

Project Manual

## Raytown Quality Schools

# Raytown School District Roof Improvements

Project Number: 18110

Prepared For:  
Raytown Quality Schools  
6608 Raytown Road  
Raytown, MO 64113

Issue Date: April 9, 2019

### **Contents:**

Volume 1: Introductory Information, Bidding and Contracting Requirements,  
Division 1 through Division 7 Specifications.



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**DOCUMENT 000101 – PROJECT TEAM DIRECTORY**

**PROJECTS:**

**RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS**

Blue Ridge Elementary, 6410 Blue Ridge Boulevard, Raytown, Missouri 64133.  
Fleetridge Elementary, 13001 East 55<sup>th</sup> Street, Kansas City, Missouri 64133.  
New Trails Early Learning Center, 6325 Hunter Street, Raytown, Missouri 64133.  
Norfleet Elementary, 6140 South Norfleet Road, Raytown, Missouri 64133.  
Raytown South High School, 8211 Sterling Ave., Raytown, Missouri 64138.  
Raytown South Middle School, 8838 East 83<sup>rd</sup> Street, Raytown, Missouri 64138.  
Three Trails Preschool, 11801 East 32<sup>nd</sup> Street S, Independence, Missouri 64052.

**OWNER:**

Raytown Quality Schools  
6608 Raytown Road  
Raytown, Missouri 64113

**ARCHITECT:**

Hollis + Miller Architects, Inc.  
1828 Walnut Street, Suite 922  
Kansas City, Missouri 64108-1867  
Contact: Sandy Cochran  
Phone: 816.442.7700

**END OF DOCUMENT 000101**



**DOCUMENT 000105 – CERTIFICATIONS AND SEALS**

Architect:

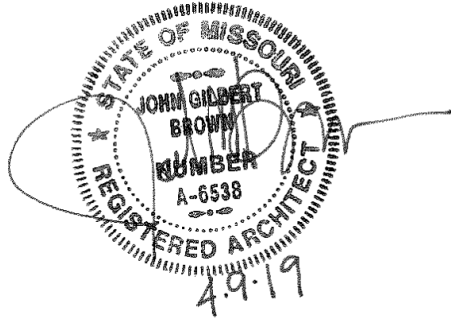
I hereby state, pursuant to RSMo 327.411, that the Specifications intended to be authenticated by my seal are limited to Specification Sections listed below:

- Division 1 Sections
- Division 2 Section
- Division 6 Section
- Division 7 Sections

I hereby disclaim any responsibility for all other specifications, drawings estimates, reports, or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

John G. Brown  
Architect

April 9, 2019  
Date





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Raytown Quality Schools  
 11507 East State Route 350  
 Raytown, Missouri

Project Identification and Locations:

**RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS**

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 Fleetridge Elementary, 13001 East 55<sup>th</sup> Street, Kansas City, Missouri 64133.  
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## SECTION 001100 – SUMMARY

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Work covered by the Contract Documents.
  - 2. Type of the Contract.
  - 3. Work phases.
  - 4. Use of premises.
  - 5. Owner's occupancy requirements.
  - 6. Work restrictions.
  - 7. Specification formats and conventions.

#### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification:
  - 1. Blue Ridge Elementary – 6410 Blue Ridge Blvd., Raytown, MO 64133
  - 2. Fleetridge Elementary – 13001 E. 55<sup>th</sup> Street, Kansas City, MO 64133
  - 3. New Trails Pre-School – 6325 Hunter Street, Raytown, MO 64133
  - 4. Norfleet Elementary – 6410 S. Norfleet Road, Raytown, MO 64133
  - 5. Raytown South Middle – 8401 E. 83<sup>rd</sup> Street, Raytown, MO 64138
  - 6. Raytown South High - 8211 Sterling Ave., Raytown, MO 64138
- B. Owner: Raytown Quality Schools
  - 1. Owner's Representative: Sandy Cochran – Hollis & Miller Architects 816-442-7700.
- C. The Work consists of the following:
  - 1. General conditions and details for all roof areas:
    - a. Any roofing or sheet metal work not completed by the date stated in these specification documents shall only be completed during non-school hours.
      - 1) Non-school hours: Monday through Friday Evenings after 4:00 P.M. or Saturdays and Sundays.
    - b. The District has implemented the following Job Site Safety & Risk Mitigation Requirements and Policies.
      - 1) The job site staging area surrounding the cranes, forklifts, kettles, ORI's, job box's, and all equipment and tools shall be secured by a minimum eight-foot chain link fence prior to start of work, and the District must approve prior to job start.
      - 2) Any axes, shovels, picks, brooms, ladders or other tools or equipment found on the grounds surrounding the work site and not secured inside the chain link fence or job box shall justify a \$500 penalty per occurrence to be deducted from final payment.
      - 3) Any ropes extending from the roof or ladder wheels, accessible from the ground while the contractor is not on site shall justify a \$500 penalty per occurrence to be deducted from final payment.

- c. Prime Contractor shall supply a submittal package including; Site Specific Safety Plan, Drain Test Report, and Sheet Metal drawings prior to start of work.
  - 1) Safety Plan shall show a site plan locating kettle, security fence, roof access points, cranes, dumpsters, ORIs, material storage, and any other equipment being supplied and used by contractor throughout the duration of the project.
  - 2) District shall review and approve submittal package within 10-week days.
- d. Prime Contractor shall keep complete roofing specification and approved submittal drawing on the roof at all times during the work.
  - 1) If required paperwork is not present on the roof, the project may be immediately shut down at Districts discretion.
    - a) All cost associate with such shut downs shall be the contractor's responsibility.
- e. The prime contractor shall use any subcontractor for their base and alternate bids if their sub-contractors are licensed in the State of Missouri and the City of Raytown for the specific job requirements and approved by District.
  - 1) Prime Contractor shall provide the district with a list of their sub-contractors with their submittal package.
  - 2) Any sub-contractor not meeting the state, county, and District requirements shall not be allowed on the project.
- f. It is the responsibility of the contractor to provide 100% supervision of the kettle at all times when hot adhesives are in use.
  - 1) It is the Districts requirements that the kettle person have a minimum of 5-years' experience monitoring and regulating the temperature controls on a kettle.
- g. It is the Districts requirements that all project Foreman have a minimum of 5-years' experience installing roofing system similar to specified system.
  - 1) Documentation showing work history, as a Foreman, shall be provided to District in their submittal package and approved by District prior to job start.
  - 2) If Foreman does not have 5-years' experience installing similar roofing system, contractor shall pay for full-time inspection by the roofing material manufacturers representative.
- h. The contractor shall include in their bids the cost to remove and re-install all drain clamping rings at the end of each day's work.
- i. It is the responsibility of the contractor to report in writing to the District, any areas of cracks or deterioration to the masonry walls above the roofline.
- j. It is the responsibility of the contractor for all underside clean up from drippage and debris coming through the roof deck.
- k. It is the responsibility of the contractor to provide a sub-contractor to water test all existing drains prior to starting the projects and at the completion of the projects.
  - 1) Contractor shall water test all drains using a standard  $\frac{3}{4}$ " hose running full on for a minimum of 10-minutes per drain.
  - 2) Contractor shall verify that the primary roof drains, overflow roof drains, and plumbing vents located within the project area are free of debris, damage, and properly functioning. The contractor shall perform a flood test of existing roof drain bowls and connections to piping by temporarily plugging the drain pipe below the existing connection and flooding the drain bowl to its top edge. Notify the Owner immediately if defects or damages are found in the roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Any plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the Owner. Prior to start of work, the contractor shall provide a letter to the Owner indicating this work has been completed, detailing the results of this roof drain inspection and testing, and identifying any corrective action needed.
  - 3) After completion of roofing work, the prime contractor shall again obtain the services of a licensed plumbing contractor to verify that primary roof drains, overflow roof drains and plumbing vents located within the project area are free of debris and properly functioning. The plumber shall perform a second flood test of existing roof drains located in the project areas. The flood test shall include the same testing as completed prior to the roofing work. Continue to flood the roof drain, up and over the installed roof drain flashing. Notify the prime contractor and Owner immediately if

defects are found in the roof drain flashing, roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the Owner and paid for by the prime contractor. After construction completion, the contractor shall provide a second letter to the Owner indicating this work has been completed, detailing the results of this roof drain inspection and testing, and identifying any corrective action needed.

- l. It is the responsibility of the contractor to examine the job site and document any damages or issues with pictures and/or video.
  - 1) Any damages found after start of work will be the responsibility of the contractor.
  - 2) Contractor shall submit all videos and pictures to Owner with their submittal package prior to job start.
- m. It is the responsibility of the contractor to add or remove perimeter and projection wood blocking to accommodate new roof system.
  - 1) Metal edge details are only allowed at gutters. All existing metal edge details shall be changed to raised edge details. Contractors are responsible for adding new wood blocking as needed to be approved by roofing material manufacturer and Owner.
- n. It is the responsibility of the contractor to clean roofs, drains, gutters, and scuppers of all debris and trash at the end of the project and prior to the expiration of their two-year warranty.
  - 1) Cleaning shall include the removal of all gravel in gutters, drain sumps, and scupper sumps.
  - 2) Two-year obligation shall also include tightening all drain bolts.
  - 3) Failure to provide this work shall end the contractor's approval to bid future work with the Owner.
- o. It is the contractor's responsibility to keep all RTU's clean and free of any roofing material, personal items, or debris.
  - 1) RTU's shall not be used to store tools, lunchbox's, or any items related to the project.
- p. It is the contractor's responsibility to disconnect and raise all electrical conduit and gas lines, and extend plumbing pipes as needed to complete work per specifications and meet all local building codes.
  - 1) All lines shall be supported by new specified supports and hangers.
  - 2) No lines shall be supported directly on outside walls, expansion joints, or other equipment.
  - 3) During work, contractor shall properly support lines with wood blocking as needed to complete work and eliminate any damage to lines.
    - a) Any damage found after project shall be the responsibility of the contractor to repair and/or replace as owner approves.
- q. Drains:
  - 1) Sump all drains a minimum of 48" x 48".
  - 2) Replace all broken or missing drain strainers with new cast iron strainers that will properly fit drain ring.
  - 3) Install 30" x 30" four-pound lead flashing into drain and strip-in with 2-ply of trilaminate felt and/or 2-ply of smooth and granular MB membrane set in cold asphalt mastic, or as required by roofing material manufacturer.
    - a) Adhere lead in a solid application of cold mastic.
  - 4) Replace any broken or missing drain clamping rings and bolts.
  - 5) Drain plugs shall be installed in all drains prior to roof removal.
    - a) All drain plugs shall be removed, and drains cleared at the end of each day.
    - b) Any drain or drain pipe joint leak found after completion of project, and not documented as leaking prior to job start, shall be the responsibility of the contractor to repair and/or replace as determined by owner.
  - 6) Install metal gravel dam around all drain sumps.
- r. Remove obsolete equipment and projections as indicated by owner during pre-bid meeting.
  - 1) Cover voids in decks with minimum 16-gauge flat metal panels or matching metal deck.
    - a) Provide additional structural support on underside as required by local codes.

- s. As needed, raise and extend projection curbs and pipes, expansion/control joints, and perimeters to accommodate new insulation height and provide a minimum eight-inch flashing height.
  - 1) Add or remove wood blocking as needed to accommodate new tapered insulation at perimeter and projection details.
- t. Replace deteriorated wood blocking at perimeters and projections as needed.
  - 1) Provide unit cost per board foot.
  - 2) New wood blocking shall not be installed on ends.
  - 3) All blocking shall be securely fastened and approved by owner and roofing material manufacturer.
- u. Repair deck as needed. (Provide unit cost)
  - 1) District's representative and/or roofing manufacturer representative shall be notified and allowed to verify deck repair and/or replacement.
- v. Adhere fiberboard cant at all projection base flashing locations as required by roofing material manufacturer.
- w. Adhere fiberboard cricket on high side of projections to eliminate any ponding water.
  - 1) Adhere as required by roofing material manufacturer.
- x. At all perimeter and projection base flashing:
  - 1) Prime masonry walls prior to installing any base flashing.
- y. Base Flashing:
  - 1) Adhere base flashing as required by roofing material manufacturer.
  - 2) Cold adhesives and mastic shall require adhesive to be installed on back side of flashing membrane and wall the flashing will adhere to.
  - 3) Horizontal flashing length shall not exceed 10'.
  - 4) Roll outside face of flashing membrane with steel roller to provide 100% positive adhesive.
    - a) Any voids found in the membrane shall require removal and replacement.
  - 5) Install bar termination at the top edge of all base flashing where the flashing is not wrapped over a curb, wall, or expansion joint.
    - a) Strip-in all bar terminations with 3-course of asphalt mastic and reinforcing mesh.
  - 6) Base flashing height shall be a minimum of eight-inches and shall not exceed twelve-inches.
  - 7) Flashing over twelve-inches shall be bar terminated and another flashing membrane wrapped over the above wall or projection and extended down past the bar termination a minimum of four-inches or install metal wall panels above base flashing.
  - 8) Adhere fiberboard cant at all base flashing as required by roofing material manufacturer.
  - 9) Provide a 3-course strip-in at all vertical and horizontal flashing laps, horizontal edges, and corners of flashing with elastomeric asphalt mastic as required by roofing material manufacturer.
  - 10) Install specified counterflashing over termination bar. Termination bar shall always be covered with metal counterflashing a minimum of four-inches.
  - 11) All brick walls shall require new 24-gauge pre-finished reglet joint counterflashing unless otherwise specified.
    - a) Width shall be sufficient to extend down over bar termination a minimum of four-inches.
  - 12) New 24-gauge metal end covers, and 90-degree corners shall be installed to properly terminate ends of all sheet metal details.
  - 13) Owners representative and roofing material manufacturer shall review and approve all completed flashing work prior to the installation of sheet metal.
- z. Install fiberboard tapered edge strips as needed along perimeters and around projections to provide positive drainage.
  - 1) Adhere tapered edge strips as required by roofing material manufacturer.
- aa. Insulation:
  - 1) Any insulation being installed with low-rise foam insulation adhesive shall at a minimum have a bead of foam installed one-inch from all outside edges.
  - 2) Stagger every layer of insulation a minimum of 24".
  - 3) Install staggered dead-man insulation tie-offs with dead-man being a minimum of 24" deep.

- bb. Install new 24-gauge pre-finished metal counterflashing skirt to all mechanical equipment curbs and vents.
  - 1) The new skirt can be mechanically fastened or riveted to the existing curb flange with no back-water laps and shall extend down over the bar termination a minimum of four-inches.
- cc. All new coping shall be 24-gauge pre-finished and approved by owner and roofing manufacturer. (Owner to select color)
  - 1) Outside and inside fascia width shall exceed and extend down past the existing fascia width unless otherwise specified.
  - 2) Install proper end closures and trims, approved by the roofing manufacturer, where terminating into concrete, brick, stucco, and/or metal walls.
  - 3) Provide a new 20-gauge continuous cleat on all copings.
  - 4) Slope the new coping to the inside by installing treated wood at the outside edge and covering top with treated 5/8" or thicker plywood.
  - 5) Any fascia over 6" shall have horizontal stiffening ribs every 6" o.c.
  - 6) Walls shall be completely wrapped (inside and outside) with new flashing or trilaminate base sheet prior to installing new coping.
    - a) Flashing or base sheet shall be back-nailed on the outside face of wood nailer to completely encapsulate and cover all wood.
- dd. Install new 24-gauge pre-finished gutters and downspouts as specified.
  - 1) Gutter and downspout size shall be based on drainage area and shall follow local code requirements.
    - a) Minimum 6" gutters and 4" x 5" downspouts.
  - 2) Inside upper flange of gutter shall extend up over membrane covering perimeter felt and wood blocking.
  - 3) Downspouts shall be open faced on the bottom three feet.
    - a) Downspouts draining into underground lines shall be solid and provide appropriate metal transition connections at tie-in.
    - b) Any holes from previous downspout hangers and straps shall be sealed and watertight.
  - 4) Provide new concrete splash blocks under each downspout.
    - a) If downspout is located on another roof, splash blocks shall have protection treads installed under them.
  - 5) Any substrate behind gutter shall be wrapped with new 24-gauge pre-finished metal prior to installing new gutters.
    - a) Fascia wrap shall be approved by owner's representative and roofing material manufacturer, and detail drawings shall be included in submittal package.
- ee. Install new 24-gauge pre-finished metal edge with gravel stop at all gutter edges.
  - 1) Set primed metal edge in solid bed of asphalt mastic over wood nailer.
  - 2) Mechanically fasten flange into wood blocking with approved fasteners every four inches on-center, two rows staggered.
  - 3) Strip in flange with two ply flashing system, consisting of trilaminate base sheet and granular surfaced modified bitumen membrane adhered in cold asphalt mastic.
    - a) Install metal gravel dam approximately 10" back from gutter, outside two-ply strip-in, and set metal flange in asphalt mastic. Do not attach or strip in metal dam.
    - b) Coat flashing between gravel dam and edge with 2-coates of reflective fibred aluminum coating.
  - 4) Outside fascia shall extend down over gutter flange a minimum of four inches.
- ff. Install metal gravel dams around all roof drains, scuppers, gutters, and overflows.
  - 1) Approximate gravel dam size 4' x 4' at drains, overflows, and scuppers.
  - 2) At gutters install approximately 12" from gutter edge.
  - 3) Adhere flange of dams in asphalt mastic.
  - 4) Do not attach or strip in flange of dams.
  - 5) V-cuts in metal dams shall extend to roof level.
  - 6) Cover sump areas with granular surfaced MB membrane as required by roofing material manufacturer.
    - a) Do not extend under drain clamping ring.
    - b) Seal MB edge at drain clamping ring with bead of approved elastomeric sealant.

- 7) Coat MB with 2-coats of fibrated aluminum or specified liquid applied membrane as required by roofing material manufacturer.
- gg. Install new 24-gauge pre-finished raised edge caps at all outside perimeters unless otherwise specified.
  - 1) Outside fascia width shall extend down past the existing fascia width a minimum of one inch unless otherwise specified.
  - 2) Install proper end closures and trims, approved by the roofing manufacturer, where terminating into concrete, brick, stucco, and/or metal walls.
  - 3) Provide a new 20-gauge continuous cleat on all copings.
  - 4) Fasten on inside slope of new metal with approved grommets screws.
- hh. Install new 24-gauge pre-finished surface-mount counterflashing to all specified walls.
  - 1) Fasten to substrate 8" o.c. minimum with approved fasteners.
  - 2) Top edge shall provide a caulking lip.
    - a) Prime metal and wall prior to installing sealant
    - b) Install sealant compatible to roof system and components.
    - c) Sealant shall be tooled to eliminate any voids and shed water.
  - 3) Any counterflashing skirt that is more than 6" wide will require a horizontal stiffening rib every 6" o.c.
- ii. Install new four-pound lead flashing sleeves over plumbing pipes and strip-in with two plies of trilaminate felt set in cold asphalt mastic.
  - 1) Adhere lead in solid application of asphalt mastic or as required by roofing material manufacturer.
  - 2) Plumbing pipe shall extend above finished roof a minimum of eight-inches or more as required by local building codes.
- jj. Install new 24-gauge pitch pans and hoods around all electrical conduits, cooling pipes, equipment supports, and miscellaneous projections.
  - 1) Strip-in with two-plies of trilaminate felt set in cold asphalt mastic or as required by roofing material manufacturer.
  - 2) Fill pans with quick set grout to within 2" from top edge and let cure.
  - 3) Fill remainder of pan with dual component, solvent free, roofing sealant.
  - 4) Install 24-gauge sloped hoods over pans with sealant around projection.
  - 5) Install gooseneck hoods over pitch pans with multiple pipes.
- kk. Install new jacks and storm collars at all round vent stacks.
  - 1) Secure storm collar and seal with approved sealant.
  - 2) Strip-in with two plies of trilaminate felt set in cold asphalt mastic or as required by roofing material manufacturer.
- ll. At all scuppers, install new 26-gauge stainless steel scupper sleeves.
  - 1) Insulation around all scuppers shall be sumped 48" x 48".
    - a) Install metal gravel dams outside sump areas.
  - 2) Scupper sleeves shall be primed and set in a bed of elastomeric mastic.
  - 3) Secure interior flanges at top, bottom, and sides.
  - 4) Strip-in with two plies of trilaminate felt set in cold elastomeric mastic.
  - 5) Install new 24-gauge pre-finished scupper heads and downspouts.
    - a) Match size and shape of exiting scupper heads and downspouts unless otherwise specified or required larger by local building codes.
      - i) All scupper heads shall have a half-moon overflow opening in the outside face.
    - b) Install new scupper heads and downspouts at all drain line pipes extending out vertical walls.
    - c) New downspouts shall be 4" x 5" or match existing, whichever is bigger
      - i) Downspout shall be open-faced at bottom three-feet.
    - d) Size of heads and downspouts shall meet building codes and owner's requirements.
  - 6) Provide new concrete splash blocks under each downspout.
- mm. At metal edge and gravel stop perimeters not changed to raised metal edge details, remove existing and install new 24-gauge pre-finished metal.
  - 1) Install 20-gauge continuous cleat.
  - 2) Outside fascia shall exceed the existing width and/or extend down over current termination point by a minimum of one-inch.

- 3) Inside horizontal flange shall be primed, set in a bed of asphalt mastic, fastened 4" staggered o.c and striped in with 2-ply of trilaminate felt and cold asphalt mastic or as required by roofing material manufacturer.
- nn. Roof access/staging points for gravel surfacing shall be protected with ¾" plywood cover a minimum of 128 sq. ft.
- 1) Plywood shall be removed and roof area under the plywood shall be inspected by owner and roofing material manufacturer.
- oo. Install hanger supports under gas and conduit lines that are 4" or wider. (Provide Owner with the hanger design prior to installation)
- 1) Install rubber triangular support blocks at gas line supports and electrical conduit smaller than 4".
    - a) Install treated wood blocking to adjust height.
  - 2) Install protection treads under wood blocking supports, rubber blocks, and hanger support legs.
  - 3) Hanger supports shall meet or exceed PS-1-2 by PHP Systems & Design.
  - 4) All wood blocking supports for gas and electrical conduit shall be replaced with new rubber pipe blocks or hangers.
- pp. Repair and replace all PVC condensate lines on RTU's.
- 1) Any broken or missing PVC components, including pee-traps, shall be replaced.
  - 2) Extend all PVC drain lines out past RTU's a minimum of four feet towards the closest drainage point.
    - a) Attach PVC lines to wood blocking with u-clamps every 6' o.c.
- qq. All wood supports shall be replaced with new treated wood with protection treads underneath, unless being replaced by other supports mentioned in specification.
- 1) New wood shall not be installed on ends unless approved by owner and roofing material manufacturer.
  - 2) New wood will be utilized only under equipment support legs and where triangular pipe blocks are not appropriate per roofing material manufacturer.
- rr. Install protection treads outside the access panels to all RTU's, mechanical equipment, roof hatches, and roof access doors.
- ss. Paint all base flashing, soil stacks, gas lines, drain strainers, drain sumps, and rusted equipment or sheet metal with two coats of aluminum reflective coating unless otherwise specified.
- tt. Contractor shall provide Owner's Representative and roofing material manufacturer a completed Pre-Final Inspection Form prior to installing, flood coat and gravel, modified bitumen cap sheet, and/or any restoration coating material.
- 1) After receipt of the Form, a meeting shall be scheduled to walk completed roof work.
  - 2) Only after the roof walk and approval by the Owner and roofing material manufacturer shall the contractor install the appropriate surfacing's and/or membranes.
  - 3) If the Form is not received and no roof walk is completed, the project will be rejected.
    - a) The contractor shall be responsible for all cost to remove surfacing's and/or membranes as needed for inspection of the underlying roof system.

## 2. Blue Ridge Elementary

### a. Roofs A, B, C, C1, and C2 & Vent roof on Roof B – (Roof Replacement)

- 1) Prior to start of roofing; provide a masonry sub-contractor to tuckpoint 100% of the brick chimney on roof A.
  - a) After tuckpointing is complete, acid wash, let dry and coat with clean dampproof coating.
- 2) Remove all roofing and insulation down to concrete decks.
  - a) Remove all perimeter and projection metal termination.
  - b) Remove obsolete equipment as determined at pre-bid meeting.
- 3) Sweep deck clean of all dirt, dust, and debris.
- 4) Prime concrete deck with asphalt primer.
- 5) Adhere tapered polyisocyanurate insulation over concrete decks with hot Type IV asphalt.
  - a) Starting height: 2.5"
  - b) Slope ¼"
- 6) Adhere ¼" gypsum coverboard over polyisocyanurate insulation with hot Type IV asphalt.

- 7) Adhere 2-ply of Type VI fiberglass felt in hot Type IV asphalt.
- 8) Adhere 1-ply smooth SBS modified bitumen membrane in hot Type IV asphalt.
- 9) Adhere two-ply base flashing to all perimeters, other than gutter edges, and projection base flashing with hot Type IV asphalt.
  - a) Flashing Backer Sheet: trilaminate base sheet.
  - b) Flashing Cap Sheet: Granular fire-rated SBS MB.
- 10) Install 24-gauge prefinished box gutters where existing gutters are located.
  - a) Install 24-gauge, prefinished, fascia over wooden fascia below gutter. Completely encapsulate wood fascia with new metal and wrap metal under lower wood edge and extend down onto brick a minimum of one-inch.
  - b) Install 24-gauge gravel stop metal edge along gutter edge.
  - c) Install new matching downspouts to accommodate water loads per local building codes.
- 11) Install new 24-gauge pre-finished raised edge detail along outside perimeter edges.
  - a) Exterior fascia shall complete encapsulate wood fascia and extend down onto brick walls or under soffit edges a minimum of one-inch.
- 12) Install new 24-gauge gravel dams approximately 12" from gutter edge and approximately 4' x 4' around all drains.
- 13) Install new 24-gauge reglet counterflashing around brick chimney on Roof A and brick walls of canopy roofs.
- 14) Over new roof membrane install a Type IV asphalt flood coat and Kunshek gravel surface.
- 15) Install two coats of aluminum reflective coating to all base flashing, plumbing pipes, and modified flashing strip-ins between gutters and gravel dams and in drain sumps.
- 16) Install walkway treads at roof access points and at access doors to all RTU's.
- 17) Install new OSHA approved DynaRound Hatch Guard around roof hatch on Roof B.

b. Roofs D & I - Roof Restoration (Gravel BUR)

- 1) Wet vacuum roof areas clean of all dirt, dust, debris, and loose gravel.
  - a) Power-brooms shall not be allowed.
- 2) Roofing material manufacturer shall inspect and approve the cleanliness of the roof surface prior to installing new flood coat and aggregate.
  - a) Contractor shall not proceed with flood coat until approved.
- 3) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in asphalt mastic adhesive.
- 4) Shave off and remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane.
  - a) Repair with 3-ply of trilaminate felt adhered with cold adhesive.
- 5) Spud gravel, and strip-in/reinforce all vents stacks, plumbing pipes, overflow scuppers, scuppers, and drains with 5-coursed repair of asphalt mastic and reinforcing mesh.
  - a) Remove drain clamping ring and extend strip-in/reinforcement into drain then reinstall clamping ring.
  - b) Reinstall drain clamping ring with new bolts and/or clamps.
  - c) If flashing is loose at metal edges, cut membrane back 1 to 2 inches prior to reinforcing.
- 6) Reinforce all base flashing laps and corners with a 3-course reinforcement of modified urethane base coat and polyester.
  - a) Prime flashing prior to installing base coat.
  - b) Apply base coat to all vertical and horizontal laps and corners at 3 to 4 gal/100 sq. ft. Weathered surfaces may require additional base coat materials.
  - c) Embed the polyester reinforcement and extend down past the bottom edge of the cant or roof transition. Brush for proper adhesive and removal of all voids.
  - d) Apply a second coat of base coat, at 2 gal/100 sq. ft, over the reinforcement and a minimum of 2" beyond edges in each direction, feather out edges.



