



**Department of  
Veterans Affairs**

VA SPECIFICATIONS

FOR

2012 EXTERIOR REPAIRS IDIQ

FOR

CENTRAL ARKANSAS VETERANS HEALTHCARE SYSTEM

AT

LITTLE ROCK & NORTH LITTLE ROCK, AR

PROPERTY OF DEPARTMENT OF VETERANS AFFAIRS

Within 10 days after date of opening bids return this specification  
(together with drawings) postage prepaid to Contracting Officer (90C),  
Central Arkansas Veterans Healthcare System, Bldg. 41, 2200 Fort Roots  
Drive, North Little Rock, AR 72114-1706

DEPARTMENT OF VETERANS AFFAIRS  
SPECIFICATIONS

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EXTERIOR REPAIRS IDIQ

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**SECTION 00 05 01** **07-11(rev.12)**  
**SPECIAL REQUIREMENTS FOR WORK WITHIN A VA HOSPITAL**

**1.GENERAL:**

A. This section is to bring to the attention of the contractor, Special Requirements of our hospital. Our primary goal is to provide safe, accurate, comfortable treatment and diagnostic work. The construction project is secondary. The prints may show phasing but cannot convey every consideration that must be given to implement the plan. Close coordination and advance notifications must be provided. The VA cannot tolerate the method of construction as would be done in an empty building for example. Therefore, the contractor shall plan for cleanliness, dust proofing, quietness, etc., as needed.

The following are considerations and requirements needed in order to work at the hospital.

B. Requirements:

**INFECTION CONTROL PROCEDURES  
TO BE APPLIED TO ALL CONSTRUCTION PROJECTS**

The overriding principal is to work within an area that is under negative pressure and contain all dust within the construction area.

In order to accomplish the above, the CUBE method will be used. This method demands that a CUBE consisting of the floor, walls both above and below suspended ceilings and the deck above be established and maintained while construction is being performed. Walls may have to be built by the contractor if the existing walls cannot be utilized. The CUBE will be kept under negative pressure. In addition to containing dust within the work area, dust must be kept from exiting the work area via footsteps and cart wheels.

The project will have an ICRA (Infection Control Risk Assessment) completed prior to any construction or phase of construction. This document will be posted and maintained at the construction site and serve as reminder of the precautions to be followed. The ICRA will address the following:

**ICRA**

- To be posted before any work is done and reviewed at each phase for any adjustment needed.
- To be initiated by IC (Infection Control department) or Engineering and signed off by both parties.
- ICRA forms will be kept by Safety and IC.

**Infection Control briefing**

- An overview of infection control will be given at the preconstruction conference.
- Superintendant will be required to attend the preconstruction conference.

**Barrier plan**

- Contractor will sketch out the placements of his barrier(s) and get approval by IC via the COTR.
- Barrier will be inspected by IC before each phase is started.

- Hard wall (drywall and metal studs) barriers will be used for work lasting longer than 24 hours. Tape and floating will not be needed. Joints will be covered with blue painters tape including attachment at walls, floors and ceilings.
- Plastic (fire-resistive ) can be used for work lasting 24 hours or less on barriers below ceilings. Plastic may be used for periods exceeding 24 hours above ceilings.
- The contractor may use the VA's Curtain-Wall system utilizing his own plastic.
- Barrier must also serve as physical barrier for when the area is not occupied by contractors. Entry will be via an actual door and frame and will be locked when not occupied.

#### Negative Air

- Existing ceilings may be used as part of the CUBE barrier.
- Minus .03 inches of water pressure must be maintained. The contractor is responsible for providing negative air unit(s) as needed to maintain .03 inches of pressure. Contractor must install a manometer with a scale of 0-1/2 inch water for each pressure area.
- Discharge into a corridor via a grill. The VA must prove that air discharged is clean (HEPA) via a particle meter before the unit is turned on and any work started.

#### Mats

- Carpet shall not be used. Contractor must clean his wheels and feet in the anteroom so that no dust is tracked down the hall.
- Sticky mats will be used in class 3 and 4 construction and will be changed every 4 hours.

#### Anteroom

- Serves as an air lock and a place to remove dust from people, carts, feet, etc.
- Can be built inside the construction area or if built in the corridor, 5 feet clearance must be maintained.
- Must be hard walls.
- Air flow will be from the outside common space into the anteroom and then into the construction area.

#### Gross demolition

- Tyvek coveralls and disposable shoe covers must be worn during gross demolition phase which is defined as wall, ceiling and flooring removal.
- Disposable items are to be used one time.
- Must be removed in the ante room before leaving the work area.

#### Existing HVAC Grills

- Must seal all grills – supply, return, and exhaust.
- Seal by substantial method to prevent barrier from coming loose. Use blue painter tape only and do not use duct tape anywhere.

#### Above Ceiling Inspections – as part of work planning

- Allowed to remove one tile per 50 square feet for inspection with no IC control.

- No work will be allowed without IC control with the exception of allowing cable pulling which may be done with the CUBE method.

#### Fire or Smoke barriers

- Temporary barriers must be built to give the same rating through an alternate path when existing barriers must be compromised.
- Permanent new rated walls and ceilings (as needed) will be built before existing rated barriers are compromised.

#### General

- Clean the work area daily to control the amount of accumulated dust from collecting within the work area.
- Ceiling T-grids must be vacuumed before tile is placed.
- Utility runs that don't necessarily have work contained to a room will still have to confirm to the CUBE method. A plastic barrier will have to be placed over the location of a utility run and secured to the remaining ceiling in conjunction with existing walls and / or barrier walls.

#### 2. Telephone and Computer Wiring:

All telephone and computer jacks shall be removed by the VA as needed. At the pre-construction walkthrough, the contractor shall discuss timeframes for removal with the COTR (Contracting Officer's Technical Representative) who will contact the VA's telecommunications group for actual removal. **THE CONTRACTOR SHALL NOT ATTEMPT ANY REMOVAL INCLUDING THE UNPLUGGING OF PHONES AND COMPUTERS.**

3. The Fire Alarm devices – smoke detectors, heat detectors and pull stations, are all addressed devices. Do not remove any of these devices. If they must be removed, please contact the COTR.

4. Penetrations through floors and rated walls must be fire-stopped with materials made from the specific application at hand. Sealing must be done at the time the penetration is made and not done at the end of the job.

5. No temporary or permanent wireless access point or WIFI will be set up inside or outside any VA Building.

#### C. Other Areas of Concern:

1. When construction is near sensitive areas such as surgery, noisy operations shall be discontinued until a more appropriate time, which may be after normal working hours or on weekends. If this has been determined, it shall be accomplished at no additional cost to the VA.

2. The contractor shall notify the COTR in advance of operations that would cause disruption to the operation of the medical center. Examples of these disruptions are: utility

shutdown, noise, vibration, etc. The contractor shall adjust his schedule to accommodate patient care activities.

3. Utilities shall not be disconnected without coordination with the COTR. Contractors have often cut power to "their" area and ended up cutting off power to areas outside the construction site.

4. Contractor shall not attempt to work an electric circuit hot. If necessary, a temporary electric feed will be run.

5. Odors may cause problems such as painting with oil-based paint on a patient ward. Reasonable action such as putting an exhaust fan in a window or hanging plastic to isolate a painted area shall be needed.

6. The contractor shall take all necessary precautions to ensure compliance with the Life Safety Code (2009) and be mindful of the seriousness of how this affects the invalid. The contractor shall not block corridors, exits or access to exits at any time.

7. ID badges shall be worn by all workers at all times.

8. The construction area shall be secure at the end of the day. The contractor shall have a means of preventing patients, employees and other unauthorized personnel from entering the work site.

9. New fire/smoke barriers must be constructed before old barriers are demolished so that barrier integrity is maintained.

10. The VA must insure that no asbestos containing products are used in construction or equipment installation. The contractor shall obtain MSDS sheets or product literature stating "CONTAINS NO ASBESTOS" for the following classifications of products that have had a history of containing asbestos products. This list does not cover all suspect items. These MSDS sheets will be bound and submitted as proof that the building materials do not contain asbestos.

- a. Surfacing Materials: Sprayed or toweled-on
- b. Thermal insulating products: Batts, blocks, pipe covering, fire doors.
- c. Textiles: Gaskets, cloth, blankets, felts, sheets, cords/rope/yard, tubing, tape/strip, wiring
- d. Cementitious: Concrete-like materials, corrugated, flat, flexible perforated laminated, roof tiles, clapboard, shingles-roofing/siding, pipe
- e. Paper Products: Corrugated high temperature or moderate temperature, indented, millboard
- f. Roofing Felts: smooth surface, mineral surface, shingles, pipeline
- g. Asbestos containing compounds: caulking, caulking putties, glues, mastics, adhesive (cold applied), joint compound, roofing asphalt, mastics, asphalt tile cement, roof putty, plaster/stucco, spackles, sealants fire/water, cements such as insulation cement, finishing cement, magnesia cements
- h. Asbestos ebony products: as used in electrical boxes
- i. Flooring tile and sheets goods: vinyl/asbestos tile, asphalt/asbestos tile, sheet goods/resilient

- j. Wall covering: Vinyl wallpaper
- k. Paints and coatings: Roof coating, air tight

D. The following items are clarifications that have caused confusion and problems in the past:

1. When painting, the entire doorframe shall be painted (excluding UL or other Fire Rating information). Walls shall be painted to a natural break of change in direction. Door silencers shall not be painted.
2. Contractors shall mark their dumpsters so VA employees will not assume it is a VA dumpster.
3. When excavating, the contractor shall be responsible for locating items within ten (10) feet as scaled from a plan.
4. Operational and Maintenance Manuals (4 sets) shall be required for completion of the job.
5. Workers parking where not permitted or without proper dash signage displayed, shall be ticketed.
6. The VA shall not loan tools or materials to the contractor. It is your responsibility to furnish all labor, materials and equipment necessary for completion of the job.
7. The job superintendent or designee shall be on site at all times when work is being performed.
8. The contractor shall not disturb the floors due to asbestos, other than how shown on the plans.
9. Where the contractor disturbs lawn areas, he shall aerate compacted areas and sod with common Bermuda.
10. When ceilings are replaced or altered in height, sprinkler heads shall be removed to allow the tiles to be installed. The heads shall be adjusted in height, if necessary, and reinstalled.

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Infection Control Construction Worksheet – Class III/IV					
Location of Construction:			Project Start Date:		
Construction Foreman:			Estimated Duration:		
Contractor Performing Work:			Completion Date:		
Supervisor:			Telephone:		
YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Low Risk
		TYPE B: Small scale, short duration activities which create minimal dust.			GROUP 2: Medium Risk
		TYPE C: Work that generates moderate to high levels of dust, requires demolition or removal of any fixed building components or assemblies; greater than 1 work shift for completion.			GROUP 3: Medium/High Risk
		TYPE D: Major demolition and construction projects; requires consecutive work shifts.			GROUP 4: Highest Risk

### SPECIFIC REQUIREMENTS

#### ICRA:

1. To be posted before any work is done and reviewed at each phase for any adjustment needed.
2. To be initialed by IC (Infection Control Department) or Engineering and signed off by both parties
3. ICRA forms will be kept by Safety and Infection Control.

#### INFECTION CONTROL BRIEFING:

1. An overview of infection control will be given at the preconstruction conference.
2. Superintendent will be required to attend the preconstruction conference.

#### BARRIER PLAN:

1. Contractor will sketch out the placements of his barrier(s) and get approval by IC via the COTR (Contracting Officer's Technical Representative).
2. Barrier will be inspected by IC before each phase is started.
3. Hard wall (drywall and metal studs) barriers will be used for work lasting longer than 24 hours. Tape and floating will not be needed. Joints will be covered with blue painters tape including attachment at walls, floors and ceilings.
4. Plastic (fire-resistive) can be used for work lasting 24 hours or less on barriers below ceilings. Plastic may be used for periods exceeding 24 hours above ceilings.
5. The contractor may use the VA's Curtain-Wall system utilizing his own plastic.
6. Barrier must also serve as physical barrier for when the area is not occupied by contractors. Entry will be via an actual door and frame and will be locked when not occupied.



**NEGATIVE AIR:**

1. Existing ceilings may be used as part of the CUBE barrier.
2. Minus .03 inches of water pressure must be maintained. The contractor is responsible for providing negative air unit(s) as needed to maintain .03 inches of pressure. Contractor must install a manometer with a scale of 0-1/2 inch water for each pressure area.
3. Discharge into a corridor via a grill. The VA must prove that air discharged is clean (HEPA) via a particle meter before the unit is turned on and any work started.

**MATS:**

1. Carpet shall not be used. Contractor must clean his wheels and feet in the anteroom so that no dust is tracked down the hall.
1. Sticky mats will be used in Class 3 and 4 construction and will be changed every 4 hours.

**ANTEROOM:**

1. Serves as an air lock and a place to remove dust from people, carts, feet, etc.
2. Can be built inside the construction area or if built in the corridor, 5 feet clearance must be maintained.
3. Must be hard walls.
4. Air flow will be from the outside common space into the anteroom and then into the construction area.

**GROSS DEMOLITION:**

1. Tyvek coveralls and disposable shoe covers must be worn during gross demolition phase which is defined as wall, ceiling and flooring removal.
2. Disposable items are to be used one time.
3. Must be removed in the ante room before leaving the work area.

**EXISTING HVAC GRILLS:**

1. Must seal all grills – supply, return and exhaust.
2. Seal by substantial method to prevent barrier from coming loose. Use blue painter tape only and do not use duct tape anywhere.

**ABOVE CEILING INSPECTIONS** – as part of work planning:

1. Allowed to remove one tile per 50 square feet for inspection with no IC control.
2. No work will be allowed without IC control with the exception of allowing cable pulling which may be done with the CUBE method.

**FIRE OR SMOKE BARRIERS:**

1. Temporary barriers must be built to give the same rating through an alternate path when existing barriers must be compromised.
2. Permanent new rated walls and ceilings (as needed) will be built before existing rated barriers are compromised.

