.
- B. Provide one emergency ventilating operating handle for every four windows.

### 3.6 CLEANING AND PROTECTION

- A. General: Upon completion of installation of metal windows, clean exposed surfaces of window units and sub-frames; comply with Fabricator's instructions. Remove excess and migrating joint sealing compounds, dirt, and foreign substances. Repair damaged areas of factory-applied finishes in accordance with Fabricator's instructions; comply with Project Director's requests. Continue maintenance of exposed finishes through remainder of construction period.
- B. Protection: Provide breakage protection promptly upon completion of fenestration installation. Install crossed streamers of cloth/plastic, adhered to unit framing exterior faces. Maintain through construction completion.
- C. Repair and Replacement: Touch up minor finish damage on metal surfaces where handling and installation have produced marred or abraded areas which can be readily corrected. Replace or refinish units where damage is of greater substance, as directed by Project Director.
- D. Glazing: Clean glazing

--- END OF SECTION ---

## **SECTION 08 71 13**

### **AUTOMATIC DOOR OPERATORS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies equipment, controls and accessories for automatic operation of sliding doors.

##### **1.2 QUALITY ASSURANCE**

- A. Automatic door operators, controls and other equipment shall be products of a manufacturer regularly engaged in manufacturing such equipment for a minimum of three years.
- B. One type of automatic door equipment shall be used throughout the building.
- C. Equipment installer shall have specialized experience and shall be approved by the manufacturer.

##### **1.3 WARRANTY**

Two Year Automatic door operators warranty complete all aspects.

##### **1.4 MAINTENANCE MANUALS**

Furnish parts and maintenance manuals and instructions on automatic door operators.

##### **1.5 SUBMITTALS**

- A. Manufacturer's literature and data describing operators, power units, controls, door hardware and safety devices.
- B. Shop Drawings:
  - 1. Showing location of controls and safety devices in relationship to each automatically operated door.
  - 2. Showing layout, profiles, product components, including anchorage, accessories, as applicable.
  - 3. Submit templates, wiring diagrams, fabrication details and other information to coordinate the proper installation of the automatic door operators.

##### **1.6 DESIGN CRITERIA**

- A. As a minimum provide blast resistant (for 80 foot standoff) automatic door equipment that shall comply with the requirements of ANSI 156.10. Except as otherwise noted on drawings, provide operators which will move the doors from the fully closed to fully opened

position in three seconds maximum time interval, when speed adjustment is at maximum setting.

- B. Equipment: Conforming to UL 325. Provide key operated power disconnect wall switch for each door installation.
- C. Electrical Wiring, Connections and Equipment: Provide all motor, starter, controls, associated devices, and interconnecting wiring required for the installation. Equipment and wiring shall be as specified in Division 26, ELECTRICAL.

#### 1.7 APPLICABLE PUBLICATIONS

- A. Builders Hardware Manufacturers Association, Inc. (BHMA):

A156.10-99.....Power Operated Pedestrian Doors (BHMA

- 1601) B. National Fire Protection Association (NFPA):

80-99.....Fire Doors and Fire Windows

101-03.....Life Safety Code

- C. Underwriters Laboratory (UL):

325-03.....Door, Drapery, Gate, Louver, and Window

Operators and  
Systems

#### PART 2 - PRODUCTS

##### 2.1 SLIDING DOOR OPERATORS

- A. General: Sliding doors shall have heavy duty type electric operators, conforming to BHMA A156.10 and the following requirements as applicable. Assembly shall be single or bi-parting sliding doors as shown on drawings.
- B. Door Operation: Doors shall be opened by electric motor pulling door from closed to open position and shall stop door by electrically reducing voltage and stalling door against mechanical stop. System shall permit manual control of door in event of power failure. Opening and closing speeds shall be adjustable. In compliance with NFPA-101, all door panels shall allow "breakout" to the full open position to provide instant egress at any point in the door's movement.
- C. Operators: Completely assembled and sealed electromechanical operating unit, all located in cast aluminum housing and filled with special lubricant for extreme conditions. Attached to transmission system shall be a minimum 1/8 Hp "DC" shunt-wound permanent magnet motor with

sealed ball bearings. Complete unit shall be rubber mounted with provisions

for easy maintenance and replacement. Operators shall have adjustable opening and closing cycle. Housing shall be minimum 6063T-5 alloy aluminum not less than .005 mm (125 inch) minimum thickness, 150 mm by 200 mm (6 inch wide by 8 inch high).

- D. Sliding Door Hardware Guide Rollers, Door Carrier: Top door carriers shall ride on steel or delrin rollers incorporating sealed bearings with each door having two support rollers and one anti-rise roller. Each roller shall have a minimum of 9 mm (3/8-inch) of vertical adjustment with positive mechanical locks. Each door shall also include two urethane covered oil impregnated bearing bottom rollers attached with 5 mm (3/16-inch) thick formed steel guide brackets. Each door carrier supporting a door leaf shall include a vertical steel reinforcing member to prevent sagging when door is swung under breakaway conditions. All carbon steel brackets and fittings shall be plated for corrosion resistance.

## 2.2 MICROPROCESSOR CONTROLS

- A. The system shall include a multi-function microprocessor control providing adjustable hold open time (1-30 seconds), LED indications for sensor input signals and operator status and power assist close options. Control shall be capable of receiving activation signals from any device with normally open dry contact output. All activation modes shall provide fully adjustable opening speed.
1. With push-to-operate function enabled, the control shall provide a means of initiating a self-start activation circuit by slightly pushing the door open at any point in the door swing.
  2. Power assist shall provide a two second impulse in the close direction to overcome restrictions with locking devices of pressure differentials, allowing the unit to operate in standard time delay mode, and permitting the door to close from the full open position after the hold time is satisfied.
- B. The door shall be held open by low voltage applied to the continuous duty motor. The control shall include an adjustable safety circuit that monitors door operation and stops the opening direction of the door if an obstruction is sensed. The motor shall include a recycle

feature that reopens the door if an obstruction is sensed at any point during the closing cycle. The control shall include a standard three position toggle switch with functions for ON, OFF, and HOLD OPEN.

## 2.3 POWER UNITS

Each power unit shall be self-contained, electric operated and independent of the door operator. Capacity and size of power circuits shall be in accordance with automatic door operator manufacturer's specifications and Division 26 - ELECTRICAL.

## 2.4 DOOR CONTROLS

- A. Opening and closing actions of doors shall be actuated by controls and safety devices specified, and conform to ANSI 156.10. Controls shall cause doors to open instantly when control device is actuated; hold doors in open positions; then, cause doors to close, unless safety device or reactivated control interrupts operation.
- B. Manual Controls:
  - Push Plate Wall Switch: Recess type, cast aluminum or stainless steel push plate minimum 100 mm by 100 mm (four-inch by four-inch), with 13 mm (1/2-inch) high letters "To Operate Door--Push" engraved on face of plate.
- C. Unless otherwise specified, all doors with control mats shall operate for two way traffic so that door operation can be controlled from either direction of approach.
- D. Motion Detector: The motion detector may be surface mounted or concealed, to provide a signal to actuate the door operator, and monitor the immediate zone, to detect intrusion by persons, carts or similar objects. The zone, which the detector monitors, shall be 1500 mm (five feet) deep and 1500 mm (five feet) across, plus or minus 150 mm (six inches) on all dimensions. The maximum response time shall be no less than 25 milliseconds. Unit shall be designed to operate on 24 volts AC. The control shall not be affected by cleaning material, solvents, dust, dirt and outdoor weather conditions.

## 2.6 SAFETY DEVICES

- A. General: Area over which doors swing or slide shall be a safety section and anyone standing in path of door's movement shall be protected by a safety device, except where push controls are shown.
- B. At sliding doors, provide two photoelectric beams mounted at heights of

600 mm (24 inches) and 1200 mm (48 inches) in the door frame on sliding doors. Beams shall parallel door openings to prevent doors from closing when anyone is in the center of the door or doors. When beams are activated, doors shall recycle to full open position. Actuation shall include a motion detector mounted on each side of the door for detection of traffic in each direction.

- C. Each swing door shall have installed on the pull side a presence sensor to detect any person standing in the door swing path and prevent the door from opening.
- D. Time delay switches shall be adjustable between 3 to 60 seconds and shall control closing cycle of doors.
- E. Decals with sign "In" or "Do Not Enter" shall be installed on both faces of each door where shown.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Coordinate installation of equipment with other related work. Manual controls and power disconnect switches shall be recessed or semi-flush mounted in partitions. Secure operator components to adjacent construction with suitable fastenings. Conceal conduits, piping, and electric equipment, in finish work.
- B. Install power units in locations shown. Where units are to be mounted on walls, provide metal supports or shelves for the units. All equipment, including time delay switches, shall be accessible for maintenance and adjustment.
- C. Operators shall be adjusted and must function properly for the type of traffic (pedestrians, carts, stretchers and wheelchairs) expected to pass through doors. Each door leaf of pairs of doors shall open and close in synchronization. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.
- D. Install controls at positions shown and make them convenient for particular traffic expected to pass through openings. Maximum height of push plate wall switches from finished floors shall be 40 inches unless otherwise approved by the Resident Engineer.

#### 3.2 INSTRUCTIONS

- A. Following the installation and final adjustments of the door operators, the installer shall fully instruct VA personnel for 4 hours on the operating, servicing and safety requirements for the swing and sliding automatic door operators.
- B. Coordinate instruction to VA personnel with Resident Engineer.

--- END OF SECTION ---



## **SECTION 08 80 00**

### **GLAZING**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies glass, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items.

Color of Spandrel glass

Tented (heat absorbing or light reducing) glass and Reflective

##### **1.2 LABELS**

###### **A. Permanent labels:**

1. Locate in corner for each pane.
2. Label in accordance with ANSI Z97.1 and SGCC (Safety Glass Certification Council) label requirements.
  - a. Tempered glass.
  - b. Blast resistant laminated glass or have certificate for panes without permanent label.
  - c. Organic coated glass.

##### **1.3 PERFORMANCE REQUIREMENTS**

###### **A. Building Enclosure Vapor Retarder and Air Barrier:**

1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

###### **B. Glass Thickness:**

1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with ASCE 7.
2. Test in accordance with ASTM E 1300.
3. Thicknesses listed are the minimum. Coordinate thicknesses with framing system manufacturers.

###### **C. Blast resistance glass or plastic assemblies:**

1. For blast resistant windows follow Unified Facilities Criteria, DOD Minimum Antiterrorism Standards for Buildings UFC4-010-01.

2. Spall Resistance: Laminated glazing shall not produce spall to interior (protected side) when impacted with scheduled ballistics. Tolerances:
3. Outside dimensions: Overall outside dimensions (height and width) of laminated security glazing shall maintain tolerance of  $\pm 3$  mm.
4. Warp age: Out-of-flat (warp age or bowing) condition of laminates shall not exceed 2.5 mm per lineal meter. The condition, if present, shall be localized to extent not greater than 0.75 mm for any 0.3 meter section.
5. Coordinate with Physical Security Design Manual requirements.

#### 1.4 SUBMITTALS

##### A. Manufacturer's Certificates:

1. Certificate on shading coefficient.
2. Certificate on "R" value when value is specified.
3. Certificate that blast resistant glass meets the requirements of UFC4-010-01.

##### B. Warranty: Submit written guaranty of 15 years.

##### C. Samples: Solar ban 60

1. Size: 150 mm by 150 mm (6 inches by 6 inches).

#### 1.5 PROJECT CONDITIONS

Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured

#### 1.6 APPLICABLE PUBLICATIONS

##### A. American National Standards Institute (ANSI):

Z97.1-04.....Safety Glazing Material Used in  
Building - Safety Performance Specifications  
and Methods of Test.

##### B. American Society for Testing and Materials (ASTM):

C1363-05.....Thermal Performance of Building Assemblies, by  
Means of A Hot Box Apparatus  
C542-05.....Lock-Strip Gaskets.  
C716-06.....Installing Lock-Strip Gaskets and Infill  
Glazing Materials.