- 7) Coat all flashing with a two-coat polyurethane elastomeric coating system.
  - a) Apply base coat at a rate of 3 to 4 gal/100 sq. ft. including previously coated flashings. Weathered surfaces may take additional base coat material.
  - b) Allow base coat to cure (min 24-hours) Apply finish coat at a rate of 2 gal/100 sq. ft. minimum. If base coat has been down longer than 72 hours prior to the application of finish coat, prime the base coat with specified primer.
- 8) Install three-ply of trilaminate felt in cold adhesive over areas where large cores were removed.
- 9) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 10) Re-secure any loose or missing metal details.
- 11) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 12) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 13) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
- 14) Replace any loose or missing caulking at perimeters and projection flashing details.
- 15) Install hot Type IV asphalt flood coat and Kunshek gravel.
- 16) Paint all soil stacks, gas lines, drain strainers, rusted equipment and metal terminations with two coats of white polyurethane elastomeric coating.

c. Roofs E, F, G, H, & J – Roof Restoration (Fully Adhered EPDM)

- 1) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in solvent based adhesive.
- 2) Remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane that would inhibit application of uniform liquid applied coating.
  - a) Repair with like membrane material and adhere in solvent based adhesive.
- 3) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 4) Resecure any loose or missing metal details.
- 5) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 6) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 7) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
- 8) Repair all holes, and loose, open, or split field membrane and flashing laps and corners with like EPDM membrane and solvent adhesive.
- 9) After all repairs have been completed, the roofing material manufacturer shall inspect and approve the roof membrane prior to power-washing.
- 10) Power-wash and wet vacuum roof areas of all dirt, dust, debris, oil, and grease.
  - a) Power-wash with a minimum of 3,000 psi.
  - b) Roofing material manufacturer shall inspect and approve the cleanliness of the field and flashing membranes prior to installation of any restoration products.
- 11) Reinforce all vertical, horizontal, and corner flashing laps with two-part, bio-based polyurethane liquid membrane.

- 12) Reinforce all field membrane side laps, end laps, and seams with two-part, bio-based polyurethane liquid membrane.
- 13) At all metal substrates, rusted or oxidized areas must be ground to a bright metal surface.
  - a) At drains, use a grinder to sand/grind metal surfaces down to clean, bare, metal; removing all asphalt residue.
  - b) Prime substrates with restoration metal primer.
- 14) At all vertical metal or lead penetrations and substrates:
  - a) Install painters tape approximately eight-inches up flashing to provide a straight clean line.
  - b) Prime all metal substrates with restoration metal primer.
  - c) The field base coat and reinforcement should extend over the toe of the flashing and onto the field of the roof approximately three-inches.
- 15) On round penetrations, cut reinforcing restoration membrane to sizes that are manageable and tear the bottom edge, 2-3" from bottom edge. This will allow the reinforcement to conform to the pipe.
  - a) Apply restoration base coat and fully embed the reinforcement.
  - b) The field base coat and reinforcement should extend over the toe of the flashing and on to the field of the roof approximately three-inches.
- 16) On square penetrations, cut restoration membrane to sizes that are manageable.
  - a) Cut the pieces to extend a minimum of 8" above the field of the roof and minimum of 4" onto the field of the roof.
- 17) At drains, the field base coat and reinforcement should be extended into the drain past where the ring meets the bowl.
  - a) A target reinforcement sheet of 40" x 40" polyester shall be installed at all drains, adhered with restoration base coat.
  - b) Reinstall the drain clamping ring and basket once all material is completely cured.
- 18) Install two-part, bio-based, polyurethane liquid membrane onto approved EPDM flashing and field membrane.
  - a) Base flashing membrane shall be coated prior to field membrane.
  - b) Spread coating evenly according to material manufacturers written instructions.
  - c) Back roll to achieve a minimum wet mil thickness of 3 gallons per square.
  - d) Coverage rates of base coat shall be continuously verified for proper wet film thickness with a wet mil gauge.
  - e) EPDM membrane shall be primed prior to installation of any coating.
- 19) After base coat is installed, and before the top coat is installed, a thorough inspection of the surface must be conducted by the manufacturer's technical representative.
  - a) Priming of the base coat is required if top coat is not applied within 72 hours of the base coat application.
  - b) The base coat shall be lightly primed with manufacturers recommended primer after 72 hours between coats.
- 20) Install restoration top coat on flashing prior to field of roof.
  - a) Extend coating up vertical surfaces to completely cover base coat and reinforcement.
  - b) Extend out onto horizontal surfaces a minimum of eight-inches.
- 21) Install restoration top coat over field of roof at a rate of 2-gallons per square.
  - a) Back roll to achieve a minimum wet mil thickness of 32 mils.
- 22) Install polyurethane anti-skid walkway and roof access landings at designated areas determined during the pre-bid roof walk.
  - a) Include in base bids 300 lineal feet of walkways 3' wide.
  - b) Include in base bids 75 square feet of roof access landings at 4 areas.
  - c) Walkways and landings will consist of:
    - i) Masking off perimeter edges with painters tape, which will need to be removed immediately after adhesive has been

- installed.
  - ii) Priming the existing coating.
  - iii) An additional polyurethane top coat at 1.25 gallons per square.
  - iv) Imbedding colored 3M granules into top coat.
  - v) Back-rolling aggregate into polyurethane top coat.
  - vi) Vacuuming up all loose granules after coating has cured.
- 23) Before the restoration coatings cure, clean all surfaces and equipment with mineral spirits.
  - 24) Avoid foot traffic on new restoration membrane for a minimum of 24-hours.
  - 25) Install new 24-gauge surface mount counterflashing around interior perimeter walls of Roof E.
  - 26) Install new OSHA approved DynaRound Hatch Guard around roof hatch on Roof E.

### 3. Fleetridge Elementary

#### a. Roofs 1, 2, 3, 4, & 5 – Roof Restoration (Granular surface MB)

- 1) Replace 3 skylights, lens and frames, on Roof 3.
- 2) Provide Alternate Bid to remove all horizontal siding, below the roof lines on Roofs 2, 3, 4, and 5.
  - a) Replace with 24-gauge pre-finished flush seam wall panels.
  - b) Including matching top, bottom, corner and end trims.
- 3) Remove five wet areas as indicated on attached drawings.
  - a) Replace wet insulation with polyisocyanurate insulation up to within ½” of existing roof surface adhered in low-rise foam.
  - b) Adhere ½” high-density fiberboard with low-rise foam.
  - c) Install 3-ply of trilaminate felt in a two-part solvent free adhesive.
- 4) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in a two-part solvent free adhesive.
- 5) Remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane that would inhibit application of uniform liquid applied coating.
  - a) Repair with solvent free polyurethane mastic and/or adhesive with the same number of polyester reinforcement plies.
- 6) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 7) Re-secure any loose or missing metal details.
- 8) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 9) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 10) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4” or larger refer to the general condition section above.
- 11) Repair all open laps, splits, or holes in field and flashing membranes with solvent free mastic and polyester reinforcement.
- 12) Reinforce all vertical, horizontal, and corner flashing laps with two-part, bio-based polyurethane liquid membrane.
- 13) At drains where MB has buckled, remove damaged membrane back from the drain bowl approximately eight-inches.
  - a) Install new granular MB membrane and lap onto existing MB a minimum of 18”.
  - b) Adhere with solvent free MB adhesive.
- 14) After all repairs have been completed, the roofing material manufacturer shall inspect and approve the roof membrane prior to power-washing.
- 15) Power-wash and wet vacuum roof areas of all dirt, dust, debris, oil, and grease.
  - a) Power-wash with a minimum of 3,000 psi.
  - b) Roofing material manufacturer shall inspect and approve the

- cleanliness of the field and flashing membranes prior to installation of any restoration products.
- 16) Reinforce all field and flashing membrane side laps, end laps, vertical laps, corners, and seams with two-part, bio-based polyurethane liquid membrane.
  - 17) At all metal substrates, rusted or oxidized areas must be ground to a bright metal surface.
    - a) At drains, use a grinder to sand/grind metal surfaces down to clean, bare, metal; removing all asphalt residue.
    - b) Prime substrates with restoration metal primer.
  - 18) At all vertical metal or lead penetrations and substrates:
    - a) Install painters tape approximately eight-inches up flashing to provide a straight clean line.
    - b) Prime all metal substrates with restoration metal primer.
    - c) The field base coat and reinforcement should extend over the toe of the flashing and onto the field of the roof approximately three-inches.
  - 19) On round penetrations, cut reinforcing restoration membrane to sizes that are manageable and tear the bottom edge, 2-3" from bottom edge. This will allow the reinforcement to conform to the pipe.
    - a) Apply restoration base coat and fully embed the reinforcement.
    - b) The field base coat and reinforcement should extend over the toe of the flashing and on to the field of the roof approximately three-inches.
  - 20) On square penetrations, cut restoration membrane to sizes that are manageable.
    - a) Cut the pieces to extend a minimum of 8" above the field of the roof and minimum of 4" onto the field of the roof.
  - 21) At north and south drain lines on Roofs 3 and 4:
    - a) Install a continuous layer of 40" wide polyester along the north and south drain lines and valleys.
      - i) The polyester reinforcement shall be adhered in liquid membrane base coat in a 3-course application.
      - ii) Reinstall the drain clamping ring and basket once all material is completely cured.
  - 22) Install two-part, bio-based, polyurethane liquid membrane onto approved MB flashing and field membrane.
    - a) Base flashing membrane shall be coated prior to field membrane.
    - b) Spread coating evenly according to material manufacturers written instructions.
    - c) Back roll to achieve a minimum wet mil thickness of 3 gallons or 48 wet mils per square.
    - d) Coverage rates of base coat shall be continuously verified for proper wet film thickness with a wet mil gauge.
    - e) MB membrane shall be primed prior to installation of any coating.
  - 23) After base coat is installed, and before the top coat is installed, a thorough inspection of the surface must be conducted by the manufacturer's technical representative.
    - a) Priming of the base coat is required if top coat is not applied within 72 hours of the base coat application.
    - b) The base coat shall be lightly primed with manufacturers recommended primer after 72 hours between coats.
  - 24) Install restoration top coat on flashing prior to field of roof.
    - a) Extend coating up vertical surfaces to completely cover base coat and reinforcement.
    - b) Extend out onto horizontal surfaces a minimum of eight-inches.
  - 25) Install restoration top coat over field of roof at a rate of 2-gallons per square.
    - a) Back roll to achieve a minimum wet mil thickness of 32 mils.
  - 26) Install polyurethane anti-skid walkway and roof access landings at designated areas determined during the pre-bid roof walk.
    - a) Include in base bids 700 lineal feet of walkways 3' wide.
    - b) Include in base bids 50 square feet of roof access landings at 3 areas.

- c) Walkways and landings will consist of:
  - i) Masking off perimeter edges with painters tape, which will need to be removed immediately after adhesive has been installed.
  - ii) Priming the existing coating.
  - iii) An additional polyurethane top coat at 1.25 gallons per square.
  - iv) Imbedding colored 3M granules into top coat.
  - v) Back-rolling aggregate into polyurethane top coat.
  - vi) Vacuuming up all loose granules after coating has cured.
- 27) Before the restoration coatings cure, clean all surfaces and equipment with mineral spirits.

**4. New Trails Early Learning Center**

a. Roofs 1, 2, 3, 4, 5, 6 & 7 – Roof Restoration (Fully Adhered EPDM)

- 1) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in solvent based adhesive.
- 2) Remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane that would inhibit application of uniform liquid applied coating.
  - a) Repair with like membrane material and adhere in solvent based adhesive.
- 3) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 4) Re-secure any loose or missing metal details.
- 5) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 6) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 7) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
- 8) Repair all holes, and loose, open, or split field membrane and flashing laps and corners with like EPDM membrane and solvent adhesive.
- 9) After all repairs have been completed, the roofing material manufacturer shall inspect and approve the roof membrane prior to power-washing.
- 10) Power-wash and wet vacuum roof areas of all dirt, dust, debris, oil, and grease.
  - a) Power-wash with a minimum of 3,000 psi.
  - b) Roofing material manufacturer shall inspect and approve the cleanliness of the field and flashing membranes prior to installation of any restoration products.
- 11) Reinforce all vertical, horizontal, and corner flashing laps with two-part, bio-based polyurethane liquid membrane.
- 12) Reinforce all field membrane side laps, end laps, and seams with two-part, bio-based polyurethane liquid membrane.
- 13) At all metal substrates, rusted or oxidized areas must be ground to a bright metal surface.
  - a) At drains, use a grinder to sand/grind metal surfaces down to clean, bare, metal; removing all asphalt residue.
  - b) Prime substrates with restoration metal primer.
- 14) At all vertical metal or lead penetrations and substrates:
  - a) Install painters tape approximately eight-inches up flashing to provide a straight clean line.
  - b) Prime all metal substrates with restoration metal primer.
  - c) The field base coat and reinforcement should extend over the toe of the flashing and onto the field of the roof approximately three-inches.

- 15) On round penetrations, cut reinforcing restoration membrane to sizes that are manageable and tear the bottom edge, 2-3" from bottom edge. This will allow the reinforcement to conform to the pipe.
  - a) Apply restoration base coat and fully embed the reinforcement.
  - b) The field base coat and reinforcement should extend over the toe of the flashing and on to the field of the roof approximately three-inches.
- 16) On square penetrations, cut restoration membrane to sizes that are manageable.
  - a) Cut the pieces to extend a minimum of 8" above the field of the roof and minimum of 4" onto the field of the roof.
- 17) At drains, the field base coat and reinforcement should be extended into the drain past where the ring meets the bowl.
  - a) A target reinforcement sheet of 40" x 40" polyester shall be installed at all drains, adhered with restoration base coat.
  - b) Reinstall the drain clamping ring and basket once all material is completely cured.
- 18) Install two-part, bio-based, polyurethane liquid membrane onto approved EPDM flashing and field membrane.
  - a) Base flashing membrane shall be coated prior to field membrane.
  - b) Spread coating evenly according to material manufacturers written instructions.
  - c) Back roll to achieve a minimum wet mil thickness of 3 gallons per square.
  - d) Coverage rates of base coat shall be continuously verified for proper wet film thickness with a wet mil gauge.
  - e) EPDM membrane shall be primed prior to installation of any coating.
- 19) After base coat is installed, and before the top coat is installed, a thorough inspection of the surface must be conducted by the manufacturer's technical representative.
  - a) Priming of the base coat is required if top coat is not applied within 72 hours of the base coat application.
  - b) The base coat shall be lightly primed with manufacturers recommended primer after 72 hours between coats.
- 20) Install restoration top coat on flashing prior to field of roof.
  - a) Extend coating up vertical surfaces to completely cover base coat and reinforcement.
  - b) Extend out onto horizontal surfaces a minimum of eight-inches.
- 21) Install restoration top coat over field of roof at a rate of 2-gallons per square.
  - a) Back roll to achieve a minimum wet mil thickness of 32 mils.
- 22) Install polyurethane anti-skid walkway and roof access landings at designated areas determined during the pre-bid roof walk.
  - a) Include in base bids 250 lineal feet of walkways 3' wide.
  - b) Include in base bids 35 square feet of roof access landings at 2 areas.
  - c) Walkways and landings will consist of:
    - i) Masking off perimeter edges with painters tape, which will need to be removed immediately after adhesive has been installed.
    - ii) Priming the existing coating.
    - iii) An additional polyurethane top coat at 1.25 gallons per square.
    - iv) Imbedding colored 3M granules into top coat.
    - v) Back-rolling aggregate into polyurethane top coat.
    - vi) Vacuuming up all loose granules after coating has cured.
- 23) Before the restoration coatings cure, clean all surfaces and equipment with mineral spirits.
- 24) Avoid foot traffic on new restoration membrane for a minimum of 24-hours.

5. **Norfleet Elementary**

- a. Roofs A, E, F, and G – Roof Restoration (Gravel surfaced BUR)
  - 1) Wet vacuum roof areas clean of all dirt, dust, debris, and loose gravel.

- a) Power-brooms shall not be allowed.
- 2) Roofing material manufacturer shall inspect and approve the cleanliness of the roof surface prior to installing new flood coat and aggregate.
  - a) Contractor shall not proceed with flood coat until approved.
- 3) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in asphalt mastic adhesive.
  - b) Replace 15 lineal feet of base flashing on both Roofs A and E.
- 4) Shave off and remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane.
  - a) Repair with 3-ply of trilaminate felt adhered with cold adhesive.
- 5) Spud gravel, and strip-in/reinforce all vents stacks, plumbing pipes, overflow scuppers, scuppers, and drains with 5-coursed repair of asphalt mastic and reinforcing mesh.
  - a) Remove drain clamping ring and extend strip-in/reinforcement into drain then reinstall clamping ring.
  - b) Reinstall drain clamping ring with new bolts and/or clamps.
  - c) If flashing is loose at metal edges, cut membrane back 1 to 2 inches prior to reinforcing.
- 6) Reinforce all base flashing laps and corners with a 3-course reinforcement of modified urethane base coat and polyester.
  - a) Prime flashing prior to installing base coat.
  - b) Apply base coat to all vertical and horizontal laps and corners at 3 to 4 gal/100 sq. ft. Weathered surfaces may require additional base coat materials.
  - c) Embed the polyester reinforcement and extend down past the bottom edge of the cant or roof transition. Brush for proper adhesive and removal of all voids.
  - d) Apply a second coat of base coat, at 2 gal/100 sq. ft, over the reinforcement and a minimum of 2" beyond edges in each direction, feather out edges.
- 7) Coat all flashing with a two-coat polyurethane elastomeric coating system.
  - a) Apply base coat at a rate of 3 to 4 gal/100 sq. ft. including previously coated flashings. Weathered surfaces may take additional base coat material.
  - b) Allow base coat to cure (min 24-hours) Apply finish coat at a rate of 2 gal/100 sq. ft. minimum. If base coat has been down longer than 72 hours prior to the application of finish coat, prime the base coat with specified primer.
- 8) Install three-ply of trilaminate felt in cold adhesive over areas where large cores were removed.
- 9) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 10) Re-secure any loose or missing metal details.
- 11) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 12) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 13) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
- 14) Replace any loose or missing caulking at perimeters and projection flashing details.
- 15) Install cold process adhesive flood coat and Kunshek gravel.
- 16) Paint all soil stacks, gas lines, drain strainers, rusted equipment and metal terminations with two coats of white polyurethane elastomeric coating.

b. Roofs B, C, and D – Roof Maintenance (Gravel surfaced BUR)

- 1) At wind scour and weathered surfacing areas, outside corners, drain sumps, and crickets:
  - a) Sweep loose gravel, dirt, and dust off the repair areas.
  - b) Install cold process adhesive flood coat over weathered areas and reapply gravel.
- 2) At weathered black flashing areas on all perimeter and projections:
  - a) Apply two-coats of metallic pigmented aluminum coating.

6. **Raytown South High School**

a. Roofs M1, M2, and P – Roof Restoration (Gravel surfaced BUR)

- 1) Wet vacuum roof areas clean of all dirt, dust, debris, and loose gravel.
  - a) Power-brooms shall not be allowed.
- 2) Roofing material manufacturer shall inspect and approve the cleanliness of the roof surface prior to installing new flood coat and aggregate.
  - a) Contractor shall not proceed with flood coat until approved.
- 3) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in asphalt mastic adhesive.
- 4) Shave off and remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane.
  - a) Repair with 3-ply of trilaminate felt adhered with cold adhesive.
- 5) Spud gravel, and strip-in/reinforce all vents stacks, plumbing pipes, overflow scuppers, scuppers, and drains with 5-coursed repair of asphalt mastic and reinforcing mesh.
  - a) Remove drain clamping ring and extend strip-in/reinforcement into drain then reinstall clamping ring.
  - b) Reinstall drain clamping ring with new bolts and/or clamps.
  - c) If flashing is loose at metal edges, cut membrane back 1 to 2 inches prior to reinforcing.
- 6) Reinforce all base flashing laps and corners with a 3-course reinforcement of modified urethane base coat and polyester.
  - a) Prime flashing prior to installing base coat.
  - b) Apply base coat to all vertical and horizontal laps and corners at 3 to 4 gal/100 sq. ft. Weathered surfaces may require additional base coat materials.
  - c) Embed the polyester reinforcement and extend down past the bottom edge of the cant or roof transition. Brush for proper adhesive and removal of all voids.
  - d) Apply a second coat of base coat, at 2 gal/100 sq. ft, over the reinforcement and a minimum of 2" beyond edges in each direction, feather out edges.
- 7) Coat all flashing with a two-coat polyurethane elastomeric coating system.
  - a) Apply base coat at a rate of 3 to 4 gal/100 sq. ft. including previously coated flashings. Weathered surfaces may take additional base coat material.
  - b) Allow base coat to cure (min 24-hours) Apply finish coat at a rate of 2 gal/100 sq. ft. minimum. If base coat has been down longer than 72 hours prior to the application of finish coat, prime the base coat with specified primer.
- 8) Install three-ply of trilaminate felt in cold adhesive over areas where large cores were removed.
- 9) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 10) Re-secure any loose or missing metal details.
- 11) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 12) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.



- 13) Replace all wood blocking supports with new treated wood blocking and protection treads.
    - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
  - 14) Replace any loose or missing caulking at perimeters and projection flashing details.
  - 15) Install cold process adhesive flood coat and Kunshek gravel.
  - 16) Paint all soil stacks, gas lines, drain strainers, rusted equipment and metal terminations with two coats of white polyurethane elastomeric coating.
  - 17) Install new OSHA approved DynaRound Hatch Guard around roof hatch on Roof M1.
- b. Roof N – Roof Maintenance (Gravel surfaced BUR)
- 1) At wind scour area in the northwest corner:
    - a) Sweep loose gravel, dirt, and dust off the repair areas.
    - b) Install cold process adhesive flood coat over weathered areas and reapply gravel.

7. **Raytown South Middle School**

- a. Roof G – Roof Restoration (Granular surface MB)
- 1) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
    - a) Repair with like membrane material and adhere in a two-part solvent free adhesive.
  - 2) Remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane that would inhibit application of uniform liquid applied coating.
    - a) Repair with solvent free polyurethane mastic and/or adhesive with the same number of polyester reinforcement plies.
  - 3) Repair flashings, coping, and other roof-related sheet metal and trim components.
    - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
  - 4) Resecure any loose or missing metal details.
  - 5) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
  - 6) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
  - 7) Repair all open laps, splits, or holes in field and flashing membranes with solvent free mastic and polyester reinforcement.
  - 8) Reinforce all vertical, horizontal, and corner flashing laps with two-part, bio-based polyurethane liquid membrane.
  - 9) After all repairs have been completed, the roofing material manufacturer shall inspect and approve the roof membrane prior to power-washing.
  - 10) Power-wash and wet vacuum roof areas of all dirt, dust, debris, oil, and grease.
    - a) Power-wash with a minimum of 3,000 psi.
    - b) Roofing material manufacturer shall inspect and approve the cleanliness of the field and flashing membranes prior to installation of any restoration products.
  - 11) Reinforce all field and flashing membrane side laps, end laps, vertical laps, corners, and seams with two-part, bio-based polyurethane liquid membrane.
  - 12) At all metal substrates, rusted or oxidized areas must be ground to a bright metal surface.
    - a) At drains, use a grinder to sand/grind metal surfaces down to clean, bare, metal; removing all asphalt residue.
    - b) Prime substrates with restoration metal primer.
  - 13) At all vertical metal or lead penetrations and substrates:
    - a) Install painters tape approximately eight-inches up flashing to provide a straight clean line.
    - b) Prime all metal substrates with restoration metal primer.
    - c) The field base coat and reinforcement should extend over the toe of the flashing and onto the field of the roof approximately three-inches.

- 14) On round penetrations, cut reinforcing restoration membrane to sizes that are manageable and tear the bottom edge, 2-3" from bottom edge. This will allow the reinforcement to conform to the pipe.
  - a) Apply restoration base coat and fully embed the reinforcement.
  - b) The field base coat and reinforcement should extend over the toe of the flashing and on to the field of the roof approximately three-inches.
- 15) Install two-part, bio-based, polyurethane liquid membrane onto approved MB flashing and field membrane.
  - a) Base flashing membrane shall be coated prior to field membrane.
  - b) Spread coating evenly according to material manufacturers written instructions.
  - c) Back roll to achieve a minimum wet mil thickness of 3 gallons or 48 wet mils per square.
  - d) Coverage rates of base coat shall be continuously verified for proper wet film thickness with a wet mil gauge.
  - e) MB membrane shall be primed prior to installation of any coating.
- 16) After base coat is installed, and before the top coat is installed, a thorough inspection of the surface must be conducted by the manufacturer's technical representative.
  - a) Priming of the base coat is required if top coat is not applied within 72 hours of the base coat application.
  - b) The base coat shall be lightly primed with manufacturers recommended primer after 72 hours between coats.
- 17) Install restoration top coat on flashing prior to field of roof.
  - a) Extend coating up vertical surfaces to completely cover base coat and reinforcement.
  - b) Extend out onto horizontal surfaces a minimum of eight-inches.
- 18) Install restoration top coat over field of roof at a rate of 2-gallons per square.
  - a) Back roll to achieve a minimum wet mil thickness of 32 mils.
- 19) Install polyurethane anti-skid walkway and roof access landings at designated areas determined during the pre-bid roof walk.
  - a) Include in base bids 50 lineal feet of walkways 3' wide.
  - b) Include in base bids 16 square feet of roof access landing at one area.
  - c) Walkway and landing will consist of:
    - i) Masking off perimeter edges with painters tape, which will need to be removed immediately after adhesive has been installed.
    - ii) Priming the existing coating.
    - iii) An additional polyurethane top coat at 1.25 gallons per square.
    - iv) Imbedding colored 3M granules into top coat.
    - v) Back-rolling aggregate into polyurethane top coat.
    - vi) Vacuuming up all loose granules after coating has cured.
- 20) Before the restoration coatings cure, clean all surfaces and equipment with mineral spirits.

b. Roof H – Roof Retrofit (Granular surfaced MB)

- 1) Remove wet insulation areas as indicated on attached drawings.
  - a) Replace wet insulation with polyisocyanurate insulation up to within ½" of existing roof surface adhered in low-rise foam.
  - b) Adhere ½" high-density fiberboard with low-rise foam.
- 2) Remove all perimeter and projection base flashing materials.
  - a) Leave north and south gutters and gutter edge metal in place.
  - b) Remove the east and west perimeter rake edge metal caps.
  - c) Cut and remove base flashing membrane at bottom edge of cant strip.
  - d) Remove cant strip along with flashing.