**GENERAL:**

1. Clean the work area daily to control the amount of accumulated dust from collecting within the work area.

2. Ceiling T-grids must be vacuumed before tile is placed.
3. Utility runs that don't necessarily have work contained to a room will still have to conform to the CUBE method. A plastic barrier will have to be placed over the location of a utility run and secured to the remaining ceiling in conjunction with existing walls and/or barrier walls.

**Matrix - Class of Precautions: Construction Project by Patient Risk**

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

**Note** Infection Control approval will be required when the Construction Activity and Risk Level indicate that **Class III** or **Class IV** control procedures are necessary.

**Areas surrounding the project area, assessing potential impact**

Unit Below	Unit Above	Lateral	Lateral	Behind	Front
Risk Group-NA	Risk Group-NA	Risk Group-High	Risk Group	Risk Group-NA	Risk Group-High

**NOTE:**

**General Requirements:**

- Vacuum off dust, construction dust, drywall dust and mud, etc. before leaving Class II, III, or IV Containment.
- Do not use dry dust mop. Use damp mop, dust control spray, or dust control sweeping compound.
- Use walk-off mats in Class II, III, or IV Containment.

**NOISE AND VIBRATION:**

**Site inspection and detail of plan:**

Date:

**Infection Control: Jamie Yarberry**

**Safety: Kim Mashburn**

**Engineering: Jon Miller**

**SECTION 01 00 00  
GENERAL REQUIREMENTS**

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

**1.1 GENERAL INTENTION**

- A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for Exterior Repairs IDIQ as required by drawings and specifications.

The work shall consist of furnishing all labor and materials in performing all operations in connection with the construction, demolition, alteration, and repair of an Indefinite Delivery, Indefinite Quantity Contract.

1. Remove and replace composition shingle systems with new asphalt shingle systems including felt underlayment, deteriorated wood decking, shingles, aluminum drip edge, flashings, etc. and repairs.
  2. Prepare surfaces for painting pertaining to fascia, soffit, frieze flashings, downspouts, handrails, stone, block, brick, etc. as listed on the pricing list.
  3. Prepare redwood decks for refinishing and apply sealer/finish.
- B. Before placement and installation of work subject to tests by testing laboratory retained by Department of Veterans Affairs, the Contractor shall notify the Project Engineer in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the Project Engineer.
- C. All employees of general contractor and subcontractors shall comply with VA security management program and obtain Identification Badges.
- D. Prior to commencing work, general contractor shall provide proof that a 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.
- E. Training:
1. Beginning July 31, 2005, all employees of general contractor or subcontractors shall have the 10-hour OSHA certified Construction Safety course and /or other relevant competency training, as determined by VA CP with input from the ICRA team.
  2. Submit training records of all such employees for approval before the start of work.

**1.2 STATEMENT OF BID ITEM(S) - NA**

**1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR**

- A. Additional sets of drawings may be made by the Contractor, at Contractor's expense, from reproducible sepia prints furnished by Issuing Office. Such sepia

prints shall be returned to the Issuing Office immediately after printing is completed.

#### **1.4 CONSTRUCTION SECURITY REQUIREMENTS**

- A. Security Plan:
  - 1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
  - 2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.
- B. Security Procedures:
  - 1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
  - 2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
  - 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.
- C. Key Control:
  - 1. The General Contractor shall turn over all permanent lock cylinders to the VA locksmith for permanent installation. See Section 08 71 00, Door Hardware and coordinate.

#### **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):
    - E84-2007.....Surface Burning Characteristics of Building Materials
  - 2. National Fire Protection Association (NFPA):
    - 10-2006.....Standard for Portable Fire Extinguishers
    - 30-2003.....Flammable and Combustible Liquids Code
    - 51B-2003.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work
    - 70-2005.....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

- 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 Project Engineer for review for compliance with contract requirements in accordance with Section 01 33 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 Project Engineer that 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. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).
- E. Temporary Construction Partitions:
  - 1. Install and maintain temporary construction partitions to provide separations between construction areas and adjoining areas. Construct partitions of gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. At door openings, install 1¾ solid core doors with self-closing devices.
  - 2. Install temporary construction partitions as shown on drawings to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
  - 3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials promptly in accordance with Section 07 84 00, FIRE-STOPPING.
- F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Project Engineer.
- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Project Engineer.
- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- K. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under

construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Project Engineer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the Project Engineer.

- L. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Project Engineer.
- M. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Project Engineer. Prepare permits at least 8 hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.
- N. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Project Engineer.
- O. Smoking: Smoking is prohibited inside existing buildings and additions under construction.
- P. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- Q. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

## **1.6 OPERATIONS AND STORAGE AREAS**

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

- D. Working space and space available for storing materials shall be as determined by the Project Engineer.
- E. Workmen are subject to rules of Medical Center applicable to their conduct. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied, during construction, jointly by patients or medical personnel, and Contractor's personnel, except as permitted by Project Engineer where required by limited working space.
  - 1. Do not store materials and equipment in other than assigned areas.
  - 2. Where access by Medical Center personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements.
  - 3. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.
- G. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
  - 1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
  - 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the Project Engineer.

## **1.7 ALTERATIONS**

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Project Engineer and a representative of VA AMMS Service, of areas of buildings in which alterations occur and areas which are anticipated routes of access. The COTR shall video tape the walk-thru documenting:
  - 1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
  - 2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.



3. Shall note any discrepancies between drawings and existing conditions at site.
  4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Project Engineer.
- B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of Project Engineer, 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) of Section 00 72 00, GENERAL CONDITIONS.
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Project Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
  2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
  3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

## **1.8 INFECTION PREVENTION MEASURES:**

Comply with Specification 000501 concerning dust control.

## **1.9 DISPOSAL AND RETENTION**

- A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:
1. Reserved items which are to remain property of the Government will be identified at the beginning of the job. The contractor will set them aside for pick-up by the VA. Items that remain property of the Government shall be

- removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse.
2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

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

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

#### **1.11 RESTORATION**

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Project Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Project Engineer before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2) of Section 00 72 00, GENERAL CONDITIONS.

#### **1.12 PHYSICAL DATA : NA**

#### **1.13 PROFESSIONAL SURVEYING SERVICES: NA**

#### **1.14 LAYOUT OF WORK**

- A. The Contractor shall lay out the work from Government established base lines and bench marks, indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at Contractor's own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through Contractor's negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

#### **1.15 AS-BUILT DRAWINGS**

- A. The contractor shall maintain one full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Project Engineer's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings to the Project Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Project Engineer.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

#### **1.16 USE OF ROADWAYS**

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Project Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.
- B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads

may be used by all who have business thereon within zone of building operations.

- C. When certain buildings (or parts of certain buildings) are required to be completed in advance of general date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

#### **1.17 PROJECT ENGINEER'S FIELD OFFICE: NA**

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

- A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:
  - 1. Permission to use each unit or system must be given by Project Engineer. If the equipment is not installed and maintained in accordance with the following provisions, the Project Engineer will withdraw permission for use of the equipment.
  - 2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
  - 3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
  - 4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
  - 5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
  - 6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government.
- B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.
- C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

### **1.19 TEMPORARY USE OF EXISTING ELEVATORS**

- A. Use of existing service elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:
  - 1. Contractor makes all arrangements with the Project Engineer for use of elevators. The Project Engineer will ascertain that elevators are in proper condition.

### **1.20 TEMPORARY USE OF NEW ELEVATORS: NA**

### **1.21 TEMPORARY TOILETS**

- A. Contractor may have for use of Contractor's workmen, such toilet accommodations as may be assigned to Contractor by Medical Center. 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. Contractor should ensure that mud, paint, tar, etc. is not tracked from the work site.

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

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing convenience outlets and supplies. Convenience outlets are located throughout the facility. The contractor will need to set a temporary panel for power until permanent panels are installed and energized before new panels are called for. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.
- C. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:

### **1.23 NEW TELEPHONE EQUIPMENT: NA**

### **1.24 TESTS**

- A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.
- B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

- C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire complex which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a complex which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.
- D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonably short period of time during which operating and environmental conditions remain reasonably constant.
- E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

## **1.25 INSTRUCTIONS**

- A. Contractor shall furnish Maintenance and Operating manuals and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
- B. Manuals: Maintenance and operating manuals (four copies each) for each separate piece of equipment shall be delivered to the Project Engineer coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.
- C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed instructions to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be

given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the Project Engineer and shall be considered concluded only when the Project Engineer is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the Project Engineer, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

**1.26 GOVERNMENT-FURNISHED PROPERTY: NA**

**1.27 RELOCATED // EQUIPMENT // ITEMS: NA**

**1.28 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS  
EQUIPMENT: NA**

**1.29 CONSTRUCTION SIGN: NA**

**1.30 SAFETY SIGN: NA**

**1.31 CONSTRUCTION DIGITAL IMAGES: NA**

**1.32 FINAL ELEVATION DIGITAL IMAGES: NA**

**1.33 HISTORIC PRESERVATION**

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

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**SECTION 01 33 23**  
**SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

- 1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in Section 00 72 00, 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 Contracting Officer, and action thereon will be taken by Resident Engineer on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, Resident-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 and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect-Engineer 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 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

Contracting Officer (90C/NLR)

Central Arkansas Veterans Healthcare System

2200 Fort Roots Drive - Bldg. 41

No. Little Rock, AR 72114

- - - E N D - - -

**SECTION 02 41 00  
DEMOLITION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

This section specifies demolition of portions of buildings and other structures and debris removal.

**1.2 RELATED WORK:**

- A. Safety Requirements: Section 00 72 00, GENERAL CONDITIONS, Article, ACCIDENT PREVENTION.
- B. Reserved items that are to remain the property of the Government: Section 01 00 00, GENERAL REQUIREMENTS.

**1.3 PROTECTION:**

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of Section 00 72 00, 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.

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

**PART 3 - EXECUTION**

**3.1 DEMOLITION:**

- A. Debris, shall become property of Contractor and shall be disposed of by him daily, off the Medical Center to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Resident Engineer. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.

**3.2 CLEAN-UP:**

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

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**SECTION 02 83 34**  
**LEAD HAZARD CONTROL - EXTERIOR**

**PART 1 - GENERAL**

**1.1 GENERAL REQUIREMENTS, OCCUPANT PROTECTION AND WORK SITE PREPARATION:**

- A. This section establishes procedures for protecting the occupants and the environment from contamination of lead-containing materials during renovation activities that may disturb lead-based paint.
- B. The Contractor's Supervisor and all workers must have attended, at a minimum, a "Lead Awareness" training as outlined in OSHA 29 CFR 1926.62 or 29 CFR 1910.1025. A lead abatement worker or supervisor training course as outlined in 24 CFR 35 or 40 CFR 745 is also acceptable. Proof of training, respiratory protection training and physical clearance will be submitted for approval with items required in paragraph 1.2 F below.
- C. Assume paint on buildings built prior to 1978 contains lead.
- D. Avoid creating dust. Use work practices to minimize creating dust, i.e., mist the surface with water before disturbing the paint. Avoid spreading dust by covering the area under work with a durable protective sheeting (plastic or polyethylene) and keep dust contained to immediate work area.
- E. When conducting work, windows and doors shall be closed along with all vents within 30 feet and must be covered to minimize lead dust contamination. Air conditioning window units shall be shut-off and the vents covered when working within 30 feet of the air conditioning unit.
- F. Provide an operational, safety and methods plan to contain all residues, chips, water, etc., for approval as a submittal; to include all training documentations, proof of fit test and physicians clearance.

**1.2 PROHIBITED ACTIVITIES:**

The following methods shall not be used to remove lead-based paint:

- A. Open flame burning or torching.
- B. Machine sanding or grinding without a HEPA local exhaust control.
- C. Abrasive blasting or sandblasting without HEPA exhaust.
- D. Heat guns operating above 1100 degrees Fahrenheit or charring the paint.
- E. Dry sanding or dry scraping, except dry scarping in conjunction with heat guns or within 1.0 ft. of electrical outlets.
- F. Paint stripping or poorly ventilated space using a volatile stripper, such as methylene chloride.
- G. Uncontained hydroblasting. Removal of paint using this method can spread paint chips, dust and debris beyond the work area. This result makes it difficult to clean up these hazards at the end of the job. Contained pressure washing is acceptable. Removal of paint using contained pressure washing within a protective enclosure to prevent the spread of paint chips, dust and debris may be done. The water must be filtered to remove the paint chips and debris prior to discharge into the sanitary sewer. Provide an operational and methods plan to contain all residues, chips, water, etc., for approval as a submittal.

**1.3 CONTRACTOR SAFETY:**

- A. The contractor is responsible for their employee safety and health. The contractor shall comply with all Federal, State and Local Regulations.
- B. Always wear safety glasses or goggles when scraping, hammering, etc.
- C. At the end of the work period, remove dusty clothes and vacuum off dust. Wash them separately. **DO NOT** use compressed air to blow dust off clothing.
- D. Wear respiratory protection when work creates dust or paint chips. In the event the contractor has "Negative assessment" documentation, that assessment must be approved by the CAVHS Safety Manager; before removal may be started.
- E. Post warning signs to prohibit eating, drinking or smoking inside the work area.
- F. Ensure that employees wash their hands and face each and every time they stop working.

**1.4 REQUIRED LEAD HAZARD CONTROL WORK:**

**Where the Component is Structurally Sound the Component Can Be Wet Scraped and Repainted.**

- A. Cover the affected area perimeter with visqueen to contain the dust and paint chips. The visqueen should be secured against the foundation (for exterior work) and extend beyond the area where the chips might fall (approximately 30 feet out unless the building is tall and then the visqueen should be placed proportionally, depending on the height). The objective is to contain all paint dust and chips onto the plastic, not the ground/floor.
- B. Mist the painted components thoroughly. A pump-up sprayer or a hand-held sprayer may be used to wet down the components. Wet scrape/sand the components to remove all loose paint. Wet sand using wet-dry sandpaper or wet sanding sponges. A power sander may be used if attached to a HEPA vacuum, and the worker is wearing respiratory protection.
- C. Conduct a thorough cleanup. Clean-up the areas as soon as feasible, but at least daily prior to the end of each shift. To minimize cleaning, an additional layer of plastic could be secured in place and rolled up and disposed of at the end of each shift.
- D. The waste generated from residential housing is not regulated by EPA as a hazardous waste and may be disposed of as regular construction waste, if the landfill permits. Waste streams from non-residential buildings must be tested (TCLP) to determine waste stream. (Normally, only the lead-containing chips/dust will have to be treated as a hazardous waste) The painted components removed and tested (TCLP) normally do not have to be treated as a hazardous waste because there is usually more wood/drywall/concrete/brick than paint, which dilutes the hazardous waste portion.