C794-06.....Adhesion-in-Peel of Elastomeric Joint Sealants.  
C864-05.....Dense Elastomeric Compression Seal Gaskets,  
Setting Blocks, and Spacers.  
C920-08.....Elastomeric Joint Sealants.  
C964-07.....Standard Guide for Lock-Strip Gasket Glazing.  
C1036-06.....Flat Glass.  
C1048-04.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated  
and Uncoated Glass.  
E84-09.....Surface Burning Characteristics of Building  
Materials.  
E1300-09.....Determining Load Resistance of Glass in  
Buildings.  
E2190-08.....Insulating Glass Unit

## PART 2 - PRODUCT

### 2.1 GLASS

- A. Exterior Glass: Tinted Heat reflective and low emissivity coated glass:  
Solar Ban 60 from PPG or equal
  - 1. ASTM C1036, Type I, Class 2, Quality q3.
  - 2. Color:
  - 3. Thickness, 6 mm (1/4 inch) .2 HEAT-TREATED GLASS
- B. Tempered Glass. Tinted Clear
  - 1. ASTM C1048, Kind FT, Condition A, Type I, Class 2, Quality q3.
  - 2. Thickness, 6 mm (1/4 inch)
- C. Spandrel Glass:
  - 1. ASTM C1048, Kind HS, Condition B, Type I.
- D. Low-E Tempered Glass:
  - 1. ASTM C1048, Kind FT, Condition C, Type I, Class 1, Quality q3 with  
low emissivity pyrolytic coating having an E of 0.15.
  - 2. Apply coating to surface of insulating glass units.
  - 3. Thickness, 4.8 mm (3/16 inch)
- E. Ceramic Coated Vision Glass:.30 Lami
  - 1. ASTM C1048, Kind HS FT, Condition C, Type I, Class 1
  - 2. Apply coating to second surface of monolithic glass laminated glass  
Thickness, 6 mm (1/4 inch)
- F. Ceramic Coated Spandrel Glass:
  - 1. ASTM C1048, Condition B, Type I, Class 2. Apply coating to second  
surface.

3. Thickness, 6 mm (1/4 inch).

## 2.2 LAMINATED GLASS

- A. Two or more lites of glass bonded with an interlayer .030 thickness blast resistant material for use in blast resistant building glazing.
- B. Colored Interlayer:
  1. Use color interlayer ultraviolet light color stabilization.
  2. Option: Use colored interlayer with clear glass in lieu of tinted glass and clear interlayer.
  3. Option: Use white interlayer with clear glass in lieu of obscure glass and clear interlayer.
  4. The interlayer assembly shall have uniform color presenting same appearance as tinted glass assembly.
- C. Use 1.5 mm (0.060 inch) thick interlayer for:
  1. Horizontal or Sloped glazing.
  2. Acoustical glazing.
  3. Heat strengthened or fully tempered glass assemblies.
- D. Use min. 0.75 mm (0.030 inch) thick interlayer for vertical glazing where 1.5 mm (0.060 inch) interlayer is not otherwise shown or required.

## 2.3 LAMINATED GLAZING ASSEMBLIES

- A. Clear Glazing:
  1. Both panes clear glass ASTM C1036, Type I, Class 1, Quality q3.
  2. Thickness: Each pane, 3 mm (1/8 inch) thick.
- B. Clear Tempered Glazing:
  1. Both panes ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.
  2. Thickness: Each pane 4.8 mm (3/16 inch) thick as indicated.

Tinted Tempered Glazing:

  3. Exterior pane ASTM C1036, Type I, Class 3, Quality q3, 3 mm (1/8 inch) thick.
  4. Interior pane ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 3 mm (1/8 inch) thick.
- D. Clear Heat Strengthened Glazing:
  1. Both panes, ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.
  2. Thickness: Each pane, 3 mm (1/8 inch) thick.
- E. Tinted Heat Strengthened Glazing:

1. Both panes, ASTM C1048, Kind HS, Condition A, Type I, Class 2, Quality q3.

2. Thickness: Each pane, 3 mm (1/8 inch) thick

F. Tempered Obscure Glazing:

1. One pane ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 3 mm (1/8 inch) thick.
2. One pane ASTM C1048, Kind FT, Type II, Class 1, Form 3, Quality q8, Finish f1, Pattern , 3 mm (1/8 inch) thick.

2.4 BLAST RESISTIVE ASSEMBLY

- A. Provide protection listed by UL ABPMED as blast resisting ballistic level in accordance with UL 752.
- B. Fabricate from Type I, Class 1, Quality q3 glass with polyvinyl butyral plastic interlayers between the layers of glass.

2.5 GLASS CLAD POLYCARBONATE SECURITY GLAZING ASSEMBLY

- A. Use 1.3 mm (0.050 inch) polyurethane sheeting for interlayer between glass and polycarbonate.
- B. Clear Heat Strengthened Glass Clad Polycarbonate.
  1. Use ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3, outer glass panes.
  2. Use clear polycarbonate sheet, 3 mm (1/8 inch) thick core.
  3. Thickness, 11 mm (7/16 inch).
- C. Clear Tempered Glass Clad Polycarbonate:
  1. Use ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 3 mm (1/8 inch) thick outer glass panes.
  2. Use clear polycarbonate sheet, 3 mm (1/8 inch) thick core.
  3. Thickness, 11 mm (7/16 inch).
- D. Maximum Allowable Area: Laminated glazing shall not exceed 1.32 meter
- E. square unless glazing has been certified.

2.6 INSULATING GLASS UNITS

- A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space and comply with ASTM E2190.
- B. Assemble units using glass types specified:

3.1 EXAMINATION

- A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.
- B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

### 3.2 PREPARATION

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.
- B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.
- C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.
- D. Verify that components used are compatible.
- E. Clean and dry glazing surfaces.
- F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

### 3.3 INSTALLATION - GENERAL

- A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.
- B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.
- C. Set glazing without bending, twisting, or forcing of units.
- D. Do not allow glass to rest on or contact any framing member.
- E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.
- F. Laminated Glass:
  1. Tape edges to seal interlayer and protect from glazing sealants.
  2. Do not use putty or glazing compounds.
- G. Insulating Glass Units:

1. Glaze in compliance with glass manufacturer's written instructions.
2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.
3. Do not use putty or glazing compounds.
4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.
5. Install with tape or gunnable sealant in wood sash.

#### 3.4 REPLACEMENT AND CLEANING

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by Resident Engineer.
- B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.
- C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

#### 3.12 PROTECTION

Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

-- END OF SECTION --

## **SECTION 08 80-01**

### **ULTRA SAFETY AND SECURITY WINDOW FILM**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION:**

- A. The intent of this specification is for furnishing and installing all materials, labor and equipment to provide for an abrasion resistant, optically clear micro-layered, metalized, safety and security window film to the existing building windows, storefront, automatic doors, pass-door glass and glass transoms, as indicated. Once applied to the interior surfaces it is to provide shatter resistance protection, reduce transmitted ultra-violet rays and infrared radiation. The film shall be manufactured using microlayered technology to provide superior tear and penetration resistance and improve personal/property safety from flying shards of glass in the event of glass breakage.

##### **1.2 APPLICABLE PUBLICATIONS:**

- A. The American National Standards Institute (ANSI): ANSI Z97 Specification for Safety Glazing Material used in Buildings Sec 5.1 Impact Test: 100-ft/lb. minimum Sec 5.3 Intensified Weathering  
ASTM E-903 Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials using Integrating Spheres.  
ASTM D-1044 Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).  
ASTM G-90 Standard Practice for Performing Accelerated Outdoor Weatherizing for Non-metallic Materials Using Concentrated Natural Sun Light.

##### **1.3 MATERIALS:**

- A. Film Material - Clear: The film material shall consist of an optically clear polyester film, with a durable acrylic abrasion resistant coating over the surface. The color is clear. The film shall have a nominal thickness of 8mils 0.008 inches. There shall be no evidence of coating voids. The film shall be



identified as to Manufacturer of Origin (hereafter to be called Manufacturer).

- B. Emissivity: The emissivity of the non-adhesive surface of the film shall be measured using a Devices & Services Emissometer Model AE at or near room temperature. The Manufacturer shall provide laboratory data of emissivity and calculated window  $-U||$  Values for various outdoor temperatures based upon established calculation procedure defined by the 1985 ASHRAE Handbook of Fundamentals, ch.27, or Lawrence Berkeley Laboratory Window 4.0 Computer Program.
- C. U Value: The U Value of the film applied to  $\frac{1}{8}||$  (6mm) clear glass shall be measured in accordance with test procedures described in 3.2 for Emissivity.
- D. Transmission - Visible: When applied to  $\frac{1}{8}||$  (6mm) clear glass, the luminous transmittance shall be measured with an integrating sphere spectrophotometer as referenced by ASTM E-903 and calculated per ASTM E-308 using Standard Source  $-C||$  for average daylight.
- E. Reflection - Visible: When applied to  $\frac{1}{8}||$  (6mm) clear glass, the total luminous reflection from the glass surface shall be measured with an integrating sphere spectrophotometer as referenced by ASTM E-903 and calculated per ASTM E-308 using Standard CIE Source  $-C||$  for average daylight.
- F. Transmission - Ultraviolet Light: When applied to  $\frac{1}{8}||$  (6mm) clear glass, the total transmission of solar ultraviolet radiation of air mass = 2 over the spectral range of 3000 to 3800 angstroms shall not exceed measured with an integrating sphere spectrophotometer as referenced by ASTM E-903.
- G. Shading Coefficient: When applied to  $\frac{1}{8}||$  (6mm) clear glass, the shading coefficient shall be measured per ASTM E-903 and the shading coefficient is computed in accordance with the established procedures defined by The ASHRAE Handbook of Fundamentals.
- H. Adhesive System: The film shall be supplied with high mass pressure sensitive weatherable acrylate adhesive applied uniformly over the surface opposite the abrasion resistant coated surface.

The adhesive shall be essentially optically flat and shall meet the following criteria:

1. Viewing the film from a distance of ten feet at angles up to 45 degrees from either side of the glass, the film itself shall not appear distorted.
  2. It shall not be necessary to seal around the edges of the applied film system with a lacquer or other substance in order to prevent moisture or free water from penetrating under the film system.
- I. Flammability: The Manufacturer shall provide independent test data showing that the window film shall meet the requirements of a Class A Interior Finish for Building Materials for both Flame Spread Index and Smoke Development Values per ASTM E-84.
  - J. Abrasion Resistance: The Manufacturer shall provide independent test data showing that the film shall have a surface coating that is resistant to abrasion such that, less than 5% increase of transmitted light haze will result in accordance with ASTM D-1044 using 100 cycles, 500 grams weight, and the CS10F Calbrase Wheel.
  - K. Tear Resistance: The film shall meet a minimum tear resistance value of when measured in accordance with ASTM D-1004 (Graves Area Tear Test) at 20 inches/minute (508 mm/minute).
  - L. Safety Glazing: The film, when applied to either side of the window glass, shall pass a 400 ft/lb. impact when tested according to CPSC CFR16, Part 1201 and shall pass the accelerated weathering test requirements for both tensile strength and peel strength.
  - M. Large scale Explosive Blast Testing: The film when applied to One Fourth Inch (6mm) clear glass shall meet a minimum performance level of 3 when open-air blast tested to a minimum of 4.0 PSI with 25/msp peak-over pressure and tested according to GSA Test Standard Protocols. This is an adaptation of ASTM F1642-96.
  - N. Tensile Strength: The film shall have an average tensile strength of 25,000 PSI when tested in accordance with ASTM D882-95a.
  - O. Elongation: The film shall have an average elongation of 130% when tested in accordance with ASTM D882-95a.
  - P. Break Strength (1 inch per width): The film shall have an average break strength of 25 lbs. per mil of film thickness.

1.4 PHYSICAL PROPERTIES:

- A. The following attributes or physical properties form a part of the specifications: Thickness -Base film (mils) 8.0 (inches)  
0.008 - Applied product 8.9  
Emissivity 0.89  
U Value 1.04  
Transmission: Visible 84% Solar 74%  
Reflection: Visible 10% Solar 12%  
Transmission - Ultraviolet <2%  
Shading Coefficient 0.91  
Tear Resistance N/A  
Safety Glazing ANSI Z97.1 400 ft/lbs.  
Tensile Strength 25,000 PSI  
Elongation 130%  
Break Strength (Per inch width) 200 lbs.  
Surface burn: Class A interior use

1.5 REQUIREMENTS OF THE AUTHORIZED DEALER/APPLICATOR (ADA)

- A. The ADA shall provide documentation that the ADA is certified by the Manufacturer of the window film to install said window film as per the Manufacturer's specifications and in accordance with specific requests as to be determined and agreed to by the customer.
- B. Authorization of dealership may be verified through the company's 3M I.D. Number.
- C. The ADA will provide a commercial building reference list of ten (10) properties where the ADA has installed window film. This list will include the following information:  
\*Name of building  
\*The name and telephone number of a management contact  
\*Type of glass  
\*Type of film  
\*Amount of film installed  
\*Date of completion
- D. Upon request, the ADA will provide a Glass Stress Analysis of the existing glass and proposed glass/film combination as recommended by the film Manufacturer.