- e) Remove all loose strip-in flashing around pitch pans, vent stacks, plumbing pipes, or any projection with a flange strip-in.
- 3) Remove lead flashing around plumbing pipes at membrane level.
  - a) Install a bed of asphalt mastic around pipe.
- 4) Shave any ridges in the existing MB membrane as needed to allow the new gypsum substrate board to lay flat.
- 5) Raise and add wood nailers around roof hatch and four obsolete capped curbs.
  - a) Add new nailers to provide a minimum 8" flashing height.
- 6) Sweep existing membrane clean of all dirt, dust, and debris.
- 7) **Mechanically fasten or adhere** 4' x 8' x ½" gypsum substrate board over the existing roof with one fastener every 2 square feet.
  - a) Increase fasteners by 50% along perimeters and 70% in corners.
- 8) Adhere ¼" gypsum coverboard in cold solvent-free low-rise foam insulation adhesive.
- 9) Adhere 2-ply of Type VI fiberglass felt in hot Type IV asphalt.
- 10) Adhere 1-ply granular SBS modified bitumen membrane in hot Type IV asphalt.
- 11) Adhere two-ply base flashing to all perimeters, other than gutter edges, and projection base flashing with hot Type IV asphalt.
  - a) Flashing Backer Sheet: trilaminate base sheet.
  - b) Flashing Cap Sheet: Granular fire-rated SBS MB.
- 12) Install new 24-gauge pre-finished gutter edge along the north and south gutters.
  - a) Use existing gutter edge as the continuous cleat and clip the new gutter edge onto the existing.
  - b) Mechanically fasten the new gutter edge flanges every 8" on-center staggered.
  - b) Strip-in the gutter edges with two-ply flashing.
- 13) Install new 24-gauge pre-finished raised edge detail along east and west rake edges.
  - a) Exterior fascia shall extend down approximately one-inch lower than existing fascia.
- 14) Install new large 24-gauge pitch pan around large pitch pan at west perimeter.
  - a) Fill pan with self-leveling elastomeric sealant.
  - b) Install hood around new pan and seal at top edge.
- 15) Install protection tread at roof hatch access.  
Install new OSHA approved DynaRound Hatch Guard around roof hatch.

c. Roof I – Roof Retrofit (Gravel surfaced BUR)

- 1) Remove wet insulation areas as indicated on attached drawings.
  - a) Replace wet insulation with polyisocyanurate insulation up to within ½" of existing roof surface mechanically fasten to metal deck.
  - b) Adhere ½" high-density fiberboard with low-rise foam.
- 2) Remove all perimeter and projection base flashing materials.
  - a) Remove coping around all outside perimeters.
  - b) Remove scupper sleeve, head, and downspout.
  - c) Remove all expansion joint detail along the west and north walls.
  - c) Cut and remove base flashing membrane at bottom edge of cant strip.
  - d) Remove cant strip along with flashing.
  - e) Remove all loose strip-in flashing around pitch pans, vent stacks, plumbing pipes, or any projection with a flange strip-in.
- 3) Shave any ridges in the existing MB membrane as needed to allow the new gypsum substrate board to lay flat.
- 4) Mechanically fasten 4' x 8' x ½" gypsum substrate board over the existing roof with one fastener every 2 square feet.
  - a) Increase fasteners by 50% along perimeters and 70% in corners.
- 5) Adhere ¼" gypsum coverboard in cold solvent-free low-rise foam insulation adhesive.
- 6) Adhere 2-ply of Type VI fiberglass felt in hot Type IV asphalt.
- 7) Adhere 1-ply smooth SBS modified bitumen membrane in hot Type IV asphalt.
- 8) Adhere two-ply base flashing to all perimeters, other than gutter edges, and projection base flashing with hot Type IV asphalt.
  - a) Flashing Backer Sheet: trilaminate base sheet.

- b) Flashing Cap Sheet: Granular fire-rated SBS MB.
- 9) Install new 24-gauge pre-finished raised edge detail along east and west rake edges.
  - a) Exterior fascia shall extend down approximately one-inch lower than existing fascia.
- 10) Install new 24-gauge, pre-finished, reglet wall expansion joint detail along the west and north interior brick walls.
- 11) Install new 26-gauge stainless scupper sleeve and securely fasten on all edges.
  - a) Strip-in with 2-ply flashing.
- 12) Install new 24-gauge, pre-finished, scupper head and matching downspout.
  - a) Securely crimp scupper sleeve into scupper head.
  - b) Install new concrete splash-block on ground under downspout.
- 13) Install new 24-gauge gravel dam approximately 2' x 4' around new scupper.
- 14) Reattach metal downspout splash pan to downspout on north wall.
- 15) Install hot Type IV asphalt flood coat and Kunshek gravel.
- 16) Install two coats of aluminum reflective coating to all base flashing, plumbing pipes, and modified flashing strip-ins between gravel dams and in scupper sumps.

d. Roofs J – Roof Restoration (Gravel surfaced BUR)

- 1) Wet vacuum roof areas clean of all dirt, dust, debris, and loose gravel.
  - a) Power-brooms shall not be allowed.
- 2) Roofing material manufacturer shall inspect and approve the cleanliness of the roof surface prior to installing new flood coat and aggregate.
  - a) Contractor shall not proceed with flood coat until approved.
- 3) Remove and replace wrinkled or loose base flashing as designated during the pre-bid roof walk.
  - a) Repair with like membrane material and adhere in asphalt mastic adhesive.
- 4) Shave off and remove, blisters, ridges, buckles, and other substrate irregularities from the existing field membrane.
  - a) Repair with 3-ply of trilaminate felt adhered with cold adhesive.
- 5) Spud gravel, and strip-in/reinforce all vents stacks, plumbing pipes, overflow scuppers, scuppers, and drains with 5-coursed repair of asphalt mastic and reinforcing mesh.
  - a) Remove drain clamping ring and extend strip-in/reinforcement into drain then reinstall clamping ring.
  - b) Reinstall drain clamping ring with new bolts and/or clamps.
  - c) If flashing is loose at metal edges, cut membrane back 1 to 2 inches prior to reinforcing.
- 6) Reinforce all base flashing laps and corners with a 3-course reinforcement of modified urethane base coat and polyester.
  - a) Prime flashing prior to installing base coat.
  - b) Apply base coat to all vertical and horizontal laps and corners at 3 to 4 gal/100 sq. ft. Weathered surfaces may require additional base coat materials.
  - c) Embed the polyester reinforcement and extend down past the bottom edge of the cant or roof transition. Brush for proper adhesive and removal of all voids.
  - d) Apply a second coat of base coat, at 2 gal/100 sq. ft, over the reinforcement and a minimum of 2" beyond edges in each direction, feather out edges.
- 7) Coat all flashing with a two-coat polyurethane elastomeric coating system.
  - a) Apply base coat at a rate of 3 to 4 gal/100 sq. ft. including previously coated flashings. Weathered surfaces may take additional base coat material.
  - b) Allow base coat to cure (min 24-hours) Apply finish coat at a rate of 2 gal/100 sq. ft. minimum. If base coat has been down longer than 72 hours prior to the application of finish coat, prime the base coat with specified primer.
- 8) Install three-ply of trilaminate felt in cold adhesive over areas where large cores were removed.

- 9) Repair flashings, gravel stops, coping, and other roof-related sheet metal and trim components.
  - a) Reseal all joints, replace loose or missing fasteners, and replace components where required to provide a watertight condition.
- 10) Re-secure any loose or missing metal details.
- 11) Fill all pitch pans with elastomeric self-leveling sealant and install metal pitch pan covers where missing.
- 12) Replace any broken, missing, or plastic drain strainers with new cast iron strainers.
- 13) Replace all wood blocking supports with new treated wood blocking and protection treads.
  - a) If blocking is supporting gas line or conduits 4" or larger refer to the general condition section above.
- 14) Replace any loose or missing caulking at perimeters and projection flashing details.
- 15) Install cold process adhesive flood coat and Kunshek gravel.
- 16) Paint all soil stacks, gas lines, drain strainers, rusted equipment and metal terminations with two coats of metallic pigmented aluminum coating.

e. Roof K – Roof Replacement (Gravel surfaced BUR)

- 1) Remove all roofing and insulation down to metal deck.
  - a) Remove all perimeter and projection metal termination.
  - b) Remove scupper
- 2) Sweep deck clean of all dirt, dust, and debris.
  - a) Wire brush metal deck to remove all scaled rust.
  - b) Install 2-coats of metal rust primer and paint.
- 3) Attach new wood blocking around all perimeters to accommodate the new insulation and provide a raised edge detail.
- 4) Mechanically fasten tapered polyisocyanurate insulation over metal deck.
  - a) Starting height: 2.5"
  - b) Slope ¼"
- 5) Adhere ¼" gypsum coverboard over polyisocyanurate insulation with hot Type IV asphalt.
- 6) Adhere 2-ply of Type VI fiberglass felt in hot Type IV asphalt.
- 7) Adhere 1-ply smooth SBS modified bitumen membrane in hot Type IV asphalt.
- 8) Adhere two-ply base flashing to all four perimeters with hot Type IV asphalt.
  - a) Flashing Backer Sheet: trilaminate base sheet.
  - b) Flashing Cap Sheet: Granular fire-rated SBS MB.
- 9) Install new 24-gauge pre-finished raised edge detail along outside perimeter edges.
  - a) Exterior fascia shall extend down onto brick walls a minimum of one-inch lower than existing.
- 10) Install new 26-gauge stainless scupper sleeve and securely fasten on all edges.
  - a) Strip-in with 2-ply flashing.
- 11) Install new 24-gauge, pre-finished, scupper head and matching downspout.
  - a) Securely crimp scupper sleeve into scupper head.
  - b) Install new concrete splash-block and protection tread on Roof J under downspout.
- 12) Install new 24-gauge gravel dam approximately 2' x 4' around new scupper.
- 13) Over new roof membrane install a Type IV asphalt flood coat and Kunshek gravel surface.
- 14) Install two coats of aluminum reflective coating to all base flashing, plumbing pipes, and modified flashing strip-ins between gravel dams and in scupper sumps.

8. **Three Trails Pre-School**

a. Roofs 1, 1-A, 2, 2-A, 3, 4, 5, and 6 – Roof Replacement (Gravel surfaced BUR)

- 1) All solar panels will be removed and replaced by others prior to and after roofing work is complete.
- 2) Coordinate with contracted masonry contractor to complete roofing work after all masonry work has been completed.

- 3) The windows and door on the north and west exterior elevation walls of Roof 3 shall be raised a minimum of eight-inches to accommodate the new tapered insulation on Roof 4.
- 4) Electrical conduit and gas lines extending over and along the interior parapet walls shall be removed and replaced by others prior to and after the roofing work.
- 5) The electrical line support located on the parapet wall in the northwest corner of Roof 4 shall be removed and electrical line properly blanketed by others prior to start of roofing work.
- 6) Remove all roofing and insulation down to gypsum decks.
  - a) Remove all flashing and metal terminations including the raised parapet wall area on the south perimeter of Roof 4 and all metal copings.
  - b) Remove all scupper sleeves, heads, and downspouts.
  - c) Remove all deteriorated limestone coping stones on parapet walls.
    - i) Install new wood blocking to extend height flush with existing coping stones and new wood covering stones.
  - d) Remove all obsolete equipment and curbs as designated at pre-bid meeting.
    - i) Cover deck openings with 18-gauge flat-stock metal and properly support per local codes.
- 7) Repair gypsum deck as needed.
- 8) Mechanically fasten a trilaminate base sheet over gypsum decks.
  - a) Use fasteners and plates spaced 9-inches on-center along the base sheet 4-inch overlap, and two rows 7-inches on-center equally spaced and staggered in the field of the sheet.
  - b) Increase at perimeters and corners as required by wind ratings.
- 9) Adhere tapered polyisocyanurate insulation over nailed base sheet with hot Type IV asphalt.
  - a) Slope: ¼" per foot
  - b) Starting height 2.5"
- 10) Adhere ¼" gypsum coverboard over polyisocyanurate insulation with hot Type IV asphalt.
- 11) Adhere 2-ply of Type VI fiberglass felt in hot Type IV asphalt.
- 12) Adhere 1-ply smooth SBS modified bitumen membrane in hot Type IV asphalt.
- 13) Mechanically attached new wood blocking over existing parapet walls per above general conditions.
- 14) Adhere two-ply base flashing to all perimeters with hot Type IV asphalt.  
Flashing Backer Sheet: trilaminate base sheet.  
Flashing Cap Sheet: Granular fire-rated SBS MB.
- 15) Install new 24-gauge pre-finished coping detail over outside parapet walls.  
Exterior fascia shall extend down below and existing limestone coping and kick back into the brick walls.
- 16) Install new 26-gauge stainless scupper sleeve and securely fasten on all edges.
  - a) Strip-in with 2-ply flashing.
- 17) Install new 24-gauge, pre-finished, scupper heads and matching downspouts.
  - a) Securely crimp scupper sleeves into scupper heads.
  - b) Install new concrete splash-block and protection tread under all downspouts existing onto lower level roofs.
- 18) Install new 24-gauge gravel dam approximately 2' x 4' around new scuppers and 4' x 4' around drains on Roofs 1-A and 6.
- 19) Install new 24-gauge pre-finished raised edge detail along the east perimeter of Roof 2A.
  - a) Install new wood blocking as needed to accommodate new insulation and raised edge detail.
- 20) Install new 24-gauge pre-finished box gutter and matching downspouts along the south perimeter of Roof 2.
- 21) Install new 24-gauge pre-finished gutter edge along the south perimeter of Roof 2.
  - a) Install new 2" x 6" wood nailers along edge to accommodate new insulation.
  - b) Mechanically fasten the new gutter edge flanges every 8" on-center

- staggered to new wood blocking.
    - c) Strip-in the gutter edges with two-ply flashing.
  - 22) Install new 24-gauge pre-finished reglet counterflashing at all brick wall terminations.
  - 23) Over new roof membrane install a Type IV asphalt flood coat and Kunshek gravel surface.
  - 24) Install two coats of aluminum reflective coating to all base flashing, plumbing pipes, and modified flashing strip-ins between gravel dams and in scupper sumps.

#### 1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

#### 1.5 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of project site beyond areas in which the Work is indicated.
  - 1. Driveways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Building: Maintain existing building in a watertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.
- C. Security: Comply with Owner's requirements related to security.
- D. Safety: Comply with all OSHA regulations and guidelines that apply to project.
- E. No smoking on Owner's property.
- F. No changing into or from work clothes on site.
- G. Use of adjacent roofs not related to the project is prohibited without written approval from Owner.

#### 1.6 OWNER'S OCCUPANCY REQUIREMENTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits, unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
  - 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
  - 1. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.

## 1.7 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.
  - 1. Weekend Hours: As approved by Owner.
  - 2. Early Morning Hours: As approved by Owner.
  - 3. Hours for Utility Shutdowns: Coordinated with and approved by Owner.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.

## 1.8 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
  - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 001100**





## DOCUMENT 001100 - INVITATION TO BID

### 1.1 PROJECT INFORMATION

- A. Notice to Bidders: Qualified bidders are hereby invited to submit bids for the Raytown Quality Schools 2019 Building Upgrades. Bids shall be fully executed, signed and sealed in envelopes as described in this Document according to the Instructions to Bidders and as amended by the Supplementary Instructions to Bidders.
- B. Project Identification and Locations:
  - 1. **RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS**
    - a. Blue Ridge Elementary, 6410 Blue Ridge Boulevard, Raytown, Missouri 64133.
    - b. Fletridge Elementary, 13001 East 55<sup>th</sup> Street, Kansas City, Missouri 64133.
    - c. New Trails Early Learning Center, 6325 Hunter Street, Raytown, Missouri 64133.
    - d. Norfleet Elementary, 6140 South Norfleet Road, Raytown, Missouri 64133.
    - e. Raytown South High School, 8211 Sterling Ave., Raytown, Missouri 64138.
    - f. Raytown South Middle School, 8838 East 83<sup>rd</sup> Street, Raytown, Missouri 64138.
    - g. Three Trails Preschool, 11801 East 32<sup>nd</sup> Street S, Independence, Missouri 64052.
- C. Owner: Raytown Quality Schools, 6608 Raytown Road, Raytown, MO. 64113.
  - 1. Owner's Representatives: Travis Hux and Josh Hustad.
- D. Architect: Hollis + Miller Architects, Inc., 1828 Walnut Street, Kansas City, MO. 64108.
  - 1. Architect's Representative: Sandy Cochran. Telephone 816.442.7700.
- E. Project Description: Work of Project is defined by the Contract Documents and consists of the following:
  - 1. General: Architectural, mechanical, electrical and plumbing work as set forth in the Contract Documents.
- F. Construction Contract: Bids will be received for the following Work:
  - 1. General Contract (all trades).
- G. Bidders are advised that the School District is tax exempt pursuant to Sections 144.030.2 and 144.615, RSMo. The School District will furnish the successful Bidder with current copies of their Missouri Project Exemption certificate and Missouri Tax Exemption Letter.
- H. Bidders are further advised that a Prevailing Wage Determination prepared by the Missouri Division of Labor Standards is in effect on this project and is included in this Project Manual. Provisions of Section 290.262 CUM, Supp RSMo (1993) shall apply to this Project. The Annual Wage Order No. 24, Section 048, as filed with the Secretary of State, is attached hereto and made part of this Specification.

### 1.2 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed bids until the bid time and date at the location indicated below. Bidders are requested to turn in their bids prior to 2:00 p.m. at the front desk so they may be logged in. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
  - 1. Bid Date: April 29, 2019.
  - 2. Bid Time: 2:00 p.m., local time.
  - 3. Location: Facility Operations Office, 5911 Blue Ridge Boulevard, Raytown, Missouri 64133.
- B. Bids will be thereafter publicly opened and read aloud. Bids received after the bid time listed above will be returned to the Bidder unopened.
- C. Bidders electing to mail in their Bids shall address Bids to the Owner, at the address listed above. The envelope shall be clearly marked as noted above. Owner will not be responsible for Bids not clearly marked.
- D. The bidding procedure shall be in accordance with all applicable provision of Missouri law, including but not limited to Mo. Rev. Statue. 177.086.
- E. Bids shall not contain any recapitulation of the work to be done. No oral, telegraphic or telephonic proposals for modifications will be considered.

### 1.3 BID SECURITY

- A. Bid security shall be submitted with each bid of \$5,000.00 or greater in the amount of 5 percent of the bid amount, including all additive alternates and made payable to the Owner: "Raytown Quality Schools". No bids may be withdrawn for a period of 60 days after opening of bids.
  - 1. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.
  - 2. One single bid security may be obtained for bidding purposes.
- B. All Bid Securities will be retained in escrow by the Architect until an Agreement is signed and a satisfactory Performance and Payment Bond is received by the Owner.

### 1.4 PREBID CONFERENCE

- A. A prebid conference for all bidders will be held at the location as listed below. Prospective bidders are requested to attend.
  - 1. Pre-Bid Date: April 22, 2019.
  - 2. Pre-Bid Time: 2:00 p.m., local time.
  - 3. Location: Facility Operations Office, 5911 Blue Ridge Boulevard, Raytown, Missouri 64133.
  - 4. Touring of the job sites to determine the extent of demolition and conditions under which Work will be conducted at each school will be critical to all Bidders (General Contractors and Subcontractors). Coordinate site tours through Josh Hustad at 5911 Blue Ridge Blvd., Raytown, MO 64133, phone 816.268.7160, email josh.hustad@raytownschools.org. As school is currently in session, Bidders are strongly encouraged to schedule tours outside of school hours. As times vary per school, contact Josh for additional information. Bidders are advised that if tour must be scheduled during school hours, Bidder visit will be limited to those spaces not in use at the time of tour. Tours of site locations will be arranged directly after pre-bid conferences, or by appointment only.

### 1.5 DOCUMENT PROCUREMENT

- A. Printed Procurement and Contracting Documents: Obtain after 3:00p.m. on April 12, 2019 by contacting the KC Blueprint Company and Planroom, 1804 Swift Street, North Kansas City, Missouri 64116, telephone 816.527.0900. Only complete sets of documents will be issued.
  - 1. Cost: Contact KC Blueprint Company.
  - 2. Shipping: Additional shipping charges of will apply. Contact reprographic house for amount.
- B. Online Procurement and Contracting Documents: Obtain access after 3:00 p.m. on April 12, 2019 by contacting KC Blueprint Company and Planroom. Online access will be provided to all registered bidders and suppliers.
- C. Plans and specifications will also be available at the following locations for review only at no cost to the Contractor:
  - 1. Hollis + Miller Architects, Inc.  
1828 Walnut Street, Suite 922  
Kansas City, Missouri 64108  
Phone: (816) 442-7700
  - 2. Builders Association  
632 West 39th Street  
Kansas City, Missouri 64111-2991
  - 3. Dodge/Scan  
1702 Broadway  
Kansas City, Missouri 64108  
Phone: (816) 221-1056
  - 4. Minority Contractors Association  
3200 Wayne  
Kansas City, Missouri 64108  
Phone: (816) 924-4441
- D. A current list of Contractors holding plans will be made available through KC Blueprint Company and Planroom.

## 1.6 TIME OF COMPLETION, LIQUIDATED DAMAGES

- A. Time is of the essence for this Project. Work may commence after school is out for the summer, approximately June 4, 2019. Substantial Completion must be achieved on or before as listed below. The work will not be deemed to be Substantially Complete until the Work is complete and fully functional for its intended purpose.
1. Bidders are advised that the Agreement will contain a stipulated date of Substantial Completion, a provision for the assessment of liquidated damages for each day the Work is not complete beyond the designated date of Substantial Completion.
  2. Substantial Completion:
    - a. Blue Ridge Elementary: April 1, 2020.
    - b. Fleetridge Elementary: April 1, 2020.
    - c. New Trails Elementary: April 1, 2020.
    - d. Norfleet Elementary: April 1, 2020.
    - e. Raytown South High School: April 1, 2020.
    - f. Raytown South Middle School: August 7, 2019.
    - g. Three Trails Prechool: August 7, 2019.
  3. Final Completion: It is required by the Owner that Final Completion of the project shall be completed by:
    - a. Blue Ridge Elementary: May 1, 2020.
    - b. Fleetridge Elementary: May 1, 2020.
    - c. New Trails Elementary: May 1, 2020.
    - d. Norfleet Elementary: May 1, 2020.
    - e. Raytown South High School: May 1, 2020.
    - f. Raytown South Middle School: August 14, 2019.
    - g. Three Trails Preschool: August 14, 2019.

## 1.7 BIDDER'S QUALIFICATIONS

- A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.
- B. Each Contractor desiring to Bid this work must have a minimum of seven (7) years continuous experience under the current company name and must submit the "Contractor's Qualification Statement", AIA Document A305 along with Bid. This Qualification Statement is available at the Office of the American Institute of Architects (AIA) at 1801 McGee Street, Kansas City, Missouri 64108, telephone: (816) 221-3485. The Architect will review the Qualification Statement with the Owner. The Owner has the right to take such steps as he deems necessary, to determine the ability of the Contractor to perform the work. The Contractor shall furnish to the Owner such additional information and data for this purpose as he may request. The right is reserved to reject any Bid, or Bidder, after an investigation or consideration of the information submitted by such Contractor. Refer to Document 004513.
- C. Owner reserves the right to reject any Contractor and Contractor's Proposal where investigation or consideration of the information submitted by the Contractors does not satisfy the Owner that the Bidder has previous experience in performing similar or comparable work, sufficient business and technical organization, financial resources and plant available to perform the Work.

## 1.8 SUPPLEMENTAL REQUIREMENTS

- A. The selected Bidder shall, within fifteen (15) days after Award of the Contract, submit the following Post-Bid information:
1. A statement of costs of the major portions of the work included in the Bid and any specific item of cost requested.
  2. A designation of the Work to be performed by the Bidder with his own forces.

- B. The selected Bidder shall, submit the following with the Bid:
1. A list of names of the Subcontractors, manufacturers, fabricators, and material suppliers or other persons or organizations proposed for each principal portion of the Work as may be designed by the Architect. The Bidder will be required to establish to the satisfaction of the Owner and Architect the reliability and responsibility of the proposed persons or entities to furnish and perform their Work. Prior to the contract, if the Owner or Architect has a reasonable and substantial objection to any person or entity on such list, and refused in writing to accept such person or entity, the bidder may, at his option, withdraw his Bid without forfeiture of Bid Security. If the Bidder submits an acceptable substitute with any increase in his Bid price to cover the difference in cost occasioned by such substitution, the Owner may, at his discretion, accept the increased Bid price or he may disqualify the Bidder. Subcontractors and other persons and entities proposed by the bidders and accepted by the Owner and Architect must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Architect.

**END OF DOCUMENT 001100**

## DOCUMENT 002100 – INSTRUCTIONS TO BIDDERS

- A. A copy of the American Institute of Architects Document A701, Instructions to Bidders 1997 Edition, is bound hereinafter as amended by Document 002200 – Supplementary Instruction to Bidders. This Document is included for information only and may not be duplicated.
- B. Additional copies of the Instructions to Bidders may be obtained, at cost, from the Local Chapter, of the American Institute of Architects, at the address listed below:

AIA Kansas City  
1801 McGee, Suite 100  
Kansas City, Missouri 64108  
Telephone: (816) 221-3485.  
[www.aiakc.org](http://www.aiakc.org)

- C. Additional copies of the Instructions to Bidders may also be obtained, at cost, from the website of the American Institute of Architects, at the internet address listed below:
  - 1. Website: <http://www.aia.org/contractdocs/index.htm>

END OF DOCUMENT 002100



**PROPOSAL FORM**  
for  
**RAYTOWN SOUTH HIGH SCHOOL RENOVATION**

**GENERAL CONTRACT**

**Bid to**

Board of Education  
Raytown Quality Schools  
6608 Raytown Road

**Place of Bid Opening**

Facility Operations Office  
5911 Blue Ridge Boulevard  
Raytown, Missouri 64133

**Bid for**

Raytown School District Roof Improvements

**Time of Bid Opening**

Monday, April 29, 2019, at  
2:00 p.m. (Local Time)

Name of Bidder: \_\_\_\_\_

Address of Bidder: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

1. **THE SITE AND THE DOCUMENTS**

We the undersigned, having examined the Contract Documents listed below and the site of the proposed Work and being familiar with all conditions affecting the construction of the Project, hereby propose and agree to provide and furnish all labor, material, equipment, supervision and other items necessary to perform and complete, in a workmanlike manner, all Work required by the Contract Documents, at the prices stated below. Stated sums include fees, insurance, payroll taxes, and all other charges applicable to materials, appliances, labor and all charges that may be levied. This Bid excludes sales tax.

- (a) Instructions to Bidders, AIA Document A701
- (b) Supplementary Instructions to Bidders
- (c) General Conditions of the Contract, AIA Document A201
- (d) Supplementary General Conditions
- (e) Subsurface Soils Information
- (f) Prevailing Wage Determination
- (g) Specifications (as listed in the Specification Table of Contents)
- (h) Drawings (sets entitled) <<Insert Project Title(s)>>
- (i) Addenda issued during the Time of Bidding  
(Numbered \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_).



2. THE AMOUNT OF THE BASE BID FOR RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS

**School 1:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Blue Ridge Elementary** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 2:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Fleetridge Elementary** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 3:** We propose to furnish all materials and labor for the **Raytown Quality Schools – New Trails Early Learning Center** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 4:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Norfleet Elementary** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 5:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Raytown South High School** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 6:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Raytown South Middle School** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

**School 7:** We propose to furnish all materials and labor for the **Raytown Quality Schools – Three Trails Preschool** called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

Voluntary Combination Bid:

We propose to furnish all materials and labor for the **RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS** (as listed above for Schools 1-7) called for by the Contract Documents for the Base Bid work for the total sum of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_).

3. THE AMOUNT OF THE ALLOWANCES

Not Used.

4. AMOUNTS FOR UNIT PRICES

We, the undersigned, propose to base adjustments in the Contract Sum, if ordered by the Architect during the Contract Time, on the unit prices listed below. These prices constitute full compensation or credit for complete provision and installation for each item listed based solely on Work in place. The Unit Prices as stated include all necessary appurtenances and connections required to complete the Work in place, insurance, overhead, profit, and superintendence.

Unit Price No. 1 – Roof Insulation Replacement (\$ \_\_\_\_\_) sq/ft

Unit Price No. 2 – Metal Decking Repair (\$ \_\_\_\_\_) sq/ft

Unit Price No. 3 – Concrete Deck Repair (\$ \_\_\_\_\_) sq/ft

5. AMOUNT OF ALTERNATES

Not Used.

6. CHANGES IN THE WORK:

Changes in the Work shall be as established in the Contract Documents. The Undersigned agrees that his net fees shall set forth below, include Overhead, Profit, and General Requirements (including but not limited to; insurance and bonds.) The following fees shall be used for Lump Sum pricing and actual cost pricing of additions and deletions to that work included in the Bid, namely:

	<u>Profit &amp; Overhead</u>	<u>Not to Exceed</u>
A. To Contractor for work performed by his/her own forces.	_____ %	10%
B. To Contractor for work performed by other than his/her own forces.	_____ %	5%
C. To Subcontractor for work performed by his/her own forces.	_____ %	10%
D. To Subcontractor for work performed by other than his/her own forces.	_____ %	5%

7. COMPLETION OF THE WORK

If we are notified of the acceptance of the Base Bid of this Proposal within sixty (60) days after the above date, we agree to execute a Contract for the above Work, for the above stated compensation in the form of the Standard Agreement Between Owner and Contractor (Stipulated Sum) AIA Document A101, of the American Institute of Architects, as modified by the Owner. We further agree to meet the date established for Substantial Completion and Final Completion as set forth in the Bidding Documents and agree to pay as liquidated damages the sum of Five Hundred Dollars (\$500.00) for each consecutive calendar day thereafter that the Work remains incomplete.