**1.5 COMPONENT REPLACEMENT:**

- A. Cover the affected area perimeter with visqueen to contain the dust and paint chips. The visqueen should be secured against the foundation (for exterior work) and extend beyond the area where the chips might fall (approximately 30 feet out unless the building is tall and then the visqueen should be placed proportionally, depending on the height). The objective is to contain all paint dust and chips onto the plastic, not the ground. In addition to the 30' of plastic use an additional 10' wide sheet of plastic over the 30' sheet and at the structures edge. This 10'

sheet is to be disposed of daily with paint chip residue leaving the 30' sheet which may be reused.

- B. Mist the painted components thoroughly, especially at the area that will be disturbed.
- C. Pry the component away from the substrate and lower to the ground.
- D. Do not allow removed debris to accumulate; dispose of removed components/debris as material is removed. Conduct a thorough cleanup at the end of each work shift.
- E. Collect paint chips properly.

## **PART 2 - CLEANUP:**

### **2.1 CLEANING UP THE WORK AREA:**

- A. It is very important to use proper cleanup procedures at the end of the job. Dust and paint chips left behind at the end of a job may contain lead and may endanger occupants, especially children.
- B. Pick up large chips and debris with a damp paper towel or you may mist the chips/debris and sweep into a dust pan.
- C. Clean off protective sheeting. Fold dirty side inward (dirty side to dirty side). Dispose of protective sheeting at the end of each job. Protective sheeting may be used again within the same work area.

### **2.2 WASTE DISPOSAL:**

- A. Confine the dust and waste to the work area that will be cleaned.
- B. Store all waste in a secure container. Lead waste must be stored in a DOT approved container (Pail or "H" top Steel drum w/liner ) or a lined dumpster until transferred to CAVHS for disposal.
- C. Water used to remove paint through pressure washing must be filtered, using a standard 1.0 Micron water filter as a final filter. The water filters will be also disposed of as in paragraph 2.2 C above.

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**SECTION 02 83 34A**  
**LEAD HAZARD CONTROL FOR RESIDENTIAL QUARTERS EXTERIOR**

**PART 1 - RESIDENTIAL SPECIFIC**

A. All paint on the exterior of the residential quarters contains or may contain lead at high concentrations. All work conducted on the residential quarters that could disturb paint must be done by an Arkansas licensed lead-based paint contractor. All contractor workers must be Arkansas certified lead-based paint workers or supervisors.

B. All lead-based paint work must be conducted in accordance with AR Regulation 25 Lead-Based Paint Activities, HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, & EPA Lead-Based Paint Poisoning Prevention in Certain Residential Structures.

C. Prior to any work on the residential quarters, the Contractor will provide notification to the Safety Office and the Quarters Occupants. The notification to the Safety Office will include an outline of methods to be used to minimize lead dust contamination and exposures, the ADEQ notice of intent (NOI), copy of the NOI to quarters occupants, and the EPA booklet Renovate Right that will be provided to the quarters occupants.

D. Upon completion of all work conducted on the quarters where paint is disturbed, a comprehensive cleaning on the interior and exterior shall be done by the HEPA vacuuming and wet washing methods. The cleaning shall at a minimum include the windows, floors and horizontal surfaces. Cleaning shall be done on the porches, steps, and walkways and/or where possible lead contamination may exist. All cleaning will include HEPA vacuuming/wet wash techniques.

E. The exterior of the quarters will be cleaned of all visible paint chips at the perimeter of the house.

F. Clearance testing will be conducted upon completion of all paint disturbance activities. Clearance testing will be done by the Safety Office. The Contractor will be responsible for passing the HUD dust wipe clearance testing and the exterior visual inspections.

**PART 2 - GENERAL**

**2.1 GENERAL REQUIREMENTS, OCCUPANT PROTECTION AND WORK SITE PREPARATION:**

- A. This section establishes procedures for protecting the occupants and the environment from contamination of lead-containing materials during renovation activities that may disturb lead-based paint.
- B. Assume paint on buildings built prior to 1978 contains lead.
- C. **Avoid creating dust.** Use work practices to minimize creating dust, i.e., mist the surface with water before disturbing the paint. Avoid spreading dust by covering the area under work with a durable protective sheeting (plastic or polyethylene) and keep dust contained to immediate work area.
- D. When conducting work, windows and doors shall be kept closed. All vents within 30 feet must be covered to minimize lead dust contamination. Air conditioning window units shall be shut-off and the vents covered when working within 30 feet of the air conditioning unit. It is the responsibility of the Contractor to remove all barriers and covers upon completion of work.

**1.2 PROHIBITED ACTIVITIES:**

The following methods shall not be used to remove lead-based paint:

- A. Open flame burning or torching.
- B. Machine sanding or grinding without a HEPA local exhaust control.
- C. Abrasive blasting or sandblasting without HEPA exhaust.
- D. Heat guns operating above 1100 degrees Fahrenheit or charring the paint.
- E. Dry sanding or dry scraping, except dry scarping in conjunction with heat guns or within 1.0 ft. of electrical outlets.
- F. Paint stripping or poorly ventilated space using a volatile stripper, such as methylene chloride.
- G. Uncontained hydroblasting. Removal of paint using this method is prohibited due to the potential that it can spread paint chips, dust and debris beyond the work area. This result makes it difficult to clean up these hazards at the end of the job. Contained pressure washing may be acceptable if a plan is approved the COTR and Safety Office. The Contractor must provide a plan of action, as a submittal, that will outline the methods to be used to contain all residues, chips, and water from the contained pressure washing. The water must be filtered to remove the paint chips and debris prior to discharge into the sanitary sewer.

**1.3 CONTRACTOR SAFETY:**

- A. The contractor is responsible for their employee safety and health. The contractor shall comply with all Federal, State and Local Regulations.
- B. Always wear safety glasses or goggles when scraping, hammering, etc.
- C. At the end of the work period, remove dusty clothes and vacuum off dust with a HEPA vacuum. Wash clothes separately. **DO NOT** use compressed air to blow dust off clothing.
- D. Wear respiratory protection when work creates dust that may near the OSHA PEL for lead.
- E. Post warning signs to prohibit eating, drinking or smoking inside the work area.
- F. Ensure that employees wash their hands and face each and every time they stop working.

**1.4 REQUIRED LEAD HAZARD CONTROL WORK: COMPONENT WET SCRAPING**

- A. Where the component is structurally sound the component may be wet scraped and repainted. Cover the affected area perimeter with visqueen to contain the dust and paint chips. The visqueen should be secured against the foundation (for exterior work) and extend beyond the area where the chips might fall (approximately 30 feet out unless the building is tall and then the visqueen should be placed proportionally, depending on the height). The objective is to contain all paint dust and chips onto the plastic, not the ground/floor.
- B. Mist the painted components thoroughly. A pump-up sprayer or a hand-held sprayer may be used to wet down the components. Wet scrape/sand the components to remove all loose paint. Wet sand using wet-dry sandpaper or wet sanding sponges. A power sander may be used if attached to a HEPA vacuum, the worker is wearing respiratory protection and air monitoring is conducted to evaluate & monitor lead dust concentrations.
- C. Conduct a thorough cleanup. Clean-up the areas as soon as feasible, but at least daily prior to the end of each shift. To minimize cleaning,



an additional layer of plastic could be secured in place and rolled up and disposed of at the end of each shift.

D. The waste generated from residential housing is not regulated by EPA as a hazardous waste and may be disposed of as regular construction waste, if the landfill permits. Waste streams from non-residential buildings must be tested (TCLP) to determine waste stream. (Normally, only the lead-containing chips/dust will have to be treated as a hazardous waste) The painted components removed and tested (TCLP) normally do not have to be treated as a hazardous waste because there is usually more wood/drywall/concrete/brick than paint, which dilutes the hazardous waste portion.

E. Pressure washing may be allowed on case by case bases. The contractor shall provide a formal request to the COTR and Safety Office with a plan of action on measures to contain the paint chips and water. The water may be disposed of into the sanitary sewer after being filtered.

#### **1.5 COMPONENT REPLACEMENT:**

A. Cover the affected area perimeter with visqueen to contain the dust and paint chips. The visqueen should be secured against the foundation (for exterior work) and extend beyond the area where the chips might fall (approximately 30 feet out unless the building is tall and then the visqueen should be placed proportionally, depending on the height). The objective is to contain all paint dust and chips onto the plastic, not the ground. In addition to the 30' of plastic use an additional 10' wide sheet of plastic over the 30' sheet and at the structures edge. This 10' sheet is to be disposed of daily with paint chip residue leaving the 30' sheet which may be reused.

B. Mist the painted components thoroughly, especially at the area that will be disturbed.

C. Pry the component away from the substrate and lower to the ground.

D. Do not allow removed debris to accumulate, dispose of removed components/debris as material is removed. Conduct a thorough cleanup at the end of each work shift.

E. Collect paint chips properly, and give to VA in five (5) gallon contained buckets.

#### **PART 2 - CLEANUP:**

##### **2.1 CLEANING UP THE WORK AREA:**

A. It is very important to use proper cleanup procedures during the project and at the end of the job. Dust and paint chips left behind at the end of a job may contain lead and may endanger occupants, especially children. A thorough cleanup is an absolute necessity. All work areas must be HEPA vacuumed, wet washed or cleaned using wet methods outlined by EPA.

B. Ensure that chips, debris and dust are thoroughly cleaned up by wet methods, HEPA Vacuuming and/or wet washing.

C. Clean off protective sheeting. Fold dirty side inward (dirty side to dirty side). Dispose of protective sheeting as necessary and at the end of each job.

##### **2.2 WASTE DISPOSAL:**

A. Store all waste in a secure container or dumpster until disposal.

B. Residential Quarter's waste may be disposed of as general waste in an approved landfill.

- C. Non-residential buildings must have the waste tested for lead content by a TCLP. Waste disposal must be determined by the TCLP results for classified as a hazardous or non-hazardous waste.
- D. Water used for cleaning and/or paint removal through pressure washing must be filtered prior to disposal.
- E. Containerized paint chips collected from the residential quarters may be given to the Safety Office for disposal.

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**SECTION 06 10 00  
ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

Section specifies wood blocking, framing, sheathing, furring, nailers, sub-flooring, rough hardware, column replacement, redwood decking and light wood construction.

**1.2 RELATED WORK: (NOT USED)**

**1.3 SUBMITTALS:**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings showing framing connection details, fasteners, connections and dimensions.

**1.4 PRODUCT DELIVERY, STORAGE AND HANDLING:**

- A. Protect lumber and other products from dampness both during and after delivery at site.
- B. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- C. Stack plywood and other board products so as to prevent warping.
- D. Locate stacks on well drained areas, supported at least 150 mm (6 inches) above grade and cover with well ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

**1.5 APPLICABLE PUBLICATIONS:**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Forest and Paper Association (AFPA):  
National Design Specification for Wood Construction  
NDS-05.....Conventional Wood Frame Construction
- C. American Society of Mechanical Engineers (ASME):  
B18.6.1-81 (R97).....Wood Screws
- D. American Plywood Association (APA):  
E30-03.....Engineered Wood Construction Guide
- E. American Society for Testing And Materials (ASTM):  
A653/A653M-07.....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process

- D143-94(R2004).....Small Clear Specimens of Timber, Method of  
Testing
- D1760-01.....Pressure Treatment of Timber Products
- D3498-03.....Adhesives for Field-Gluing Plywood to Lumber  
Framing for Floor Systems
- F844-07.....Washers, Steel, Plan (Flat) Unhardened for  
General Use
- F1667-05.....Nails, Spikes, and Staples
- F. Federal Specifications (Fed. Spec.):
- MM-L-736C.....Lumber; Hardwood
- G. Commercial Item Description (CID):
- A-A-55615.....Shield, Expansion (Wood Screw and Lag Bolt Self  
Threading Anchors)
- H. Military Specification (Mil. Spec.):
- MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated
- I. Truss Plate Institute (TPI):
- TPI-85.....Metal Plate Connected Wood Trusses
- J. U.S. Department of Commerce Product Standard (PS)
- PS 1-95.....Construction and Industrial Plywood
- PS 20-05.....American Softwood Lumber Standard

## **PART 2 - PRODUCTS**

### **2.1 LUMBER:**

- A. Unless otherwise specified, each piece of lumber bear grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced.
1. Identifying marks in accordance with rule or standard under which material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
  2. Inspection agency for lumber approved by the Board of Review, American Lumber Standards Committee, to grade species used.
- B. Structural Members: Species and grade as listed in the AFPA, National Design Specification for Wood Construction having design stresses as shown.
- C. Lumber Other Than Structural:
1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.
  2. Framing lumber: Minimum extreme fiber stress in bending of 1100.

3. Furring, blocking, nailers and similar items 100 mm (4 inches) and narrower Standard Grade; and, members 150 mm (6 inches) and wider, Number 2 Grade.
4. Board Sub-flooring: Shiplap edge, 25 mm (1 inch) thick, not less than 200 mm (8 inches) wide.

D. Sizes:

1. Conforming to Prod. Std., PS20.
2. Size references are nominal sizes, unless otherwise specified, actual sizes within manufacturing tolerances allowed by standard under which produced.

E. Moisture Content:

1. At time of delivery and maintained at the site.
2. Boards and lumber 50 mm (2 inches) and less in thickness: 19 percent or less.
3. Lumber over 50 mm (2 inches) thick: 25 percent or less.

F. Fire Retardant Treatment:

1. Mil Spec. MIL-L-19140 with piece of treated material bearing identification of testing agency and showing performance rating.
2. Treatment and performance inspection, by an independent and qualified testing agency that establishes performance ratings.