1.6 REQUIREMENTS OF THE MANUFACTURER

- A. The Manufacturer will insure proper quality control during production, shipping and inventory, clearly identify and label each film core with the product designation and run number.
- B. The Manufacturer will, upon request and pre-approval, provide 100% financing for the complete installation of the window film to the end-user customer in either an installment purchase or lease purchase format to be decided upon by customer.

#### 1.7 SUBMITTAL

- A. Security Window Film Manufacturer Product and Installation

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER BASIS OF DESIGN

- A. Materials shall be manufactured by:  
3M Consumer Safety and Light Management Department  
3M Center, Building 223-02-S-24  
St. Paul, MN 55144-1000

### PART 3 - EXECUTION (SEE ATTACHMENT NO. 1)

#### 3.1 APPLICATION

- A. Examination: Contractor to coordinate with C.O.T.R. and examine glass surfaces to receive new film and verify that they are free from defects and imperfections which will affect the final appearance. Correct all such deficiencies before starting film application.
- B. Preparation:
  - 1. The window and window framing will be cleaned thoroughly with a neutral cleaning solution. The inside surface of the window glass shall be bladed with industrial razors to insure the removal of any foreign contaminant's.
  - 2. Toweling or other absorbent material shall be placed on the window sill or sash to absorb moisture accumulation generated by the film application.

#### 3.2 INSTALLATION

The film shall be applied as to the specifications of the Manufacturer by an ADA.

- 1. Materials will be delivered to a the job site with the manufacturers labels intact and legible.
- 2. To minimize waste, the film will be cut to specification utilizing a vertical dispenser designed for that purpose. Film

edges shall be cut neatly and square at a uniform distance of  $\frac{1}{16}$ " (3mm) to  $\frac{1}{16}$ " (1.6mm) of the window-sealing device.

3. Clear, clean water will be used to remove the water soluble overcoat that protects the pressure sensitive adhesive. Water and film slip solution only will be used on the window glass to facilitate the proper positioning of the film.
4. To insure efficient removal of excess water from the underside of the film and to maximize bonding of the pressure sensitive adhesive, polyplastic bladed squeegees will be utilized.
5. Upon completion, the film may have a dimpled appearance from residual moisture. Said moisture shall, under reasonable weather conditions, dry flat with no moisture dimples within a period of 30 calendar days when viewed under normal viewing conditions.
6. After installation, any left-over material will be removed from the site daily and the work area will be returned to original condition. Use all necessary means to protect the film before, during and after the installation.

### 3.3 CLEANING

- A. The film may be washed using common window cleaning solutions, including ammonia solutions, 30 days after application. Abrasive type cleaning agents and bristle brushes, which could scratch the film, must not be used. Synthetic sponges or soft clothes are recommended.

### 3.4 WARRANTY

- A. In that the film will maintain solar reflective properties without cracking, crazing, delaminating peeling or discoloration.
- B. In the event that the product is found to be defective under warranty, the film manufacturer (3M) will replace such quantity of the film proved to be defective. The application shall be warranted by the film manufacturer (3M) for a period of ten (10) years.

--- END OF SECTION ---

## **SECTION 08 90 00**

### **LOUVERS AND VENTS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies fixed and operable wall louvers and wall vents.

##### **1.2 SUBMITTALS**

- A. Shop Drawings: Each type, showing material, finish, size of members, operating devices, method of assembly, and installation and anchorage details.

##### **1.4 APPLICABLE PUBLICATIONS**

- A. The Master Painters Institute (MPI):  
Approved Product List - 2009
- B. American Society for Testing and Materials (ASTM):  
B209/B209M-07.....Aluminum and Aluminum Alloy, Sheet and Plate  
B221-08.....Aluminum and Aluminum Alloy Extruded Bars,  
Rods, Wire, Shapes, and Tubes
- C. National Association of Architectural Metal Manufacturers (NAAMM):  
AMP 500-505 (1988).....Metal Finishes Manual
- D. American Architectural Manufacturers Association (AAMA):  
2605-05.....Performing Organic Coatings on Architectural  
Extrusions and Panels
- E. Air Movement and Control Association, Inc. (AMCA):  
500-L-07.....Testing Louvers

#### **PART 2 - PRODUCTS**

##### **2.1 MATERIALS**

- A. Aluminum, Extruded: ASTM B221/B221M.if Integral with the window manufacturer
- B. If separate Stainless Steel: ASTM A167, Type 302B.
- C. Fasteners: Fasteners for securing louvers and wall vents to adjoining construction, except as otherwise specified or shown, shall be toggle or expansion bolts, of size and type as required for each specific type of installation and service condition.

1. Where type, size, or spacing of fasteners is not shown or specified, submit shop drawings showing proposed fasteners, and method of installation.
2. Fasteners for louvers, louver frames, and wire guards shall be of stainless steel or aluminum.

## 2.2 EXTERIOR WALL LOUVERS

### A. General:

1. Provide fixed type louvers of size and design shown.
2. Heads, sills and jamb sections shall have formed caulking slots or be designed to retain caulking. Head sections shall have exterior drip lip, and sill sections an integral water stop.
3. Furnish louvers with sill extension or separate sill as shown.
4. Frame shall be mechanically fastened or welded construction with welds dressed smooth and flush.

### B. Performance Characteristics:

1. Replace existing fixed louver with new stainless steel or aluminum

## 2.10 FINISH

- A. In accordance with NAAMM Metal Finishes Manual: AMP 500-505 color match the windows with the paint or powder coat finish.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set work accurately, in alignment and where shown. Items shall be plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.
- B. Furnish setting drawings and instructions for installation of anchors and for the positioning of items having anchors to be built into masonry construction. Provide temporary bracing for such items until masonry is set.
- C. Provide anchoring devices and fasteners as shown and as necessary for securing louvers and vents to building construction as specified. Power actuated drive pins may be used, except for removal items and where members would be deformed or substrate damaged by their use.
- D. Generally, set wall louvers and vents in masonry walls during progress of the work. If wall louvers and vents are not delivered to job in time for installation in prepared openings, make provision for later installation. Set in cast-in-place concrete in prepared openings.

### 3.2 CLEANING AND ADJUSTING

- A. After installation, all exposed prefinished and plated items and all items fabricated from stainless steel and aluminum shall be cleaned as recommended by the manufacturer and protected from damage until completion of the project.
- B. All movable parts, including hardware, shall be cleaned and adjusted to operate as designed without binding or deformation of the members, so as to be centered in the opening of frame, and where applicable, to have all contact surfaces fit tight and even without forcing or warping the components

--- END OF SECTION ---



## SECTION 09 22 16

### NON-STRUCTURAL METAL FRAMING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

This section specifies steel studs wall systems, framing around windows systems, ceiling or soffit suspended or furred framing, wall furring, fasteners, and accessories for the screw attachment of gypsum board, plaster bases or other building boards.

##### 1.2 TERMINOLOGY

- A. Description of terms shall be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by beams, trusses, or bar joists. In interstitial spaces with walk-on floors the underside of the walk-on floor is the underside of structure overhead.
- C. Thickness of steel specified is the minimum bare (uncoated) steel thickness.

##### 1.3 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 For Testing And Materials (ASTM)
  - A123-09.....Zinc (Hot-dip Galvanized) Coatings on Iron and Steel Products
  - A653/A653M-09.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
  - A641-09.....Zinc-Coated (Galvanized) Carbon Steel Wire
  - C11-10.....Terminology Relating to Gypsum and Related Building Materials and Systems
  - C635-07.....Manufacture, Performance, and Testing of Metal Suspension System for Acoustical Tile and Lay-in Panel Ceilings

C636-06.....	Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
C645-09.....	Non-Structural Steel Framing Members
C754-09.....	Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
C841-03(R2008).....	Installation of Interior Lathing and Furring
C1002-07.....	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
E580-09.....	Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint.

## PART 2 - PRODUCTS

### 2.1 PROTECTIVE COATING

Galvanize steel studs, runners (track), rigid (hat section) furring channels, "Z" shaped furring channels, and resilient furring channels, with coating designation of G-60 minimum, per ASTM 123.

### 2.2 STEEL STUDS AND RUNNERS (TRACK)

- A. ASTM C645, modified for thickness specified and sizes as shown.
  - 1. Use ASTM A525 steel, 0.8 mm (0.0329-inch) thick bare metal (33 mil).
  - 2. Runners same thickness as studs.
- B. Provide not less than two cutouts in web of each stud, approximately 300 mm (12 inches) from each end, and intermediate cutouts on approximately 600 mm (24-inch) centers.
- C. Doubled studs for openings and studs for supporting concrete backer-board.
- D. Studs 3600 mm (12 feet) or less in length shall be in one piece.

### 2.3 FURRING CHANNELS

- A. Rigid furring channels (hat shape): ASTM C645.
- B. Resilient furring channels:
  - 1. Not less than 0.45 mm (0.0179-inch) thick bare metal.
  - 2. Semi-hat shape, only one flange for anchorage with channel web leg slotted on anchorage side, channel web leg on other side stiffens fastener surface but shall not contact anchorage surface other channel leg is attached to.

- C. "Z" Furring Channels: 1. Not less than 0.45 mm (0.0179-inch)-thick bare metal, with 32 mm (1-1/4 inch) and 19 mm (3/4-inch) flanges.  
2. Web furring depth to suit thickness of insulation with slotted perforations.
- D. Rolled Steel Channels: ASTM C754, cold rolled; or, ASTM C841, cold rolled.

#### 2.4 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES

- A. ASTM C754, except as otherwise specified.
- B. For fire rated construction: Type and size same as used in fire rating test.
- C. Fasteners for steel studs thicker than 0.84 mm (0.033-inch) thick. Use ASTM C954 steel drill screws of size and type recommended by the manufacturer of the material being fastened.
- D. Clips: ASTM C841 (paragraph 6.11), manufacturer's standard items. Clips used in lieu of tie wire shall have holding power equivalent to that provided by the tie wire for the specific application.
- E. Concrete ceiling hanger inserts (anchorage for hanger wire and hanger straps): Steel, zinc-coated (galvanized), manufacturers standard items, designed to support twice the hanger loads imposed and the type of hanger used.
- F. Tie Wire and Hanger Wire:
  - 1. ASTM A641, soft temper, Class 1 coating.
  - 2. Gage (diameter) as specified in ASTM C754 or ASTM C841.
- G. Attachments for Wall Furring:
  - 1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.
  - 2. For concrete or masonry walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 1 mm (0.0396-inch) thick galvanized steel with corrugated edges.
- H. Power Actuated Fasteners: Type and size as recommended by the manufacturer of the material being fastened.

#### 2.5 SUSPENDED CEILING SYSTEM FOR GYPSUM BOARD (OPTION)

- A. Conform to ASTM C635, heavy duty, with not less than 35 mm (1-3/8 inch) wide knurled capped flange face designed for screw attachment of gypsum board.
- B. Wall track channel with 35 mm (1-3/8 inch) wide flange.

## PART 3 - EXECUTION

### 3.1 INSTALLATION CRITERIA

- A. Where fire rated construction is required for walls, partitions, columns, beams and floor-ceiling assemblies, the construction shall be same as that used in fire rating test.
- B. Construction requirements for fire rated assemblies and materials shall be as shown and specified, the provisions of the Scope paragraph (1.2) of ASTM C754 and ASTM C841 regarding details of construction shall not apply.