The Undersigned hereby agrees to commence work under the Contract within twenty-four hours after written notice is given that a portion of this Contractor's work is ready.

8. BID SECURITY

Bidders whose Bid includes both labor and materials and whose Base Bid amount is \$5,000.00 or greater, agrees to and has attached hereto a Bid Bond for the amount of five percent (5%) of the amount of the Bid submitted.

This Bid Security is to be left in escrow with the Architect. If the Undersigned defaults in executing the Agreement within three (3) days of written notification of the award of the Contract to him, or in furnishing the Performance Bond within fourteen (14) days thereafter, the Bid Security will become the property of the Owner and will be delivered to him by the Architect. If the Undersigned executes and delivers the Agreement and Bond within the time specified, or if the Base Bid of this Proposal is not accepted within sixty (60) days of the time set for submission of Bids, the Bid Security shall be returned to the Contractor upon delivery of a receipt therefore.

If the Undersigned defaults in executing and delivering the above-named Agreement and the required performance Bond, the Owner would sustain liquidated damages for five percent (5%) of the amount of the Bid submitted, the measure of which is the amount of the accompanying Bid Bond, Certified Check, or Cashier's Check, payable to "Raytown Quality Schools".

We the undersigned, acknowledge and agree that the owner reserves the right to waive and informalities in any Bid and to reject any and all Bids.

The undersigned Bidder, on behalf of itself and all sub-bidders, releases the Owner, Architect, Construction Manager and other Bidders from any claim arising out of or relating to the acceptance, non-acceptance, or rejection of the undersigned's or any other Bidder's Bid, including without limitation Bids of its sub-bidders, on this Project.

NOTE: If the Contractor is a Corporation, Proposal must be signed by an authorized officer, showing his title.

Yours very truly,

Corporate Seal

\_\_\_\_\_  
FIRM  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
ADDRESS

TELEPHONE: \_\_\_\_\_

FAX: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

STATE OF INCORPORATION: \_\_\_\_\_

Notary Seal

\_\_\_\_\_  
Notary Public

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**Bid Bond**

**CONTRACTOR:**

*(Name, legal status and address)*

<< >>< >  
<< >>

**SURETY:**

*(Name, legal status and principal place of business)*

<< >>< >  
<< >>

**OWNER:**

*(Name, legal status and address)*

<< >>< >  
<< >>

**BOND AMOUNT:** \$ << >>

**PROJECT:**

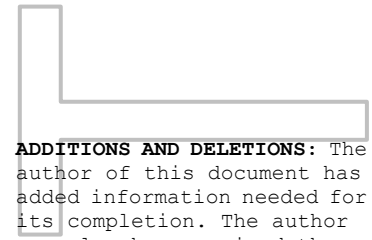
*(Name, location or address, and Project number, if any)*

<< >>  
<< >>  
<< >>

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

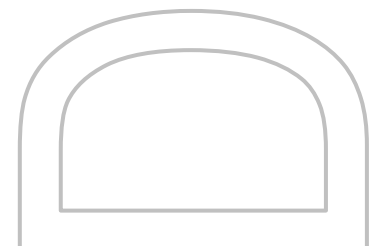
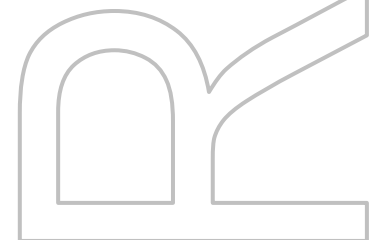
When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.



**ADDITIONS AND DELETIONS:** The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.



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Signed and sealed this « » day of « », « »

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Witness)

« »  
\_\_\_\_\_  
(Contractor as Principal) (Seal)

« »  
\_\_\_\_\_  
(Title)

« »  
\_\_\_\_\_  
(Surety) (Seal)

« »  
\_\_\_\_\_  
(Title)



# DRAFT AIA® Document A305™ – 1986

## Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO: <>

ADDRESS: <>

SUBMITTED BY: <>

NAME: <>

ADDRESS: <>

PRINCIPAL OFFICE: <>

[ <> ] Corporation

[ <> ] Partnership

[ <> ] Individual

[ <> ] Joint Venture

[ <> ] Other <>

NAME OF PROJECT: (if applicable) <>

TYPE OF WORK: (file separate form for each Classification of Work)

[ <> ] General Construction

[ <> ] HVAC

[ <> ] Electrical

[ <> ] Plumbing

[ <> ] Other: (Specify) <>

### § 1 ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor? <>

§ 1.2 How many years has your organization been in business under its present business name? <>

§ 1.2.1 Under what other or former names has your organization operated?

<>

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation: <>

§ 1.3.2 State of incorporation: <>

§ 1.3.3 President's name: <>

**ADDITIONS AND DELETIONS:** The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

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§ 1.3.4 Vice-president's name(s)

<< >>

§ 1.3.5 Secretary's name: << >>

§ 1.3.6 Treasurer's name: << >>

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization: << >>

§ 1.4.2 Type of partnership (if applicable): << >>

§ 1.4.3 Name(s) of general partner(s)

<< >>

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization: << >>

§ 1.5.2 Name of owner:

<< >>

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

<< >>

§ 2 LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

<< >>

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

<< >>

§ 3 EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

<< >>

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

<< >>

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

<< >>

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

<< >>

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

<< >>

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

<< >>

§ 3.4.1 State total worth of work in progress and under contract:

<< >>

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

<< >>

§ 3.5.1 State average annual amount of construction work performed during the past five years:

<< >>

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

<< >>

## § 4 REFERENCES

§ 4.1 Trade References:

<< >>

§ 4.2 Bank References:

<< >>

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

<< >>

§ 4.3.2 Name and address of agent:

<< >>

## § 5 FINANCING

§ 5.1 Financial Statement.

§ 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);



Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

<< >>

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?

<< >>

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

<< >>

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

<< >>

§ 6 SIGNATURE

§ 6.1 Dated at this << >> day of << >> << >>

Name of Organization: << >>

By: << >>

Title: << >>

§ 6.2

<< >>

M << >> being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this << >> day of << >> << >>

Notary Public: << >>

My Commission Expires: << >>

# DRAFT AIA® Document A101™ – 2017

## Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

**AGREEMENT** made as of the  day of  in the year   
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

and the Contractor:  
(Name, legal status, address and other information)

for the following Project:  
(Name, location and detailed description)

The Architect:  
(Name, legal status, address and other information)

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:** The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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**TABLE OF ARTICLES**

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**

**EXHIBIT A INSURANCE AND BONDS**

**ARTICLE 1 THE CONTRACT DOCUMENTS**

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

**ARTICLE 2 THE WORK OF THIS CONTRACT**

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

**ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

**§ 3.1** The date of commencement of the Work shall be:

*(Check one of the following boxes.)*

- [ « » ] The date of this Agreement.
- [ « » ] A date set forth in a notice to proceed issued by the Owner.
- [ « » ] Established as follows:  
*(Insert a date or a means to determine the date of commencement of the Work.)*

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

**§ 3.2** The Contract Time shall be measured from the date of commencement of the Work.

**§ 3.3 Substantial Completion**

**§ 3.3.1** Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

*(Check one of the following boxes and complete the necessary information.)*

- [ « » ] Not later than « » ( « » ) calendar days from the date of commencement of the Work.

[ « » ] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

#### ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

#### § 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

« »

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » ( « » ) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

« »

§ 5.1.7.1.1 The following items are not subject to retainage:  
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

<< >>

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:  
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

<< >>

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:  
(Insert any other conditions for release of retainage upon Substantial Completion.)

<< >>

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

## § 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

<< >>

## § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

<< >> % << >>

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

<< >>

<< >>

<< >>

<< >>

**§ 6.2 Binding Dispute Resolution**

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box.)*

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

**ARTICLE 7 TERMINATION OR SUSPENSION**

**§ 7.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

**§ 7.1.1** If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)*

**§ 7.2** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** The Owner’s representative:

*(Name, address, email address, and other information)*

**§ 8.3** The Contractor’s representative:

*(Name, address, email address, and other information)*

**§ 8.4** Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

<< >>

§ 8.7 Other provisions:

<< >>

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

<< >>

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[ << >> ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
(Insert the date of the E204-2017 incorporated into this Agreement.)

<< >>



[ « » ] The Sustainability Plan:

Title	Date	Pages

[ « » ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

**.9** Other documents, if any, listed below:

*(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)*

« »

This Agreement entered into as of the day and year first written above.

\_\_\_\_\_  
**OWNER** (Signature)

« »« »

\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

« »« »

\_\_\_\_\_  
(Printed name and title)

**ADDENDUM to A101-2017 – Standard Form of Agreement Between Owner and Contractor** where the basis of payment is a stipulated sum

Section 6.2 Binding Dispute Resolution

[x] Litigation in a court of competent jurisdiction

**[NEW] Section 6.3.** In the event that any party to this Agreement shall be compelled to enforce the terms of this agreement through litigation or retention of legal counsel, the prevailing party in any such enforcement action shall be entitled to the payment of its attorneys' fees by the breaching party. Any legal action in connection with this Agreement shall be filed in the Circuit Court of Jackson County, Missouri, the United States District Court for the Western District of Missouri, as appropriate, to which jurisdiction and venue the Parties expressly agree.

~~Section 7.1.1.~~ If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201-2017, then the Owner shall pay the Contractor a termination fee as follows:

**Section 8.4.** Neither the Owner's nor the Contractor's representative shall be changed without ten days **written** prior notice to the other party.

**Section 8.5.1** The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents. **Owner preserves all immunities recognized at law. Nothing herein shall be construed as a waiver of Sovereign Immunity or Governmental Immunity by whatever name as set forth in Mo. Rev. Stat. § 537.600 et seq. Any insurance purchased by Owner or Contractor hereto is not intended to act as a waiver, nor is it a waiver of any defense available to Owner and its employees by statute or at common law.**

**[NEW] Section 8.6.1.** This Agreement shall be based upon the required payment by the Contractor of not less than the prevailing hourly rate of wages, as set out in the Wage Order attached herein and made part of the Specification for Work under the Contract, must be paid to all workers performing work under the Contract. The Contractor will forfeit a penalty to the Owner of \$100.00 per day (or portion of a day) for each worker that is paid less than the prevailing wage for any work done under the Contract by the Contractor or by any Subcontractor.

**[NEW] Section 8.6.2.** Prior to commencement of the work, the Contractor shall provide to the Owner a sworn affidavit and other sufficient documentation to affirm its enrollment and participation in the Federal Work Authorization Program. Federal Work Authorization Program means the eVerify program maintained and operated by the United States Department of Homeland Security and the Social Security Administration, or any successor program. The Contractor shall also provide the Owner a sworn affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

**[NEW] Section 8.6.3.** As a condition of the Contract, Contractor must provide a 10-hour Occupational Safety and Health Administration (OSHA) construction safety program ("Program") for Contractors on site employees as mandated by Section 292.675, RSMo. Said Program must include a

course in construction safety and health approved by OSHA or a similar program approved by the Missouri Department of Labor and Industrial Relations. This requirement includes the following:

- 8.6.3.1 All of Contractor's on site employees must complete the Program within 60 days of beginning work on the Project;
- 8.6.3.2 Any employee found on the work site subject to this requirement without documentation of the successful completion of the Program will be given 20 days to produce such documentation before being subject to removal from the Project
- 8.6.3.3 Contractor's failure to comply with these requirements will subject it to penalties. Contractor shall forfeit as a penalty to the Owner \$2,500.00 plus \$100.00 for each employee employed by Contractor or Contractor's subcontractor, for each calendar day, or portion thereof, such employee is employed to do work pursuant to this Contract without the required training. Said penalty shall not begin to accrue until the time period in subsections 8.6.2.1 and 8.6.2.2 have elapsed. Contractor will be subject to said penalties notwithstanding any other provision to the contrary in this Contract.
- 8.6.3.4 Contractor shall require its Contracts with all subcontractors to contain these provisions. Contractor shall be responsible for penalties to Owner due to any subcontractor's employees' failure to be able to produce documentary evidence of training in the required program. Contractor may withhold all sums necessary to cover any penalty Owner has withheld or been paid. Contractor may recover any penalties from subcontractor by filing a lawsuit in the Circuit Court of Jackson County, Missouri. Contractor shall have no right of recovery against Owner.

**[NEW] Section 8.6.4.** Every transient employer, as defined in Section 285.230, RSMo, must post in a prominent and easily accessible place at the worksite a clearly legible copy of the following: (1) a notice of registration for employer withholding issued to such transient employer by the Director of Revenue; (2) proof of coverage for workers compensation insurance or self-insurance signed by the transient employer and verified by the Department of Revenue through the records of the Division of Workers Compensation; and (3) the notice of registration for unemployment insurance issued to such transient employer by the Division of Employment Security. Any transient employer failing to comply with these laws shall, under Section 285.234, RSMo, be liable for a penalty of \$500.00 per day until the notices required by this Section are posted as required by that Statute.

**[NEW] Section 8.6.5.** Before employment of any employee, contractor, subcontractor, consultant, or subconsultant who is an individual for work on this Project, the Contractor shall conduct or shall allow the Owner to conduct background checks through all appropriate state agencies and any other background checks as may be standard for entities providing services to public schools, including without limitation, a thorough review of the list of registered sex offenders as provided by the County Sheriff's Department, and any such individual who does not pass such background check as determined by the Owner in its sole discretion shall not be permitted to enter the premises where the Project is located or any other school district property or to work on the Project. The Contractor shall include all of these requirements in its contracts with its subcontractors and suppliers.

**[NEW] Section 8.6.** The relationship of the Owner and Contractor is one of District and independent contractor and not master and servant or joint venturers. Except as provided herein, the Contractor does not have authority to act for or on behalf of the Owner.

**[NEW] Section 8.7. Throughout the term of this Agreement, the Architect shall fully comply with all applicable laws and ordinances and the applicable orders, rules, regulations and requirements of all federal, state and municipal governments and appropriate administrative officers and agencies having jurisdiction over the Project, including the policies of the Board of Education of Owner.**

EXHIBIT A – Insurance and Bonds

Section A.3.4. The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located **covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.**



## Application and Certificate for Payment, Contractor–Subcontractor Version

<b>TO CONTRACTOR:</b>    <b>FROM SUBCONTRACTOR:</b>	<b>PROJECT:</b>    	<b>APPLICATION NO:</b> <b>PERIOD TO:</b> <b>SUBCONTRACT FOR:</b> <b>SUBCONTRACT DATE:</b> <b>PROJECT NOS:</b> /     /	<b>Distribution to:</b> OWNER <input type="checkbox"/> ARCHITECT <input type="checkbox"/> CONTRACTOR <input type="checkbox"/> FIELD <input type="checkbox"/> <input type="checkbox"/>
---	---------------------------------	---	--

### SUBCONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Subcontract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL SUBCONTRACT SUM ..... \$ \_\_\_\_\_

2. NET CHANGE BY CHANGE ORDERS ..... \$ \_\_\_\_\_

3. SUBCONTRACT SUM TO DATE (Line 1 ± 2) ..... \$ \_\_\_\_\_

4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$ \_\_\_\_\_

5. RETAINAGE:

a. \_\_\_\_\_ % of Completed Work  
(Columns D + E on G703) ..... \$ \_\_\_\_\_

b. \_\_\_\_\_ % of Stored Material  
(Column F on G703) ..... \$ \_\_\_\_\_

Total Retainage (Lines 5a + 5b, or Total in Column I of G703) ..... \$ \_\_\_\_\_

6. TOTAL EARNED LESS RETAINAGE ..... \$ \_\_\_\_\_  
(Line 4 minus Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$ \_\_\_\_\_  
(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE ..... \$

9. BALANCE TO FINISH, INCLUDING RETAINAGE  
(Line 3 minus Line 6) ..... \$ \_\_\_\_\_

The undersigned Subcontractor certifies that to the best of the Subcontractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Subcontract Documents, that all amounts have been paid by the Subcontractor for Work for which previous Certificates for Payment were issued and payments received from the Contractor, and that current payment shown herein is now due.

**SUBCONTRACTOR:**

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

State of: \_\_\_\_\_

County of: \_\_\_\_\_

Subscribed and sworn to before  
me this \_\_\_\_\_ day of \_\_\_\_\_

Notary Public:

My commission expires:

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$	\$
Total approved this month	\$	\$
<b>TOTAL</b>	<b>\$</b>	<b>\$</b>
NET CHANGES by Change Order	\$	



## DOCUMENT 006273 – APPLICATION AND CERTIFICATE FOR PAYMENT

### 1.1 APPLICATION AND CERTIFICATE FOR PAYMENT

- A. The Form of the Application and Certificate for Payment shall be AIA Document G702 – 1992 “Application and Certification for Payment” and G703 – 1992 “Continuation Sheet. A copy of each form is bound hereinafter for information only and may not be duplicated.
- B. Additional copies of AIA Document G702 and AIA Document G703 may be obtained, at cost, from the Local Chapter, of the American Institute of Architects, at the address listed below:

AIA Kansas City  
1801 McGee, Suite 100  
Kansas City, Missouri 64108  
Telephone: (816) 221-3485.  
[www.aiakc.org](http://www.aiakc.org)

- C. Additional copies of AIA Document G702 and AIA Document G703 may also be obtained, at cost, from the website of the American Institute of Architects, at the internet address listed below:
  - 1. Website: <http://www.aia.org/contractdocs/index.htm>

END OF DOCUMENT 006273





**DOCUMENT 006275 – PARTIAL LIEN WAIVERS**

1.1 PARTIAL LIEN WAIVER

- A. The Form of the Partial Lien Waiver is bound hereinafter for Contractor's use and duplication.

**END OF DOCUMENT 006275**

**PARTIAL LIEN WAIVER**

Reference that certain Agreement between \_\_\_\_\_, as Contractor, and Raytown Quality Schools of Raytown, Missouri in Jackson County as Owner, dated on the Project know as: Raytown Quality Schools – Baseball Stadium Improvements, Project No. 16134, for work to be performed by said Contractor.

Reference also that certain Invoice (s) No(s). \_\_\_\_\_ of Contractor to said Owner in the amount of \$ \_\_\_\_\_ for work, labor, and materials installed in or furnished for said Project as of \_\_\_\_\_, 20\_\_\_\_\_.

Upon receipt of the Owner’s remittance for the amount of said invoice(s) and contingent upon the final clearance and payment of said remittance, Contractor agrees to and does hereby waive and release said property, Project and Owner from any and all liens, statutory or otherwise, for any and all work, labor and materials furnished by or through \_\_\_\_\_ Contractor on said Project to and including the work, labor, and materials covered by said above numbered invoice(s) except for unpaid retainage.

The remittance of the Owner’s identified as payment of said above numbered invoice(s) as endorsed by Contractor marked “paid” or otherwise canceled by the bank against which said remittance was drawn shall constitute conclusive proof that said Invoice(s) were paid and that payment thereof was received by Contractor and this lien waiver shall become effective automatically and without requirement of any further act, acknowledgement or receipt on the part of the Contractor named herein.

Dated this \_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
By  
\_\_\_\_\_  
Title

Notary Seal (Below)

\_\_\_\_\_  
Notary Public  
Subscribed and sworn to before me within and for  
STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_  
On this \_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

**DOCUMENT 006276 – BAILMENT RECIEPT**

1.1 BAILMENT RECIEPT

- A. The Form of the Bailment Receipt is bound hereinafter for Contractor’s use and duplication.

**END OF DOCUMENT 006276**

**NON-NEGOTIABLE BAILMENT RECEIPT**

Receipt No. \_\_\_\_\_

BAILOR: Raytown Quality Schools  
6608 Raytown Road  
Raytown, MO. 64113

BAILEE: \_\_\_\_\_  
Contractor / Supplier

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

LOCATION OF STORAGE: \_\_\_\_\_

The goods and materials described below are held and stored pursuant to the Contract by and between Bailee, as Contractor/Supplier, and Raytown Quality Schools of Raytown, Missouri in Jackson County as Owner, for Work to be performed at the above referenced Project Location. Said goods and materials are to be transferred or delivered to the Project site in conjunction with the performance of Bailee's Contract referenced above or upon the direction of Bailor or its General Contractor and no other. The Bailee acknowledges that it has not ownership rights or title in, nor shall claim any lien upon, said goods and materials.

<u>QUANTITY</u>	<u>DESCRIPTION OF ITEM</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Received and Acknowledged by:

\_\_\_\_\_  
Contractor / Supplier (Bailee)

On this \_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_\_

**DOCUMENT 006277 – BILL OF SALE**

1.1 BILL OF SALE

- A. The Form of the Bill of Sale is bound hereinafter for Contractor's use and duplication.

**END OF DOCUMENT 006277**

**BILL OF SALE**

SELLER: \_\_\_\_\_, Subcontractor or Supplier  
\_\_\_\_\_, Address  
\_\_\_\_\_, City, State Zip

In consideration of payments made pursuant to its Contract with Raytown Quality Schools in Jackson County as Owner, Buyer, dated \_\_\_\_\_, 20\_\_ for the Project known as \_\_\_\_\_, receipt of which is hereby acknowledged, Seller does hereby grant, sell, transfer, and deliver to Buyer right, title, and interest in the following goods:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Buyer shall have all rights and title to the goods in himself and his executors, administrators and assigns. Seller is the lawful owner of the goods and the goods are free from all encumbrances. Seller has good right to sell the goods and will warrant and defend the right against the lawful claims and demands of all persons. It is expressly understood and agreed that the acceptance of the goods described herein is not a waiver of any right of action that the Buyer may have for breach of warranty of any other cause under the Contract referenced above or at law.

In Witness Whereof, Seller has executed this Agreement the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Seller: \_\_\_\_\_ (subcontractor, supplier)  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

**ASSIGNMENT OF BILL OF SALE**

\_\_\_\_\_, in consideration of payments made by \_\_\_\_\_, Owner, pursuant to its Contract dated \_\_\_\_\_, 20\_\_\_\_\_ for the project known as \_\_\_\_\_ does hereby assign this Bill of Sale to Owner.

By: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**DOCUMENT 007200 – GENERAL CONDITIONS**

**1.1 APPLICABLE DOCUMENTS**

- A. The American Institute of Architects Document A201, “General Conditions of the Contract for Construction”, 2007 Edition, is part of the Contract Documents and is included hereinafter, as amended.

**END OF DOCUMENT 007200**





## **ADDENDUM to A201-2017 – General Conditions of the Contract for Construction**

### **SUPPLEMENTARY CONDITIONS**

Section 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor ~~to whom the Contractor has no reasonable objection~~ and whose status under the Contract Documents shall be that of Architect.

Section 3.6.1 .1 There will be a Certificate Expiration Date on the Missouri Project Exemption Certificates which will correspond with the Estimated Project Completion Date. If this ~~date~~ **date** should have to be extended, the Contractor shall contact the Architect and the School District for a revised expiration date.

Section 3.7.2 The Contractor shall comply and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, **district board policies**, and lawful orders of public authorities applicable to performance of the Work. If the Contractor performs any Work in a manner contrary to such laws, ordinances, rules and regulations, and without such notice to Architect, he shall assume full responsibility therefore and shall bear all costs attributable thereto.

Section 11.3.1.4 This should become Section 11.1.5.

Section 11.3.1.6 This should become Section 11.2.4

Section 11.3.7 This language is now included in A201-2017, Section 11.3.1.

Section 11.4.1 This language could be added to the end of 11.1.2.

Section 14.1.1.4 Delete Sections 14.1.1.4 and 14.1.1.5

Section 14.1.2.3 The language of A201-2017 stating “on three (3) or more occasions” is acceptable

Section 15.1.2 This language is now included in A201-2017, Section 15.1.3.1.

Section 15.1.4 This language is now provided in Section 15.1.5 of A201-2017

Section 15.2.1 This language has been significantly modified and the mediation section (15.3) has been added. Section 15.3 is generally acceptable.

### **SPECIAL CONDITIONS**

Section 1.12 The prevailing wage law has been modified to exclude contracts under \$75,000. This is simply being noted in the event that a contract would fail to exceed that amount, prevailing wage would not be required.

**[New] Section 1.17 Before employment of any employee, contractor, subcontractor, consultant, or subconsultant who is an individual for work on this Project, the Contractor shall conduct or shall**

allow the Owner to conduct background checks through all appropriate state agencies and any other background checks as may be standard for entities providing services to public schools, including without limitation, a thorough review of the list of registered sex offenders as provided by the County Sheriff's Department, and any such individual who does not pass such background check as determined by the Owner in its sole discretion shall not be permitted to enter the premises where the Project is located or any other school district property or to work on the Project. The Contractor shall include all of these requirements in its contracts with its subcontractors and suppliers.

#### A101-2017 EXHIBIT A

A.2.1 General            Add this statement to the end of the section: **Owner preserves all immunities recognized at law. Nothing herein shall be construed as a waiver of Sovereign Immunity or Governmental Immunity by whatever name as set forth in Mo. Rev. Stat. § 537.600 et seq. Any insurance purchased by Owner or Contractor hereto is not intended to act as a waiver, nor is it a waiver of any defense available to Owner and its employees by statute or at common law. No insurance purchased by Owner herein is not intended to cover machinery, tools, and equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements.**

A.2.4            Optional Extended Property Insurance – this section A.2.4.1 – A.2.4.7 is subject to review and negotiation, based upon the District's preferences.

A.2.5    Other Optional Insurance – same as A.2.4 above (negotiable).

A.3.1.1.            Add this language to the end of section A.3.1.1: **The Contractor shall furnish the Owner with a satisfactory proof of carriage of the insurance required. Certificates of insurance will be required in duplicate for file with the Owner and with the A/E, such certificates to provide that the Owner is entitled to the same notice as that given to the purchaser of the insurance in case of cancellation or any major change therein. Owner preserves all immunities recognized at law. Nothing herein shall be construed as a waiver of Sovereign Immunity or Governmental Immunity by whatever name as set forth in Mo. Rev. Stat. § 537.600 et seq. Any insurance purchased by Owner or Contractor hereto is not intended to act as a waiver, nor is it a waiver of any defense available to Owner and its employees by statute or at common law.**

A.3.2.2            The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in **the State of Missouri and that carries a Best policyholder's rating of "A" or better; and carrier at least Class X financial rating.** The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

A.3.2.2.1            CGL Limits

General CGL:    \$1,000,000 per Occurrence  
                         \$1,000,000 General Aggregate

Aggregate for Products-Completed operations hazard: Contact MUSIC for recommendation

Automobile: \$1,000,000 per accident (Combined Single Limit Bodily Injury and Property Damage)

Excess Liability: \$2,000,000 (Umbrella)

A.3.2.2.5 Workers' Comp: Contractor shall take out, pay for and maintain at all times during the prosecution of the work under the contract, the following forms of insurance, by carriers acceptable to and approved by Owner.

Statutory Workmen's Compensation and Employer's Liability Insurance: The Contractor shall procure and shall maintain during the life of this Contract, Statutory Compensation Insurance and Employer's Liability Insurance with limits as shown below for all of his employees to be engaged in work for the project under this Contract. In case of any such work sublet, the Contractor shall similarly require Subcontractors to provide Statutory Workmen's Compensation Insurance and Employer's Liability Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide, and shall cause such Subcontractor to provide, adequate Employer's Liability Insurance for the protection of such of the employees as are not otherwise protected.

Workers' Compensation and Employers' Liability (Per Contract)

Each Accident \$500,000

Disease - Policy Limit \$500,000

Disease - Each Employee \$500,000

#### A.3.4 Performance Bonds and Payment Bond

Type	Penal Sum (\$ )
Payment Bond	<b>Set value</b>
Performance Bond	<b>Set value</b>



## **DOCUMENT 007300 - SUPPLEMENTARY CONDITIONS**

The following supplements modify AIA Document A201-2017, "General Conditions of the Contract for Construction". Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions remain in effect.

### **ARTICLE 1 – GENERAL PROVISIONS**

Add to the end of Subparagraph 1.1.2:

The Contract Form will be the Standard Form of Agreement Between Owner and Contractor (Stipulated Sum), AIA Document A101, [and attached Addendum](#).