G. Preservative Treatment:

1. Do not treat Heart Redwood and Western Red Cedar.
2. Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 600 mm (24 inches) from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.
3. Treat other members specified as preservative treated (PT).
4. Preservative treat by the pressure method complying with ASTM D1760, except any process involving the use of Chromated Copper arsenate (CCA) for pressure treating wood is not permitted.

## 2.2 PLYWOOD

- A. Comply with Prod. Std., PS 1.
- B. Bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.
- C. Sheathing:
  1. APA rated Exposure 1 or Exterior; panel grade CD or better.

## 2. Roof sheathing:

- a. Minimum 9 mm (11/32 inch) thick with span rating 24/0 or 12 mm (15/32 inch) thick with span rating for supports 400 mm (16 inches) on center unless specified otherwise.
- b. Minimum 15 mm (19/32 inch) thick or span rating of 40/20 or 18 mm (23/32 inch) thick or span rating of 48/24 for supports 600 mm (24 inches) on center.

## 2.3 STRUCTURAL-USE PANELS

- A. Comply with APA.
- B. Bearing the mark of a recognized association or independent agency that maintains continuing control over quality of panel which identifies compliance by end use, Span Rating, and exposure durability classification.
- C. Wall and Roof Sheathing:
  1. APA Rated sheathing panels, durability classification of Exposure 1 or Exterior Span Rating of 16/0 or greater for supports 400 mm (16 inches) on center and 24/0 or greater for supports 600 mm (24 inches) on center.

## 2.4 ROUGH HARDWARE AND ADHESIVES:

- A. Anchor Bolts:
  1. ASME B18.2.1 and ANSI B18.2.2 galvanized, 13 mm (1/2 inch) unless shown otherwise.
  2. Extend at least 200 mm (8 inches) into masonry or concrete with ends bent 50 mm (2 inches).
- B. Miscellaneous Bolts: Expansion Bolts: C1D, A-A-55615; lag bolt, long enough to extend at least 65 mm (2-1/2 inches) into masonry or concrete. Use 13 mm (1/2 inch) bolt unless shown otherwise.
- C. Washers
  1. ASTM F844.
  2. Use zinc or cadmium coated steel or cast iron for washers exposed to weather.
- D. Screws:
  1. Wood to Wood: ANSI B18.6.1 or ASTM C1002.
  2. Wood to Steel: ASTM C954, or ASTM C1002.
- E. Nails:
  1. Size and type best suited for purpose unless noted otherwise. Use aluminum-alloy nails, plated nails, or zinc-coated nails, for nailing wood work exposed to weather and on roof blocking.
  2. ASTM F1667:
    - a. Common: Type I, Style 10.

- b. Concrete: Type I, Style 11.
  - c. Barbed: Type I, Style 26.
  - d. Underlayment: Type I, Style 25.
  - e. Masonry: Type I, Style 27.
  - f. Use special nails designed for use with ties, strap anchors, framing connectors, joists hangers, and similar items. Nails not less than 32 mm (1-1/4 inches) long, 8d and deformed or annular
- F. Adhesives:
- 1. For field-gluing plywood to lumber framing floor or roof systems: ASTM D3498.
  - 2. For structural laminated Wood: ASTM D2559.

## **2.5: FIBERGLASS ARCHITECTURAL STRUCTURAL COLUMNS:**

- A. Conform to the need of replacing existing wood column with comparable fiberglass columns of the tapered Tuscan Style.
- B. Structural requirements are to equal weight bearing capacity of existing wood columns.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF FRAMING AND MISCELLANEOUS MEMBERS:**

- A. Conform to applicable requirements of the following:
  - 1. AFPA National Design Specification for Wood Construction for timber connectors.
  - 2. AITC Timber Construction Manual for heavy timber construction.
  - 3. AFPA WCD-number 1, Manual for House Framing for nailing and framing unless specified otherwise.
  - 4. APA for installation of plywood or structural use panels.
- B. Fasteners:
  - 1. Nails.
    - a. Nail in accordance with the Recommended Nailing Schedule as specified in AFPA Manual for House Framing where detailed nailing requirements are not specified in nailing schedule. Select nail size and nail spacing sufficient to develop adequate strength for the connection without splitting the members.
    - b. Use special nails with framing connectors.
    - c. For sheathing and subflooring, select length of nails sufficient to extend 25 mm (1 inch) into supports.
    - d. Use eight penny or larger nails for nailing through 25 mm (1 inch) thick lumber and for toe nailing 50 mm (2 inch) thick lumber.
    - e. Use 16 penny or larger nails for nailing through 50 mm (2 inch) thick lumber.

- f. Select the size and number of nails in accordance with the Nailing Schedule except for special nails with framing anchors.
- g. Nailing Schedule; Using Common Nails:
  - 1) Joist bearing on sill or girder, toe nail three-8d or framing anchor
  - 2) Bridging to joist, toe nail each end two-8d
  - 3) Ledger strip to beam or girder three-16d under each joint.
  - 4) Subflooring or Sheathing:
    - a) 150 mm (6 inch) wide or less to each joist face nail two-8d.
    - b) Subflooring, more than 150 mm (6 inches) wide, to each stud or joint, face nail three-8d.
    - c) Plywood or structural use panel to each stud or joist face nail 8d, at supported edges 150 mm (6 inches) on center and at intermediate supports 250 mm (10 inches) on center. When gluing plywood to joint framing increase nail spacing to 300 mm (12 inches) at supported edges and 500 mm (20 inches) o.c. at intermediate supports.
  - 5) Sole plate to joist or blocking, through sub floor face nail 20d nails, 400 mm (16 inches) on center.
  - 6) Top plate to stud, end nail two-16d.
  - 7) Stud to sole plate, toe nail or framing anchor. Four-8d
  - 8) Doubled studs, face nail 16d at 600 mm (24 inches) on center.
  - 9) Built-up corner studs 16d at 600 mm (24 inches) (24 inches) on center.
  - 10) Doubled top plates, face nails 16d at 400 mm (16 inches) on center.
  - 11) Top plates, laps, and intersections, face nail two-16d.
  - 12) Continuous header, two pieces 16d at 400 mm (16 inches) on center along each edge.
  - 13) Ceiling joists to plate, toenail three-8d or framing anchor.
  - 14) Continuous header to stud, four 16d.
  - 15) Ceiling joists, laps over partitions, face nail three-16d or framing anchor.
  - 16) Ceiling joists, to parallel rafters, face nail three-16d.
  - 17) Rafter to plate, toe nail three-8d. or framing anchor. Brace 25 mm (1 inch) thick board to each stud and plate, face nail three-8d.
  - 18) Built-up girders and beams 20d at 800 mm (32 inches) on center along each edge.



2. Power actuated drive pins may be used where practical to anchor to solid masonry, concrete, or steel.
3. Do not anchor to wood plugs or nailing blocks in masonry or concrete. Use metal plugs, inserts or similar fastening.
4. Screws to Join Wood:
  - a. Where shown or option to nails.
  - b. ASTM C1002, sized to provide not less than 25 mm (1 inch) penetration into anchorage member.
  - c. Spaced same as nails.
- C. Set sills or plates level in full bed of mortar on masonry or concrete walls.
  1. Space anchor bolts 1200 mm (4 feet) on centers between ends and within 150 mm (6 inches) of end. Stagger bolts from side to side on plates over 175 mm (7 inches) in width.
  2. Use shims of slate, tile or similar approved material to level wood members resting on concrete or masonry. Do not use wood shims or wedges.
  3. Closely fit, and set to required lines.
- D. Cut notch, or bore in accordance with NFPA Manual for House-Framing for passage of ducts wires, bolts, pipes, conduits and to accommodate other work. Repair or replace miscut, misfit or damaged work.
- E. Blocking Nailers, and Furring:
  1. Install furring, blocking, nailers, and grounds where shown.
  2. Use longest lengths practicable.
  3. Use fire retardant treated wood blocking where shown at openings and where shown or specified.
  4. Layers of Blocking or Plates:
    - a. Stagger end joints between upper and lower pieces.
    - b. Nail at ends and not over 600 mm (24 inches) between ends.
    - c. Stagger nails from side to side of wood member over 125 mm (5 inches) in width.
- F. Roof Framing:
  1. Set rafters with crown edge up.
  2. Form a true plane at tops of rafters.
  3. Valley, Ridge, and Hip Members:
    - a. Size for depth of cut on rafters.
    - b. Straight and true intersections of roof planes.
    - c. Secure hip and valley rafters to wall plates by using framing connectors.

- d. Double valley rafters longer than the available lumber, with pieces lapped not less than 1200 mm (4 feet) and spiked together.
- e. Butt joint and scab hip rafters longer than the available lumber.
- 4. Spike to wall plate and to ceiling joists except when secured with framing connectors.
- 5. Frame openings in roof with headers and trimmer rafters. Double headers carrying more than one rafter unless shown otherwise.
- 6. Install 50 mm by 100 mm (2 inch by 4 inch) strut between roof rafters and ceiling joists at 1200 mm (4 feet) on center unless shown otherwise.

G. Framing of Dormers:

- 1. Frame as shown, with top edge of ridge beveled to pitch of roof header.
- 2. Set studs on doubled trimmer rafters.
- 3. Double studs at corners of dormers.
- 4. Double plate on studs and notch rafters over plate and bear at least 75 mm (3 inches) on plates.
- 5. Frame opening to receive window frame or louver frame.

H. Sheathing:

- 1. Use plywood or structural-use panels for sheathing.
- 2. Lay panels with joints staggered, with edge and ends 3 mm (1/8 inch) apart and nailed over bearings as specified.
- 3. Set nails not less than 9 mm (3/8 inch) from edges.
- 4. Install 50 mm by 100 mm (2 inch by 4 inch) blocking spiked between joists, rafters and studs to support edge or end joints of panels.
- 5. Match and align sheathing which is an extension of work in place to existing.

I. Fiberglass Architectural Structural Columns:

- 1. Remove existing wood columns and replace with fiberglass.
  - a. Construct support to secure structure current columns are supporting.
  - b. Remove column shaft, column capital, and column base.
  - c. Salvage the square metal base and remove all built-up paint down to bare metal.
  - d. Paint metal base per Section 099100.
  - e. Place metal base, column shaft, and column capital (new if original capital is not salvageable).
  - f. Paint all column items per Section 099100.

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**SECTION 07 31 13  
ASPHALT SHINGLES**

**SPEC WRITER NOTE:**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies organic felt and fiberglass asphalt shingles.

**1.2 RELATED WORK**

- A. Counterflashing and flashing of roof projections: Section 07 60 00, FLASHING AND SHEET METAL.

**1.3 SUMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Shingles, each type, color and texture.
- C. Manufacturer's Literature and Data:
  - 1. Shingles, each type
  - 2. Installation instructions

**1.4 DELIVERY AND STORAGE**

- A. Deliver materials in manufacturer's unopened bundles or containers with the manufacturer's brand and name clearly marked thereon.
- B. Shingle bundle wrapping shall bear the label of Underwriters Laboratories, Inc.
- C. Store shingles in accordance with manufacturer's printed instructions. Store roll goods on end in an upright position.
- D. Keep materials dry, covered completely and protected from the weather.

**1.5 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - D226-06.....Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
  - D1970-01.....Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
  - D2178-04.....Asphalt Glass Felt used in Roofing and Waterproofing

D3018-03.....Class A Asphalt Shingles Surfaced with Mineral  
Granules

D3462-07.....Asphalt, Shingles Made from Glass Felt and  
Surfaced with Mineral Granules

F1667-05.....Driven Fasteners: Nails, Spikes, and Staples

C. Underwriter's Laboratories Inc. (UL):

UL790-04.....Fire Tests of Roof Covering

## **PART 2 - PRODUCTS**

### **2.1 SHINGLES**

- A. Class A: (Fire resistive), per UL790. ASTM D3018, Type I and ASTM 3462, square butt for a maximum exposure of 125 mm (5 inches), headlap minimum 50 mm (2 inches), wind resistant, self sealing. Minimum weight: 10.3 Kg/sqm (210 lbs/100sft).

### **2.2 ROOFING NAILS**

- A. ASTM F1667; Type I, Style 20, galvanized steel, deformed shanks, with heads 9.5 mm to 11 mm (3/8-inch to 7/16-inch) diameter.
- B. Use nails 32 mm (1-1/4 inches) long for shingles and 19 mm (3/4-inch long) for felt.

### **2.3 ROOFING FELT**

- A. Fiberglass Felt: ASTM D2178.
- B. Organic Felt: ASTM D226, TYPE 1.
- C. Modified bitumen; ASTM D 1970.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Roof surfaces shall be sound, reasonably smooth and free from defects which would interfere with roofing installation.
- B. Roof accessories, vent pipes and other projections through the roof must be in place and roof flashing installed or ready for installation before laying shingles.

### **3.2 LAYING**

- A. Lay felt under shingles over entire roof.
- B. Install asphalt felt underlayment, lapping a minimum of 100 mm (four inches) at ends, 50 mm (2 inches) at head and 300 mm (12 inches) over ridge. Extend felt 13 mm (1/2-inch) beyond edges of roof. Nail felt 125 mm (five inches) on centers along laps.
- C. At eaves, install strip of 41 Kg (90 pound) mineral surface roll roofing not less than 460 mm (18 inches) wide and starter course of

roof shingles with tabs reversed. Both shall overhang lower edge of roof 13 mm (1/2-inch).

- D. Lay shingles with maximum exposure of 125 mm (5 inches). Nail shingles in accordance with manufacturer's published directions.

### **3.3 METAL DRIP EDGES**

- A. At rakes, install metal drip edges made of stainless steel specified under Section 07 60 00, FLASHING AND SHEET METAL. Apply the metal drip edge directly over the underlayment along the rakes.
- B. Secure metal drip edges with compatible nails spaced not more than 250 mm (10 inches) on center along the inner edges.

### **3.4 FLASHINGS**

Provide metal flashings specified under Section 07 60 00, FLASHING AND SHEET METAL at the intersections of roofs, adjoining walls, or projections through the deck such as chimneys and vent stacks. Give careful attention to the installation of all flashings.