### 3.2 INSTALLING STUDS

- A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.
- B. Space studs not more than 610 mm (24 inches) on center.
- C. Cut studs 6 mm to 9 mm (1/4 to 3/8-inch) less than floor to underside of structure overhead when extended to underside of structure overhead.
- D. Where studs are shown to terminate above suspended ceilings, provide bracing as shown or extend studs to underside of structure overhead.
- E. Extend studs to underside of structure overhead for fire, rated partitions, smoke partitions, shafts, and sound rated partitions and insulated exterior wall furring.
- F. At existing plaster ceilings and where shown, studs may terminate at ceiling.
- G. Openings:
  - 1. Frame jambs of openings in stud partitions and furring with two studs placed back to back or as shown.
  - 2. Fasten back to back studs together with 9 mm (3/8-inch) long Type S pan head screws at not less than 600 mm (two feet) on center, staggered along webs.
  - 3. Studs fastened flange to flange shall have splice plates on both sides approximately 50 X 75 mm (2 by 3 inches) screwed to each stud with two screws in each stud. Locate splice plates at 600 mm (24 inches) on center between runner tracks.
- H. Fastening Studs:
  - 1. Fasten studs located adjacent to partition intersections, corners and studs at jambs of openings to flange of runner tracks with two screws through each end of each stud and flange of runner.

2. Do not fasten studs to top runner track when studs extend to underside of structure overhead.
  - I. Form building seismic or expansion joints with double studs back to back spaced 75 mm (three inches) apart plus the width of the seismic or expansion joint.
  - J. Form control joint, with double studs spaced 13 mm (1/2-inch) apart.
- 3.3 INSTALLING WALL FURRING FOR FINISH APPLIED TO ONE SIDE ONLY
- A. In accordance with ASTM C754, or ASTM C841 except as otherwise specified or shown.
  - B. Wall furring-Stud System:
    1. Framed with 63 mm (2-1/2 inch) or narrower studs, 600 mm (24 inches) on center.
    2. Brace as specified in ASTM C754 for Wall Furring-Stud System or brace with sections or runners or studs placed horizontally at not less than three foot vertical intervals on side without finish.
    3. Securely fasten braces to each stud with two Type S pan head screws at each bearing.
  - C. Direct attachment to masonry or concrete; rigid channels or "Z" channels:
    1. Install rigid (hat section) furring channels at 600 mm (24 inches) on center, horizontally or vertically.
    2. Install "Z" furring channels vertically spaced not more than 600 mm (24 inches) on center.
    3. At corners where rigid furring channels are positioned horizontally, provide mitered joints in furring channels.
    4. Ends of spliced furring channels shall be nested not less than 200 mm (8 inches).
    5. Fasten furring channels to walls with power-actuated drive pins or hardened steel concrete nails. Where channels are spliced, provide two fasteners in each flange.
    6. Locate furring channels at interior and exterior corners in accordance with wall finish material manufacturers printed erection instructions. Locate "Z" channels within 100 mm (4 inches) of corner.
  - D. Installing Wall Furring-Bracket System: Space furring channels not more than 400 mm (16 inches) on center.

### 3.4 INSTALLING SUPPORTS REQUIRED BY OTHER TRADES

- A. Provide for attachment and support of electrical outlets, plumbing, laboratory or heating fixtures, recessed type plumbing fixture accessories, access panel frames, wall bumpers, wood seats, toilet stall partitions, dressing booth partitions, urinal screens, chalkboards, tackboards, wall-hung casework, handrail brackets, recessed fire extinguisher cabinets and other items like auto door buttons and auto door operators supported by stud construction.
- B. Provide additional studs where required. Install metal backing plates, or special metal shapes as required, securely fastened to metal studs.

### 3.5 INSTALLING FURRED AND SUSPENDED CEILINGS OR SOFFITS

- A. Install furred and suspended ceilings or soffits in accordance with ASTM C754 or ASTM C841 except as otherwise specified or shown for screw attached gypsum board ceilings and for plaster ceilings or soffits.
  - 1. Space framing at 400 mm (16-inch) centers for metal lath anchorage.
  - 2. Space framing at 600 mm (24-inch) centers for gypsum board anchorage.
- B. New exposed concrete slabs:
  - 1. Use metal inserts required for attachment and support of hangers or hanger wires with tied wire loops for embedding in concrete.
  - 2. Furnish for installation under Division 3, CONCRETE.
  - 3. Suspended ceilings under concrete rib construction shall have runner channels at right angles to ribs and be supported from ribs with hangers at ends and at 1200 mm (48-inch) maximum intervals along channels. Stagger hangers at alternate channels.
- C. Concrete slabs on steel decking composite construction:
  - 1. Use pull down tabs when available.
  - 2. Use power activated fasteners when direct attachment to structural framing cannot be accomplished.
- D. Where bar joists or beams are more than 1200 mm (48 inches) apart, provide intermediate hangers so that spacing between supports does not exceed 1200 mm (48 inches). Use clips, bolts, or wire ties for direct attachment to steel framing.
- E. Existing concrete construction exposed or concrete on steel decking:
  - 1. Use power actuated fasteners either eye pin, threaded studs or drive pins for type of hanger attachment required.

2. Install fasteners at approximate mid height of concrete beams or joists. Do not install in bottom of beams or joists.

F. Steel decking without concrete topping:

1. Do not fasten to steel decking 0.76 mm (0.0299-inch) or thinner.
2. Toggle bolt to decking 0.9 mm (0.0359-inch) or thicker only where anchorage to steel framing is not possible.

G. Installing suspended ceiling system for gypsum board (ASTM C635 Option):

1. Install only for ceilings to receive screw attached gypsum board.
2. Install in accordance with ASTM C636.
  - a. Install main runners spaced 1200 mm (48 inches) on center.
  - b. Install 1200 mm (four foot) tees not over 600 mm (24 inches) on center; locate for edge support of gypsum board.
  - c. Install wall track

H. Installing Ceiling Bracing System:

1. Construct bracing of 38 mm (1-1/2 inch) channels for lengths up to 2400 mm (8 feet) and 50 mm (2 inch) channels for lengths over 2400 mm (8 feet) with ends bent to form surfaces for anchorage to carrying channels and overhead construction. Lap channels not less than 600 mm (2 feet) at midpoint back to back. Screw or bolt lap together with two fasteners.
2. Install bracing at an approximate 45 degree angle to carrying channels and structure overhead; secure as specified to structure overhead with two fasteners and to carrying channels with two fasteners or wire ties.
3. Brace suspended ceiling or soffit framing in seismic areas in accordance with ASTM E580.

3.7 TOLERANCES

- A. Fastening surface for application of subsequent materials shall not vary more than 3 mm (1/8-inch) from the layout line.
- B. Plumb and align vertical members within 3 mm (1/8-inch.)
- C. Level or align ceilings within 3 mm (1/8-inch.)

--- END OF SECTION ---

## SECTION 09 24 00

### PLASTERING

#### PART 1 GENERAL

##### 1.1 DESCRIPTION

This section specifies lathing and Portland cement based plaster.

##### 1.2 PROJECT CONDITIONS

- A. Maintain work areas for interior work at a temperature of not less than 4 C (40 F) for not less than 48 hours prior to application of plaster, during application of plaster and until plaster is completely dry.
- B. Exterior plaster shall not be applied when the ambient temperature is less than 4 C (40 F).
- C. Plaster shall not be applied to frozen surfaces or surfaces containing frost.
- D. Frozen materials shall not be used in the mix.
- E. Plaster coats shall be protected against freezing for a period of not less than 24 hours after application.

##### 1.3 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 basic designation only.
- B. American Society for Testing And Materials (ASTM):
  - A653/A653M-08.....Steel Sheet, Zinc-Coated  
(Galvanized) or Zinc- Iron Alloy-  
Coated (Galvannealed) by the Hot-  
Dip Process
  - A641/A641M-03.....Zinc-Coated (Galvanized) Carbon Steel  
Wire
  - C11-08a.....Terminology Relating to Gypsum and  
Related  
Building Materials  
and Systems. C91-  
05.....Masonry Cement
  - C841-03 (2008)e1.....Installation of Interior Lathing and  
Furring
  - C847-06.....Metal Lath
  - C897-05.....Aggregate for Job-Mixed Portland Cement  
Based Plasters



C926-06.....Application of Portland Cement-Based Plaster

C933-07b.....Welded Wire Lath

C1002-07.....Steel Self-Piercing Tapping  
Screws for the Application of  
Gypsum Panel

## PART 2 - PRODUCTS

### 2.1 METAL PLASTERING BASES

#### A. Wire Lath:

1. Zinc coated (Galvanized).
2. Welded Wire Lath: ASTM C933, with backing as specified.
3. Self-furring where applied over solid backing.

### 2.2 ACCESSORIES FOR CEMENT PLASTER (STUCCO)

- A. ASTM C841, except fabricate from zinc alloy.
- B. Control Joints: ASTM C841, zinc.

### 2.3 FASTENERS

- A. Tie, wire, screws, clips, and other fasteners ASTM C841, except as otherwise specified.
- B. Fasteners for securing metal plastering bases shall have heads, or be through washers large enough to engage two strands of the metal plastering base.
- C. For fire rated construction; type and size as used in fire rated test.
- D. Screws: ASTM C1002.
- D. Expansion Shields: CID A-A-55615, of the Type and Class applicable.

### 2.4 PLASTER

- A. Plaster Portland Based
- B. Masonry: ASTM C91. Lime where added, ASTM C207, Type S. C. Greg for scratch coat and White where required for white finish coat.

### 2.5 LIME

- A. ASTM C206, Type S. ASTM C207, Type S.

### 2.6 BONDING AGENT

- A. ASTM C932.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR CHOICE PLASTER OR GYP BOARD AND TAPPING COMPOUND FINISH

- A. Touch up plaster around interior window jambs.
- B. On interior wall framing for storefront:

1. Use flat diamond mesh lath.
2. Use lath with water resistant backing in wet areas.
- D. Over steel columns, use self-furring flat diamond mesh lath.
- E. Where metal plastering bases are used as a base for exterior cement plaster over wall sheathing, use wire lath or stucco mesh with water resistant backing.

### 3.2 APPLYING METAL PLASTERING BASES

- A. In accordance with ASTM C841, except as otherwise specified or shown.
- B. Form true surfaces, straight or in fair curves where shown, without sags or buckles and with long dimension of lath at right angles to direction of supports.
- C. Lath for ceiling or soffit construction shall terminate at casing bead (floating angle construction) at perimeter angles between walls and ceilings or soffits.
- D. Lath with backing shall be applied to produce a paper to paper and metal to metal lap at ends and sides of adjacent sheets, whether full sheets or less than full sheets are used:
  1. Backing shall be lapped 50 mm (2 inches) for both horizontal and vertical laps.
  2. Horizontal laps shall be ship lap fashion to conduct water to the outside and over flashing or waterproofing.

### 3.3 INSTALLING PLASTERING ACCESSORIES

- A. Install accessories in accordance with ASTM C841, except as otherwise specified.
  1. Set plastering accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified for metal lath.
  2. Install in one piece, within the limits of the longest commercially available lengths.
- B. Corner Beads: Install at all vertical and horizontal external plaster corners, as required to establish grounds, and where shown.
- C. Strip Lath:
  1. Install metal lath strips centered over joints between dissimilar materials, such as hollow tile, brick, concrete masonry units, concrete, and joints with

metal lath on framing or furring, where both such surfaces are required to be plastered and are in contact with each other in same plane, except where expansion joints and casing beads are required.

2. Wire tie or fasten strip lath to base along both edges at not over 150 mm (six inches) on centers.

D. Casing Beads:

1. Install casing beads where shown and at following locations where plaster terminates to provide finish trim.
2. Where plaster terminates against non-plastered surfaces such as masonry, concrete, and wood.
3. Where plaster terminates against trim of steel frames and trim of other materials and equipment, except where trim overlaps plaster.
4. Around perimeter of openings except where edge is covered by flanges. Locate to conform to dimensions shown on shop drawings.
5. Where plaster for new walls or furring (vertical or horizontal) terminates against existing construction.
6. Both sides of expansion and control joints unless shown otherwise.
7. Install casing bead at perimeter angles between walls and ceilings so as to provide floating angle (unrestrained) construction in accordance with ASTM C841.

E. Cornerites:

1. Install at interior corners of walls, partitions, and other vertical surfaces to be plastered, except where metal lath is carried around angle.
2. Fasten only as necessary to retain position during plastering.
3. Omit cornerites at junction of new plastered walls with existing plastered walls at locations where casing beads are specified.

F. Control Joints:

1. Where control joints are placed parallel to framing members, install joints within 100 mm (four inches) of the framing member.

2. Install control joints only to the edges of abutting sheets of lath so that the lath is not continuous or tied across the joint.
3. Joints shall extend the full width and height of the wall or length of soffit/ceiling plaster membrane.