Add to the end of Subparagraph 1.1.3:

1.1.3 The work referred to in these documents consists of the furnishing of all labor, materials and equipment for the complete installation of all work specified herein and shown on the drawings, including; hauling off, delivery, unloading, uncrating, assembly, setting-in-place, leveling, completely installed and clean up of any debris.

Add the following definitions:

1.1.9 Product: Materials, systems and equipment incorporated or to be incorporated in the Work.

1.1.10 Provide: Furnish and install and shall include, without limitation, labor, materials, equipment, transportation, services and other items required to complete the referenced tasks.

1.1.11 Furnish: Pay for, deliver (or receive), unload, uncrate, inspect and store as specified or directed while retaining care, custody and control until received for installation by others based on a signed receipt.

1.1.12 Install: Receive, unload, uncrate, inspect and store as specified or directed while retaining care, custody, and control; set or place in position, make required connections, adjust and test for satisfactory performance and operation.

1.1.13 Not In Contract (N.I.C.): Products not in Contract, but which may require provisions in the Work for future installation.

1.1.14 By Owner Future (B.O.F.): Items furnished and installed by Owner and are not in the Contract but may require rough-in services, blocking and anchorage devices, for future installation.

1.1.15 By Owner (B.O.): Items ordered, paid for and shipped to Project by Owner. Contractor shall receive, unload, unpack or uncrate, protect, move into place, install and connect items.

1.1.16 Relocate Existing (R.E.): Existing items requiring relocation under the Contract and which may require service disconnection and capping and new service connections.

Add Clause 1.2.2.1:

1.2.2.1 The terms "Contractor", "furnished under other sections", "included as part of other sections", "related work in other sections", or similar description of segregation shall not be interpreted to limit the responsibility of any particular party involved in the Work. The limitations of any subcontractor's work shall rest solely upon the agreement between the General Contractor and the Subcontractor, regardless of where the work is called for in the Contract Documents.

Add Clauses 1.2.3.1 and 1.2.3.2:

1.2.3.1 When, in the Specifications, a word such as "approved comparable product", "approved substitute", "satisfactory", "as directed", etc., is used, it implies such reference is to the Architect's specific approval and directions. Whenever substitutions; products, materials and equipment not originally specified, alter the design or space requirements indicated in the Contract Documents, the Contractor shall include all items of cost of the revised design and construction, including costs of all allied trades involved.

1.2.3.1 Whenever the words "necessary", "proper", or words of like effect are used in the Contract Documents with respect to the extent, conduct, or character of work specified, they shall mean that the said work shall be carried to the extent, must be conducted in a manner, or be of a character which is "necessary" or "proper" under the circumstances in the opinion of the Architect, and the Architect's judgment in such matters shall be considered final.

Add Subparagraphs 1.2.4 through 1.2.6:

1.2.4 In case of actual and alleged conflicts and inconsistencies between Drawings and Specifications, Schedules, or other Contract Documents, or within any Document not clarified by addendum; the better quality and greater quantity of Work consistent with the design indicated, shall be deemed to be the basis of the Contractor's Bid and the Contract Sum. Failure to report alleged conflicts and inconsistencies in the Contract Documents shall be deemed as evidence that the Contractor has elected to proceed in the more expensive manner, as the basis of the Contract Sum. Work involving any alleged conflict or inconsistency shall be provided in accordance with the Architect's interpretation.

1.2.5 Where items are specified by use of reference standard specifications or to codes of local or state authorities, the date of the reference shall be the latest edition published as of the date of the Agreement, unless a specific edition is referenced in the Specifications or in an applicable code, in which case the code reference to the specific edition shall govern.

1.2.6 Materials which are shown on the Drawings and which may not be specifically described in the Specifications or on the Drawings, shall be compatible with adjacent materials, and shall be subject to review and acceptance by the architect for conformance with the intent of the Contract Documents. Where installation techniques are not specified, installation shall be in accordance with the manufacturer's current instructions and industry standards, as acceptable to the Architect.

## **ARTICLE 2 - OWNER**

Revise Paragraph 2.5. as follows:

In the first sentence, DELETE "a ten-day period" and INSERT in it's place, "forty-eight hours". In the second sentence, DELETE the word "reasonable".

## **ARTICLE 3 - CONTRACTOR**

Add clause 3.2.2.1:

3.2.2.1 The Contractor shall notify the Architect of actual or alleged conflicts and inconsistencies between Drawings and Specifications, Schedules, or other Contract Documents, or within any Document not clarified by addendum in accordance with Subparagraph 1.2.4 of these Supplementary Conditions.

Add Subparagraph 3.2.5:

3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

Add Clause 3.4.2.1:

3.4.2.1 After the Contract has been executed, the Owner and Architect will consider requests for substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). Substitutions for Convenience and Substitutions for Cause shall be made in accordance with Article 7 and as set forth in Sections 012500 and 016000.

- .1 After execution of the Contract, substitutions for "**Cause**" for specified materials constitute "changes in the work" and may be proposed by the Contractor up to thirty (30) days after date of Award of the Contract only on condition that either:
  - .a Specified item has been discontinued or is unavailable in time frame to meet the Project schedule due to conditions beyond the control of the Contractor, or
  - .b Specified item has been determined to be unsuitable for the Project, or
  - .c Owner will benefit by a reduced cost or an improved Project. Owner is to receive full benefit of any cost reductions.
- .2 Requests for substitutions shall comply with requirements specified in Sections 012500 and 016000, in addition to including the following:
  - .a Statement of cause for request with substantiating documents.
  - .b Documentary proof of equal or superior quality, delivery time, and costs in the form of certified

quotations from suppliers of both specified and proposed items. Approved substitutions will be incorporated into the Work by Change Order or Construction Change Directive under provisions of Article 7.

Add Clause 3.4.2.2:

3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions and to make agreed-upon changes in the Drawings and Specifications made necessary by the Owner's acceptance of such substitutions.

Add Subparagraph 3.6.1:

3.6.1 The Owner is sales tax-exempt under State of Missouri Statutes. A Missouri Project Exemption Certificate approved by the Missouri Department of Revenue and a copy of the Owner's current 'Missouri Tax Exemption Letter' will be furnished to the Contractor as authorization to purchase, on behalf of the Owner, all tangible personal property and materials to be incorporated or consumed in the construction of the Project on a sales tax-exempt basis. The Contractor shall furnish copies of the Exemption Certificate and Missouri Tax Exemption Letter to its Subcontractors and Suppliers on this Project.

- .1 Procedure for obtaining those exemption certificates - Contractor shall submit a complete list of Subcontractor's who will be working on the project along with their addresses, phone numbers and contact persons to Travis Hux or Josh Hustad of the Raytown Quality Schools. The Owner will type all information on the Missouri Project Exemption Certificates and mail back to the Contractor. The Contractor shall keep a copy of each of these certificates in his file and mail a set to each of his Subcontractors.
- .2 There will be a Certificate Expiration Date on the Missouri Project Exemption Certificates which will correspond with the Estimated Project Completion Date. If this data should have to be extended, the Contractor shall contact the Architect and the School District for a revised expiration date. A revised Missouri Project Exemption Certificate will be issued to you reflecting the revised expiration date. The Contractor shall submit, to the Owner, a list of all Subcontractors still working on the project at that time who will need the revised Missouri Project Exemption Certificate.
- .3 A copy of these certificates will be on file with the Owner.

Add Clause 3.10.1.1:

A detailed time line schedule shall be submitted within fifteen (15) days after Award of the Contract. In addition to detailed information required in Subparagraph 3.10.1, the Contractor's Construction Schedule shall include anticipated labor/crew size, manpower, activity durations. Schedule information shall include shop drawing submittal schedule, material delivery schedule and construction activity information. Submit update of schedule with each request for payment. Pay requests will not be processed without being accompanied with an updated construction and submittal schedules.

Add Subparagraph 3.10.4:

3.10.4 The Contractor, Subcontractors, sub-subcontractors and suppliers shall furnish sufficient forces, construction plant and equipment, and shall work such hours as may be necessary to ensure the timely execution of the Work in accordance with the time limits set forth in the Contract Documents. If, in the opinion of the Owner, the Contractor falls behind the time constraints indicated in the Construction Progress Schedule, the Contractor shall take such steps as may be necessary to improve the progress of the Work. The Owner may require the Contractor to increase the number of shifts, and/or overtime operations and days of the work including holidays, Saturdays and Sundays, all without additional cost to the Owner.

Add Clause 3.12.6.1:

3.12.6.1 The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

## **ARTICLE 4 - ARCHITECT**

Add Clause 4.2.2.1:

4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

## **ARTICLE 5 - SUBCONTRACTORS**

Revise Subparagraph 5.2.1 as follows:



In the first sentence delete "as soon as practicable" and insert "no later than seven days".

Add Clause 5.2.1.1:

5.2.1.1 Notice of no reasonable objection shall in no way be construed or indicate prior acceptance or approval of materials or equipment for which persons or entities may be agents or representatives, and shall not relieve the Contractor from full and complete responsibility for the quality of the Work and performance of those with whom the Contractor executes a contract.

Add Subparagraph 5.3.1:

5.3.1 The Contractor shall require each subcontractor to designate one individual as the on-site foreman/supervisor of the Subcontractor's work, who shall direct the Work at all times the Subcontractor is performing work and who shall confer with the Contractor before reducing his/her work forces or leaving the project unsupervised. The foreman/supervisor shall act for the Subcontractor in all areas as designated by the Subcontract.

## **ARTICLE 7 - CHANGES IN THE WORK**

Modify Subparagraph 7.3.8:

Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect including an allowance for overhead and profit.

When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase or decrease, if any, with respect to that change.

Add Subparagraph 7.3.11

7.3.11 In Subparagraph 7.3.7, the allowance for the combined overhead and profit included in the total cost to the Owner for increase and decrease change orders shall be based on the following:

7.3.11.1 The allowances to the Contractor for Work performed by the Contractor with the Contractor's own forces and for materials purchased directly by the Contractor (not through a Subcontractor).

7.3.11.2 The allowances to the Contractor and Subcontractor for Work performed by the Subcontractor with that Subcontractor's own forces or purchased directly by that Subcontractor (not through a Sub-subcontractor).

7.3.11.3 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7.

7.3.11.4 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change be approved without such itemization, except those so minor that the change can be seen by inspection.

## **ARTICLE 9 - PAYMENTS AND COMPLETION**

Add Clause 9.3.1.3:

9.3.1.3 The Contractor shall submit three (3) of each of the following: Notarized applications for payment; previous month's affidavits and partial liens waivers from Contractor, Subcontractors and suppliers, and supporting documents. Non-Negotiable Bailment Receipt form and Partial Lien Release form are included at the end of this Section for use.

Add to Subparagraph 9.4.1:

Five percent (5%) of the Sum of each Application for Payment shall be retained until the Project is Substantially Complete. Thereafter, no further retainage will be withheld provided, however, that Satisfactory Progress and Performance is being made in the Work. Final Payment shall be in accord with Article 9, and shall be made within thirty (30) days after issue of the final Certificate of Payment. The retained percentage shall be withheld until final payment.

Add to Subparagraph 9.6.1:

The Architect may decline to approve any Application for Payment and the Owner shall not be required to make any Progress

Payments or Final Payment to the Contractor if the Contractor is in violation of any term or condition of this Agreement, the General Conditions of the Contract (AIA Document A201), or the Supplementary Conditions, or if the Contractor fails to timely provide any information reasonably requested by Owner.

Add to Subparagraph 9.8.3:

The Contractor and each Subcontractor shall carefully and regularly check their work for conformance as the work is being done. Unsatisfactory work shall be corrected as the work progresses and not be permitted to remain and become a part of the Punch List. When the Contractor determines that the entire work is ready for the Punch List inspection, he shall so notify the Architect/Engineer, who shall make arrangements for his Punch List inspection at the earliest possible date. Transmittal of the Punch List to the Contractor shall set the date for a Reinspection prior to issuance of a Certificate of Substantial Completion. Upon receipt of the Punch List, the Contractor shall within seven (7) days bring to the attention of the Architect/Engineer any questions that he or any of his Subcontractors may have concerning the requirements of the Punch List. When advised by the Contractor that all items on the Punch List have been completed and/or corrected, the Architect/Engineer shall make a Reinspection and shall be accompanied by the Contractor, any needed Subcontractors (and the Owner's representative where applicable) to determine whether the Certificate of Substantial Completion can be issued. When issued, the Certificate of Substantial Completion shall name the date, triggering the beginning of the Warranty period (with any items to have a later starting date specifically noted). The Certificate of Substantial Completion shall also have attached to it the uncompleted Punch List items, and shall name the date for their completion. The Certificate of Substantial Completion shall also state the responsibilities of the Owner and the Contractor for maintenance, heat, utilities, insurance, and building security. Acknowledgment of the Date of Substantial Completion by the signature of all parties on the Certificate implies possession of the premises by the Owner, and completion of incomplete Punch List items by the Contractor and the Subcontractors at the Owner's convenience. The Owner shall cooperate in permitting the Contractor access to the work for the completion of Punch List items.

Add Clause 9.8.3.1:

9.8.3.1 Except with the consent of the Owner, the Architect will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

Add Clause 9.10.1.1:

9.10.1.1 Except with the consent of the Owner, the Architect will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

Add Clauses 9.10.4.5 and 9.10.4.6:

9.10.4.5 Faulty or defective Work appearing after Final Payment is made; or

9.10.4.6 Direct damages sustained or asserted either as a result of any wrongful act or neglect of the Contractor, or as a result of any breach of Contract.

## **ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY**

Add Clause 10.3.1.1:

10.3.1.1 The Work shall be asbestos free. The Contractor shall, if requested, provide certification which attests to same. Reference in the technical specifications to Manufacturers, model numbers, equipment, material, article or process shall be regarded as establishing a standard of quality and/or function. The Contractor shall submit a request for substitution on any item which can not be certified to be asbestos free.

## **ARTICLE 11 – INSURANCE AND BONDS**

Add to end of Subparagraph 11.1.1:

11.1.1 In the second sentence, after the word “from”, add the following: “...an insurance carrier licensed to do business in the state of Missouri; carries a Best’s policyholder rating of “A” or better; and carrier at least a Class X financial rating. The Contractor shall either cover all Subcontractors or require each Subcontractor not so covered to secure insurance in the minimum amounts required of the Contractor.”

## **ARTICLE 12 - UNCOVERING AND CORRECTION OF THE WORK**

Add the following Clause 12.2.2.4:

12.2.2.4 Upon request of the Owner and prior to the expiration of one (1) year from the date of Substantial Completion, the Architect will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

## **ARTICLE 13 - MISCELLANEOUS PROVISIONS**

Add Subparagraph 13.1.1:

13.1.1 Environmental Performance: In order to secure approval to proceed with construction, the Owner is committed to comply with the Environmental Protection Agency rule under Section 203 of Title II of the Toxic Substance Control Act (TSCA), 15 U.S.C. 2643 which requires all local educational agencies to identify asbestos containing materials in their school building. The Contractor shall certify that all materials furnished and installed in this project are asbestos free in conformance to the Environmental Protection Agency requirements.

## **ARTICLE 15 - CLAIMS AND DISPUTES**

Add Subclause 15.1.6.1.1 to read as follows:

15.1.6.1.1 Each month, Contractor shall notify the Architect of all claims for extensions of time, stating dates and causes for the time extensions. Notice shall accompany the Application for Payment; otherwise, they shall be waived. In the case of continuing cause of delay, only one claim is necessary.

Add Clauses 15.1.6.5 and 15.1.6.6:

15.1.6.5 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days’ increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis for the Claim.

15.1.6.6 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

Revise Subparagraph 15.2.1 as follows:

In the third sentence line delete “mediation” and insert “litigation”.

Revise Subparagraph 15.2.5 as follows:

In the third sentence delete “mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution” and insert “litigation”.

Revise Subparagraph 15.2.6 as follows:

Delete the word “mediation” and insert “litigation”.

Revise Clause 15.2.6.1 as follows:

In the first and second sentences, delete the word “mediation” and insert “litigation”. In the second sentence, delete the word “mediate” and insert “litigate”.

Add new Clause 15.2.6.2:

15.2.6.2 Any disputes between the Owner and the Contractor shall be tried before the District Court of Jackson County Missouri, unless the parties mutually agree otherwise.

DELETE Paragraph 15.3, MEDIATION, in its entirety, including Subparagraphs and Clauses 15.3.1 through 15.3.3.

DELETE Paragraph 15.4 - ARBITRATION, in its entirety, including Subparagraphs and Clauses 15.4.1 through 15.4.4.3.

**END OF SUPPLEMENTARY CONDITIONS**



## SECTION 007400 - SPECIAL CONDITIONS

- 1.1 GENERAL: The Division of the body of these Specifications into various Sections is done for clarity in the explanation of the individual parts of the whole work. It is not the intent of such division to develop any secondary responsibilities for the satisfactory completion of the work as required by the Drawings and Specifications. Along those same lines, assignment by the Architect of parts of work to any trade or craft is not to be inferred from these Documents.
- 1.2 CODES, LAWS, STANDARDS, and PERMITS
- A. Contractor's performance, workmanship and material shall comply with all governing codes, state statutes and regulations, city ordinances and regulations of regulatory bodies having jurisdiction.
  - B. The Contractor shall comply with rules and regulations of public utilities and municipal departments affected by work under this contract.
  - C. Laws, codes, ordinances and regulations shall take precedence, excepting only where work called for by the Drawings and Specifications exceeds code requirements in quality and/or quantity.
  - D. It will be the responsibility of the Owner to pay, apply and obtain the General Building permit. For ALL other permits required to complete the work by additional trades it will be the responsibility of the contractor and or subcontractor to obtain and pay for any such permits.
  - E. ALL Contractors working on this project are required to have a current Business License in Raytown, MO. It will be the responsibility of the General Contractor to advise all subcontractors of this requirement as well as providing a List of All Contractors working on the project to the Business License Compliance Offer at the City of Raytown, MO.
- 1.3 QUALIFICATIONS OF CONTRACTORS: All Contractors shall be a qualified with histories of successful performance acceptable to the Owner / Architect.
- A. Labor and Workmanship: All labor for the installation of material and equipment furnished under this Contract shall be done by experienced mechanics of the proper trade. All workmanship shall be first class and in compliance with the specific requirements of Drawings and Specifications.
  - B. All contractors bidding on construction contracts which exceed \$500,000.00 with the Raytown Quality School District shall meet qualification standards prior to acceptance of any bid.
  - C. The District shall investigate and examine the qualifications of all concerns and, upon determining that a contractor meets the requirements of this policy and is in all respects responsible, qualified and competent for the class, character and magnitude of the work which the applicant proposes or intends to perform under this proposed contract shall then be determined to be qualified to be awarded a bid.
  - D. In determining the acceptability of a contractor for the purpose of qualification, the District shall investigate and consider at least the following:
    - 1. Financial responsibility.
    - 2. The character, quality and availability of the contractor's equipment.
    - 3. The performance record of the contractor in the performance of other contracts for public or private improvements.
    - 4. The nature and extent of other contract commitments involving the use of contractor's machinery, equipment and personnel.
    - 5. The reputation for reliability and integrity.
    - 6. History of compliance with applicable State and Federal laws.
    - 7. Compliance with MBE/WBE Policies.
    - 8. The source of any labor involved in the project.

9. Any other fact which would materially affect the ability of the applicant to properly, adequately, expeditiously and satisfactorily perform such work as might be awarded to such contractor.
- E. Under no circumstance shall a contractor be qualified who fails to provide or participate in any of the aforementioned programs.
- 1.4 QUALIFICATIONS OF MANUFACTURER: Products used in the work of this specification shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- 1.5 CONTRACTS: When entering into any contract which exceeds \$500,000.00 involving labor or hiring any labor for public contract work, preference may be given to contractors, mechanics, artisans or other laborers of any class, who shall have actually resided in Jackson County, Missouri, for a period of six months preceding the start of their engagement.
- A. A contract or purchase may be awarded to a bidder utilizing local labor where the bid by such bidders is, in all material respects, comparable to the lowest responsible bid not utilizing local labor if the amount bid (labor, materials, and other services) by such bidder does not exceed the lowest bid not utilizing local labor by more than the following percentages, unless such an award is contrary to State or Federal law or regulations or unless the District, at its discretion, determines prior to giving notice soliciting bids that the provisions of this section shall not apply to the contract or purchases.
1. \$0 to \$500,000.00 – No preference
  2. \$500,000.00 to \$1,000,000.00 – 5 percent on the first \$500,000 and no adjustment for the amount between \$500,000.00 and \$1,000,000.00
  3. \$1,000,000.00 and Greater – 5 percent higher on the first \$500,000.00 and 2.5 percent on amount between \$500,000.00 and \$1,000,000.00
  4. No additional adjustment for amounts in excess of \$1,000,000.00
- B. The amount of any preference awarded will be based on the maximum preference awarded for size of the contract multiplied by the percentage of local labor compared to the total labor for the work.
- 1.6 CONSTRUCTION DOCUMENTS: Prior to the start of construction, if requested, the Contractor will be provided up to a maximum of five (5) sets of contract documents, specifications and drawings for use during the construction phase.
- 1.7 CONTRACTOR'S MATERIALS: All materials delivered to the Job Site shall be stored so as to be kept in First Class condition. Materials and equipment to be left on the job overnight shall be stored in a secure, weatherproof manner.
- 1.8 UTILITIES: Access to electrical and water utilities shall be provided by the Owner in reasonable quantities at no cost to the Contractor. The contractor shall be responsible for ALL extensions, modifications and applicable fees for these utilities to adapt them to his use.
- 1.9 EXAMINATION OF EXISTING CONDITIONS: It is recommended that bidders visit the project sites prior to Bid Date and become familiar with all existing conditions as they apply to their area of work. Failure to do so will in no way relieve the successful bidder from being required to complete all work in compliance with these Documents.
- 1.10 CONTRACTOR'S SUBMITTALS: Approval of required submittals must be obtained from the Architect prior to starting any work requiring submittals as specified. The Architect will return the submittals approved or disapproved within five (5) work days after receipt. Warranties are required at the completion of the contract work and no later than thirty (30) days after final inspection. One electronic and one paper copy of all warranties shall be provided unless otherwise specified.
- A. If an item has not received a positive review by the second submittal, any subsequent reviews by the Architect will be paid for by the Contractor at the rate of one-hundred dollars (\$110.00) per man-hour for review time until final approval is granted.

1.11 EXISTING BUILDING ACCESS

- A. All access through the existing buildings shall be coordinated with the Owner. The Contractor shall protect the interior floors, walls and ceilings from damage caused by such access.
- B. All finished surfaces of the existing building are assumed to be in good condition. It will be the responsibility of the Contractor to repair any damage caused during the course of the project and at no additional expense to the Owner. The Contractor shall, at his own option, inspect those areas affected by the new work, documenting any existing damage, and report same to the Owner / Architect at the Pre-Construction meeting.

1.12 PREVAILING WAGES: This is a Prevailing Wage project. Prevailing Wage information, including the applicable Wage Rates are included in another portion of these Documents for the Contractors review and use. The Contractor shall follow and enforce all requirements of the Prevailing Wage Law. Refer to Section 008100 "Prevailing Wage Determination" for additional requirements.

1.13 CLEANING AND ADJUSTMENT: Dirt and refuse resulting from the performance of the work shall be removed from the premises as required. Upon completion of the installation, visually inspect each installed item, thoroughly clean all surfaces by using the cleaning material recommended by the manufacturer of the finish being cleaned, and carefully adjust all operating components for optimum operation. All debris shall be kept to a minimum and at no time shall create a hazard to the occupants of the other buildings.

- A. In addition to clean-up provisions of the Specifications, Contractor shall take appropriate steps to prevent airborne dust due to work under this Contract. Water shall be applied wherever practical to settle and hold dust to a minimum, particularly during demolition and moving of materials.

1.14 RECORD DRAWING INFORMATION: Contractor shall designate one set of drawings and specifications as "*RECORD DRAWING INFORMATION DOCUMENTS*". Any changes are to be documented on these drawings and specifications. These documents shall be submitted to the Architect as part of the Close-out Documentation.

1.15 EMPLOYMENT VERIFICATION SYSTEM: Prior to commencement of the Work, Contractor shall provide to Owner a sworn affidavit and other sufficient documentation to affirm its enrollment and participation in the federal work authorization program. Federal work authorization program means the E-Verify Program maintained and operated by the United States Department of Homeland Security and the Social Security Administration, or any successor program. Contractor shall also provide Owner a sworn affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

**END OF SECTION 007400**





## SECTION 008100 – PREVAILING WAGE DETERMINATION

### PART 1 - GENERAL

- 1.1 This Project is contracted under the requirements of Missouri Prevailing Wage Law. This Section includes general information and forms for convenience. Detailed requirements, information, forms, and assistance may be obtained by contacting the following:
1. Missouri Department of Labor and Industrial Relations  
Division of Labor Standards  
Prevailing Wage Section  
PO Box 449  
Jefferson City, MO 65102-0449  
Phone: 573-751-3403  
Fax: 573-751-3721  
Email: [prevailingwage@labor.mo.gov](mailto:prevailingwage@labor.mo.gov)  
Website: [www.labor.mo.gov/lis/prevailingwage](http://www.labor.mo.gov/lis/prevailingwage)
  2. **Contractor shall be responsible for obtaining the latest information and rates regarding the Missouri Prevailing Wage Law, including but not limited to incremental increases, issued on or before the date of bids.**
- B. Prevailing Hourly Rate of Wages: Not less than the prevailing hourly rate of wages, as set out in the wage order attached, must be paid to all workers performing work under this Contract.
1. Contractor shall forfeit a penalty to the contracting public body of \$100 per day (or portion of a day) for each worker that is paid less than the prevailing rate for any work done under this Contract by the Contractor or by any Subcontractor.
  2. Submit certified copies of Contractor's and subcontractor's payrolls to contracting public body on a weekly basis.
- C. Safety Training Program: All on-site employees, including those of Contractor and subcontractors, are required to complete the ten-hour safety training program required under Section 292.675 RSMo, if they have not previously completed the program and have documentation of having done so.
1. Contractor shall forfeit a penalty to the contracting public body of \$2500 plus an additional \$100 for each employee, including those of subcontractors, for each calendar day, or portion thereof, such employee is employed without the required training.
- D. Construction Transient Employers: Every transient employer, as defined in section 285.230 RSMo, must post in a prominent and easily accessible place at the site, a clearly legible copy of the notices listed below. Any transient employer failing to comply with these requirements shall, under section 285.234 RSMo, be liable for a penalty of \$500 per day until notices are posted as required by the statute:
1. The notice of registration for employer withholding issued to such transient employer by the director of revenue.
  2. Proof of coverage for workers' compensation insurance or self-insurance signed by transient employer and verified by the Department of Revenue through records of the Division of Workers' Compensation.
  3. The notice of registration for unemployment insurance to such transient employer by the Division of Employment Security.
- E. Posting of Wage Rates: While work under this Contract is being performed, a legible list of all prevailing wage rates must remain posted in a prominent and easily accessible location at the site by the Contractor and each subcontractor on the project. Such notice shall remain posted during the full time that any worker is employed on the project.
- F. Project Notification - Contractor Information Notification: Before performing any Work, submit a completed PW-2 Form "Prevailing Wage Project Notification - Contractor Information Notification," available at [www.labor.mo.gov/lis/prevailingwage](http://www.labor.mo.gov/lis/prevailingwage) under "Forms," to The Division of Labor Standards (DLS).
- G. Project Completion Notification – Affidavit of Compliance: Before final payment will be made, the Contractor shall file a fully executed affidavit, PW-4 Form "Affidavit – Compliance with the Prevailing Wage Law", available at [www.labor.mo.gov/lis/prevailingwage](http://www.labor.mo.gov/lis/prevailingwage) under "Forms," to The Division of Labor Standards (DLS).