### **3.5 RIDGE**

- A. Bend each shingle lengthwise down center to provide equal exposure on each side of ridge. Beginning at one end of ridge, apply shingles with maximum 125 mm (5 inches) exposure.
- B. Secure each shingle with one nail on each side, 210 mm (8-1/2 inches) back from exposed end and one inch up from edge.

### **3.6 VALLEY FLASHING**

- A. Install metal valley flashing shown and as specified under Section 07 60 00, FLASHING AND SHEET METAL.
- B. Secure valley flashing in accordance with shingle manufacturer's printed instructions.
- C. Expose flashing in open portion of valley a minimum of 125 mm (5 inches) and lap the shingles over the flashing a minimum of 125 mm (5 inches).

### **3.7 ROOF ACCESSORIES**

- a. Lap shingles over the accessories flashing a minimum of 125 mm (5 inches).

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**SECTION 07 53 30**  
**FLEXIBLE SHEET ROOFING SYSTEM**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

A. Scope: Contractor shall furnish and install a 40 mil single-ply membrane roofing system that is fabricated of a weft inserted low-shrink, anti-wicking polyester fabric and has a thermoplastic coating of co-polymer alloy (CPA) material laminated to both sides equal to system-manufactured by Duro-Last Inc., Firestone, Tremco or Johns-Mansville.

B. Application: This specially formulated thermoplastic coated membrane classified as CPA in this section consists of a weft inserted polyester scrim (18x14, 100 denier), laminated on both sides with a plasticized blend of vinyl and acrylic polymers which allows installation through the use of continuous 3-1/4 inch securing tabs, factory dielectrically welded every 60 inches on center (prefabricated). Mechanical fasteners and distribution plates are used through the 3-1/4 inch tab eliminating the need for ballast.

C. Physical Properties: The single-ply membrane shall allow installation at any time of the year and shall provide: resistance to ultra-violet rays, superb tear and puncture strength, the ability to be impervious to most caustic chemicals and acids, and show no ill effects to heat or cold.

**1.2 QUALITY ASSURANCE**

A. Requirements of Regulatory Agencies: Membrane and related items shall be classified by Underwriters Laboratories, Inc. as a Class A Sheathing Material for use in construction of Class A coverings and amendments.

B. Roofing Contractor's Qualifications:

1. Contractor shall submit work history data showing having had successful warranted installation experience of the system specified, and of being authorized by the roofing system manufacturer to install the specified manufacturer's materials.

2. The contractor shall use adequate amounts of such qualified workmen who are thoroughly trained in the crafts and techniques required to properly install the type of roofing

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system proposed for use and other work required to complete the work specified and within the specified time.

3. The contractor shall have an experienced, pre-qualified, thoroughly trained superintendent having experience installing the roof system specified, who is familiar with the requirements of this project and on-the-job at all times when roofing system work is in progress. Training for superintendent shall include certification of completion of manufacturer's in-house training course and on-site training.

C. Requirements of the Membrane Manufacturer:

1. All components of the roofing system shall conform to the current published specifications and details of the membrane manufacturer.

2. There shall be no deviation made from this specification without prior written approval of the membrane manufacturer and Contracting Officer or his/her duly appointed representative.

3. Manufacturer may be asked to submit an audited document listing the long-term warranty liability commitment of manufacturer.

4. Provide primary flexible sheet factory prefabricated roofing system from a single manufacturer, which has successfully manufactured raw materials into specified products for not less than five (5) years. No secondary private labels are acceptable. Provide secondary materials, such as but limited to insulation, gypsum board, vapor barriers, etc. as recommended and approved by manufacturer of primary materials.

D. Field Inspection:

The contractor shall arrange for the membrane manufacturer to provide inspection of the roofing system installation. Upon completion of the installation, an inspection shall be made by a Quality Assurance Specialist of the membrane manufacturer at no extra charge to the Government or contractor. The inspection is to ascertain that the visible elements of the roofing system have been installed in accordance with the membrane manufacturer's published specifications and details.

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E. Defective Work:

Should the roofing system not be approved by the manufacturer's technician, correcting the defective work shall be done by the contractor until the roofing system satisfactorily meets all the specifications and manufacturer's requirements. Corrective work will be done with no additional expense to the Government.

F. Guarantees:

1. The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the date of acceptance by the membrane manufacturer. Should any leaks covered under the warranty occur during this period, corrective action will be taken by the contractor to repair the roof to the satisfaction of the owner and membrane manufacturer. All corrective work will be done at no cost to the Government.

2. The warranty shall be full roofing system repair and/or replacement fifteen (15) year warranty covering materials and labor. The warranty shall be a no-dollar limit type and provide for completion of repairs or total replacement of the "roofing system" at the then current material and labor prices throughout the life of the warranty. Warranty shall contain no exclusions for ponded water, biological growth or consequential damages. The manufacturer shall provide Certification of financial stability enough to insure the value of their warranty in order to protect the interests of the Government.

3. Warranty shall be issued by the original manufacturer of the roofing membrane. No private label products shall be accepted.

G. Weight Requirements:

The total weight of the installed roofing system including all accessories, i.e., screws, plates, 2-way breather vents, etc., shall not exceed Manufacturers' recommendations.

H. Mechanical Attachment:

1. Membrane fastening for buildings with maximum height of 40 feet (12m), securement tabs shall be spaced maximum of 60 inches on center and the first tab on the edge of the sheet parallel to the roof edge shall be a maximum 36 inches

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(.75m). Fastening for buildings that are greater than 40 feet, consult the membrane manufacturer for proper fastening.

2. Deck membrane shall be fastened with approved fasteners, 18 inches on center along bottom of all parapet walls, elevation changes and perimeter edges.

3. Deck membrane shall be fastened around cut-outs with approved fasteners 12 inches on center or a minimum of 1 per round penetration having a diameter of not more than 6 inches.

**1.3 SUBMITTALS**

A. Required Submittals to the Contracting Officer:

1. Written confirmation from membrane manufacturer, that the installer is an approved applicator.

2. Manufacturer's literature on the following items:

- a. Roofing membrane with dielectrically welded seams
- b. Pre-manufactured pipe flashing
- c. Urethane sealant
- d. PVC weldable drip-edge, gravel/water stop, termination bar
- e. Breathable 2-way vents
- f. Self-leveling pourable sealer
- g. Maintenance & repair instructions

3. 6" long samples of the following:

- a. Sample of membrane
- b. Mechanical fasteners
- c. Lap splice sample (factory & field)

4. Pullout Tests: Perform pullout tests and submit engineering results of random location pull tests. Submit pull test results with drawing indicating the locations of the tests. Engineering results shall demonstrate the manufacturer's reasons for selection of anchorage, frequency and the seaming patterns.

5. Membrane Data: Advise Contracting Officer in writing of any recommendations made or revisions required by manufacturer to particular job conditions. In the absence of any comments, the Owner and/or his representative shall

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assume the manufacturer's most recently published specifications shall be followed.

6. Samples: Submit samples to the Contracting Officer for approval prior to ordering and delivery so as to not delay progress and completion of the work or final inspection.

7. Submit shop drawings for approval.

8. Shop drawings shall include: outline of the roof and roof



size, perimeter and penetration details, special details and section layout, location of factory dielectric and field welds, accessory and material list and flashing requirements and details.

#### **1.4 PRODUCT DELIVERY, STORAGE AND HANDLING PROCEDURES:**

- A. Deliver materials in original unopened packaging.
- B. Containers labeled with manufacturer's name, brand name, and identification of various items.
- C. Store materials in a dry area and protect from inclement weather. Damaged materials shall be replaced at contractor's expense.
- D. Do not allow roofing membrane to come in contact or be exposed to any materials that would be detrimental to or cause degradation of the roofing membrane.

#### **1.5 JOB CONDITIONS**

##### **A. Environmental Conditions:**

- 1. In making field heat welds, make sure all welding surfaces are clean and free of moisture or foreign items.
- 2. Weather precautions: Proceed with roofing work when existing and forecasted weather conditions permit work performance in compliance with manufacturer's recommendations.
- 3. Roofing system shall not be applied when the surrounding air, surface temperature, relative humidity or wind velocity is not within the range acceptable under the manufacturer's recommendations.

##### **B. Protection:**

- 1. Prior to starting work, protect all work in an approved manner including all paving and faces of building walls. Provide special protection of the face of the building wall adjacent to hoist.  
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- 2. Complete the whole roofing section or any portion of the roof in a single day to avoid exposure to rain, dew, or moisture of any kind. If rain threatens during the day or in an emergency, protect the unfinished exposed roofing components and provide temporary water cut-offs around exposed edges and incomplete flashing areas.
- 3. All hoisting equipment shall bear on solid pad blocking. If on the roof surface, pad shall be large enough to evenly distribute the load to avoid crushing insulation and roof system. Pad shall consist of two separate layers of material to eliminate vibration and movement to directly affect the roofing membrane. Pad shall be of sufficient size to accommodate work tools and weights used around hoisting operations.
- 4. Repairs: Clean or repair surfaces damaged or soiled by operations under this contract to the satisfaction of the Owner or Owner's representative without additional cost to the Owner. These would include, but not limited to, windows, doors, floors, walls, stairs, elevators, steps, walks, curbs, lawn areas, or other roofs.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

#### **A. Roof Membrane:**

1. A special formulated, permanent, thermoplastic alloy, bonded to a high tenacity, low shrinkage weft inserted polyester fabric with resistance to ultraviolet rays, microorganisms and impervious to most caustic chemicals.

2. Membrane shall be factory dielectrically welded, prefabricated sheets up to 2,500 square feet or as determined by job condition.

3. The new roofing shall be a prefabricated mechanically fastened installation of single-ply reinforced co-polymer alloy (CPA) membrane, 40 mils thick. Manufacturer's physical specifications and minimum performance criteria shall be in accordance with the following schedule. (If conditions require, FM requirements shall be followed).

#### **MINIMUM PERFORMANCE AND PHYSICAL SPECIFICATION REQUIREMENTS FOR MEMBRANE:**

##### **Physical Property Test Method Used Specification Requirements**

Thickness Min. ASTM D-751 .040 inch thick (40 mils)

Tear Strength, Tongue

Method

ASTM D-751 130 x 110 lbf

8" x 8" sample .

Breaking Strength ASTM D-751 435 x 350 lbf.

EMMAQUA Exposure ASTM E938, Desert Sun >6.9 million Langley's

Elongation ASTM D-751 35%

Dimensional Stability ASTM D-1204 <.0.1%

Low Temperature

Flexibility

ASTM D-2136, 1/8" mandrel no cracks, -40 degrees F

Dynamic Impact

(Puncturing)

Fed. Std. 1013, Method B 350 lbs.

Water Vapor Transmission ASTM E96 WVT, Procedure B,

Method A

>.25 US Perms, 0.086

g/hr//sqm

Accelerated Weathering Carbon Arc, 6000 Hours No cracks, crazing, or blistering

Accelerated weathering ASTM G-5388, 2000 Hrs. No cracks, crazing, or blistering

UVB-313 Lamp @ 80 degrees C

Factory Mutual Research ASTM E-108 Class 1 I-60 & I-90

Underwriter's Laboratory UL-790 Class A, B, or C

Scrim: Weft Inserted

Polyester

18 x 14, 1000 denier

#### **B. Manufacturer:**

1. Manufacturers requesting approval must submit Acceptable information certifying that they are the direct manufacturer from raw material into specified membrane, factory prefabricate the membrane into roofing panels, and meet the performance and financial criteria required.

2. Fire resistance of CPA roofing system shall meet UL Class A. All packaging of membrane and insulation shall bear UL Class A label.
3. Membrane color shall be white.

## **2.2 ACCESSORIES**

### **A. Membrane-Related Materials:**

1. All membrane components, including pipe and curb flashings must be factory prefabricated from the same fabric reinforced material used for the deck membrane.

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2. Termination Sealant: Compatible with materials to which membrane is to be bonded, conforming to Federal Specifications TT-598 and TT-S-00230C as furnished by the membrane manufacturer.

3. Distribution Plates: Factory Mutual approved stress distribution plates formed from a minimum 24 gauge G-90 C.Q. steel with a galvalume coating for insulation attachment, or 20 gauge G-90-C.Q. steel with galvalume coating or high strength polyblend for membrane attachment.

4. Water Cut-Off Mastic: Compatible with materials with which it is used and furnished by the membrane manufacturer.

5. Pitch Pocket Sealant: Shall be a single component, self-leveling silicone sealant furnished by the membrane manufacturer.

6. Fasteners: Compatible with roof deck as furnished by the membrane manufacturer. Fasteners shall be furnished by the membrane manufacturer and be Duro-Guard coated #14 and must pass 30 cycles in the Kesternich Cabinet, DIN #50018-2 Liter. The FM approved fastener is inserted through the hole in the distribution plate and properly secured to the roof deck.

7. Breather Vents: Two-way vents with factory attached skirt shall be installed at a density of one per 1000 square feet of roof deck area and in accordance with manufacturer's specifications. Vents shall be furnished by membrane manufacturer.

8. Terminations/Edge Details: Shall be manufactured from rigid exterior vinyl with slotted holes for securement and furnished by membrane manufacturer. All other terminations/edge details must be approved and warranted by the membrane manufacturer.

9. Walkway Pads: Provide membrane manufacturer's walkway pads made from the roofing membrane material installed in strict compliance with manufacturer's recommendations. Pads shall be non-skid, maintenance free, and restrained to remain in position. Pad installation minimum configuration is shown on the drawings. Where not shown provide walkway pads where they existed prior to installation of new roofing. Walkway pads shall be a contrasting color to the roof membrane. Provide gray color unless otherwise indicated.

### **B. Nailers & Blocking:**

1. Where required, nailers and wood blocking shall be S4S 1500 fc construction grade Douglas fir conforming to standard 15 grading and dressing rules of the West Coast Lumber

Inspection Bureau, or other species of wood of equal strength. All lumber shall be grade marked at the mill.

2. All lumber shall be pressure treated by a method approved by the roofing membrane manufacturer: "Wolmanized" or "Osmose K-33" are acceptable.