#### 3.4 SURFACE PREPARATION OF SOLID BASES

- A. Surfaces that are to receive plaster shall be prepared and conditioned in accordance with ASTM C926, except as otherwise specified.
- B. New surfaces of masonry and concrete:
  1. Remove projections and clean concrete surface of form oil.
  2. Fill depressions, holes, cracks and similar voids flush with Portland cement plaster to provide substrate within the tolerance specified in ASTM C926.
  3. Use bonding agent.
  4. Cover with self-furring lath where required to keep the total plaster thickness as specified in Table 4 of ASTM C926.
- C. Existing surfaces of concrete and masonry:
  1. Clean surface of dirt and other foreign matter which will prevent bond.
  2. Apply dash bond coat or bonding agent as specified herein.
  3. Where existing surfaces have a coating such as paint or bituminous waterproofing apply metal plastering base as specified herein.

#### 3.5 PORTLAND CEMENT BASED PLASTER

- A. Provide portland cement based plaster where cement plaster (stucco) is shown and specified, and as follows:
  1. Three coat work shall be used over all metal plastering bases, with or without solid backing.
  2. Two coat work may only be used over solid bases meeting the requirements of Paragraph, SURFACE PREPARATION OF SOLID BASES.
- B. Proportion, mix and apply plaster in accordance with ASTM C926, except as otherwise specified.
  1. Use air entrained plaster for all exterior work.
  2. Use coloring pigments for finish coat when integral color other than white is specified.
  3. Use white cement with white sand when white finish coat is specified or gypsum tapping compound for finish coat.

4. Factory prepared finish coat: Add water, mix, and apply as specified by manufacturer.
5. Color:
  - a. Color of finish coat shall be natural cement color when painted or other coating is specified.
6. Finish coat shall be to match existing texture.

-----END---

## SECTION 09 29 00

### GYPSUM BOARD

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

This section specifies installation and finishing of gypsum board.

##### 1.2 TERMINOLOGY

- A. Definitions and description of terms shall be in accordance with ASTM C11, C840, and as specified.

##### 1.3 APPLICABLE PUBLICATIONS

- A. American Society for Testing And Materials (ASTM):
  - C11-08c.....Terminology Relating to Gypsum and Related Building Materials and Systems
  - C475-02 (R2007).....Joint Compound and Joint Tape for Finishing Gypsum Board
  - C840-08.....Application and Finishing of Gypsum Board
  - C1002-07.....Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
  - C1047-05.....Accessories for Gypsum Wallboard and Gypsum Veneer Base
  - C1177-08.....Glass Mat Gypsum Substrate for Use as Sheathing
  - C1325-08.....Fiber Mat Reinforced Cementitious Backer Unit
  - C1396-09.....Gypsum Board

##### 1.4 SUBMITTAL

- A. Water Resistant Sheet Rock Sample

#### PART 2 - PRODUCTS

##### 2.1 GYPSUM BOARD

- A. Water Resistant Gypsum Backing Board: ASTM C1396, 16 mm (5/8 inch) thick.

##### 2.2 ACCESSORIES

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet or rigid PVC plastic.

##### 2.3 FASTENERS

- A. ASTM C1002 and ASTM C840, except as otherwise specified.

## 2.4 FINISHING MATERIALS AND LAMINATING ADHESIVE

- A. ASTM C475 and ASTM C840.

## PART 3 - EXECUTION

### 3.1 INSTALLING GYPSUM BOARD OR PLASTER CONTRACTOR CHOICE

- A. Install gypsum board around interior window perimeter or lath and plaster in accordance with ASTM C840, except as otherwise specified.
- B. Accessories:
  - 1. Install the following accessories in accordance with ASTM C1047.
    - a. Corner Beads
    - b. Edge Trim (casing beads).

### 3.2 INSTALLING GYPSUM SHEATHING

- A. Install in accordance with ASTM C840.

### 3.3 FINISHING OF GYPSUM BOARD

- A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840. Use Level 5 finish for all finished areas open to public view; level 2 finish in utility, maintenance and service areas and level 1 in plenums, attics and other concealed areas. Follow manufacturer's fire testing reports where fire resistant construction is shown on drawings.

### 3.4 REPAIRS

- A. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- B. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- C. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with 16 mm (5/8 inch) thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- D. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non-decorated surface to provide fire protection equivalent to the fire rated construction.

--- END OF SECTION ---

## **SECTION 09 30 13**

### **CERAMIC AND PORCLEAIN TILE**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies ceramic tile to replace disturbed demolished ceramic tile due to window or window with louver installation.

##### **1.2 SUBMITTALS**

###### **A. Samples:**

1. Wall (or wainscot) tile, each color, size and pattern to match tile disturbed during demolition and emplacement of new window or windows with louvers.

##### **1.3 APPLICABLE PUBLICATIONS**

###### **A. American National Standards Institute (ANSI):**

A108.1A-11.....Installation of Ceramic Tile in the Wet-Set  
Method with Portland Cement Mortar

A137.1-08.....Ceramic Tile

###### **B. Tile Council of America, Inc. (TCA):**

2007.....Handbook for Ceramic Tile Installation

#### **PART 2 - PRODUCTS**

##### **2.1 TILE MATCH EXISTING**

###### **A. Comply with ANSI A137.1, Standard Grade:**

1. Inspection procedures listed under the Appendix of ANSI A137.1.

###### **B. Glazed Wall Tile: Cushion edges, glazing.**

##### **2.2 FASTENERS**

###### **A. Screws for Cementitious Backer Units.**

1. Standard screws for gypsum board are not acceptable.
2. Minimum 11 mm (7/16 inch) diameter head, corrosion resistant coated, with washers.
3. ASTM C954 for steel 1 mm (0.033 inch) thick.
4. ASTM C1002 for steel framing less than 0.0329 inch thick.

###### **B. Washers: Galvanized steel, 13 mm (1/2 inch) minimum diameter.**

##### **2.3 SETTING MATERIALS OR BOND COATS**

###### **A. Conform to TCA Handbook for Ceramic Tile Installation.**

###### **B. Portland Cement Mortar: ANSI A108.1.**



C. Latex-Portland Cement Mortar: ANSI A108.1.

1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A108.1.
2. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of Portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.

D. Dry-Set Portland Cement Mortar: ANSI A108.1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A108.4.

E. Organic Adhesives: ANSI A108.1, Type 1.

## 2.4 GROUTING MATERIALS

A. Coloring Pigments:

1. Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
2. Add coloring pigments to grout by the manufacturer.
3. Job colored grout is not acceptable.
4. Use is required in Commercial Portland Cement Grout, Dry-Set Grout, and Latex-Portland Cement Grout.

B. White Portland Cement Grout:

1. ANSI A108.1.
2. Use one part white Portland cement to one part white sand passing a number 30 screen.
3. Color additive not permitted.

C. Latex-Portland Cement Grout: ANSI A108.1 color as specified.

1. Unsanded grout mixture for joints 3.2 mm (1/8 inch) and narrower.
2. Sanded grout mixture for joints 3.2 mm (1/8 inch) and wider.

## 2.5 PATCHING AND LEVELING COMPOUND

A. Portland cement base, polymer-modified, self-leveling compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

B. Shall have minimum following physical properties:

1. Compressive strength - 25 MPa (3500 psig) per ASTM C109/C109M.
2. Flexural strength - 7 MPa (1000 psig) per ASTM C348 (28 day value).
3. Tensile strength - 600 psi per ANSI 118.7.
4. Density - 1.9.

- C. Capable of being applied in layers up to 38 mm (1-1/2 inches) thick without fillers and up to 100 mm (four inches) thick with fillers, being brought to a feather edge, and being trowelled to a smooth finish.
- D. Primers, fillers, and reinforcement as required by manufacturer for application and substrate condition.
- E. Ready for use in 48 hours after application.

### PART 3 - EXECUTION

#### 3.1 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature of work areas at not less than 16 degree C (60 degrees F), without interruption, for not less than 24 hours before installation and not less than three days after installation.
- B. Maintain higher temperatures for a longer period of time where required by manufacturer's recommendation and ANSI Specifications for installation.
- C. Do not install tile when the temperature is above 38 degrees C (100 degrees F).
- D. Do not install materials when the temperature of the substrate is below 16 degrees C (60 degrees F).
- E. Do not allow temperature to fall below 10 degrees C (50 degrees F) after fourth day of completion of tile work.

#### 3.2 ALLOWABLE TOLERANCE

- A. Variation in plane of sub-floor, including concrete fills leveling compounds and mortar beds:
  - 1. Not more than 1 in 500 (1/4 inch in 10 feet) from required elevation where Portland cement mortar setting bed is used.
  - 2. Not more than 1 in 1000 (1/8 inch in 10 feet) where dry-set Portland cement, and latex-Portland cement mortar setting beds and chemical-resistant bond coats are used.
- B. Variation in Plane of Wall Surfaces:
  - 1. Not more than 1 in 400 (1/4 inch in eight feet) from required plane where Portland cement mortar setting bed is used.
  - 2. Not more than 1 in 800 (1/8 inch in eight feet) where dry-set or latex-Portland cement mortar or organic adhesive setting materials is used.

### 3.3 SURFACE PREPARATION

#### A. Cleaning New Concrete or Masonry:

1. Chip out loose material, clean off all oil, grease dirt, adhesives, curing compounds, and other deterrents to bonding by mechanical method, or by using products specifically designed for cleaning concrete and masonry.
2. Use self-contained power blast cleaning systems to remove curing compounds and steel trowel finish from concrete slabs where ceramic tile will be installed directly on concrete surface with thin-set materials.
3. Steam cleaning or the use of acids and solvents for cleaning will not be permitted.

#### B. Patching and Leveling:

1. Mix and apply patching and leveling compound in accordance with manufacturer's instructions.
2. Fill holes and cracks and align concrete floors that are out of required plane with patching and leveling compound.
  - a. Thickness of compound as required to bring finish tile system to elevation shown.

Apply patching and leveling compound to concrete and masonry wall surfaces that are out of required plane.

Apply leveling coats of material compatible with wall surface and tile setting material to wall surfaces, other than concrete and masonry that are out of required plane.

#### B. Walls:

1. Apply patching and leveling compound to concrete and masonry surfaces that are out of required plane.
2. Apply leveling coats of material compatible with wall surface and tile setting material to wall surfaces, other than concrete and masonry that are out of required plane.

### 3.4 CERAMIC TILE - GENERAL

- #### A. Comply with ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" applicable to methods of installation.

#### B. Comply with TCA Installation Guidelines:

1. Lay out tile work so that no tile less than one-half full size is used. Make all cuts on the outer edge of the field. Align new tile

- work scheduled for existing spaces to the existing tile work unless specified otherwise.
2. Set tile firmly in place with finish surfaces in true planes. Align tile flush with adjacent tile unless shown otherwise.
  3. Form intersections and returns accurately.
  4. Cut and drill tile neatly without marring surface.
  5. Cut edges of tile abutting penetrations, finish, or built-in items:
    - a. Fit tile closely around electrical outlets, piping, fixtures and fittings, so that plates, escutcheons, collars and flanges will overlap cut edge of tile.
    - b. Seal tile joints water tight as specified in Section 07 92 00, JOINT SEALANTS, around electrical outlets, piping fixtures and fittings before cover plates and escutcheons are set in place.
  6. Completed work shall be free from hollow sounding areas and loose, cracked or defective tile.
  7. Remove and reset tiles that are out of plane or misaligned.
  8. Walls:
    - a. Cover walls and partitions, including pilasters, furred areas, and freestanding columns from floor to ceiling, or from floor to nominal wainscot heights shown with tile.
    - b. Finish reveals of openings with tile, except where other finish materials are shown or specified.
    - c. At window openings, provide tile stools and reveals, except where other finish materials are shown or specified.
    - d. Finish wall surfaces behind and at sides of casework and equipment, except those units mounted in wall recesses, with same tile as scheduled for room proper.
  10. Joints:
    - a. Keep all joints in line, straight, level, perpendicular and of even width unless shown otherwise.
    - b. Make joints 2 mm (1/16 inch) wide for glazed wall tile and mosaic tile work.
    - c. Make joints in quarry tile work not less than 6 mm (1/4 inch) nor more than 9 mm (3/8 inch) wide. Finish joints flush with surface of tile.
    - d. Make joints in Paver tile, porcelain type; maximum 3 mm (1/8 inch) wide.