- H. Monthly Applications for Payment: Pursuant to prevailing wage laws, an Affidavit of Compliance (Form PW-4) must be filed with the District before payment will be approved. The District will withhold and retain any amounts due as a result of any violation of the prevailing wage law prior to making payment with any contractor. Include Affidavit of Compliance with each application for payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**END OF SECTION 008100**

# Missouri

## Division of Labor Standards

WAGE AND HOUR SECTION



ERIC R. GREITENS, Governor

## Annual Wage Order No. 25

Section 048

**JACKSON COUNTY**

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by

Matt Cowell, Director  
Division of Labor Standards

Filed With Secretary of State: \_\_\_\_\_ **March 9, 2018**

Last Date Objections May Be Filed: **April 9, 2018**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	** Date of Increase	*	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
Asbestos Worker (H & F) Insulator			\$38.12	52	53	\$25.75
Boilermaker	6/18		\$37.91	57	7	\$29.38
Bricklayer and Stone Mason	6/18		\$35.43	58	39	\$19.73
Carpenter	6/18		\$38.85	63	68	\$17.10
Cement Mason	6/18		\$31.71	65	4	\$19.67
Communication Technician	6/18		\$35.55	47	72	\$21.73
Electrician (Inside Wireman)			\$38.53	13	72	\$18.17 + 10%
Electrician (Outside-Line Construction)\Lineman	6/18		\$44.26	125	65	\$5.50 + 34.5%
Lineman Operator	6/18		\$40.91	125	65	\$5.50 + 34.5%
Groundman	6/18		\$28.53	125	65	\$5.50 + 34.5%
Elevator Constructor	6/18	a	\$46.91	26	54	\$34.355
Glazier	6/18		\$35.00	88	32	\$18.39
Ironworker	6/18		\$33.30	50	4	\$29.65
Laborer (Building):						
General	6/18		\$28.45	30	4	\$16.15
First Semi-Skilled	6/18		\$28.85	30	4	\$16.15
Second Semi-Skilled	6/18		\$29.25	30	4	\$16.15
Lather			USE CARPENTER RATE			
Linoleum Layer and Cutter	6/18		\$36.51	46	67	\$17.10
Marble Mason			\$35.16	25	4	\$14.11
Marble Finisher			\$24.58	25	4	\$8.92
Millwright			USE CARPENTER RATE			
Operating Engineer						
Group I	6/18		\$38.74	85	4	\$18.02
Group II	6/18		\$37.93	85	4	\$18.02
Group III	6/18		\$32.38	85	4	\$18.02
Group III-A	6/18		\$36.59	85	4	\$18.02
Group IV						
Group V	6/18		\$33.98	85	4	\$18.02
Painter	6/18		\$30.14	37	4	\$17.16
Pipe Fitter			\$44.48	2	33	\$21.15
Plasterer	6/18		\$32.07	68	4	\$17.63
Plumber	6/18		\$45.34	45	33	\$21.89
Pile Driver						
Roofer \ Waterproofor	6/18		\$32.95	95	2	\$18.89
Sheet Metal Worker			\$40.90	17	22	\$22.99
Sprinkler Fitter - Fire Protection			\$37.74	14	4	\$20.02
Terrazzo Worker			\$35.16	25	4	\$14.11
Terrazzo Finisher			\$24.58	25	4	\$8.92
Tile Setter			\$35.16	25	4	\$14.11
Tile Finisher			\$24.58	25	4	\$8.92
Traffic Control Service Driver			\$15.35	48	49	\$2.71
Truck Driver-Teamster						
Group I			\$30.09	100	4	\$10.90
Group II			\$30.09	100	4	\$10.90
Group III			\$30.29	100	4	\$10.90
Group IV			\$30.29	100	4	\$10.90

Fringe Benefit Percentage is of the Basic Hourly Rate

\*\*Annual Incremental Increase



**REPLACEMENT PAGE  
JACKSON COUNTY  
BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 2:** Means the maximum of eight (8) hours shall constitute a day's work beginning at 8:00 a.m. to 12:00 noon, 12:30 p.m. to 4:30 p.m. The maximum work week shall be forty (40) hours beginning Monday at 8:00 a.m. and ending Friday at 4:30 p.m. Because of traffic, parking or other circumstances, the hours of work on any project may be any continuous 8½ hours period (8 hours of work plus 30 minutes for lunch) between 7:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m. Monday through Thursday, with one-half (½) hour allowed for a lunch period each day. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. Overtime performed Monday through Saturday shall be paid at the rate of one and one-half (1½) times the regular rate of pay. Sundays and recognized holidays shall be paid at the double (2) time rate of pay. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional \$0.25 above the regular hourly rate and perform seven and one-half (7½) hours work for eight (8) hours pay. Third shift employees shall be paid an additional \$0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. In the event a first shift is not required, a second and third shift employee shall receive an additional 15% of the base rate and receive pay for actual hours worked.

**NO. 13:** Means a regular workday shall consist of eight (8) hours between 8:00 a.m. and 4:30 p.m. Forty (40) hours, within five (5) days -- Monday through Friday inclusive -- shall constitute the regular workweek. The Employer may alter the above stated hours by two (2) hours for an early starting and quitting time only, not to exceed eight (8) hours of work in any one day. When job conditions dictate and as required by the customer, the Employer shall be allowed to establish a four (4) day, ten (10) hour per day work week. This work week is defined as Monday through Thursday, with a Friday make-up day. The normal work day under a ten (10) hour four (4) day work week shall be from 7:00 a.m. to 6:00 p.m., with a one hour starting variance. The make-up day of Friday shall be instituted for specific reasons such as loss of production due to weather and/or holidays. All hours worked in excess of ten (10) hours per day or forty (40) hours per week or hours worked outside the normal work week shall be paid at the applicable overtime rate. The first four (4) hours of overtime after the normal workday, each day Monday through Friday and the first ten (10) hours of overtime on Saturdays shall be paid for at one and one-half (1½) times the regular straight time rate of pay. All other work performed outside of the regularly scheduled working hours and outside of the first ten (10) hours worked on Saturdays shall be paid for at double (2) the regular straight time rate of pay. Sundays and the recognized holidays shall be paid for at double (2) the regular straight time rate of pay, if worked. When so elected by the contractor, multiple shifts of at least five (5) days duration may be worked. When two (2) or three (3) shifts are worked: The first shift (day shift) shall be worked between the hours of 8:00 a.m. and 4:30 p.m. Workmen on the "day shift" shall receive eight (8) hours pay at the regular hourly rate for eight (8) hours work. The second shift (swing shift) shall be worked between the hours of 4:30 p.m. and 12:30 a.m. Workmen on the "swing shift" shall receive eight (8) hours pay at the regular hourly rate plus 10% for seven and one-half (7 ½) hours work. The third shift (graveyard shift) shall be worked between the hours of 12:30 a.m. and 8:00 a.m. Workmen on the "graveyard shift" shall receive eight (8) hours pay at the regular hourly rate plus 15% for seven (7) hours work. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the "shift" hourly rate.

**NO. 14:** Means eight (8) hours per day shall constitute a day's work. The regular starting time shall be 8:00 a.m., and the regular quitting time shall be 4:30 p.m.; lunch time shall be twelve (12) o'clock noon to 12:30 p.m. The regular starting time may, by mutual consent of employees on the job site, and the employer, be between 7:00 a.m. and 9:00 a.m. with appropriate adjustments made to the regular quitting time and lunch time. All time worked before the regular starting time and after the regular quitting time, Monday through Friday, shall be paid at the rate of time and one-half (1½). Four (4) days at ten (10) hours a day may be worked at straight time. All work commencing with the beginning of the established work day on Saturday shall be paid at the rate of time and one-half (1½). All work commencing with the beginning of the established work day on Sundays and/or Holidays shall be paid at the rate of double (2) time.

**REPLACEMENT PAGE  
JACKSON COUNTY  
BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 17:** Means the regular working day shall consist of eight (8) hours of labor between 7:00 a.m. and 3:30 p.m. and the regular work week shall consist of five (5) consecutive eight (8) hour days of labor beginning on Monday and ending with Friday of each week. All full-time or part-time labor performed during such hours shall be recognized as regular working hours and paid for at the regular hourly rate. Except as otherwise provided, all work performed outside of regular working hours during the regular work week, shall be at double (2) times the regular rate. Working hours may be varied by two (2) hours. When circumstances warrant and when it is mutually beneficial and agreed to by interested parties, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of five (5) a.m. and six (6) p.m., Monday through Thursday, with one-half (1/2) hour allowed for a lunch period each day. Friday may be used as a make-up day. The make-up day will be voluntary, and a decision not to work may not be held against the employee. When working four (4) ten (10) hour day's overtime will be paid at the time and one-half (1½) rate for the eleventh (11<sup>th</sup>) and twelfth (12<sup>th</sup>) hour, all other work will be paid at the double (2) time rate of pay. The first two (2) hours of overtime, Monday through Friday, and the first eight (8) hours on Saturday shall be at time and one-half (1½) for all work. All other overtime shall be at double (2) time. The first two (2) hours of overtime must be concurrent with the regular work day; two (2) hours prior to or following the regular work day are at time and one-half (1½). The regular workday (as previously defined) on Saturday is paid at time and one-half (1½). Work performed outside of the regular Saturday work day is at double (2) time. All work performed on recognized holidays, or days locally observed as such, and Sundays shall be paid at the double (2) time rate of pay.

**NO. 25:** Means forty (40) hours (5-8's) shall constitute a regular workweek, anything over eight (8) hours per day shall be paid for at one and one-half times the regular hourly rate. Work may be scheduled on a four days a week (Monday through Thursday) at 10 hours a day scheduled between 6:00 a.m. and 6:00 p.m. at the regular hourly rate understanding that anything over ten (10) hours per day shall be paid for at one and one-half times the regular hourly rate. Employment from 6:00 p.m. and 6:00 a.m. Monday through Friday shall be paid for at one and one-half times the regular hourly rate. For work scheduled on Saturday, all hours worked shall be paid for at one and one-half times the regular hourly rate. For work scheduled on Sunday, any hours worked shall be paid for at twice the regular hourly rate. Hours worked on Holidays will be paid at double time wages except for Veteran's Day.

**NO. 26:** Means that the regular working day shall consist of eight (8) hours worked between 6:00 a.m., and 5:00 p.m., five (5) days per week, Monday to Friday, inclusive. Hours of work at each jobsite shall be those established by the general contractor and worked by the majority of trades. (The above working hours may be changed by mutual agreement). Work performed on Construction Work on Saturdays, Sundays and before and after the regular working day on Monday to Friday, inclusive, shall be classified as overtime, and paid for at double (2) the rate of single time. The employer may establish hours worked on a jobsite for a four (4) ten (10) hour day work week at straight time pay for construction work; the regular working day shall consist of ten (10) hours worked consecutively, between 6:00 a.m. and 6:00 p.m., four (4) days per week, Monday to Thursday, inclusive. Any work performed on Friday, Saturday, Sunday and holidays, and before and after the regular working day on Monday to Thursday where a four (4) ten (10) hour day workweek has been established, will be paid at two times (2) the single time rate of pay. The rate of pay for all work performed on holidays shall be at two times (2) the single time rate of pay.

**NO. 30:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 A.M., except when the work week is scheduled as a week with starting time advanced or delayed. Starting time may be advanced or delayed by the employer up to two (2) hours from the regular starting time. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate. In the event that a scheduled eight (8) hour work day is missed (not to include holidays) because of events out of the control of the contractor, then that missed work day may be made up at straight time the following Saturday. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after the forty (40) hours in a week must be paid at time and one-half (1½). Saturday make-up day shall not be used to make up for time lost due to recognized holidays. The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day). If using a 4-10's schedule, a Friday make-up day is allowed. If using a 4 (10) schedule, any work more than ten (10) hours in a day or forty (40) hours in a work week shall be paid at the time and one-half (1½) rate. Friday make-up day shall not be used to make up for time lost due to recognized holidays. All work performed on Sundays or holidays shall be paid at the double (2) time rate.



**REPLACEMENT PAGE  
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BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 37:** The Employer may choose, at his discretion, to work five eight hour days or four ten hour days with a Friday make-up day, Monday through Friday at straight time. Overtime shall be paid after eight (8) hours when working "five eights" and after ten hours when working "four tens". All work performed on Sundays and recognized holidays shall be paid for at the rate of double (2) time. All Saturday work shall be paid for at the rate of time and one-half (1½) the regular wage rate. All night work during the regular work week other than the above-mentioned days shall be paid for at the rate of time and one-half (1½) the regular wage scale until midnight and double (2) time after midnight except make-up time will be allowed under the following condition: In the event of inclement weather on exterior projects which prevents working the full regular eight (8) hour day, forty (40) hour work week schedule, a Saturday make-up day can be granted. Then said work on Saturday shall be paid at the straight time rate of pay up to a maximum total of forty (40) hours per week.

**NO. 45:** Means eight (8) hours shall constitute a day's work, beginning at 8:00 a.m. and ending at 4:30 p.m. The regular work week shall be forty (40) hours, beginning Monday, 8:00 a.m. and ending at 4:30 p.m. Friday. Because of traffic, parking and other circumstances, the hours of work on any project may begin as early as 6:00 a.m. with eight (8) hours worked between 6:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m., Monday through Thursday. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. All overtime Monday through Saturday shall be paid at the rate of time and one-half (1½) the regular rate of pay. Sunday and recognized holidays shall be paid at double (2) time. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. The hourly rate for second shift (seven and one-half hours worked for eight hours paid) shall be twenty-five cents (\$0.25) over and above the hourly rate. The hourly rate for third shift (seven hours worked, eight hours paid) shall be fifty cents (\$0.50) above the hourly rate. If no first shift is worked, second and third shift employees shall receive an additional fifteen percent (15%) over and above the hourly rate for actual hours worked.

**NO. 46:** Means the regular work day shall be eight (8) hours from 6:00 a.m. to 6:30 p.m. Starting time may be between 6:00 a.m. and 10:00 a.m. The regular work week shall be forty (40) hours, beginning between 6:00 a.m. and 10:00 a.m. on Monday and ending between 2:30 p.m. and 6:30 p.m. on Friday. All hours in excess of the regular work day and work week shall be considered overtime. Overtime on days recognized as regular work days and on Saturday shall be paid for at the rate of time and one-half (1½) the regular rate. Sunday and recognized holidays shall be paid for at the rate of double time (2) for time worked. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours at straight time rate of pay. The 4-10's must run for a period of at least four (4) days.

**NO 47:** Means a regular workday shall consist of eight (8) hours between 6:00 a.m. and 6:30 p.m. Forty (40) hours, within five (5) days -- Monday through Friday or Tuesday through Saturday inclusive -- shall constitute the regular workweek. The Employer may alter the above stated hours by two (2) hours for an early starting and quitting time only, not to exceed eight (8) hours of work in any one day. The Employer shall be allowed to establish a four (4) day, ten (10) hour per day work week. This work week is defined as Monday through Thursday, with a Friday make-up day. The normal work day under a ten (10) hour four (4) day work week shall be from 7:00 a.m. to 6:00 p.m. All hours worked in excess of ten (10) hours per day or forty (40) hours per week or hours worked outside the normal work week shall be paid at the applicable overtime rate. The first four (4) hours of overtime after the normal workday, each day Monday through Friday and the first ten (10) hours of overtime on Saturdays shall be paid for at one and one-half (1½) times the regular straight time rate of pay. All other work performed outside of the regularly scheduled working hours and outside of the first ten (10) hours worked on Saturdays shall be paid for at double (2) the regular straight time rate of pay. Sundays and the recognized holidays shall be paid for at double (2) the regular straight time rate of pay, if worked. When so elected by the contractor, multiple shifts of at least five (5) days duration may be worked. When two (2) or three (3) shifts are worked: The first shift (day shift) shall be worked between the hours of 8:00 a.m. and 4:30 p.m. Workmen on the "day shift" shall receive eight (8) hours pay at the regular hourly rate for eight (8) hours work. The second shift (swing shift) shall be worked between the hours of 4:30 p.m. and 12:30 a.m. Workmen on the "swing shift" shall receive eight (8) hours pay at the regular hourly rate plus 10% for seven and one-half (7 ½) hours work. The third shift (graveyard shift) shall be worked between the hours of 12:30 a.m. and 8:00 a.m. Workmen on the "graveyard shift" shall receive eight (8) hours pay at the regular hourly rate plus 15% for seven (7) hours work. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the "shift" hourly rate.

**REPLACEMENT PAGE  
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BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 48:** Means the regularly scheduled work week shall be five (5) consecutive days, Monday through Friday or Tuesday through Saturday. Eight (8) hours shall constitute a day's work. Starting time shall not be earlier than 7:00 a.m. nor later than 10:00 a.m. Forty (40) hours shall constitute a week's work. Overtime at the rate of time and one-half (1½) will be paid for all work in excess of forty (40) hours in any one work week. On the Monday through Friday schedule, all work performed on Saturday will be time and one-half (1½) unless time has been lost during the week, in which case Saturday will be a makeup day to the extent of the lost time. On the Tuesday through Saturday schedule, all work performed on Monday will be time and one-half (1½) unless time has been lost during the week, in which case Monday will be a make-up day to the extent of the lost time. Any work performed on Sunday will be double (2) time. If employees work on any of the recognized holidays, they shall be paid time and one-half (1½) their regular rate of pay for all hours worked.

**NO. 50:** Means eight (8) hours constitute a normal day's work Monday through Friday. Any time worked over eight (8) hours will normally be paid at time and one-half (1½) except for exclusions stated in some following additional sentences. The Employer, at his discretion, may start the work day between 6:00 a.m. and 9:00 a.m. Any schedule chosen shall be started at the beginning of the work week (Monday) and used for at least five days. Work may be scheduled on a four (4) days a week (Monday through Thursday) at ten (10) hours a day schedule. If such a schedule is employed, then Friday may be used as a make-up day when time is lost due to inclement weather. Time and one-half (1½) shall be paid for any work in excess of eight (8) hours in any regular work day Monday through Friday unless working 4-10's, then time and one-half (1½) after ten (10) hours. All work performed on Saturday will be time and one-half (1½). Double (2) time shall be paid for all work on Sundays and recognized holidays.

**NO. 52:** Means the regular workweek shall consist of five (5) eight (8) hour days, Monday through Friday. The regular workday shall consist of an eight (8) hour period, to be worked between the agreed upon starting time and ending no later than 4:30 p.m. The agreed upon starting time shall be any time between the hours of 6:00 a.m. and 8:00 a.m. The option exists for the employer to use a four (4) day, ten (10) hour work week. Days worked shall be Monday through Thursday or Tuesday through Friday. If the job requires men on duty all five (5) days, then part of the crew may work the first four (4) days and the remainder of the crew may work the last four (4) days. Hours each day shall be from 7:00 a.m. to 5:30 p.m. Interested parties on the project must agree to this clause before it may be used. Once this clause has been put into effect, it shall remain as long as the majority of the Employees on the project and the Employer agree to keep it. The four (4) day clause shall not be used to circumvent a Holiday. Except as otherwise provided, all work performed outside the regular working hours and performed during the regular work week (Monday through Friday) shall be at the following rates of pay:

Holidays-New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, Christmas Day (or days observed as such) shall be recognized as Holidays that shall be paid at two (2) times the regular rate of pay.

Labor Day-No work shall be performed on Labor Day except in special cases of emergency. Rate of pay shall be at three (3) times the regular rate of pay.

Overtime-Work performed outside of the regular work day (the regular work day shall consist of an eight (8) hour period, to be worked between the agreed upon starting time and ending not later than 4:30 p.m. The agreed upon starting time shall be any time between the hours of 6:00 a.m. and 8:00 a.m., by mutual consent of the interested party's.), shall be:

- A. Hours worked Monday through Friday, the first two (2) hours of overtime will be paid at time and one-half (1½). All other overtime will be paid at the double (2) time rate.
- B. The first ten (10) hours worked on Saturday will be paid at time and one-half (1½), with all other hours to be paid at the double (2) time rate.
- C. Sundays and Holidays (except Labor Day) shall be paid at the double (2) time rate.

**REPLACEMENT PAGE  
JACKSON COUNTY  
BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 57:** Means eight (8) hours per day shall constitute a day's work and forty (40) hours per week, Monday through Friday, shall constitute a week's work. The regular starting time shall be 8:00 a.m. If a second or third shift is used, the regular starting time of the second shift shall be 4:30 p.m. and the regular starting period for the third shift shall be 12:30 a.m. These times may be adjusted by the employer. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional \$0.25 above the regular hourly rate and perform seven and one-half (7½) hours work for eight (8) hours pay. Third shift employees shall be paid an additional \$0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. When circumstances warrant, the Employer may change the regular workweek to four (4) ten-hour days at the regular time rate of pay. All time worked before and after the established workday of eight (8) hours, Monday through Friday, and all time worked on Saturday shall be paid at the rate of time and one-half (1½) except in cases where work is part of an employee's regular Friday shift. All time worked on Sunday and recognized holidays shall be paid at the double (2) time rate of pay except in cases where work is part of an employee's previous day's shift. For all overtime hours worked \$27.51 of the fringe benefits portion of the prevailing wage shall be paid at the same overtime rate at which the cash portion of the prevailing wage is to be paid. The remaining \$1.87 of the fringe benefit portion of the prevailing wage may be paid at straight time.

**NO. 58:** Means eight (8) consecutive hours, between 6:00 a.m. and 5:30 p.m., shall constitute a day's work. Five (5) day's work, Monday through Friday, shall constitute a normal work week. Work performed in excess of eight (8) hours per day or eight hours beyond normal starting time for that project excluding lunch Monday through Friday, and all work performed on Saturday, shall be paid for the rate of time and one-half (1½). When Sundays and recognized holidays are worked, the worker(s) shall be paid at the rate of double (2) time. Work may be scheduled on a four (4) days a week (Monday through Thursday) at ten (10) hours a day schedule at straight time. A Friday make-up day is available if time is lost due to inclement weather and at least sixteen (16) hours, but not more than thirty (30) hours, were worked during the week.

**NO. 63:** Means eight (8) hours shall constitute the regular work day between time that may be advanced or delayed by two (2) hours on either side of 8:00 AM. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours straight time. The four (4) tens (10s) must run for a period of at least four (4) days, Monday through Thursday. All work on Friday on a four (4) tens (10) project will be paid at the rate of time and one-half (1½). All work performed on Saturday shall be paid at time and one-half (1½). All work performed on Sundays and recognized holidays must be paid at double (2) time. All work performed prior to or after the regular eight (8) hour work day, or ten (10) hour work day, as described above shall be paid at time and one-half (1½) the regular rate.

**NO. 65:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 a.m., with one half hour for lunch between three and one-half (3½) and five (5) hours after starting time. The starting time may be advanced by two (2) hours or delayed one (1) hour by the employer from the regular starting time. All work performed before the advanced starting time and during the half hour lunch shall be paid at the overtime rate of time and one-half (1½). Work performed outside these hours shall be paid at the overtime rate of time and one-half (1½), except as provided otherwise below. All work performed on Sundays or recognized holidays shall be paid at the double (2) time rate. When the start time is delayed past 9:00 a.m., the employee's pay shall start at 9:00 a.m. and all time, after the normal quitting time (5:30 p.m.), shall be paid at the overtime rate. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate. In the event that a scheduled eight (8) hour work day is missed (not including recognized holidays) because of inclement weather, then that missed work day may be made up at straight time on the following Saturday. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after forty (40) hours must be paid at time and one-half (1½). The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day at straight time). In order to use the 4-10's schedule, the employer must schedule the 4-10's for a minimum of one (1) week. If using a 4-10's schedule, a Friday make-up day is allowed.

**REPLACEMENT PAGE  
JACKSON COUNTY  
BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 68:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 a.m., with one half hour for lunch between three and one-half and five hours after starting time. The starting time may be advanced or delayed by the employer up to one hour from the regular starting time. All work performed before the advance starting time and during the half hour lunch shall be paid at the overtime rate of time and one-half (1½). Work performed outside these hours shall be paid at the overtime rate of time and one-half (1½), except as provided otherwise below. All work performed on Sundays or holidays shall be paid at the double (2) time rate. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate, except as hereinafter described. In the event that a scheduled eight (8) hour work day is missed (not including recognized holidays) because of inclement weather, then that missed work day may be made up at straight time on the Saturday in the week of the pay period. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after forty (40) hours must be paid at time and one-half (1½). The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day at straight time). In order to use the 4-10's schedule, the employer must schedule the 4-10's for a minimum of one (1) week. If using a 4-10's schedule, a Friday make-up day is allowed.

**NO. 85:** Means the work week shall be Monday through Sunday. Eight (8) hours shall constitute a day's work to begin between 6:00 a.m. and 9:00 a.m. and end between 2:30 p.m. to 5:30 p.m. Employees required to work during their lunch period shall receive the overtime rate. Employees shall receive time and one-half (1½) for all time they are required to work prior to their normal starting time or after eight (8) hours or normal quitting time Monday through Friday, or all day on Saturday. If an Employer has started the work week on a five day, eight hours a day schedule, and due to inclement weather misses any time, then he may switch to a nine or ten hours a day schedule, at straight time, for the remainder of that work week in order to make up for the lost time (10-hour make-up day). All work over ten (10) hours a day or over forty (40) hours a week must be paid at time & one-half (1½). Sundays and recognized holidays shall be paid at the double (2) time rate of pay. A contractor may alter the regular work week to four (4) ten (10) hour days at straight time rate of pay. To do this the scheduled 4-10's must be worked at least one full week and the regular workweek shall be Monday through Thursday with Friday being a make-up day at straight time for days missed in the regular workweek due to inclement weather. If 5-8's are being worked, Saturday may be used as a make-up day at straight time if inclement weather prevents work during the normal work week.

**NO. 88:** Means the regular work week shall consist of five (5) eight (8) hour days, 7:00 a.m. to 3:30 p.m., Monday through Friday, except when the work week is scheduled as a 4-10's week or as a week with start time advanced or delayed as described below. The starting time may be advanced or delayed by one hour on either side of 7:00 a.m. The advanced or delayed starting time must run for a period of at least five (5) days. The Employer may establish a work week consisting of four (4) days, during the regular work week, each day consisting of ten (10) hours at straight time. The 4-10's must run for a period of at least four (4) days. Time and one-half (1½) shall be paid for any work in excess of eight (8) hours in any regular work day Monday through Friday (or ten hours in a 4-10's week), the first eight (8) hours of a Saturday, and it shall be at time and one-half (1½) for the Friday and Saturday following Thanksgiving. Double (2) time shall be paid for the following time worked on Sunday, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day, as well as any work in excess of eight (8) hours on a Saturday and the Saturday of a three-day weekend (except the Saturday following Thanksgiving).

**NO. 95:** Means a regular workday shall consist of eight and one-half (8½) hours elapsed time, including one-half hour for lunch. The crew starting times shall be flexible within the period of daylight to 8:00 a.m. Any work performed over ten (10) hours of elapsed time per day including one-half hour for lunch and/or any work performed over forty (40) hours at the straight time rate in one week shall be paid at time and one-half (1½) the straight time rate. Saturday shall be a voluntary make-up day at straight time at the discretion of the contractor and with the consent of the employees. Sunday and recognized holidays shall be paid for at double (2) time.

**REPLACEMENT PAGE  
JACKSON COUNTY  
BUILDING CONSTRUCTION - OVERTIME SCHEDULE**

**NO. 100:** Means eight (8) hours shall constitute a day's work, and five (5) continuous eight-hour days shall constitute a week's work, Monday through Friday. Time and one-half (1½) the regular hourly rate shall be paid for all work performed in excess of eight (8) hours in any one day or forty (40) hours in any one week. Starting time shall be between 6:00 a.m. and 9:00 a.m. All work over eight (8) hours in a regular 5-day 8-hour schedule shall be at the appropriate overtime rate. All time worked before the regular scheduled starting time shall be paid for at the rate of time and one-half (1½) and shall not apply to regular shift. All time worked after eight (8) hours in any one day or after 5:30 p.m., whichever comes first, shall be paid at the time and one-half (1½) rate. An Employer, at his option, may elect to work four (4) ten (10) hour days, Monday through Thursday, at straight time. All such work must be done at least one week in duration. All work over ten (10) hours in one day or forty (40) hours in a week shall be at the overtime rate. Any employee who is scheduled to work on any regular work day but is prevented from working because of weather conditions, shall be permitted to work on Saturday (Friday if working 4-10's) as a make-up day at the straight time rate of pay. When an employee is required to work on any recognized holiday they shall receive the double (2) time rate for all time that they are required to perform work. All time worked from 12:00 Midnight Saturday to 12:00 Midnight Sunday shall be paid for at the rate of double (2) time on single shift.