3. Nailers shall be securely anchored to the deck to resist the minimum force required in Loss Prevention Data Sheet I-49, "Perimeter Flashing," Factory Mutual Systems, June, 1985. The thickness of the nailer shall be such that the top of the nailer is flush with the surface to which the membrane is to be applied.

C. Other Accessories:

Primary accessories shall be factory prefabricated or manufactured by or under the direction of roofing membrane manufacturer. All other shall be furnished and approved by the membrane manufacturer.

### **PART 3 - EXECUTION**

#### **3.1 SUBSTRATE INSPECTION:**

A. Inspect all surfaces to receive roofing for any condition that will adversely affect execution, performance, or quality of work.

B. All roof surfaces and all sloped surfaces to drains and outlets shall be checked and approved by the roofing contractor prior to the start of the roofing work.

C. Install roofing material only under satisfactory conditions as specified by the membrane manufacturer.

D. Scheduling: Schedule the roofing work in areas and sections in such a manner as to keep the new and existing insulation, roofing materials, and building absolutely dry and watertight during new roofing work.

E. Any damage sustained to the facility or contents as a result of improper scheduling of roofing work shall be the contractor's responsibility.

#### **3.2 GENERAL REQUIREMENTS**

A. Precautions:

1. Do not lay out or expose any insulation on the deck that cannot be covered by membrane on the same day.

2. In making all field heat welds, make sure all edges are clean and free of tar, mastic or other foreign items.

3. Do not expose membrane and accessories to a constant temperature in excess of 110 degrees Fahrenheit.

4. Sealants and adhesives should be applied according to the manufacturer's specifications and all containers shall be disposed of properly.

5. Start securing the membrane at the highest point and work towards the drains.

B. Protection of Roofing Surfaces:

Storing, wheeling, or trucking directly on roof insulation or membrane surface is not recommended. Smooth, clean plywood or plank walkways, runways and platforms shall be provided as necessary.

### **3.3 MEMBRANE INSTALLATION**

#### **A. Laying Out:**

Select the proper factory marked rolled sheet of roofing membrane for an outside corner or high point. Layout new roof membrane per manufacturers' requirements.

#### **B. Field Welding:**

All field heat seams of the roofing materials shall be 1-1/2 inch wide minimum and be made with a hot air welder. The hot air welder shall be in such a position so that the outside edge and both pieces of material will receive an equal amount of heat and all of which will be closely followed by a roller specially designed for this purpose. Make a hands and knees inspection of all field welds with a probe.

#### **C. Perimeter Nailing:**

The membrane shall be mechanically fastened at all roof perimeters, parapets, curbs, wall, penetrations, etc., in strict accordance with the Contract Documents and roofing manufacturer's specifications and details.

#### **D. Cut-Outs:**

Make cut-outs in roofing membrane for protrusions through the roof. Some situations might require that the deck membrane be slit to the section edge for fitting around protrusions. Fasten around cut-outs with approved fasteners, 12 inches on center or a minimum of one per side. The skirts on factory prefabricated accessories when welded to deck will cover these.

#### **E. Stacks:**

After membrane has been attached, select proper size of Pre-manufactured round stack for roof vents and pipes. Drop stack flashing over the pipe, lay flat to the roof, and heat weld the skirt to the deck membrane. Using appropriate hand tool, tighten stainless steel band (or stainless steel screw clamp) around top of stack flashing to prevent water penetration, and cut off excess. Using factory-approved sealant, liberally seal the top of the stack flashing and steel band.

#### **F. Custom Curbs/Pitch Pockets:**

After securing cut out as stated, heat weld the bottom of the skirt to the deck membrane. If the square or rectangle penetration has a removable top, i.e., roof hatch, skylight, etc., remove the unit and fold the custom curb flashing over the top, secure, then replace unit. If top is not removable, secure the top of the custom curb flashing with termination bar and seal with factory approved sealant. Use this same procedure on existing or new pitch pockets.

#### **G. Breather Vents:**

Install a two-way breather vent for every 1,000 square feet of deck area. Factory prefabricated vents with a skirt made from roofing membrane shall be used. For new construction or reroof after tear-off, a 2-1/2 inch diameter hole cut down through the roofing membrane. Heat weld skirt to the deck membrane so as to position two-way vent directly over the hole. Careful placement of the breather vents must be observed.

#### **H. Parapet Walls:**

Fasten bottom tab of prefabricated parapet wall flashing with approved fasteners. Fastening sequence will secure both bottom of parapet and edge of deck membrane. Base skirt should extend

approximately 6 inches onto the roof. Heat weld skirt to deck membrane. On all termination bar applications, start fastening at one end and proceed to the other. If parapet wall coping is to be covered, extend covering down 2 inches on exterior face of coping and terminate with termination bar, or approved method.

**I. Scuppers:**

Use of prefabricated custom roof scuppers is required. Terminate outside of scupper lining with termination bar as specified and field weld inside skirting to membrane. Apply sealant to underside of lining and top of termination bar.

**J. Roof Drains:**

1. Secure cut out made in deck membrane with four (4) equally spaced fasteners and distribution plates. If drain is flush with deck, use a prefabricated drain boot. Apply factory approved sealant all around drain approximately 12 inches under deck membrane and install the expanding snap rings.

2. If the roof drain has a secure clamping ring and strainer, unbolt and remove. Clean and apply factory-approved sealant under deck membrane around drain for use as a water block seal after cutting properly sized hole. Secure clamping ring and strainer to drain base over deck membrane. Seal with factory approved sealant between clamping ring and roofing membrane.

**3.4 CLEAN-UP:**

Upon completion of the membrane installation, the contractor shall remove all foreign matter, rubbish and scrap material from the roof. The membrane surface shall be cleaned using cleaners recommended by the membrane manufacturer.

**3.5 INSPECTION & WARRANTY:**

A. Inspection: Roofing manufacturer's technical representative, Contracting Officer or his representative and roofing contractor shall conduct all required inspections. Submit all required drawings, details, and completed questionnaires to the roofing manufacturer before obtaining the specified warranty. After an authorized Technical Representative has inspected the roof for determining acceptability for warranty issuance, any deficiencies on the final inspection report shall be corrected by the contractor/applicator and made ready for re-inspection within five (5) working days.

B. Warranty: Upon receipt of required materials, certifying inspection, and acceptance of the roofing system by the roofing manufacturer, the warranty shall be duly executed and issued to the Central Arkansas Veterans Healthcare System.

**3.6 CONSTRUCTION DAMAGE:**

Upon completion of work, repair or replace as required, all building materials damaged as a result of the roofing operations. Match existing materials as close as possible. Contracting Officer or his/her representative shall be involved in the selection of matching materials.

-----END-----

**SECTION 07 60 00  
FLASHING AND SHEET METAL**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Formed sheet metal work for flashing IS specified in this section.

**1.2 RELATED WORK**

- A. Sealant compound and installation: Section 07 92 00, JOINT SEALANTS.
- B. Section 07 72 00, ROOF ACCESSORIES.
- C. Paint materials and application: Section 09 91 00, PAINTING.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
  - Flashings
  - Gutter and Conductors
- C. Certificates: Stating that aluminum has been given - specified finish or thickness of anodizing.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below for 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):
  - A653/A653M-06.....Steel Sheet Zinc-Coated (Galvanized) or Zinc Alloy Coated (Galvanized) by the Hot- Dip Process
  - B32-04.....Solder Metal
  - B209-06.....Aluminum and Aluminum-Alloy Sheet and Plate
  - B370-03.....Copper Sheet and Strip for Building Construction
  - D4586-07.....Asphalt Roof Cement, Asbestos Free
- C. National Association of Architectural Metal Manufacturers (NAAMM):
  - AMP 500 Series.....Metal Finishes Manual
- D. Federal Specification (Fed. Spec):
  - A-A-1925A.....Shield, Expansion; (Nail Anchors)
  - UU-B-790A.....Building Paper, Vegetable Fiber
- E. International Building Code (IBC):
  - 2003 Edition

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Solder: ASTM B32; flux type and alloy composition as required for use with metals to be soldered.
- B. Stainless Steel: ASTM A167, Type 302B, dead soft temper.
- C. Copper ASTM B370, cold-rolled temper.
- D. Aluminum Sheet: ASTM B209, alloy 3003-H14. Except alloy used for color anodized aluminum shall be as required to produce specified color. Alloy required to produce specified color shall have the same structural properties as alloy 3003-H14.
- E. Galvanized Sheet: ASTM, A653.
- F. Rosin Paper: Fed-Spec. UU-B-790, Type I, Grade D, Style 1b, Rosin-sized sheathing paper, weighing approximately 3 Kg/10 m<sup>2</sup>( 6 lbs/100 sf).
- G. Fasteners:
  - 1. Use copper, copper alloy, bronze, brass, or stainless steel for copper and copper clad stainless steel, and stainless steel for stainless steel and aluminum alloy. Use galvanized steel or stainless steel for galvanized steel.
  - 2. Nails:
    - a. Minimum diameter for copper nails: 3 mm (0.109 inch).
    - b. Minimum diameter for aluminum nails 3 mm (0.105 inch).
    - c. Minimum diameter for stainless steel nails: 2 mm (0.095 inch) and annular threaded.
    - d. Length to provide not less than 22 mm (7/8 inch) penetration into anchorage.
  - 3. Rivets: Not less than 3 mm (1/8 inch)diameter.
  - 4. Expansion Shields: Fed Spec A-A-1925A.
- H. Sealant: As specified in Section 07 92 00, JOINT SEALANTS for exterior locations.
- I. Roof Cement: ASTM D4586.

### **2.2 SHEET METAL THICKNESS**

- A. Except as otherwise shown or specified use thickness or weight of sheet metal as follows:
- B. Concealed Locations (Built into Construction):
  - 1. Copper: 30g (10 oz) minimum 0.33 mm (0.013 inch thick).
  - 2. Stainless steel: 0.25 mm (0.010 inch) thick.
  - 3. Copper clad stainless steel: 0.25 mm (0.010 inch) thick.
  - 4. Galvanized steel: 0.5 mm (0.021 inch) thick.



C. Exposed Locations:

1. Copper: 0.4 Kg (16 oz).
2. Stainless steel: 0.4 mm (0.015 inch).
3. Copper clad stainless steel: 0.4 mm (0.015 inch).

D. Thickness of aluminum or galvanized steel is specified with each item.

## **2.3 FABRICATION, GENERAL**

A. Jointing:

1. In general, copper, stainless steel and copper clad stainless steel joints, except expansion and contraction joints, shall be locked and soldered.
2. Jointing of copper over 0.5 Kg (20 oz) weight or stainless steel over 0.45 mm (0.018 inch) thick shall be done by lapping, riveting and soldering.
3. Joints shall conform to following requirements:
  - a. Flat-lock joints shall finish not less than 19 mm (3/4 inch) wide.
  - b. Lap joints subject to stress shall finish not less than 25 mm (one inch) wide and shall be soldered and riveted.
  - c. Unsoldered lap joints shall finish not less than 100 mm (4 inches) wide.
4. Flat and lap joints shall be made in direction of flow.
5. Soldering:
  - a. Pre tin both mating surfaces with solder for a width not less than 38 mm (1 1/2 inches) of uncoated copper, stainless steel, and copper clad stainless steel.
  - b. Wire brush to produce a bright surface before soldering lead coated copper.
  - c. Treat in accordance with metal producers recommendations other sheet metal required to be soldered.
  - d. Completely remove acid and flux after soldering is completed.

## **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.
- C. Finish exposed metal surfaces as follows, unless specified otherwise:
  1. Copper: Mill finish.
  2. Stainless Steel: Finish No. 2B or 2D.

## 3. Aluminum:

- a. Clear Finish: AA-C22A41 medium matte, clear anodic coating, Class 1 Architectural, 18 mm (0.7 mils) thick.
- b. Colored Finish: AA-C22A42 (anodized) or AA-C22A44 (electrolytically deposited metallic compound) medium matte, integrally colored coating, Class 1 Architectural, 18 mm (0.7 mils) thick. Dyes will not be accepted.
- c. Fluorocarbon Finish: AAMA 605.2, high performance organic coating.
- d. Mill finish.

## 4. Steel and Galvanized Steel:

- a. Finish painted under Section 09 91 00, PAINTING unless specified as prefinished item.
- b. Manufacturer's finish:
  - 1) Baked on prime coat over a phosphate coating.
  - 2) Baked-on prime and finish coat over a phosphate coating.
  - 3) Fluorocarbon Finish: AAMA 605.2, high performance organic coating.

**2.5 HANGING GUTTERS**

- A. Fabricate gutters of not less than 0.032 inch) thick Prefinished Aluminum.
- B. Fabricate hanging gutters in sections not less than 2400 mm (8 feet) long, except at ends of runs where shorter lengths are required.
- C. Building side of gutter shall be same height as exterior side.
- D. Gutter Bead: Stiffen outer edge of gutter by folding edge over approximately 19 mm (3/4 inch) toward roof and down approximately 19 mm (3/4 inch) unless shown otherwise.
- E. Gutter Spacers:
  - 1. Fabricate of same material and thickness as gutter.
  - 2. Fabricate 25 mm (one inch) wide strap and fasten to gutters not over 900 mm (36 inches) on center.
  - 3. Turn back edge up 25 mm (one inch) and lap front edge over gutter bead.
  - 4. Rivet and solder to gutter except rivet and seal to aluminum.
- F. Outlet Tubes:
  - 1. Form outlet tubes to connect gutters to conductors of same metal and thickness as gutters extend into the conductor 75 mm (3 inch). Flange upper end of outlet tube 13 mm (1/2 inch).

2. Lock and solder longitudinal seam except use sealant in lieu of solder with aluminum.
3. Seal aluminum tube to gutter and rivet to gutter.
4. Fabricate basket strainers of same material as gutters.

G. GUTTER BRACKETS:

1. Fabricate of same metal as gutter. Use 6 mm x 25 mm (1/4 by one inch) aluminum.
2. Fabricate to gutter profile.
3. Drill two 5 mm (3/16 inch) diameter holes in anchor leg for countersunk flat head screws.