### 3.5 GROUTING

#### A. Grout Type and Location:

1. Grout for glazed wall and base tile latex-Portland cement grout, and commercial Portland cement grout for floor tile.

#### B. Workmanship:

1. Install and cure grout in accordance with the applicable standard.
2. Portland Cement grout: ANSI A108.1.

### 3.6 CLEANING

- A. Thoroughly sponge and wash tile. Polish glazed surfaces with clean dry cloths.
- B. Methods and materials used shall not damage or impair appearance of tile surfaces.
- C. The use of acid or acid cleaners on glazed tile surfaces is prohibited.
- D. Clean tile grouted with epoxy, furan and commercial Portland cement grout and tile set in elastomeric bond coat as recommended by the manufacturer of the grout and bond coat.

--- END OF SECTION ---

## SECTION 09 91 00

### PAINTING

#### PART 1-GENERAL

##### 1.1 DESCRIPTION

- A. Section specifies field painting.
- B. Section specifies prime coats which may be applied in shop under other sections.

##### 1.2 RELATED WORK

- A. Rust Removal, prime and painting of steel and ferrous metals
- B. Gypsum fine smooth finish.
- C. Touch up painting of Aluminum window paint finish.

##### 1.3 SUBMITTALS

- A. Manufacturer Sherwin Williams 's Interior Six Color Sample Panels:  
Panels to show color: Composition board, 102 mm by 254 mm by 3 mm  
4 inch by 10 inch by 1/8 inch).
- B. Manufacturer Sherwin Williams 's Exterior Six Color Sample Panels:  
Steel Panels to show primer and Bronze color.

##### 1.4 APPLICABLE PUBLICATIONS

- A. American Conference of Governmental Industrial Hygienists (ACGIH):  
ACGIH TLV-BKLT.....Threshold Limit Values (TLV) for Chemical  
Substances and Physical Agents and  
Biological Exposure Indices (BEIs)  
ACGIH TLV-DOC.....Documentation of Threshold Limit Values and  
Biological Exposure Indices, (Sixth  
Edition)
- B. Commercial Item Description (CID):  
A-A-378.....Putty, Linseed Oil Type (For Wood Sash  
Glazing) (cancelled)  
A-A-1272.....Plaster, Gypsum (Spackling Compound)  
A-A-1555.....Water Paint, Powder (Cementitious, White and  
Colors) (WPC) (cancelled)
- C. Federal Specifications (Fed Spec):  
TT-F-322D.....Filler, Two-Component Type, For Dents, Cracks  
INT AMD 1.....Small-Hole and Blow-Holes

TT-F-340C.....Filler, Wood, Plastic

TT-P-1411A.....Paint, Copolymer-Resin, Cementitious (For  
Waterproofing Concrete and Masonry Walls)

(CEP) D. Master Painters Institute (MPI):

No. 1.....Aluminum Paint (AP)

No. 9.....Exterior Alkyd Enamel  
(EO)

No. 26.....Cementitious Galvanized Metal Primer

No. 43.....Interior Satin Latex

No. 44.....Interior Low Sheen Latex

No. 45.....Interior Primer Sealer

No. 50.....Interior Latex Primer Sealer

No. 51.....Interior Alkyd, Eggshell

No. 52.....Interior Latex, MPI Gloss Level 3 (LE)

No. 53.....Interior Latex, Flat, MPI Gloss Level 1 (LE)

No. 54.....Interior Latex, Semi-Gloss, MPI Gloss Level  
5 (LE)

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Putty: Fed Spec A-A-378, Type II (Putty) to repair voids.
- B. Cementitious Paint (CEP): TT-P-1411A [Paint, Copolymer-Resin, Cementitious (CEP)], Type 1 for exterior use, Type II for interior use.
- C. Aluminum Paint (AP): MPI 1. Touch up for windows
- D. Exterior Alkyd Enamel (EO): MPI 9. N.
- E. Metal Galvanized Metal Primer: MPI 26.
- F. Interior Satin Latex: MPI 43.
- G. Interior Low Sheen Latex: MPI 44.
- H. Interior Latex Primer Sealer: MPI 50.

### 2.2 PAINT PROPERTIES

- A. Use ready-mixed (including colors)
- B. Use primer on every application.

### 2.3 REGULATORY REQUIREMENTS

- A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction. VOC content of paint materials shall not exceed local, state or district requirements.

2. Lead-Base Paint:

- a. For lead-paint removal, see Section 02 83 33.13, LEAD-BASED PAINT REMOVAL AND DISPOSAL. This will be minimum because the intent will be to encapsulate the possible lead based paint area

3. Asbestos: Paint materials shall not contain asbestos.

4. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.

5. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.

1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at the end of each day's work.

B. Atmospheric and Surface Conditions:

1. Do not apply coating when air or substrate conditions are:
  - a. Less than 3 degrees C (5 degrees F) above dew point.
  - b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
2. Maintain interior temperatures until paint dries hard.
3. Do no exterior painting when it is windy and dusty.
4. Apply only on clean, dry and frost free surfaces except as follows:
  - a. Apply water thinned acrylic and cementitious paints to damp (not wet) surfaces where allowed by manufacturer's printed instructions.
  - b. Dampened with a fine mist of water on hot dry days concrete and



masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.

c. Immediately before varnishing wipe down surfaces with a tack rag.

### 3.2 SURFACE PREPARATION

A. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified with no overlays.

B. General:

1. Remove pre-finished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, and similar items for reinstallation after paint is dried.
2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
3. See other sections of specifications for specified surface conditions and prime coat.
4. Clean surfaces for painting with materials and methods compatible with substrate and specified finish. Remove rust and or apply Bondo to finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

D. Ferrous Metals:

1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 (Hand Tool Cleaning) and SSPC-SP 3 (Power Tool Cleaning). Exception: where high temperature aluminum paint is used, prepare surface in accordance with paint manufacturer's instructions.
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with TT-F-322D (Filler, Two-Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.

- a. This includes flat head countersunk screws used for permanent anchors.
  - b. Do not fill screws of item intended for removal such as glazing beads.
  4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.
  5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.
- E. Zinc-Coated (Galvanized) Metal Surfaces Specified Painted:
1. Clean surfaces to remove grease, oil and other deterrents to paint adhesion in accordance with SSPC-SP 1 (Solvent Cleaning).
  2. Spot coat abraded and damaged areas of zinc-coating which expose base metal on hot-dip zinc-coated items with MPI 18 (Organic Zinc Rich Coating). Prime or spot prime with MPI 134 (Waterborne Galvanized Primer) or MPI 135 (Non- Cementitious Galvanized Primer) depending on finish coat compatibility.
- F. Masonry, Concrete, Cement Board, Cement Plaster and Stucco:
1. Clean and remove dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.
  2. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. Use of solvents, acid, or steam is not permitted.
  3. Remove loose mortar in masonry work.
  4. Replace mortar and fill open joints, holes, cracks and depressions with new mortar specified in Section 04 05 13 MASONRY MORTARING, section 04 05 16 MASONRY GROUTING. Do not fill weep holes. Finish to match adjacent surfaces.
  5. Neutralize Concrete floors to be painted by washing with a solution of 1.4 Kg (3 pounds) of zinc sulfate crystals to 3.8 L (1 gallon) of water, allow to dry three days and brush thoroughly free of crystals.
  6. Repair broken and spalled concrete edges with concrete patching compound to match adjacent surfaces as specified in CONCRETE Sections. Remove projections to level of adjacent surface by grinding or similar methods.
- G. Gypsum Plaster and Gypsum Board:

1. Remove efflorescence, loose and chalking plaster or finishing materials.
2. Remove dust, dirt, and other deterrents to paint adhesion.
3. Fill holes, cracks, and other depressions with CID-A-A-1272A [Plaster, Gypsum (Spackling Compound) finished flush with adjacent surface, with texture to match texture of adjacent surface. Patch holes over 25 mm (1-inch) in diameter as specified in Section for plaster or gypsum board.

### 3.3 PAINT PREPARATION

- A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.
- D. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

### 3.4 APPLICATION

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
- C. Apply each coat evenly and cover substrate completely.
- D. Allow not less than 24 hours between applications of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Resident Engineer.
- E. Finish surfaces to show solid even color, free from runs, lumps, brush marks, laps, holidays, or other defects.
- F. Apply by brush, roller or spray, except as otherwise specified.

- G. Do not spray paint in existing occupied spaces unless approved by Resident Engineer, except in spaces sealed from existing occupied spaces.
  - 1. Apply painting materials specifically required by manufacturer to be applied by spraying.
  - 2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, and electrical equipment, fronts of sterilizes and other recessed equipment and similar pre-finished items.
- H. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.

### 3.5 PRIME PAINTING

- A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.
- B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.
- C. Additional field applied prime coats over shop or factory applied prime coats are not required except for exterior exposed steel apply an additional prime coat.
- D. Prime rebates for stop and face glazing of wood, and for face glazing of steel.
- E. Metals except boilers, incinerator stacks, and engine exhaust pipes:
  - 1. Steel and iron: MPI 79 (Marine Alkyd Metal Primer). Use MPI 101 (Cold Curing Epoxy Primer) where MPI 77 (Epoxy Cold Cured, Gloss (EC) finish is specified.
  - 2. Zinc-coated steel and iron: MPI 134 (Waterborne Galvanized Primer.
  - 3. Aluminum scheduled to be painted: MPI 95 (Fast Drying Metal Primer).
  - 4. Machinery not factory finished: MPI 9 (Exterior Alkyd Enamel (EO)).
- F. Gypsum Board:
  - 1. Surfaces scheduled to have MPI 10 (Exterior Latex, Flat (AE)
  - 2. Primer: MPI 50 (Interior Latex Primer Sealer) except use MPI 45 (Interior Primer Sealer).
  - 3. Surfaces scheduled to receive vinyl coated fabric wall covering: Use MPI 45 (Interior Primer Sealer).

G. Gypsum Plaster and Veneer Plaster:

1. Surfaces scheduled to receive vinyl coated fabric wall-covering: Use MPI 45 (Interior Primer Sealer).
2. MPI 45 (Interior Primer Sealer), except use MPI 50 (Interior Latex Primer Sealer) when an alkyd flat finish is specified.

H. Concrete Masonry Units except glazed or integrally colored and decorative units:

1. MPI 4 (Block Filler) on interior surfaces.
2. Prime exterior surface as specified for exterior finishes.

I. Cement Plaster or stucco Interior Surfaces of Ceilings and Walls:

1. MPI 53 (Interior Latex, Flat, MPI Gloss Level 1 LE except use two coats where substrate has aged less than six months.
2. Use MPI 138 (Interior High Performance Latex, MPI Gloss Level 2 (LF)) as scheduled.

3.6 EXTERIOR FINISHES

A. Apply following finish coats.

B. Steel and Ferrous Metal:

1. Two coats of Steel and iron: MPI 79 (Marine Alkyd Metal Primer). Use MPI 101 (Cold Curing Epoxy Primer) where MPI 77 (Epoxy Cold Cured, Gloss (EC) finish is specified on exposed surfaces, except on surfaces over 94 degrees C (200 degrees F).
2. One coat of MPI 22 (High Heat Resistant Coating (HR)) on surfaces over 94 degrees K (200 degrees F) and on surfaces of boiler engine.

3.7 INTERIOR  
FINISHES

A. Apply following finish coats over prime coats in spaces or on surfaces.

B. Metal Work:

1. Apply to exposed surfaces.
2. Omit body and finish coats on surfaces concealed after installation except electrical conduit containing conductors over 600 volts.
3. Ferrous Metal, Galvanized Metal, and Other Metals Scheduled:
  - a. Apply two coats of MPI 47 (Interior Alkyd, Semi-Gloss (AK)) unless specified otherwise.
  - b. Two coats of MPI 48 (Interior Alkyd Gloss (AK)).

- c. One coat of MPI 46 (Interior Enamel Undercoat) plus one coat of MPI 47 (Interior Alkyd, Semi-Gloss (AK)) on exposed interior surfaces of alkyd-amine enamel prime finished windows.
- d. Two coats of CID-A-A3120 Type E (RP) on exposed surfaces in pool area and chlorinator rooms.
- e. Machinery: One coat MPI 9 (Exterior Alkyd Enamel (EO)).
- f. Asphalt Coated Metal: One coat MPI 1 (Aluminum Paint (AP)).
- g. Ferrous Metal over 94 degrees K (200 degrees F): Boilers, Incinerator Stacks, and Engine Exhaust Pipes: One coat MPI 22 (High Heat Resistant Coating (HR)).