**NO. 125:** Eight (8) hours of work between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. Forty (40) hours within the five (5) days, Monday through Friday inclusive, shall constitute the work week. Starting time may be adjusted not to exceed two (2) hours. Work performed outside of the aforementioned will be paid at the applicable overtime rate. When starting time has been adjusted, all other provisions concerning the work day shall be adjusted accordingly. The overtime rate of pay shall be one and one-half (1½) times the regular rate of wages, other than on Sundays, holidays and from Midnight until 6:00 a.m., which will be paid at double (2) the straight time rate.

## **JACKSON COUNTY BUILDING CONSTRUCTION - HOLIDAY SCHEDULE**

**NO. 2:** All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or the days observed as such, shall be paid at the double time rate of pay.

**NO. 4:** All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. If any of the above holidays fall on Sunday, Monday will be observed as the recognized holiday. If any of the above holidays fall on Saturday, it will be celebrated on Saturday.

**NO. 7:** The following days are assigned days and are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. If a holiday falls on a Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week. However, no reimbursement for these eight (8) hours is to be paid to the workman unless worked. If workman are required to work the above enumerated holidays or days observed as such, or on Sunday, they shall receive double (2) the regular rate of pay for such work.

**NO. 22:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, or days locally observed as such, and Sunday shall be recognized as holidays. If a holiday falls on Saturday, Friday shall be observed; if it falls on Sunday, Monday shall be observed. All work performed on holidays shall be paid at the double (2) time rate of pay.

**NO. 32:** All work performed for the Friday and Saturday following Thanksgiving shall be paid at the time and one-half (1½) rate of pay. All work performed on Sundays, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day shall be paid at the double (2) time rate of pay. When one of the above holidays falls on Sunday, the following Monday shall be observed and when one of the above holidays falls on Saturday, the preceding Friday shall be observed.

**NO. 33:** All work done on New Year's Day, Memorial Day, Fourth of July, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. Labor Day shall be paid at the triple (3) time rate of pay. If the holiday falls on Sunday, the following Monday will be observed; if the holiday falls on Saturday, the preceding Friday will be observed.

**NO. 39:** No work shall be done on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas. Any of these holidays falling on Sunday, the following Monday shall be a holiday, and any of these holidays falling on Saturday, the preceding Friday shall be a holiday.

**NO. 49:** The following days shall be observed as legal holidays: New Year's Day, Decoration Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, Employee's birthday and two (2) personal days. The observance of one (1) of the personal days to be limited to the time between December 1 and March 1 of the following year. If any of these holidays fall on Sunday, the following Monday will be observed as the holiday and if any of these holidays fall on Saturday, the preceding Friday will be observed as the holiday. If employees work on any of these holidays they shall be paid time & one-half (1½) their regular rate of pay for all hours worked.

**NO. 53:** All work done on New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, Christmas Day or days observed as such for these holidays shall be paid at the double (2) time rate of pay. No work shall be performed on Labor Day except in special cases of emergency, and then the rate of pay shall be at three (3) times the regular rate of pay. When a holiday falls on a Sunday, the following Monday shall be observed as the holiday. When a holiday falls on Saturday, the preceding Friday shall be observed as the holiday.

**NO. 54:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day shall be paid at the double (2) time rate of pay. When a holiday falls on Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

**JACKSON COUNTY  
BUILDING CONSTRUCTION - HOLIDAY SCHEDULE**

**NO. 65:** Work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. If the holiday falls on Saturday, it will be observed on Friday; if the holiday falls on Sunday, it will be observed on Monday, and shall be paid for at double (2) the regular straight time rate of pay.

**NO. 67:** All work performed on New Year's Day, Memorial Day, Christmas Day, Fourth of July and Thanksgiving Day, from midnight to midnight, shall be paid for at the rate of double time (2) the basic rate of pay if required to work in addition to any other pay otherwise required hereunder as holiday pay. Positively no work shall be performed on Labor Day. Martin Luther King's Birthday, Veteran's Day, and the day after Thanksgiving Day shall be considered optional holidays, and if the Employer and employees agree that work will be performed on that day, no premium pay will be required. Should any of the above holidays fall on Saturday; the holiday will be observed on Friday. Should any of the above holidays fall on Sunday, the holiday will be observed on Monday.

**NO. 68:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day, Christmas Day, or days observed as such, shall be paid at the rate of double (2) time. When a holiday falls on a Saturday, Friday shall be observed. When a holiday falls on a Sunday, Monday shall be observed. No work shall be performed on the Fourth of July or Labor Day except to save life or property. Where one of the holidays specified falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 72:** All work performed on New Year's Day, Memorial Day (last Monday in May), Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall be paid for at double (2) the regular straight time rate of pay. Any one of the above listed holidays falling on Sunday shall be observed on the following Monday and paid for at double (2) the regular straight time rate of pay, if worked. Any one of the above listed holidays falling on Saturday shall be observed on the prior Friday and paid for at double (2) the regular straight time rate of pay, if worked. No work shall be performed on Labor Day except in case of emergency.

OCCUPATIONAL TITLE	* Date of Increase	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefits
Carpenter		\$37.73	1	17	\$16.85
Cement Mason	6/18	\$31.83	3	2	\$17.39
Electrician (Outside-Line Construction)\Lineman)	6/18	\$44.26	18	24	\$5.50 + 34.5%
Lineman Operator	6/18	\$40.91	18	24	\$5.50 + 34.5%
Lineman - Tree Trimmer	6/18	\$23.02	31	30	\$5.75 + 28%
Groundman	6/18	\$28.53	18	24	\$5.50 + 34.5%
Groundman - Tree Trimmer	6/18	\$18.62	31	30	\$5.75 + 28%
Laborer					
General Laborer	6/18	\$30.18	3	2	\$15.63
Skilled Laborer	6/18	\$31.39	3	2	\$15.63
Millwright		\$37.73	1	17	\$16.85
Operating Engineer					
Group I	6/18	\$36.22	3	2	\$17.99
Group II	6/18	\$35.18	3	2	\$17.99
Group III	6/18	\$35.18	3	2	\$17.99
Group IV	6/18	\$30.71	3	2	\$17.99
Oiler-Driver	6/18	\$34.06	3	2	\$17.99
Pile Driver		\$37.73	1	17	\$16.85
Traffic Control Service Driver		\$29.58	FED		\$15.23
Truck Driver-Teamster					
Group I	6/18	\$32.09	3	2	\$15.25
Group II	6/18	\$32.09	3	2	\$15.25
Group III	6/18	\$32.09	3	2	\$15.25
Group IV	6/18	\$32.09	3	2	\$15.25

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate sheet.



## JACKSON COUNTY HEAVY CONSTRUCTION - OVERTIME SCHEDULE

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 1:** Means (8) hours shall constitute the regular work day between time that may be advanced or delayed by two (2) hours on either side of 8:00 AM. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours straight time. The four (4) tens (10s) must run for a period of at least four (4) days, Monday through Thursday. All work on Friday on a four (4) tens (10) project will be paid at the rate of time and one-half (1½). All work performed on Saturday shall be paid at time and one-half (1½). All work performed on Sundays and recognized holidays must be paid at double (2) time. All work performed prior to or after the regular eight (8) hour work day, or ten (10) hour work day, as described above shall be paid at time and one-half (1½) the regular rate.

**NO. 3:** Means a regular work week shall consist of not more than forty (40) hours of work and all work performed over and above ten (10) hours per day or forty (40) hours per week shall be paid at the rate of time & one-half (1½). Workers shall receive time and one-half (1½) for all work performed on Sundays and recognized holidays. Double (2) time shall be paid for work performed on Sundays or recognized holidays when and only if any other craft employees of the same employer at work on that same job site are receiving double (2) time pay for that Sunday or Holiday work. A work day is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer prevents work, in which event, the starting time may be delayed, but not later than 12:00 noon. Where one of the recognized holidays falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 18:** Eight (8) hours of work between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. Forty (40) hours within the five (5) days, Monday through Friday inclusive, shall constitute the work week. Starting time may be adjusted not to exceed two (2) hours. Work performed outside of the aforementioned will be paid at the applicable overtime rate. When starting time has been adjusted, all other provisions concerning the work day shall be adjusted accordingly. The overtime rate of pay shall be one and one-half (1½) times the regular rate of wages, other than on Sundays, holidays and from Midnight until 6:00 a.m., which will be paid at double (2) the straight time rate.

**NO. 31:** Means the overtime rate shall be time and one-half the regular rate for work over forty (40) hours per week. Sundays and Holidays shall be paid at double the straight time rate. All employees performing work on affected properties during or following emergencies shall receive the applicable rate of pay for the first sixteen (16) consecutive hours and all hours worked in excess of sixteen (16) consecutive hours shall be paid at double time until broken by an eight (8) hour rest period. Should an employee be called back to work within two hours of his normal quitting time, the previous hours worked shall count toward the above sixteen (16) hour provision.

**JACKSON COUNTY  
HEAVY CONSTRUCTION - HOLIDAY SCHEDULE**

**NO. 2:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day and Christmas Day, or days observed as such, and Sundays shall be paid at the rate of time and one-half (1½). Double (2) time shall be paid for work on Sundays or recognized holidays when and only if other craft employees of the same employer at work on that same job site are receiving double (2) time pay for that Sunday or holiday work. No work shall be performed on Labor Day, except in case of jeopardy of life or property. This rule is applied to protect Labor Day. When one of the above holidays falls on a Saturday, the preceding Friday shall be observed; when the holiday falls on a Sunday, the following Monday shall be observed. Where one of the specified holidays falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 17:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day, Christmas Day, or days observed as such, shall be paid at the rate of double (2) time. When a holiday falls on a Saturday, Friday shall be observed. When a holiday falls on a Sunday, Monday shall be observed. No work shall be performed on the Fourth of July or Labor Day except to save life or property. Where one of the holidays specified falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 24:** Work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. If the holiday falls on Saturday, it will be observed on Friday; if the holiday falls on Sunday, it will be observed on Monday, and shall be paid for at double (2) the regular straight time rate of pay.

**NO. 30:** All work performed on New Year's Day, Decoration Day, Fourth of July, Labor Day, Christmas Day, Thanksgiving Day and Day after Thanksgiving or days celebrated for the same.





**DIVISION OF  
LABOR  
STANDARDS**

MISSOURI DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
**PREVAILING WAGE  
PROJECT NOTIFICATION – CONTRACTOR INFORMATION**

The information below is requested pursuant to Sections 290.210 through 290.340 and 290.550 through 290.580, RSMo. During a time of excessive unemployment, only Missouri laborers and laborers from non-restrictive states shall be employed on public works projects. See 290.550 through 290.580, RSMo.

1. Date of Notification		2. Annual Wage Order Number Included in Bid Specifications	
3. Popular or Descriptive Name of Project			
4. Estimated Project Cost of Completion <i>(total construction contracts to be awarded)</i>		5. \$	
5. Exact Location of Project			
<u>County</u>	<u>City</u>	<u>Township</u>	
6. Official Name of Public Body or Agency			
7. Name of Contact Person			8. Phone Number <i>(include area code)</i>
9. Address			
10. E-mail Address		Website	
11. Anticipated Date for Soliciting or Advertising for Bids		12. Contract Award Date	
13. Estimated Start Date of Work	14. Estimated Date of Project Completion	15. Will There Be Any Federal Funds Used in this Contract? <input type="checkbox"/> Yes <input type="checkbox"/> No	
16. Contractor Information Notification			
General Contractor:			
Name		_____	
Address		_____	
City		State	ZIP
_____	_____	_____	_____
Phone Number		E-mail Address	
_____	_____		
Type of Craftsmen Needed by Project _____			
Scope of Work _____			
List all Subcontractors:			
Name		_____	
Address		_____	
City		State	ZIP
_____	_____	_____	_____
Phone Number		E-mail Address	
_____	_____		
Type of Craftsmen Needed by Project _____			
Scope of Work _____			
Name		_____	
Address		_____	
City		State	ZIP
_____	_____	_____	_____
Phone Number		E-mail Address	
_____	_____		
Type of Craftsmen Needed by Project _____			
Scope of Work _____			

The state of Missouri requires workers on public works projects be paid the prevailing wage. Public bodies have duties as required under this law (Section 290.210 - 290.340, RSMo).

Mail, Fax or E-mail completed form to:

**DIVISION OF LABOR STANDARDS**

Attn: Prevailing Wage Section

P.O. Box 449 Jefferson City, MO 65102-0449

Phone: 573-751-3403

Fax: 573-751-3721

E-mail: [prevailingwage@labor.mo.gov](mailto:prevailingwage@labor.mo.gov)

Website: [www.labor.mo.gov/DLS](http://www.labor.mo.gov/DLS)





**DIVISION OF  
LABOR  
STANDARDS**

MISSOURI DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
DIVISION OF LABOR STANDARDS

**AFFIDAVIT  
COMPLIANCE WITH THE PREVAILING WAGE LAW**

I, \_\_\_\_\_, upon being duly sworn upon my oath state that: (1) I am the \_\_\_\_\_ of \_\_\_\_\_; (2) all requirements of §§ 290.210 to 290.340, RSMo, pertaining to the payment of wages to workers employed on public works projects have been fully satisfied with regard to this company's work on \_\_\_\_\_;

(3) I have reviewed and am familiar with the prevailing wage rules in 8 CSR 30-3.010 to 8 CSR 30-3.060; (4) based upon my knowledge of these rules, including the occupational titles set out in 8 CSR 30-3.060, I have completed full and accurate records clearly indicating (a) the names, occupations, and crafts of every worker employed by this company in connection with this project together with an accurate record of the number of hours worked by each worker and the actual wages paid for each class or type of work performed, (b) the payroll deductions that have been made for each worker, and (c) the amounts paid to provide fringe benefits, if any, for each worker; (5) the amounts paid to provide fringe benefits, if any, were irrevocably paid to a trustee or to a third party pursuant to a fund, plan, or program on behalf of the workers; (6) these payroll records are kept and have been provided for inspection to the authorized representative of the contracting public body and will be available, as often as may be necessary, to such body and the Missouri Department of Labor and Industrial Relations; (7) such records shall not be destroyed or removed from the state for one year following the completion of this company's work on this project; (8) when in effect, the requirements of §§ 290.550 through 290.580, RSMo, pertaining to excessive unemployment were fully satisfied; and (9) there has been no exception to the full and complete compliance with the provisions and requirements of Annual Wage Order No. \_\_\_\_\_ Section \_\_\_\_\_ issued by the Missouri Division of Labor Standards and applicable to this project located in \_\_\_\_\_ County, Missouri, and completed on the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

The matters stated herein are true to the best of my information, knowledge, and belief. I acknowledge that the falsification of any information set out above may subject me to criminal prosecution pursuant to §§290.340, 570.090, 575.040, 575.050, or 575.060, RSMo.

\_\_\_\_\_  
**Signature**

Subscribed and sworn to me this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.  
My commission expires \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
**Notary Public**

\_\_\_\_\_  
**Receipt by Authorized Public Representative**





**DIVISION OF  
LABOR  
STANDARDS**

MISSOURI DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
DIVISION OF LABOR STANDARDS  
**REQUEST FOR WAGE DETERMINATION**

**PLEASE RETURN TO:** Division of Labor Standards  
Attn: Prevailing Wage Section  
P.O. Box 449  
Jefferson City, MO 65102-0449

Phone: 573-751-3403  
Fax: 573-751-3721  
E-mail: [prevailingwage@labor.mo.gov](mailto:prevailingwage@labor.mo.gov)  
Website: [www.labor.mo.gov/DLS](http://www.labor.mo.gov/DLS)

**REQUESTER INFORMATION**

I am requesting a wage determination according to Chapter 290 of the Missouri Prevailing Wage Law (sections 290.210 through 290.340 and 290.550 through 290.580 RSMo).

Name of Requester <i>(please print)</i>		Requester's Title	
Requester's Organization			Phone Number <i>(include Area Code)</i>
Mailing Address			E-mail Address
City	State	ZIP Code	

**PUBLIC BODY INFORMATION**

Contact Person at Public Body			
Official Name of the Public Body requesting the wage rates			Phone Number <i>(include Area Code)</i>
Street Address			E-mail Address
City	State	ZIP Code	

**FUNDING INFORMATION**

Will the federal government or any of its agencies furnish loans or grants for any part of the funds used in your contracts?  
 Yes     No

If "Yes," will the federal government or any of its agencies also prescribe a schedule of Prevailing Wage Rates?  
 Yes     No

**COUNTY(IES) REQUESTED**

Please list county(ies) requested: \_\_\_\_\_  
*(for St. Louis, please specify "County" or "City")*

**ANNUAL WAGE ORDER PASSWORDS**

The Annual Wage Order is being provided to requesters via the Division's website. Passwords are required to access the Annual Wage Order and Incremental Increases on the Internet. Please provide an e-mail address below where we can send a password to you.

E-mail address: \_\_\_\_\_

\_\_\_\_\_  
Requester's Signature

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Date of Request





## DOCUMENT 008400 - ATTACHMENTS

### 1.1 APPLICABLE AFFIDAVITS AND FORMS

- A. The electronic verification of work authorization, "E-Verify" form is bound hereinafter for Contractor's duplications and use.
- B. The OSHA "Affidavit of 10 Hour OSHA Training" is bound hereinafter for Contractor's duplication and use.
- C. "Contractor's Affidavit Concerning Drug/Alcohol Testing Program" form is bound hereinafter for Contractor's duplication and use.
- D. The "Missouri Service-Disabled Veteran Business Preference" form is bound hereinafter for Contractor's duplication and use.
- E. Blue Ridge Elementary Roof overview plan.
- F. Fleetridge Elementary Roof overview plan.
- G. New Trails Early Learning Center Roof overview plan.
- H. Norfleet Elementary Roof overview plan.
- I. Raytown South High School Roof overview plan.
- J. Raytown South Middle School overview plan.
- K. Three Trails Elementary School overview plan.

END OF DOCUMENT 008400



**FEDERAL WORK AUTHORIZATION PROGRAM AFFIDAVIT**

I, \_\_\_\_\_, being of legal age and having been duly sworn upon my oath, state the following facts are true:

1. I am more than twenty-one years of age; and have first-hand knowledge of the matters set forth herein.
2. I am employed by \_\_\_\_\_ (hereinafter "Company") and have authority to issue this affidavit on its behalf.
3. Company is enrolled in and participating in the United States E-Verify (formerly known as "Basic Pilot") federal work authorization program with respect to Company's employees working in connection with the services Company is providing to, or will provide to, the District, to the extent allowed by E-Verify.
4. Company does not knowingly employ any person who is an unauthorized alien in connection with the services the Company is providing to, or will provide to, the District.

FURTHER AFFIANT SAYETH NOT.

By: \_\_\_\_\_ (individual signature)

For: \_\_\_\_\_ (company name)

Title: \_\_\_\_\_

Subscribed and sworn to before me on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
NOTARY PUBLIC

My commission expires:



**FEDERAL WORK AUTHORIZATION PROGRAM (“E-VERIFY”) ADDENDUM**

Pursuant to Missouri Revised Statute 285.530, all business entities awarded any contract in excess of five thousand dollars (\$5,000) with a Missouri public school district must, as a condition to the award of any such contract, be enrolled and participate in a federal work authorization program with respect to the employees working in connection with the contracted services being provided, or to be provided, to the District (to the extent allowed by E-Verify). In addition, the business entity must affirm the same through sworn affidavit and provision of documentation. In addition, the business entity must sign an affidavit that it does not knowingly employ any person who is an unauthorized alien in connection with the services being provided, or to be provided, to the District.

Accordingly, your company:

- A. agrees to have an authorized person execute the attached “Federal Work Authorization Program Affidavit” attached hereto as Exhibit A and deliver the same to the District prior to or contemporaneously with the execution of its contract with the District;
- B. affirms it is enrolled in the “E-Verify” (formerly known as “Basic Pilot”) work authorization program of the United States, and are participating in E-Verify with respect to your employees working in connection with the services being provided (to the extent allowed by E-Verify), or to be provided, by your company to the District;
- C. affirms that it is not knowingly employing any person who is an unauthorized alien in connection with the services being provided, or to be provided, by your company to the District;
- D. affirms you will notify the District if you cease participation in E-Verify, or if there is any action, claim or complaint made against you alleging any violation of Missouri Revised Statute 285.530, or any regulations issued thereto;
- E. agrees to provide documentation of your participation in E-Verify to the District prior to or contemporaneously with the execution of its contract with the District (or at any time thereafter upon request by the District), by providing to the District an E-Verify screen print-out (or equivalent documentation) confirming your participation in E-Verify;
- F. agrees to comply with any state or federal regulations or rules that may be issued subsequent to this addendum that relate to Missouri Revised Statute 285.530; and
- G. agrees that any failure by your company to abide by the requirements a) through f) above will be considered a material breach of your contract with the District.

By: \_\_\_\_\_ (signature)

Printed Name and Title: \_\_\_\_\_

For and on behalf of: \_\_\_\_\_ (company name)



**MISSOURI SERVICE-DISABLED VETERAN BUSINESS PREFERENCE**

Pursuant to section 34.074, RSMo, a preference will be given all contracts for the performance of any job or service to service-disabled veteran business either doing business as Missouri firms, corporations, or individuals; or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing bids, in their entirety, are comparable.

Definitions:

**Service-Disabled Veteran** is defined as any individual who is disabled as certified by the appropriate federal agency responsible for the administration of veterans' affairs.

**Service-Disabled Veteran Business** is defined as a business concern:

- a. Not less than fifty-one (51) percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than fifty-one (51) percent of the stock of which is owned by one or more service-disabled veterans; and
- b. The management and daily business operations of which are controlled by one or more service-disabled veterans.

If a bidder meets the definitions of a service-disabled veteran and a service-disabled veteran business as defined in section 34.074, RSMo, and is either doing business as a Missouri firm, corporation, or individual; or maintains a Missouri office or place of business, the bidder **must** provide the following with the proposal in order to receive the Missouri service-disabled veteran business preference over a non-Missouri service-disabled veteran business when the quality of performance promised is equal or better and the price quoted is the same or less or whenever competing proposals, in their entirety, are comparable:

- a. A copy of a letter from the Department of Veterans Affairs (VA), or a copy of the bidder's discharge paper (DD Form 214, Certificate of Release or Discharge from Active Duty) from the branch of service the bidder was in; and
- b. A completed copy of this exhibit

(NOTE: For ease of evaluation, please attach copy of the above-referenced letter from the VA or a copy of the bidder's discharge paper to this Exhibit. The above-referenced letter from the VA and a copy of the bidder's discharge paper shall be considered confidential pursuant to subsection 14 of section 610.021, RSMo.)

By signing below, I certify that I meet the definitions of a service-disabled veteran and a service-disabled veteran business as defined in 34.074 RSMo and that I am either doing business as a Missouri firm, corporation, or individual; or maintain Missouri offices or places of business at the location(s) listed below.

\_\_\_\_\_  
Service-Disabled Veteran's Name  
(Please Print)

\_\_\_\_\_  
Service Disabled Veteran Business Name

\_\_\_\_\_  
Service-Disabled Veteran's Signature

\_\_\_\_\_  
\_\_\_\_\_  
Missouri Address of Service-Disabled Veteran  
Business









**AFFIDAVIT OF 10 HOUR OSHA TRAINING**

Comes now \_\_\_\_\_ as \_\_\_\_\_ first  
Name Office Held

being duly sworn, on my oath, affirm \_\_\_\_\_ does  
Company Name

comply with the requirements of Section 292.675, which requires all contractors and subcontractors doing work on the project to provide, and require its on-site employees to complete a ten-hour course in construction safety and health approved by the Occupational Safety and Health Administration (OSHA) or a similar program approved by the Missouri Department of Industrial Relations which is at least as stringent as an approve OSHA program.