## 2.6 CONDUCTORS (DOWNSPOUTS)

- A. Fabricate conductors of same metal and thickness as gutters in sections approximately 3000 mm (10 feet) long.
- B. Fabricate elbows by mitering, riveting, and soldering except seal aluminum in lieu of solder. Lap upper section to the inside of the lower piece.
- C. Fabricate conductor brackets or hangers of same material as conductor, 2 mm (1/16 inch) thick by 25 mm (one inch) minimum width. Form to support conductors 25 mm (one inch) from wall surface in accordance with Architectural Sheet Metal Manual Plate 34, Design C for rectangular shapes and E for round shapes.
- D. Conductor Heads:
  1. Fabricate of same material as conductor.
  2. Fabricate conductor heads to not less than 250 mm (10 inch) wide by 200 mm (8 inch) deep by 200 mm (8 inches) from front to back.
  3. Form front and side edges channel shape not less than 13 mm (1/2 inch) wide flanges with edge hemmed.
  4. Slope bottom to sleeve to conductor or downspout at not less than 60 degree angle.
  5. Extend wall edge not less than 25 mm (one inch) above front edge.
  6. Solder joints for water tight assembly.
  7. Fabricate outlet tube or sleeve at bottom not less than 50 mm (2 inches) long to insert into conductor.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
  1. Apply Sealant as specified in Section 07 92 00, JOINT SEALANTS .

2. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application.
3. 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.
4. Confine direct nailing of sheet metal to strips 300 mm (12 inch) or less wide. Nail flashing along one edge only. Space nail not over 100 mm (4 inches) on center unless specified otherwise.
5. Coordinate with roofing work for the installation of metal base flashings and other metal items having roof flanges for anchorage and watertight installation.
6. Install flashings in conjunction with other trades so that flashings are inserted in other materials and joined together to provide a water tight installation.
7. Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.
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 aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of bituminous paint.
10. Paint aluminum in contact with absorptive materials that may become repeatedly wet with two coats of bituminous paint or two coats of aluminum paint.

### **3.2 HANGING GUTTERS**

- A. Hang gutters with high points equidistant from downspouts. Slope at not less than 1:200 (1/16 inch per foot).
- B. Lap joints, except for expansion joints, at least 25 mm (one inch) in the direction of flow. Rivet and seal or solder lapped joints.

- C. Support gutters in brackets spaced not more than 600 mm (24 inch) on centers, brackets attached to facial or wood nailer by at least two screws or nails.
  - 1. For copper or copper clad stainless steel gutters use brass or bronze brackets.
  - 2. For stainless steel gutters use stainless steel brackets.
  - 3. For aluminum gutters use aluminum brackets or stainless steel brackets.
  - 4. Use brass or stainless steel screws.
- D. Secure brackets to gutters in such a manner as to allow free movement of gutter due to expansion and contraction.
- E. Gutter Expansion Joint:
  - 1. Locate expansion joints midway between outlet tubes.
  - 2. Provide at least a 25 mm (one inch) expansion joint space between end baffles of gutters.
  - 3. Install a cover plate over the space at expansion joint.
  - 4. Fasten cover plates to gutter section on one side of expansion joint only.
  - 5. Secure loose end of cover plate to gutter section on other side of expansion joint by a loose-locked slip joint.
- F. Outlet Tubes: Set bracket strainers loosely into gutter outlet tubes.

### **3.3 CONDUCTORS (DOWNSPOUTS)**

- A. Where scuppers discharge into downspouts install conductor head to receive discharge with back edge up behind drip edge of scupper. Fasten and seal joint. Sleeve conductors to gutter outlet tubes and fasten joint and joints between sections.
- B. Set conductors plumb and clear of wall, and anchor to wall with two anchor straps, located near top and bottom of each section of conductor. Strap at top shall be fixed to downspout, intermediate straps and strap at bottom shall be slotted to allow not less than 13 mm (1/2 inch) movement for each 3000 mm (10 feet) of downspout.
- C. Install elbows, offsets and shoes where shown and required. Slope not less than 45 degrees.

### **3.4 SPLASH PANS**

- A. Install where downspouts discharge on low slope roofs unless shown otherwise.

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**SECTION 07 72 00  
ROOF ACCESSORIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies fascias.

**1.2 RELATED WORK**

A. Sealant material and installation: Section 07 92 00, JOINT SEALANTS.

**1.3 QUALITY CONTROL**

- A. All roof accessories shall be the products of manufacturers regularly engaged in producing the kinds of products specified.
- B. Each accessory type shall be the same and be made by the same manufacturer.
- C. Each accessory shall be completely assembled to the greatest extent possible before delivery to the site.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Representative sample panel of color anodized aluminum not less than 100 mm X 100 mm (four by four inches), except extrusions shall be a width not less than section to be used. Sample shall show coating with integral color and texture and shall include manufacturer's identifying label.
- C. Shop Drawings: Each item specified showing design, details of construction, installation and fastenings.
- D. Manufacturer's Literature and Data: Each item specified.
- E. Certificates: Stating that aluminum has been given specified thickness of anodizing.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Material (ASTM):
  - B209/209M-07.....Aluminum and Aluminum Alloy-Sheet and Plate
  - B221/221M-07.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
  - C612-04.....Mineral Fiber Block and Board Thermal Insulation
  - D1187-97 (R2002).....Asphalt-Base Emulsions for Use as Protective Coatings for Metal
- C. National Association of Architectural Metal Manufacturers (NAAMM):
  - AMP 500-505-88.....Metal Finishes Manual

- D. American Architectural Manufacturers Association (AAMA):  
 605-98.....High Performance Organic Coatings on  
 Architectural Extrusions and Panels.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Aluminum, Extruded: ASTM B221/B221M.
- B. Aluminum Sheet: ASTM B209/B209M.
- C. Galvanized Sheet Steel: ASTM A526/A526M; G-90 coating.

### **2.2 EXTRUDED ALUMINUM GRAVEL STOPS AND FASCIAS**

- A. Fabricate of aluminum not less than 2 mm (0.078 inch) thick.
- B. Turn fascia down face of wall and up above roof as shown.
- C. Maximum lengths of 3000 mm (10-feet).
- D. Shop fabricate external and internal corners as one piece assemblies with not less than 300 mm (12 inch) leg lengths.
- E. Provide 100 mm (four inch) wide 2 mm (0.078 inch) thick watertight joint covers with 150 mm (six inch) wide 0.8 mm (0.030 inch) thick underside joint flashing.

### **2.3 EXTRUDED ALUMINUM FASCIA-CANT SYSTEM**

- A. The fascia-cant system consists of three pieces, an extruded aluminum fascia, a galvanized steel cant, and an aluminum compression clamp.
- B. Furnish in stock lengths of not more than 3000 mm (10 feet) long.
- C. Form fascia from not less than 2 mm (0.070 inch) thick aluminum. Provide four inch wide 0.8 mm (0.032-inch) thick concealed sheet aluminum joint cover plates in back of fascia.
- D. Form cant strip from galvanized steel not less than 0.8 mm (0.0299 inch) thick, to profile shown and design to hold lower edge of the fascia.
- E. Form compression clamp of not less than 0.8 mm (0.032 inch) thick aluminum designed to hold the top edge of the fascia and the built-up flashing.
- F. Internal and external corners:
  - 1. Factory fabricate and fully weld mitered joints.
  - 2. Furnish corner sections in manufacturers standard sizes with not less than 300 mm (12 inch) leg lengths.
- G. Factory fabricated fascia sump assemblies.
  - 1. Fabricate sump assemblies with stainless steel cores and extruded aluminum cover to match fascia-cant.
  - 2. Provide stainless steel outlet, tube sized to suit downspout and solder to core to make watertight.
  - 3. Furnish sump assembly in 500 mm (20 inch) minimum lengths.
- H. Finish on aluminum: anodized as specified.

## **2.4 FINISH**

- A. In accordance with NAAMM Amp 500-505.
- B. Aluminum, Mill Finish: AA-MIX, as fabricated.
- C. Aluminum, Clear Finish: AA-C22A41 medium matte, clear anodic coating, Class II, Architectural, 0.4 mils thick.
- D. Aluminum Colored Finish: AA-C22A42 (anodized or AA0C22A44 (electrolytically deposited metallic compound) medium matte, integrally colored coating, Class II, Architectural, 0.4 mils thick. Dyes will not be accepted.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install roof accessories where necessary.
- B. Secure with fasteners in accordance with manufacture's printed installation instructions and approved shop drawings unless shown otherwise.
- C. Comply with section 07 92 00, JOINT SEALANTS to install sealants where manufactures installation instructions require sealant.
- D. Coordinate with roofing work for installation of items in sequence to prevent water infiltration.
- E. Fascias:
  - 1. Install fascia with butt joints with approximately 6 mm (1/4 inch) space for expansion.
  - 2. Over each joint provide cover plates of sheet aluminum, complete with concealed sheet aluminum flashing, centered under each joint.
  - 3. Lap cover plates and concealed flashing over the gravel stop and fascia not less than four inches.

### **3.2 PROTECTION OF ALUMINUM**

- A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with two coats of asphalt coating (complete coverage), or by separating the contact surfaces with a preformed neoprene tape having pressure sensitive adhesive coating on side.
- B. Paint aluminum in contact with wood, concrete and masonry, or other absorptive materials, that may become repeatedly wet, with two coats of asphalt coating.

### **3.3 ADJUSTING**

Adjust expansion joints to close tightly and be watertight; insuring maximum allowance for building movement.



### 3.4 PROTECTION

Protect roof accessories from damage during installation and after completion of the work from subsequent construction.

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**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 building materials or systems.

**1.2 RELATED WORK: (NOT USED)**

**1.3 QUALITY CONTROL:**

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

**1.4 SUBMITTALS:**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's installation instructions for each product used.
- C. Cured samples of exposed sealants for each color where required to match adjacent material.
- D. Manufacturer's Literature and Data:
  - 1. Caulking compound
  - 2. Primers
  - 3. Sealing compound, each type, including compatibility when different sealants are in contact with each other.

**1.5 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 4.4 °C (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.

**1.6 DELIVERY, HANDLING, AND STORAGE:**

- A. Deliver materials in manufacturers' original unopened containers, with brand names, date of manufacture, shelf life, and material designation clearly marked thereon.
- B. Carefully handle and store to prevent inclusion of foreign materials.
- C. Do not subject to sustained temperatures exceeding 5 °C (90 °F) or less than 32 °C (40 °F).

**1.7 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.

**1.8 WARRANTY:**

- A. Warranty exterior sealing against leaks, adhesion, and cohesive failure, and subject to terms of "Warranty of Construction" Article specified in Section 00 72 00, GENERAL CONDITIONS, except that warranty period shall be extended to two years.
- B. 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.

**1.9 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.
  - C612-04.....Mineral Fiber Block and Board Thermal Insulation.

C717-07.....Standard Terminology of Building Seals and Sealants.

C834-05.....Latex Sealants.

C919-02.....Use of Sealants in Acoustical Applications.

C920-05.....Elastomeric Joint Sealants.

C1021-01.....Laboratories Engaged in Testing of Building Sealants

C1193-05.....Standard Guide for Use of Joint Sealants.

C1330-02.....Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

D1056-07.....Specification for Flexible Cellular Materials—Sponge or Expanded Rubber.

E84-07.....Surface Burning Characteristics of Building Materials.

C. Sealant, Waterproofing and Restoration Institute (SWRI).  
The Professionals' Guide

## **PART 2 - PRODUCTS**

### **2.1 SEALANTS:**

- A. S-1:
  - 1. ASTM C920, polyurethane or polysulfide.
  - 2. Type M.
  - 3. Class 25.
  - 4. Grade NS.
  - 5. Shore A hardness of 20-40
- B. S-2:
  - 1. ASTM C920, polyurethane or polysulfide.
  - 2. Type M.
  - 3. Class 25.
  - 4. Grade P.
  - 5. Shore A hardness of 25-40.
- C. S-6:
  - 1. ASTM C920, silicone, neutral cure.
  - 2. Type S.
  - 3. Class: Joint movement range of plus 100 percent to minus 50 percent.
  - 4. Grade NS.
  - 5. Shore A hardness of 15-20.
  - 6. Minimum elongation of 1200 percent.
- D. S-9:

1. ASTM C920 silicone.
2. Type S.
3. Class 25.
4. Grade NS.
5. Shore A hardness of 25-30.
6. Non-yellowing, mildew resistant.

## **2.2 CAULKING COMPOUND:**

- A. C-1: ASTM C834, acrylic latex.
- B. C-2: One component acoustical caulking, non drying, non hardening, synthetic rubber.

## **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 other locations shall be light gray or aluminum, unless specified otherwise.
- D. Caulking shall be light gray or white, unless specified otherwise.

## **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 °C (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 FILLER:**

- A. Mineral fiber board: ASTM C612, Class 1.
- B. Thickness same as joint width.
- C. Depth to fill void completely behind back-up rod.

**2.6 PRIMER:**

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

**2.7 CLEANERS-NON POUROUS 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 to 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. Apply primer to sides of joints wherever required by compound manufacturer's printer instructions.
  1. Apply primer prior to installation of back-up rod or bond breaker tape.
  2. Use brush or other approved means that will reach all parts of joints.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

### **3.3 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.

### **3.4 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.

### 3.5 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. Finish paving or floor joints flush unless joint is otherwise detailed.
9. Apply compounds with nozzle size to fit joint width.
10. 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 gypsum board partitions are of sound rated, fire rated, or smoke barrier construction, follow requirements of ASTM C919 only to seal all cut-outs and intersections with the adjoining construction unless specified otherwise.

1. Apply a 6 mm (1/4 inch) minimum bead of sealant each side of runners (tracks), including those used at partition intersections with dissimilar wall construction.
2. Coordinate with application of gypsum board to install sealant immediately prior to application of gypsum board.
3. Partition intersections: Seal edges of face layer of gypsum board abutting intersecting partitions, before taping and finishing or application of veneer plaster-joint reinforcing.



4. Openings: Apply a 6 mm (1/4 inch) bead of sealant around all cut-outs to seal openings of electrical boxes, ducts, pipes and similar penetrations. To seal electrical boxes, seal sides and backs.
5. Control Joints: Before control joints are installed, apply sealant in back of control joint to reduce flanking path for sound through control joint.