C. Gypsum Board:

- 1. One coat of MPI 45 (Interior Primer Sealer), plus one coat of MPI 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).
- 2. Two coats of MPI 138 (Interior High Performance Latex, MPI Gloss Level 2 (LF)).
- 3. One coat of MPI 45 (Interior Primer Sealer), plus one coat of MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)) or MPI 114 (Interior Latex, Gloss (LE) and (LG)).
- 4. One coat of MPI 45 (Interior Primer Sealer), plus one coat of MPI 48 (Interior Alkyd Gloss (AK)).

D. Plaster:

- 1. One coat of MPI 45 (Interior Primer Sealer), plus one coat of MPI 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).
- 2. Two coats of MPI 51 (Interior Alkyd, Eggshell) (AK)).
- 3. One coat of MPI 45 (Interior Primer Sealer), plus one coat of 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).
- 4. One coat MPI 101 (Cold Curing Epoxy Prime (EC)).

E. Masonry and Concrete Walls:

- 1. Over MPI 4 (Interior/Exterior Latex Block Filler) on CMU surfaces.
- 2. Two coats of MPI 53 (Interior Latex, Flat, MPI Gloss Level 1 (LE)).
- 3. Two coats of MPI 138 (Interior High Performance Latex, MPI Gloss Level 2 (LF)).

3.8 REFINISHING EXISTING PAINTED SURFACES

- A. Clean, patch and repair existing surfaces as specified under surface preparation.

- B. Remove and reinstall items as specified under surface preparation.
- C. Remove existing finishes or apply separation coats to prevent non compatible coatings from having contact.
- C. Patched or Replaced Areas in Surfaces and Components: Apply spot prime and body coats as specified for new work to repaired areas or replaced components.
- D. Except where scheduled for complete painting apply finish coat over plane surface to nearest break in plane, such as corner, reveal, or frame.
- E. In existing rooms and areas where alterations occur, clean existing stained and natural finished wood retouch abraded surfaces and then give entire surface one coat of MPI 31 (Polyurethane, Moisture Cured, Clear Gloss), or MPI 71 (Polyurethane, Moisture Cured, Clear Flat (PV)).
- F. Refinish areas as specified for new work to match adjoining work unless specified or scheduled otherwise.
- G. Coat knots and pitch streaks showing through old finish with MPI 36 (Knot Sealer) before refinishing.
- H. Sand or dull glossy surfaces prior to painting.
- I. Sand existing coatings to a feather edge so that transition between new and existing finish will not show in finished work.

### 3.9 PAINT COLOR

- A. Interior Color match Sherwin Williams paints PROM MAR 200 currently being used by the VA Painting Department of the Engineers.
- B. Exterior Color Color match Aluminum Windows.

### 3.10 PROTECTION CLEAN UP, AND TOUCH-UP

- A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.
- B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.

--- END OF SECTION ---

## SECTION 12 24 00

### WINDOW SHADES

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

Cloth roller shades are specified in this section. Window shades shall be furnished complete, including brackets, fittings and hardware. For hospital windows building one but not in stairwells, not in mechanical rooms.

##### 1.2 RELATED WORK

A. Color of shade cloth as determined by the Muskogee VA Interior Decorator.

B. Lightproof Shades in locations as determined.

##### 1.3 SUBMITTALS

A. Samples:

1. Shade cloth, each type, 600 mm (24 inch) square, including cord and ring, showing color, finish and texture.

##### 1.4 PUBLICATIONS

A. AA-V-00200B.....Venetian Blinds, Shade, Roller, Window, Roller, Slat, Cord, and Accessories

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

A167-99 (R2004).....Stainless and heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip

B221-08..... Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

D635-06.....Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position

D648-07.....Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

D1784-08.....Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS



- A. Shade Cloth: translucent or opaque (verify with VA Project Manager).
- B. Staples (For Cloth Window Shades): Nonferrous metal or zinc-coated steel.
- C. Stainless Steel: ASTM A167
- D. Cords for Blinds: Extruded Aluminum: ASTM B221/B221M.

## 2.2 VENETIAN BLINDS

Fed. Spec. AA-V-00200, Type II, 25 mm (one inch slats) fabricated of aluminum. Pre-production sample is not required.

## 2.3 FASTENINGS

Zinc-coated or cadmium plated metal, aluminum or stainless steel fastenings of proper length and type. Except as otherwise specified, fastenings for use with various structural materials shall be as follows:

Type of Fastening	Structural Material
Wood screw	Wood
Tap screw	Metal
Case-hardened, self-tapping screw	Sheet Metal
Screw or bolt in expansion shields	Solid masonry
Toggle bolts	Hollow blocks, wallboard and plaster

## 2.4 FABRICATION

- A. Fabricate cloth shades, venetian blinds, vertical blinds to fit measurements of finished openings obtained at site.
- B. Cloth Window Shades: Rolling type, constructed of shade cloth mounted on rollers. Shade cloth shall have plain sides, and with hem at bottom to accommodate wood slat. Separate shades are required for each individual sash within opening. Length of shades shall exceed height of window approximately 300 mm (12 inches) measured from head to sill, in addition to material required to make-up hem:
  - 1. Provide rollers with spindles, nylon bearings, tempered steel springs, and all other related accessories required for positive action. Provide rollers of diameter recommended by

shade manufacturer. Staple shade cloth to wood rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade will hang plumb. Space staples not over 90 mm (3-1/2 inches) on centers. Use of tacks is prohibited.

2. Eyelets shall have clear openings large enough to accommodate cords. Edges of eyelets shall not cut into cloth when set.
3. Cords shall be of sufficient length to permit shades to be drawn to bottom of opening with ends looped and held with cord rings. Attach cords to hems through metal eyelets in center of slats in bottom hems.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Cloth Window Shades: Mount window shades on end of face brackets, set on metal gussets, or casing of windows as required. Provide extension face brackets where necessary at mullions. In existing buildings, provide brackets similar to those on existing windows.
  1. Locate rollers in level position as high as practicable at heads of windows to prevent infiltration of light over rollers.
  2. Where extension brackets are necessary, on mullions or elsewhere, for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.
  3. Place brackets and rollers so that shades will not interfere with window and screen hardware.
  4. Mount shades at wire mesh window guards on head rails of hinged frame.
  5. Mount shades at detention, or protection screens on head rail (room side) of hinged frame, with face brackets located approximately 38 mm (1-1/2 inches) from outside edges.
  6. Shade installation methods not specifically described, are subject to approval of Resident Engineer.

--- END OF SECTION ---

## **SECTION 23 34 00**

### **EXHAUST FANS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

- A. Exhaust Fans for ventilating.
- B. Product Definitions: AMCA Publication 99 Standards Handbook, 99-0066-01 Definitions.

##### **1.2 QUALITY ASSURANCE**

- A. Fans and power ventilators shall bear the AMCA performance seal.
- B. Fans and power ventilators shall comply with the following standards:
  - 1. Testing and Rating: AMCA 210-08.
  - 2. Reverberant Room Method for Sound Testing of Fans: AMCA 300-08.
- C. Performance Criteria:
  - 1. Provide fans and motors capable of stable operation at design conditions and at 110 percent pressure.
  - 2. Lower than design pressure drop of approved individual components may allow use of a smaller fan motor and still provide the safety factor. When submitted as a deviation a smaller motor may be approved in the interest of energy conservation. The contractor shall be responsible for making necessary changes to the electrical system.
  - 3. Select fan operating point as follows:
    - a. Forward curved and axial fans: Right hand side of peak pressure point.
    - b. Airfoil, backward inclined or tubular: Near the peak of static efficiency.
- D. Safety Criteria: Provide manufacturer's standard screen on fan inlet and discharge where exposed to operating and maintenance personnel.

##### **1.3 SUBMITTALS**

- A. Manufacturers Literature and Data:
  - 1. Fan sections, motors and drives.
  - 2. Centrifugal fans, motors, drives, accessories and coatings.
    - a. In-line centrifugal fans.
    - b. Utility fans and vent sets.
- B. Certified Sound power levels for each fan.

#### 1.4 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. Air Movement and Control Association International, Inc. (AMCA):
  - 99.....Standards Handbook
  - 210-07.....Laboratory Methods of Testing Fans for  
Certified Aerodynamic Performance Rating
  - 300-08.....Reverberant Room Method for Sound Testing of  
Fans
- C. Underwriters Laboratories, Inc. (UL):
  - UL 181.....Factory-Made Air Ducts and Air Connectors

#### PART 2 - PRODUCTS

##### 2.2 CENTRIFUGAL FANS

- A. Standards and Performance Criteria: Refer to Paragraph, QUALITY ASSURANCE. Record factory vibration test results on the fan or furnish to the Contractor.
- B. Construction: Wheel diameters and outlet areas shall be in accordance with AMCA standards.
  - 1. Housing: Low carbon steel, arc welded throughout, braced and supported by structural channel or angle iron to prevent vibration or pulsation, flanged outlet, inlet fully streamlined. Provide lifting clips, and casing drain. Provide manufacturer's standard access door. Provide 12.5mm (1/2") wire mesh screens for fan inlets without duct connections.
  - 2. Wheel: Steel plate with die formed blades welded or riveted in place, factory balanced statically and dynamically.
  - 3. Shaft: Designed to operate at no more than 70 percent of the first critical speed at the top of the speed range of the fans class.
  - 4. Bearings: Heavy duty ball or roller type sized to produce a B10 life of not less than 40,000 hours, and an average fatigue life of 200,000 hours.
  - 5. Motor, adjustable motor base, drive and guard: Furnish from factory with fan
- C. In-line Centrifugal Fans: In addition to the requirements of paragraphs A and B, provide inlet and outlet flanges, bolted access door and arrangement 1, 4 or 9 supports as required.

- D. Utility Fans, Vent Sets and Small Capacity Fans: Class 1 design, arc welded housing, spun intake cone. Applicable construction specification, paragraphs A and B, for centrifugal fans shall apply for wheel diameters 300 mm (12 inches) and larger. Requirement for AMCA seal is waived for wheel diameters less than 300 mm (12 inches).

## 2.3 CENTRIFUGAL CEILING FANS (Small Cabinet Fan)

- A. Standards and Performance Criteria: Refer to Paragraph, QUALITY ASSURANCE.
- B. Steel housing, baked enamel finish, direct connected fan assembly, attached grille. Integral backdraft assembly, wall cap and insect screen.
- C. Motor: Shaded pole or permanent split capacitor, sleeve bearings, supported by steel brackets in combination with rubber isolators.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install ceiling fan, motor and drive in accordance with manufacturer's instructions into acoustical ceiling grid.

### 3.2 PRE-OPERATION MAINTENANCE

- A. Mount into ceiling and then install exhaust ductwork from fan to louver in window.
- B. Clean fan interiors to remove foreign material and construction dirt and dust.

### 3.3 START-UP AND INSTRUCTIONS

- A. Verify proper operation of motor, drive system and fan wheel.
- B. Check vibration and correct as necessary for air balance work.

--- END OF SECTION ---

**SECTION 26 05 21**  
**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS**  
**AND BELOW)**

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the furnishing, installation, and connection of the low voltage power and lighting wiring.

1.2 FACTORY TESTS

Low voltage cables shall be thoroughly tested at the factory per NEMA WC-70 to ensure that there are no electrical defects. Factory tests shall be certified.

1.3 SUBMITTALS

1. Manufacturer's Literature and Data: Showing each cable type and rating.

1.4 APPLICABLE PUBLICATIONS

- A. American Society of Testing Material (ASTM):  
D2301-04.....Standard Specification for Vinyl Chloride  
Plastic Pressure-Sensitive Electrical  
Insulating Tape
- C. National Fire Protection Association (NFPA):  
70-08.....National Electrical Code (NEC)
- D. National Electrical Manufacturers Association (NEMA):  
WC 70-09.....Power Cables Rated 2000 Volts or Less for the  
Distribution of Electrical Energy
- E. Underwriters Laboratories, Inc. (UL):  
44-05.....Thermoset-Insulated Wires and Cables  
83-08.....Thermoplastic-Insulated Wires and Cables  
467-071.....Electrical Grounding and Bonding Equipment  
486A-486B-03.....Wire Connectors  
486C-04.....Splicing Wire Connectors

PART 2 - PRODUCTS

2.1 conductors and CABLES

A. Conductors and cables shall be in accordance with NEMA WC-70 and as specified herein.

B. Single Conductor:

1. Shall be annealed copper.
2. Shall be stranded for sizes No. 8 AWG and larger, solid for sizes No. 10 AWG and smaller.
3. Shall be minimum size No. 12 AWG, except where smaller sizes are allowed herein.