### 3.6 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.

### 3.7 LOCATIONS:

- A. Exterior Building Joints, Horizontal and Vertical:
  1. Metal to Metal: Type S-1, S-2
  2. Metal to Masonry or Stone: Type S-1
  3. Wood to Masonry: Type S-1
- B. Metal Reglets and Flashings:
  1. Flashings to Wall: Type S-6
  2. Metal to Metal: Type S-6
- C. Sanitary Joints:
  1. Pipe Penetrations: Type S-9

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**SECTION 09 91 00  
PAINTING**

**PART 1-GENERAL**

**1.1 DESCRIPTION**

- A. Section specifies field painting: All exterior area as directed and associated with exterior repairs and wood protection.
- B. Section specifies prime coats which may be applied in shop under other sections.
- C. Painting includes shellacs, stains, varnishes and coatings specified.

**1.2 RELATED WORK (NOT USED)**

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:  
Before work is started, or sample panels are prepared, submit manufacturer's literature, the current Master Painters Institute (MPI) "Approved Product List" indicating brand label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI "Approved Product List" where applicable is acceptable.
- C. Sample Panels:
  - 1. After painters' materials have been approved and before work is started submit sample panels showing each type of finish and color specified.
  - 2. Panels to show color: Composition board, 100 by 250 by 3 mm (4 inch by 10 inch by 1/8 inch).
  - 3. Panel to show transparent finishes: Wood of same species and grain pattern as wood approved for use, 100 by 250 by 3 mm (4 inch by 10 inch face by 1/4 inch) thick minimum, and where both flat and edge grain will be exposed, 250 mm (10 inches) long by sufficient size, 50 by 50 mm (2 by 2 inch) minimum or actual wood member to show complete finish.
  - 4. Attach labels to panel stating the following:
    - a. Federal Specification Number or manufacturers name and product number of paints used.
    - b. Specification code number specified in Section 09 06 00, SCHEDULE FOR FINISHES.

- c. Product type and color.
- d. Name of project.
- 5. Strips showing not less than 50 mm (2 inch) wide strips of undercoats and 100 mm (4 inch) wide strip of finish coat.
- D. Sample of identity markers if used.
- E. Manufacturers' Certificates indicating compliance with specified requirements:
  - 1. Manufacturer's paint substituted for Federal Specification paints meets or exceeds performance of paint specified.
  - 2. High temperature aluminum paint.
  - 3. Epoxy coating.
  - 4. Intumescent clear coating or fire retardant paint.
  - 5. Plastic floor coating.

#### **1.4 DELIVERY AND STORAGE**

- A. Deliver materials to site in manufacturer's sealed container marked to show following:
  - 1. Name of manufacturer.
  - 2. Product type.
  - 3. Batch number.
  - 4. Instructions for use.
  - 5. Safety precautions.
- B. In addition to manufacturer's label, provide a label legibly printed as following:
  - 1. Federal Specification Number, where applicable, and name of material.
  - 2. Surface upon which material is to be applied.
  - 3. If paint or other coating, state coat types; prime, body or finish.
- C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.
- D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

#### **1.5 MOCK-UP PANEL**

- A. Before starting application of water paint mixtures, apply paint as specified to an area, not to exceed 9 m<sup>2</sup> (100 ft<sup>2</sup>), selected by Resident Engineer.
- B. Finish and texture approved by Resident Engineer will be used as a standard of quality for remainder of work.

## 1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.
- B. Master Painters Institute (MPI):
- No. 1-04.....Aluminum Paint (AP)
  - No. 4-04.....Interior/ Exterior Latex Block Filler
  - No. 5-04.....Exterior Alkyd Wood Primer
  - No. 7-04.....Exterior Oil Wood Primer
  - No. 8-04.....Exterior Alkyd, Flat MPI Gloss Level 1 (EO)
  - No. 9-04.....Exterior Alkyd Enamel MPI Gloss Level 6 (EO)
  - No. 10-04.....Exterior Latex, Flat (AE)
  - No. 11-04.....Exterior Latex, Semi-Gloss (AE)
  - No. 27-04.....Exterior / Interior Alkyd Floor Enamel, Gloss (FE)
  - No. 31-04.....Polyurethane, Moisture Cured, Clear Gloss (PV)
  - No. 36-04.....Knot Sealer
  - No. 59-04.....Interior/Exterior Alkyd Porch & Floor Enamel, Low Gloss (FE)
  - No. 60-04.....Interior/Exterior Latex Porch & Floor Paint, Low Gloss
  - No. 68-04.....Interior/ Exterior Latex Porch & Floor Paint, Gloss
  - No. 71-04.....Polyurethane, Moisture Cured, Clear, Flat (PV)
  - No. 91-04.....Wood Filler Paste
  - No. 94-04.....Exterior Alkyd, Semi-Gloss (EO)
- C. Steel Structures Painting Council (SSPC):
- SSPC SP 1-00.....Solvent Cleaning
  - SSPC SP 2-00.....Hand Tool Cleaning
  - SSPC SP 3-00.....Power Tool Cleaning

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Wood Sealer: (Redwood) MPI 31 (gloss) or MPI 71 (flat) thinned with thinner recommended by manufacturer at rate of about one part of thinner to four parts of varnish.
- B. Exterior Alkyd Wood Primer: MPI 5.
- C. Exterior Oil Wood Primer: MPI 7.
- D. Exterior Alkyd, Flat (EO): MPI 8.
- E. Exterior Alkyd Enamel (EO): MPI 9.
- F. Exterior Latex, Flat (AE): MPI 10.
- G. Exterior Latex, Semi-Gloss (AE): MPI 11.

- H. Exterior/ interior Alkyd Floor Enamel, Gloss (FE): MPI 27.
- I. Knot Sealer: MPI 36.
- J. Exterior Alkyd, Semi-Gloss (EO): MPI 94.
- K. Exterior Latex, High Gloss (acrylic) (AE): MPI 119.

## **2.2 PAINT PROPERTIES**

- A. Use ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately and paints requiring specified additives.
- B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

## **2.3 REGULATORY REQUIREMENTS**

- A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.
  - 1. Volatile Organic Compounds (VOC): VOC content of paint materials shall not exceed local, state or district requirements.
  - 2. Lead-Base Paint:
    - a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
    - b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.
    - c. For lead-paint removal, see Section 02 83 33.13, LEAD-BASED PAINT REMOVAL AND DISPOSAL.
  - 3. Asbestos: 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.
  - 6. Comply with the Regional Ozone Transport Commission (OTC) regulations regarding Volatile Organic Content (VOC).

## **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 end of each days 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. Do no exterior painting when it is windy and dusty.
3. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
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.

### 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 prefinished 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 any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

- C. Wood: Fascia, soffit, columns, redwood porch and decking (both sides of upper decking), and all other wood associated with repairs/painting open wood area.
1. Sand to a smooth even surface and then dust off.
  2. Sand surfaces showing raised grain smooth between each coat.
  3. Wipe surface with a tack rag prior to applying finish.
  4. Surface painted with an opaque finish:
    - a. Coat knots, sap and pitch streaks with MPI 36 (Knot Sealer) before applying paint.
    - b. Apply two coats of MPI 36 (Knot Sealer) over large knots.
  5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler paste. Sand the surface to make smooth and finish flush with adjacent surface.
  6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.
  7. Fill open grained wood such as oak, walnut, ash and mahogany with MPI 91 (Wood Filler Paste), colored to match wood color.
    - a. Thin filler in accordance with manufacturer's instructions for application.
    - b. Remove excess filler, wipe as clean as possible, dry, and sand as specified.
- 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. 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, stove 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. 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. Remove projections to level of adjacent surface by grinding or similar methods.

### 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 48 hours between application 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, brushmarks, 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.
- I. 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. Wood and Wood Particleboard:
  - 1. Use same kind of primer specified for exposed face surface.
    - a. Exterior wood: MPI 7 (Exterior Oil Wood Primer) for new construction and MPI 5(Exterior Alkyd Wood Primer) for repainting bare wood.
    - b. Transparent finishes as specified under Transparent Finishes on Wood and Finish for Wood Floors.

2. Apply two coats of primer MPI 7 (Exterior Oil Wood Primer) or MPI 5 (Exterior Alkyd Wood Primer) to surfaces of wood doors, including top and bottom edges, which are cut for fitting or for other reason.
  3. Apply one coat of primer MPI 7 (Exterior Oil Wood Primer) or MPI 5 (Exterior Alkyd Wood Primer) as soon as delivered to site to surfaces of unfinished woodwork, except concealed surfaces of shop fabricated or assembled millwork and surfaces specified to have varnish, stain or natural finish.
  4. Back prime and seal ends of exterior woodwork, and edges of exterior plywood specified to be finished.
- F. Metals except boilers, incinerator stacks, and engine exhaust pipes:
1. Steel and iron: MPI 95 (Fast Drying 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. Terne Metal: MPI 95 (Fast Drying Metal Primer).
  5. Copper and copper alloys scheduled to be painted: MPI 95 (Fast Drying Metal Primer).
  6. Asphalt coated metal: MPI 1 (Aluminum Paint (AP)).
  7. Metal over 94 degrees C. (200 degrees F), Boilers, Incinerator Stacks, and Engine Exhaust Pipes: MPI 22 (High Heat Resistant Coating (HR)).
- G. Concrete Masonry Units except glazed or integrally colored and decorative units:
1. Prime exterior surface as specified for exterior finishes.

### 3.6 EXTERIOR FINISHES

- A. Apply following finish coats where specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Wood:
1. Do not apply finish coats on surfaces concealed after installation, top and bottom edges of wood doors and sash, or on edges of wood framed insect screens.
  2. Portion of sash runs of double hung wood windows, concealed by sash when in a closed position: Apply two coats of ASTM D260 mixed with not more than 0.12L (1/4 pint) of dryer per 3.89L (gallon).
  3. Two coats of MPI 10 Exterior Latex, Flat (AE)) MPI 11 (Exterior Latex, Semi-Gloss (AE) MPI 119 (Exterior Latex, High Gloss (acrylic) (AE)) on exposed surfaces, except where transparent finish is specified.
  4. Two coats of MPI 71 (Polyurethane, Moisture Cured, Clear Flat (PV)) for transparent finish.

C. Steel and Ferrous Metal, Including Ternc:

1. Two coats of MPI 8 (Exterior Alkyd, Flat (EO)) MPI 9 (Exterior Alkyd Enamel (EO)) or MPI 94 (Exterior Alkyd, Semi-Gloss (EO)) on exposed surfaces, except on surfaces over 94 degrees C (200 degrees F).

E. Concrete Masonry Units Brick, Cement Plaster, or Concrete:

1. General:

- a. Where specified in Section 09 06 00, SCHEDULE FOR FINISHES or shown.
- b. Mix as specified in manufacturer's printed directions.
- c. Do not mix more paint at one time than can be used within four hours after mixing. Discard paint that has started to set.
- d. Dampen warm surfaces above 24 degrees C (75 degrees F) with fine mist of water before application of paint. Do not leave free water on surface.
- e. Cure paint with a fine mist of water as specified in manufacturer's printed instructions.

2. Use two coats of TT-P-1411 (Paint, Co-polymer-Resin, Cementitious (CEP)), unless specified otherwise.

### 3.7 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.
- D. 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.
- E. Except where scheduled for complete painting apply finish coat over plane surface to nearest break in plane, such as corner, reveal, or frame.
- 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.

### 3.8 PAINT COLOR

- A. Color and gloss of finish coats will be specified upon award of contract.
- B. Coat Colors:
  1. Color of priming coat: Lighter than body coat.
  2. Color of body coat: Lighter than finish coat.

3. Color prime and body coats to not show through the finish coat and to mask surface imperfections or contrasts.

### **3.9 BUILDING AND STRUCTURAL WORK FIELD PAINTING**

- A. Painting and finishing of exterior work.
  1. Painting and finishing of new and existing work including colors and gloss of finish selected will be specified upon determination of specific work area.
  2. Painting of disturbed, damaged and repaired or patched surfaces when entire space is not scheduled for complete repainting or refinishing.
  3. Painting of ferrous metal and galvanized metal.
- B. Building and Structural Work not Painted:
  1. Prefinished items:
    - a. Casework, doors, elevator entrances and cabs, metal panels, wall covering, and similar items specified factory finished under other sections.
    - b. Factory finished equipment and pre-engineered metal building components such as metal roof and wall panels.
  2. Finished surfaces:
    - a. Hardware except ferrous metal.
    - b. Anodized aluminum, stainless steel, chromium plating, copper, and brass, except as otherwise specified.
    - c. Signs, fixtures, and other similar items integrally finished.
  3. Concealed surfaces:
    - a. Inside dumbwaiter, elevator and duct shafts, interstitial spaces, pipe basements, crawl spaces, pipe tunnels, above ceilings, attics, except as otherwise specified.
    - b. Inside walls or other spaces behind access doors or panels.
    - c. Surfaces concealed behind permanently installed casework and equipment.
  4. Moving and operating parts:
    - a. Shafts, chains, gears, mechanical and electrical operators, linkages, and sprinkler heads, and sensing devices.
    - b. Tracks for overhead or coiling doors, shutters, and grilles.
  5. Labels:
    - a. Code required label, such as Underwriters Laboratories Inc., Inchcape Testing Services, Inc., or Factory Mutual Research Corporation.
    - b. Identification plates, instruction plates, performance rating, and nomenclature.
  6. Galvanized metal:

- a. Exterior chain link fence and gates, corrugated metal areaways, and gratings.
  - b. Gas Storage Racks.
  - c. Except where specifically specified to be painted.
- 7. Metal safety treads and nosings.
  - 8. Gaskets.
  - 9. Concrete curbs, gutters, pavements, retaining walls, exterior exposed foundations walls and interior walls in pipe basements.
  - 10. Face brick.
  - 11. Structural steel encased in concrete, masonry, or other enclosure.
  - 12. Structural steel to receive sprayed-on fire proofing.
  - 13. Ceilings, walls, columns in interstitial spaces.
  - 14. Ceilings, walls, and columns in pipe basements.
  - 15. Wood Shingles.

### **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.
- C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

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