C. Color Code:

1. Secondary service feeder and branch circuit conductors shall be color-coded as follows:

208/120 volt	Phase	480/277 volt
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray *
* or white with colored (other than green) tracer.		

- a. Lighting circuit "switch legs" and 3-way switch "traveling wires" shall have color coding that is unique and distinct (e.g., pink and purple) from the color coding indicated above. The unique color codes shall be solid and in accordance with the NEC.

Coordinate color coding in the field with the Resident Engineer.

2. Use solid color insulation or solid color coating for No. 12 AWG and No. 10 AWG branch circuit phase, neutral, and ground conductors.
3. Conductors No. 8 AWG and larger shall be color-coded using one of the following methods:
  - a. Solid color insulation or solid color coating.
  - b. Stripes, bands, or hash marks of color specified above.
  - c. Color as specified using 0.75 in [19 mm] wide tape. Apply tape in half-overlapping turns for a minimum of 3 in [75 mm] for terminal points, and in junction boxes, pull-boxes, troughs, and manholes. Apply the last two laps of tape with no tension to prevent possible unwinding. Where cable markings are covered by tape, apply tags to cable, stating size and insulation type.
4. For modifications and additions to existing wiring systems, color coding shall conform to the existing wiring system.

## 2.2 SPLICES AND JOINTS

- A. In accordance with UL 486A, C, D, E, and NEC.
- B. Aboveground Circuits (No. 10 AWG and smaller):
  - 1. Connectors: Solderless, screw-on, reusable pressure cable type, rated 600 V, 220° F [105° C], with integral insulation, approved for copper and aluminum conductors.
  - 2. The integral insulator shall have a skirt to completely cover the stripped wires.
  - 3. The number, size, and combination of conductors, as listed on the manufacturer's packaging, shall be strictly followed.
- C. Aboveground Circuits (No. 8 AWG and larger):
  - 1. Connectors shall be indent, hex screw, or bolt clamp-type of high conductivity and corrosion-resistant material, listed for use with copper and aluminum conductors.
  - 2. Field-installed compression connectors for cable sizes 250 kcmil and larger shall have not fewer than two clamping elements or compression indents per wire.
  - 3. Insulate splices and joints with materials approved for the particular use, location, voltage, and temperature. Splice and joint insulation level shall be not less than the insulation level of the conductors being joined.
  - 4. Plastic electrical insulating tape: Per ASTM D2304, flame-retardant, cold and weather resistant.

## 2.3 CONTROL WIRING

- A. Unless otherwise specified elsewhere in these specifications, control wiring shall be as specified for power and lighting wiring, except that the minimum size shall be not less than No. 14 AWG.
- B. Control wiring shall be large enough such that the voltage drop under in-rush conditions does not adversely affect operation of the controls.

## 2.4 WIRE LUBRICATING COMPOUND

- A. Lubricating compound shall be suitable for the wire insulation and conduit, and shall not harden or become adhesive.

## PART 3 - EXECUTION

### 3.1 General

- A. Install in accordance with the NEC, and as specified.



- B. Install all wiring in raceway systems.
- C. Splice cables and wires only in outlet boxes, junction boxes, pull-boxes, manholes, or handholes.
- D. Wires of different systems (e.g., 120 V, 277 V) shall not be installed in the same conduit or junction box system.
- E. Install cable supports for all vertical feeders in accordance with the NEC. Provide split wedge type which firmly clamps each individual cable and tightens due to cable weight.
- F. For panel boards, cabinets, wire ways, switches, and equipment assemblies, neatly form, train, and tie the cables in individual circuits.
- G. Wire Pulling:
  - 1. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables. Use lubricants approved for the cable.
  - 2. Use nonmetallic ropes for pulling feeders.
  - 3. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors, as approved by the Resident Engineer.
  - 4. All cables in a single conduit shall be pulled simultaneously.
  - 5. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- H. No more than three single-phase branch circuits shall be installed in any one conduit.

### 3.2 SPLICE INSTALLATION

- A. Splices and terminations shall be mechanically and electrically secure.
- B. Tighten electrical connectors and terminals according to manufacturer's published torque values.
- C. Where the Government determines that unsatisfactory splices or terminations have been installed, remove the devices and install approved devices at no additional cost to the Government.

### 3.3 existing wiring

Unless specifically indicated on the plans, existing wiring shall not be reused for a new installation.

### 3.4 CONTROL AND SIGNAL WIRING INSTALLATION

- A. Unless otherwise specified in other sections, install wiring and connect to equipment/devices to perform the required functions as shown and specified.
- B. Except where otherwise required, install a separate power supply circuit for each system so that malfunctions in any system will not affect other systems.
- C. Where separate power supply circuits are not shown, connect the systems to the nearest panel boards of suitable voltages, which are intended to supply such systems and have suitable spare circuit breakers or space for installation.

### 3.5 CONTROL AND SIGNAL SYSTEM wiring IDENTIFICATION

- A. Install a permanent wire marker on each wire at each termination.
- B. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.
- C. Wire markers shall retain their markings after cleaning.
- D. In each manhole and hand hole, install embossed brass tags to identify the system served and function.

### 3.6 Acceptance Checks and Tests

- A. Feeders and branch circuits shall have their insulation tested after installation and before connection to utilization devices, such as fixtures, motors, or appliances. Test each conductor with respect to adjacent conductors and to ground. Existing conductors to be reused shall also be tested.
- B. Applied voltage shall be 500VDC for 300-volt rated cable, and 1000VDC for 600-volt rated cable. Apply test for one minute or until reading is constant for 15 seconds, whichever is longer. Minimum insulation resistance values shall not be less than 25 megohms for 300-volt rated cable and 100 megohms for 600-volt rated cable.

- - - END OF SECTION - - -

## **SECTION 26 27 26**

### **WIRING DEVICES**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

- A. This section specifies the furnishing, installation and connection of wiring devices.

##### **1.2 SUBMITTALS**

- A. Shop Drawings:
  - 1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
  - 2. Include electrical ratings, dimensions, mounting details, construction materials, grade and termination information.

##### **1.3 APPLICABLE PUBLICATIONS**

- A. 70-08 National Electrical Code (NEC)
- B. National Electrical Manufacturers Association (NEMA):
  - WD 1-99.....General Color Requirements for Wiring Devices
  - WD 6-02 .....Wiring Devices - Dimensional Requirements
- C. Underwriter's Laboratories, Inc. (UL):
  - 5-07.....Surface Metal Raceways and Fittings
  - 20-08.....General-Use Snap Switches

#### **PART 2 - PRODUCTS**

##### **2.1 WALL PLATES**

- A. Wall plates for switches and receptacles shall be type smooth nylon. Oversize plates are not acceptable.
- B. Color shall be ivory unless otherwise specified.
- C. Standard NEMA design, so that products of different manufacturers will be interchangeable. Dimensions for openings in wall plates shall be accordance with NEMA WD 6.
- D. For receptacles or switches mounted adjacent to each other, wall plates shall be common for each group of receptacles or switches.
- E. Wall plates for data, telephone or other communication outlets shall be as specified in the associated specification.

#### **PART 3 - EXECUTION**

### 3.1 INSTALLATION

- A. Installation shall be in accordance with the NEC and as shown as on the drawings.
- B. Outlet boxes for light and dimmer switches shall be mounted on the strike side of doors.
- C. Coordinate with other work, including painting, electrical boxes and wiring installations, as necessary to interface installation of wiring devices with other work. Coordinate the electrical work with the work of other trades to ensure that wiring device flush outlets are positioned with box openings aligned with the face of the surrounding finish material. Pay special attention to installations in cabinet work, and in connection with laboratory equipment.
- D. Exact field locations of floors, walls, partitions, doors, windows, and equipment may vary from locations shown on the drawings. Prior to locating sleeves, boxes and chases for roughing-in of conduit and equipment, the Contractor shall coordinate exact field location of the above items with other trades. In addition, check for exact direction of door swings so that local switches are properly located on the strike side.
- E. Install wall switches 1200mm (48 inches) above floor, OFF position down.
- F. Label device plates with a permanent adhesive label listing panel and circuit feeding the wiring device.
- G. Test wiring devices for damaged conductors, high circuit resistance, poor connections, inadequate fault current path, defective devices, or similar problems using a portable receptacle tester. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

--- END OF SECTION ---

## **SECTION 26 29 21**

### **DISCONNECT SWITCHES**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

This section specifies the furnishing, installation, and connection of low voltage disconnect switches.

##### **1.2 QUALITY ASSURANCE**

Refer to Paragraph, QUALIFICATIONS, in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

##### **1.3 SUBMITTALS**

###### **A. Submit Shop Drawings:**

1. Clearly present sufficient information to determine compliance with drawings and specifications.
2. Include electrical ratings, dimensions, mounting details, materials, enclosure types, and fuse types and classes.
3. Show the specific switch and fuse proposed for each specific piece of equipment or circuit.

###### **B. Manuals:**

1. Provide complete maintenance and operating manuals for disconnect switches, including technical data sheets, wiring diagrams, and information for ordering replacement parts. Deliver four copies to the Resident Engineer two weeks prior to final inspection.

##### **1.4 APPLICABLE PUBLICATIONS**

- ###### **A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.**

###### **B. National Electrical Manufacturers Association (NEMA):**

KS 1-06.....Enclosed and Miscellaneous Distribution  
Equipment Switches (600 Volts Maximum)

###### **C. Underwriters Laboratories, Inc. (UL):**

98-04.....Enclosed and Dead-Front Switches  
248-00.....Low Voltage Fuses

977-94.....Fused Power-Circuit Devices

## PART 2 - PRODUCTS

### 2.1 LOW VOLTAGE FUSIBLE SWITCHES RATED 600 AMPERES AND LESS

- A. In accordance with UL 98, NEMA KS1, and NEC.
- B. Shall have NEMA classification General Duty (GD) for 240 V switches and NEMA classification Heavy Duty (HD) for 480 V switches.
- C. Shall be HP rated.
- D. Shall have the following features:
  - 1. Switch mechanism shall be the quick-make, quick-break type.
  - 2. Copper blades, visible in the OFF position.
  - 3. An arc chute for each pole.
  - 4. External operating handle shall indicate ON and OFF position and have lock-open padlocking provisions.
  - 5. Mechanical interlock shall permit opening of the door only when the switch is in the OFF position, defeatable to permit inspection.
  - 6. Fuse holders for the sizes and types of fuses specified.
  - 7. Electrically operated switches shall only be installed where shown on the drawings.
  - 8. Solid neutral for each switch being installed in a circuit which includes a neutral conductor.
  - 9. Ground lugs for each ground conductor.
- 10. Enclosures:
  - a. Shall be the NEMA types shown on the drawings for the switches.
  - b. Where the types of switch enclosures are not shown, they shall be the NEMA types most suitable for the ambient environmental conditions. Unless otherwise indicated on the plans, all outdoor switches shall be NEMA 3R.
  - c. Shall be finished with manufacturer's standard gray baked enamel paint over pretreated steel (for the type of enclosure required).

### 2.2 LOW VOLTAGE UNFUSED SWITCHES RATED 600 AMPERES AND LESS

Shall be the same as the Low Voltage Fusible Switches Rated 600 Amperes and Less, but without provisions for fuses.

### 2.3 LOW VOLTAGE FUSIBLE SWITCHES RATED OVER 600 AMPERES TO 1200 AMPERES

Switches over 600 amps shall be the same as Low Voltage Fusible Switches Rated 600 Amperes and Less, except for the minimum duty rating

which shall be NEMA classification Heavy Duty (HD). These switches shall also be HP rated.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install disconnect switches in accordance with the NEC and as shown on the drawings.
- B. Fusible disconnect switches shall be furnished complete with fuses. Arrange fuses such that rating information is readable without removing the fuse.

#### 3.2 SPARE PARTS

Two weeks prior to the final inspection, furnish one complete set of spare fuses for each fusible disconnect switch installed on the project. Deliver the spare fuses to the COR.

--- END OF SECTION ---