*In Affirmation thereof, the facts stated above are true and correct (The undersigned understands that false statements made in this filing are subject to the penalties provided under Section 292.675, RSMo).*

\_\_\_\_\_  
Signature (person with authority)

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

Subscribed and sworn to before me this \_\_\_\_\_ of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Signature of notary

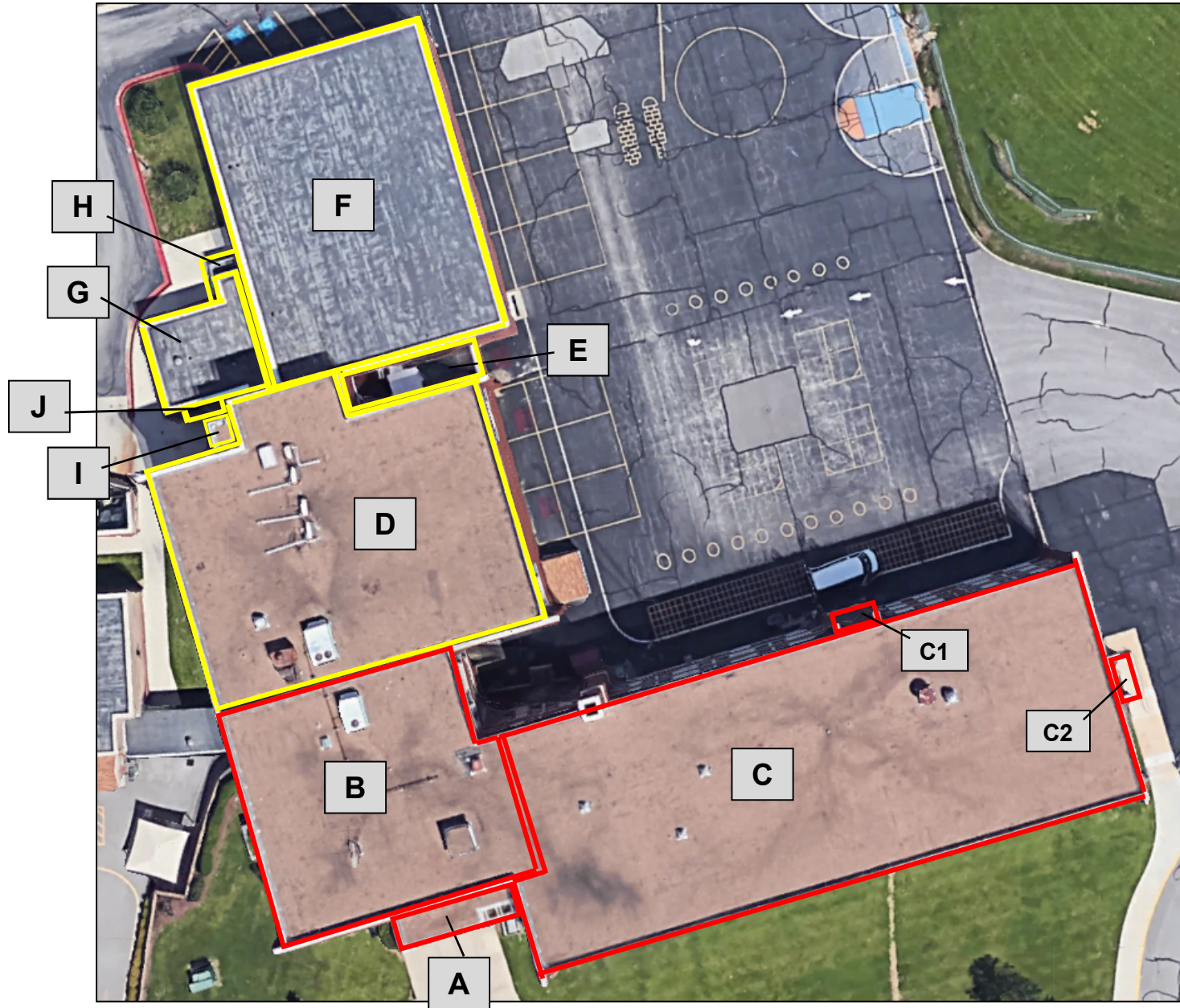
\_\_\_\_\_  
Date



# Blue Ridge Elementary

6410 Blue Ridge Blvd, Raytown, MO 64133

Raytown  
School District



Restore



Replace



Retrofit

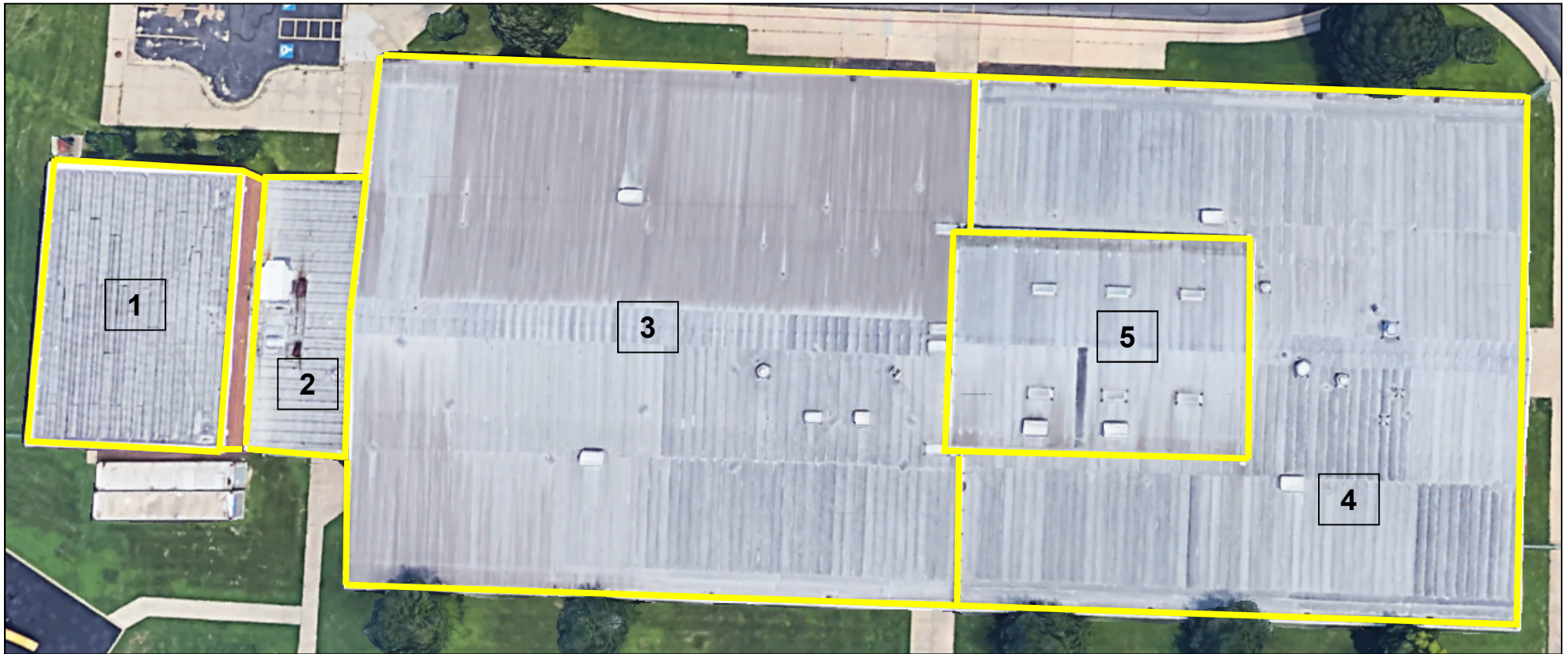




# Fletridge Elementary

13001 E. 55<sup>th</sup> Street, Kansas City, MO 64133

Raytown  
School District



Restore



Replace



Retrofit

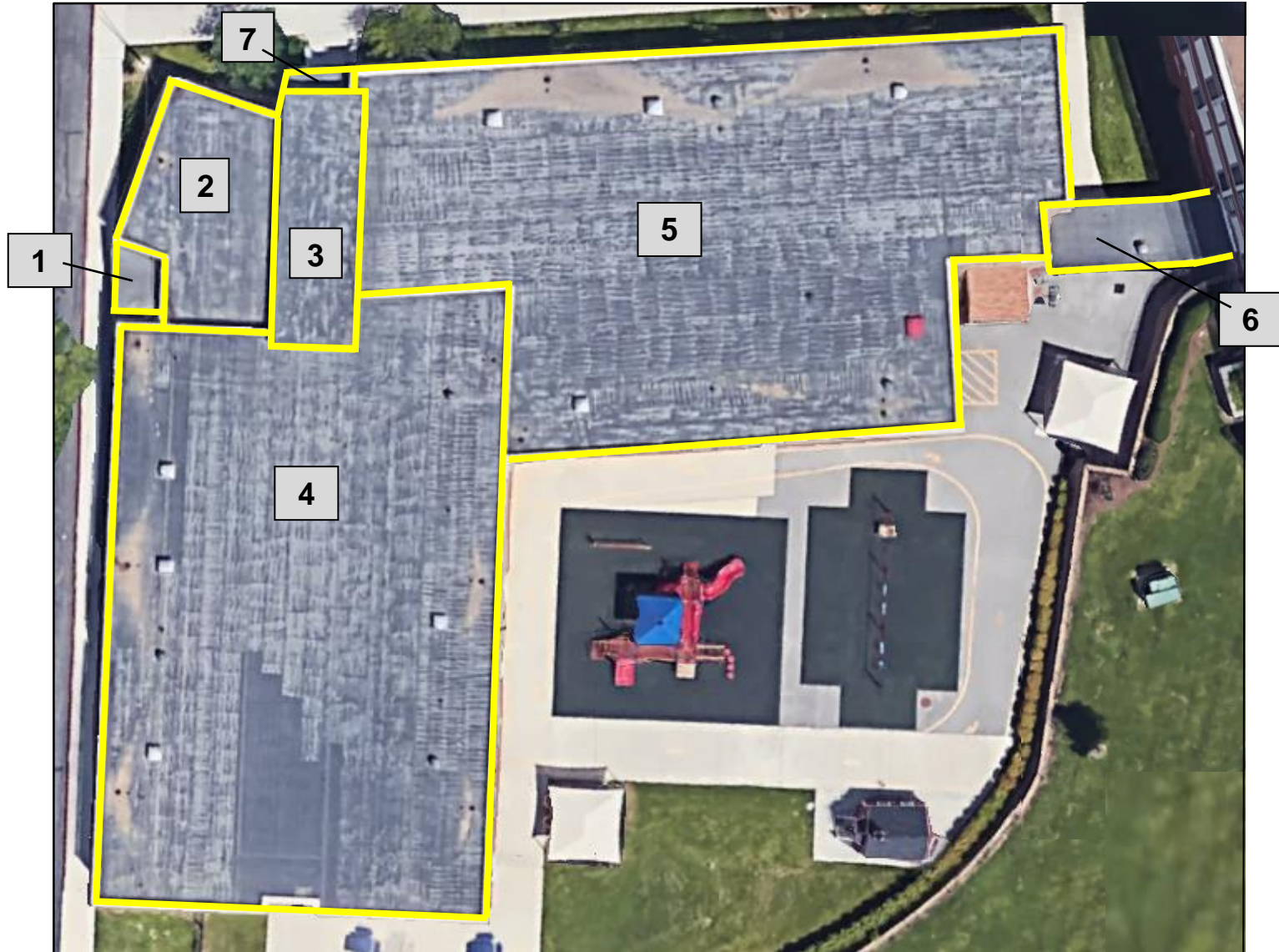






**New Trails Early Learning Center**  
6325 Hunter Street, Raytown, MO 64133

**Raytown  
School District**



 Restore

 Replace

 Retrofit





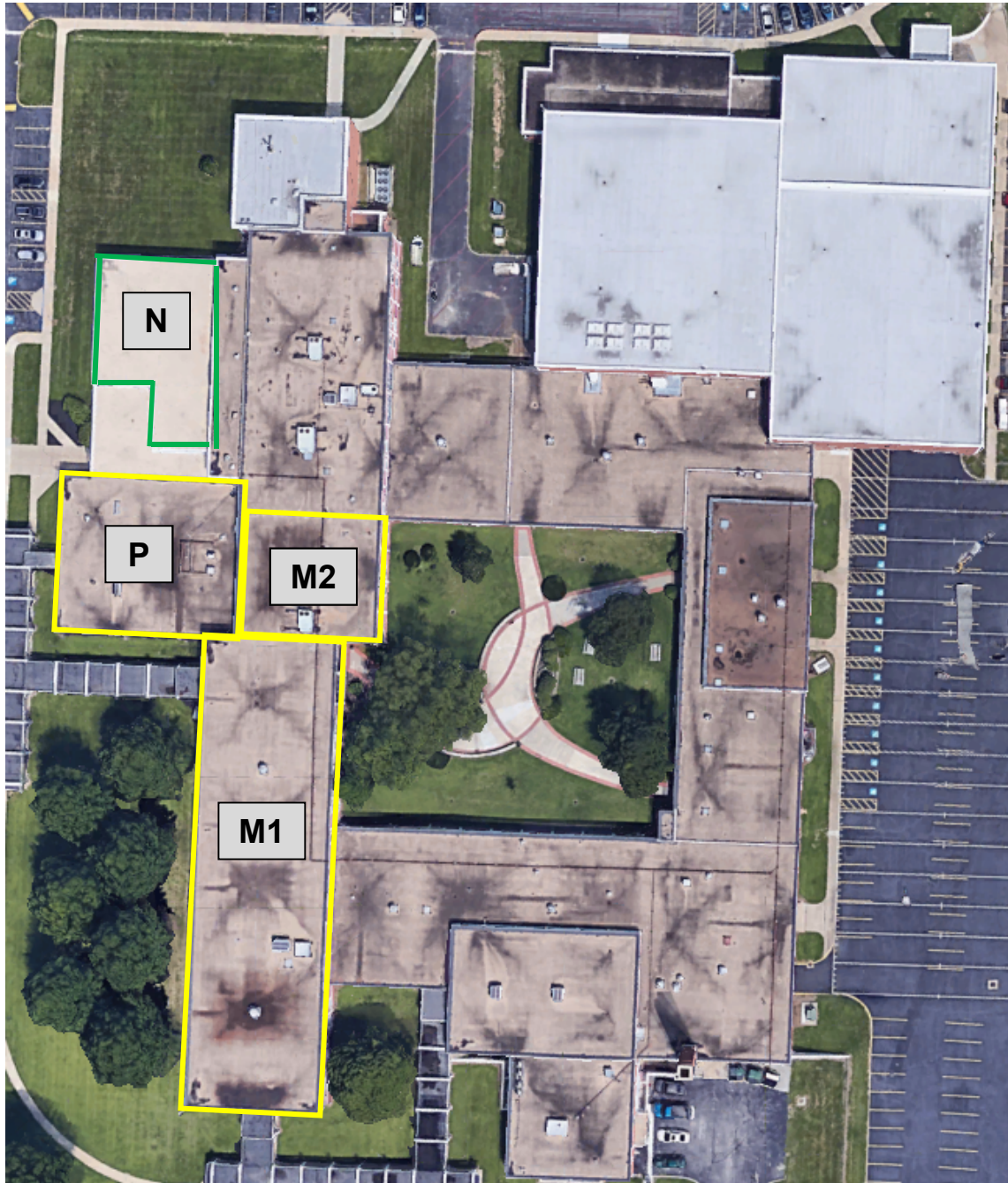






-  Restore
-  Replace
-  Retrofit



**Raytown South High School**  
8211 Sterling Avenue, Raytown, MO 64138

**Raytown  
School District**



-  Repairs
-  Restore
-  Replace
-  Retrofit

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



**Raytown South Middle School**  
8401 E. 83<sup>rd</sup> Street, Raytown, MO 64138



 Restore

 Replace

 Retrofit





# Raytown South Middle School

Roofs J & K (3D angles & zoomed in)





# Three Trails Preschool

8812 E. Gregory Avenue, Raytown, MO 64133

Raytown  
School District



 Restore

 Replace

 Retrofit

**TREMCO**  
ROOFING & BUILDING MAINTENANCE



## SECTION 011000 - SUMMARY

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Owner-furnished products.
  - 4. Access to site.
  - 5. Coordination with occupants.
  - 6. Work restrictions.
  - 7. Specification and drawing conventions.
  - 8. Miscellaneous provisions.

#### 1.2 PROJECT INFORMATION

- A. Project Identification:
  - 1. RAYTOWN SCHOOL DISTRICT ROOF IMPROVEMENTS
    - a. Blue Ridge Elementary, 6410 Blue Ridge Boulevard, Raytown, Missouri 64133.
    - b. Fleetridge Elementary, 13001 East 55- Street, Kansas City, Missouri 64133.
    - c. New Trails Early Learning Center, 6325 Hunter Street, Raytown, Missouri 64133.
    - d. Norfleet Elementary, 6140 South Norfleet Road, Raytown, Missouri 64133.
    - e. Raytown South High School, 8211 Sterling Ave., Raytown, Missouri 64138.
    - f. Raytown South Middle School, 8838 East 83- Street, Raytown, Missouri 64138.
    - g. Three Trails Preschool, 11801 East 32- Street S, Independence, Missouri 64052.
- B. Owner: Raytown Quality Schools, 6608 Raytown Road, Raytown, MO. 64113.
  - 1. Owner's Representatives: Travis Hux and Josh Hustad.
- C. Architect: Hollis + Miller Architects, Inc., 1828 Walnut Street, Kansas City, MO. 64108.
  - 1. Architect's Representative: Sandy Cochran. Telephone 816.442.7700.
- D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:
  - 1. Refer to the Project Team Directory, Document 000101.

#### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
  - 1. All architectural, fire suppression, plumbing, mechanical, electrical, access control and utilities as indicated in the Contract Documents.
  - 2. Alternates: Refer to Section 012300.
- B. Type of Contract:
  - 1. Project will be constructed under a single prime contract.

#### 1.4 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Preceding Work: Owner will remove certain items from the Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.

#### 1.5 OWNER-FURNISHED PRODUCTS

- A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products:
  - 1. Refer to individual technical specifications, items include, but are not limited to:

## 1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to Areas shown on Drawings.
  - 2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Restrictions: Note that no deliveries to the Project Site will be allowed between the hours of 7:00 to 8:30 a.m. and 2:00 to 3:30 p.m.
    - b. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - c. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

## 1.7 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
  - 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

## 1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 4:00 p.m., Monday through Friday, unless otherwise indicated.
  - 1. Contractor shall have limited use of the building until school is out for the summer.
  - 2. Weekend Hours: Coordinate and schedule all weekend hours with the Owner not less than 48 hours in advance. Comply with regulations of authorities having jurisdiction.
  - 3. Early Morning Hours: Notify Owner of days when early morning hours will be required and comply with regulations of authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Architect and Owner not less than three days in advance of proposed utility interruptions.
  - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Architect and Owner not less than three days in advance of proposed disruptive operations.
  - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Buildings and Sites: Smoking is not permitted on School District property.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

- H. Employee Screening: Comply with Owner's requirements for drug, alcohol and background screening of Contractor personnel working on Project site.
  - 1. Maintain list of approved screened personnel with Owner's representative.
  - 2. As a condition for the award of any service contract in excess of \$5,000.00 by the School District, the service provider must be enrolled in and currently participating in "E-Verify" or any other equivalent electronic verification of work authorization program operated by the U.S. Department of Homeland Security
  - 3. As a further condition for the award of any service contract in excess of \$5,000.00 the service provider shall not knowingly employ any person who is an un-authorized alien in conjunction with the contracted services.
    - a. E-Verify forms are available for duplication and contractor's use in Section 008400 Attachments.

#### 1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
  - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 011000**





## SECTION 012100 - ALLOWANCES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
  - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
  - 1. Lump-sum allowances.
- C. Related Requirements:
  - 1. Section 014000 "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

#### 1.2 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

#### 1.3 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

#### 1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

#### 1.6 LUMP-SUM AND UNIT-COST ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes (other than sales and use taxes), freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner and/or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

#### 1.7 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  1. Include installation costs in purchase amount only where indicated as part of the allowance.
  2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
  3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
  4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

##### 3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

##### 3.3 SCHEDULE OF ALLOWANCES

1. Not Used.

#### END OF SECTION 012100

## SECTION 012200 - UNIT PRICES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
  - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 2. Section 014000 "Quality Requirements" for general testing and inspecting requirements.

#### 1.2 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

#### 1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes (other than sales and use tax), overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price 1: Roof Insulation Replacement.
  - 1. Description: Provide cost for new roof insulation replacement and installation, per specification.
  - 2. Unit of Measurement: Square foot.
- B. Unit Price 2: Metal Decking Repair.
  - 1. Description: Provide cost for metal deck repair, at roof replacement locations, per specification.
  - 2. Unit of Measurement: Square foot.
- C. Unit Price 3: Concrete Deck Repair.
  - 1. Description: Provide cost for concrete deck repair as required for new assembly installation, per specification.
  - 2. Unit of Measurement: Square foot.

END OF SECTION 012200

## SECTION 012300 - ALTERNATES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

#### 1.2 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

#### 1.3 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 SCHEDULE OF ALTERNATES

- 1. Not Used

**END OF SECTION 012300**



## SECTION 012500 - SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for "Substitutions for Convenience" and "Substitutions for Cause".
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for products selected under an allowance.
  - 2. Section 012200 "Unit Prices" for products selected under a unit price.
  - 3. Section 012300 "Alternates" for products selected under an alternate.
  - 4. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
  - 5. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

#### 1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms. Substitutions for Cause, if any, shall be submitted after award of the contract as set forth hereinafter.
  - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner. Substitutions for Convenience by the Contractor, shall be submitted prior to bidding as set forth hereinafter.
- B. Comparable Products: Naming of specified items on the Drawings and in the specifications, means that such named items are specifically required by the Architect and/or Owner. When the words "or comparable product" follows such named item(s), a substitution request must be submitted when proposing a product other than the named product. Requests for substitutions must be received by the Architect within the time frame set hereinafter.
- C. The following are not considered substitutions:
  - 1. Revisions to Contract Documents requested by the Owner or Architect.
  - 2. Specified options of products, materials and construction methods included in the Contract Documents.

#### 1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit at least one (1) paper copy or an electronic pdf copy of each request for consideration to the Architect. Clearly identify proposed product and all related options or fabrication or installation method to be replaced. Include Specification Section number and title, in addition to applicable Drawing numbers and titles.
  - 1. Substitution Request Form: Use facsimile of form provided at the end of this Section.
    - a. Accompanying each Substitution Request shall be a fully executed copy of the Substitution Request Form.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - c. A written and detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.



- e. Samples, where applicable or requested of proposed substitution and of specified product shall be submitted for comparison and review by Architect.
  - f. Certificates and qualification data, where applicable or requested.
  - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
  - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
  - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Review Process: Submittal requests for proposed substitutions will be processed using the following procedures:
- a. Submittals will be "Received Dated" immediately upon arrival.
  - b. Submittals will be placed by receiving person in a file designated for that purpose.
  - c. Submittals will not be reviewed for completeness or compliance until after the date and time established for closing of receipt of substitution request submittals.
  - d. Submittals will be reviewed by a member of Hollis + Miller Architect's staff (or respective consultant). Reviewer(s) will not be designated until after closing period established for receipt of submittal of substitutions.
  - e. Reviewer's General Attitude will be:
    - 1) Burden of Proof is on Proposer.
    - 2) Reviewer should not be required to complete the submittal, that is, select from options or between models and lines of products.
    - 3) Reviewer should not be required to conduct an exhaustive review of the submittal. Submittals of manufacturer's catalogs which do not clearly indicate proposed product and proposed product options will be rejected.
    - 4) Reviewer should not be required to seek information from manufacturer's literature on file in the office, from an improperly submitted electronic submittal or information in other locations.
    - 5) Substitute must be "comparable to" or superior in those features and performance which the Project requires and those which the specified product will provide.
    - 6) Review is complete when, in the reviewer's opinion, significant deficiency(ies) are established. In such case, review of data covering other points of specifications is not required.
  - f. Reviewer will note action taken (No Exception taken to Submitted Manufacturer, No Exception taken to Specific Product, Exceptions Noted, Not Accepted or Received Late), the date, and his/her initials.
  - g. All submittals received after closing time will be "Received Dated", marked "Late", initialed by reviewer, and filed without review.
  - h. Submittals will be filed in Architect's office until completion of the Project.
4. Architect's Action:
- a. Architect will review requests for "Substitutions for Convenience" only once, no additional information may be submitted. Architect may request additional information as necessary for review of "Substitutions for Cause."
  - b. Architect will note action taken.
  - c. Architect is not obligated nor required to review any and all substitution requests.
  - d. Architect is not obligated to inform proposers of substitutions of incomplete and non-accepted requests for substitution.
  - e. Acceptance of Substitutions:
    - 1) Acceptance of Substitutions for Convenience: Accepted substitutions will be set forth in an Addendum and in no other manner.
      - a) Use product specified if Architect does not issue a decision on use of a proposed substitution.

- 2) Acceptance of Substitutions for Cause: Architect will review proposed substitution within 15 business days of receipt of request. If necessary, Architect will request additional information or documentation for evaluation within seven (7) business days of receipt of a request for Substitution for Cause.” Only acceptable substitutions will receive notification of status. Substitutions shall be considered unacceptable unless a form of acceptance is received by the Proposer.
  - a) Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b) Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### 1.4 ELECTRONIC SUBMITTAL OF SUBSTITUTIONS

- A. Substitution Request submittals will be accepted for review when submitted electronically under the following conditions. Substitution requests which are not submitted in accordance with the criteria listed below may be rejected at the Architect’s discretion.
  1. Accompanying each submittal shall be a fully executed copy of the Substitution Request Form.
  2. Submittals sent to Hollis + Miller Architects, shall be sent to **Sandy Cochran**. Refer to Document 000101 - Project Team Directory, for mailing address and email address. Submittals directed to the attention of anyone other than the person named above will not be considered.
  3. Submittals of Substitutions for Cause must be received within the time limits set forth in Paragraph 2.1 A of this Section.
  4. Submittals of Substitutions for Convenience must be received prior to bidding and within the time limits set forth in Paragraph 2.1 B of this Section.
  5. Documentation requirements as set forth in 1.3 A.2a through 1.3 A.2m are applicable to electronic submittals.
    - a. Note: Electronic submittals in which the manufacturer’s entire catalog is submitted will be rejected.

#### 1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

#### 1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions at no additional cost to the Owner.

### PART 2 - PRODUCTS

#### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 30 days prior to time required for preparation and review of related submittals.
  1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Request is directly related to a “or comparable product” clause or similar language in the Contract Documents.
    - c. Specified product or method of construction cannot be provided within the Contract Time.
    - d. Specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
    - e. Specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution will provide the specified warranty.
    - f. Substitution request is fully documented and properly submitted.
    - g. Requested substitution will not adversely affect Contractor's construction schedule.
    - h. Requested substitution has received necessary approvals of authorities having jurisdiction.

- i. Requested substitution is compatible with other portions of the Work.
  - j. Requested substitution has been coordinated with other portions of the Work.
  - k. Requested substitution provides specified warranty.
  - l. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution only when submitted prior to bidding, and no later than noon on **March 25, 2019**. Requests received after that time may be considered or rejected at discretion of Architect.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Substitution request is fully documented and properly submitted.
    - e. Requested substitution will not adversely affect Contractor's construction schedule.
    - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - g. Requested substitution is compatible with other portions of the Work.
    - h. Requested substitution has been coordinated with other portions of the Work.
    - i. Requested substitution provides specified warranty.
    - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- C. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptance or validate request for substitution, nor does it constitute approval.
- D. Under no circumstances does the Architect's and/or Owner's acceptance of any such substitution relieve the Contractor from timely, full and proper performance of the Work.

PART 3 - EXECUTION (Not Used)

**END OF SECTION 012500**

# SUBSTITUTION REQUEST FORM

**MAIL TO:** Hollis + Miller Architects  
1828 Walnut St., Suite 922  
Kansas City, MO. 64108

**PROJECT:** - RAYTOWN SCHOOLS ROOF IMPROVEMENTS

**SPECIFIED ITEM:** \_\_\_\_\_

**PROPOSED SUBSTITUTE:** \_\_\_\_\_

**SUBMITTED BY:**

Firm: \_\_\_\_\_

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

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

Date: \_\_\_\_\_ Phone No. \_\_\_\_\_ Fax No. \_\_\_\_\_

**Attach complete description, designation, catalog or model number, Spec Data Sheet and other Technical Data and samples, including Laboratory Tests if Applicable.**

*Fill in blanks below:*

1. Will substitution affect dimension indicated on drawings? \_\_\_\_\_  
\_\_\_\_\_
2. Will substitution affect wiring, piping, ductwork, etc., indicated on drawings? \_\_\_\_\_  
\_\_\_\_\_
3. What effect will substitution have on other trades? \_\_\_\_\_  
\_\_\_\_\_
4. Differences between proposed substitution and specified item? \_\_\_\_\_  
\_\_\_\_\_
5. Any and all impacts on costs, design modifications, additional architectural and engineering services, material and labor changes, schedule changes, and other unanticipated consequences, resulting from this substitution in lieu of the specified item, shall be the full responsibility of the contractor and his subcontractors and supplier.
6. Manufacturer's warranties of the specified items and proposed items are: [ ] same [ ] different, *explain:*  
\_\_\_\_\_

**REVIEW COMMENTS:**

- [ ] **No Exception taken to Submitted Manufacturer**  
*Manufacturer only is accepted due to time limitations for full review of product, or because no specific product data is submitted, or other unspecified reasons. Contractor must still bear full responsibility for compliance with contract requirements.*
- [ ] **No Exception taken to Specific Products**
- [ ] **Exceptions Noted**  
*See attached copy or notes on product literature*
- [ ] **Not Accepted**
- [ ] **Received too Late**

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

Remarks: \_\_\_\_\_



## SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
  - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions for "cause" made after the Contract award.

#### 1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

#### 1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within 14 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
  - 7. Proposal Request Form: Use form acceptable to Architect.

#### 1.4 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

## 1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.
  - 1. Change Orders are to be dated and numbered sequentially.
- B. Change Orders will describe the change or changes, will refer to the related Proposal Request number and date; and will be signed by the Owner and Architect.
- C. Changes in the Project (additions and credits) where unit prices are not required by the bid documents and value of changes or extra work is determined by an estimate and accepted in a lump sum amount, by cost and percentages, or by cost and a fixed fee, the percentages for overhead and profit, or commission to be allowed for net increases shall in no case exceed the following:
  - 1. To Contractor for work performed by his own forces 10%
  - 2. To Contractor for work performed by other than his own forces 5%
  - 3. To Subcontractor for work performed by his own forces 10%
  - 4. To Subcontractor for work performed by other than his own forces 5%

Percentages for overhead and profit will not be allowed on bond premiums.

## 1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 012600**

## SECTION 012900 - PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
  - 2. Section 012300 "Alternates" for procedural requirements governing the handling and processing of allowances.
  - 3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 4. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

#### 1.2 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work at each of the individual schools and used as the basis for reviewing Contractor's Applications for Payment.

#### 1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Items required to be indicated as separate activities in Contractor's construction schedule.
  - 2. Submit the schedule of values to Architect at earliest possible date, but no later than fourteen (14) days after Notice of Award.
  - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
  - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Arrange schedule of values consistent with format of AIA Document G703.
  - 3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
    - a. Related Specification Section or Division.
    - b. Description of the Work.
    - c. Name of subcontractor.
    - d. Name of manufacturer or fabricator.
    - e. Name of supplier.
    - f. Change Orders (numbers) that affect value.



- g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  - 1) Labor.
  - 2) Materials.
  - 3) Equipment.
- 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five (5) percent of the Contract Sum.
  - a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five (5) percent of the Contract Sum and subcontract amount.
- 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
- 6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
- 7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
- 9. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
- 10. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 11. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the 1st of the month. The period covered by each Application for Payment is one month, ending on the 25<sup>th</sup> day of the month.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment. Sample copies are included in Project Manual.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
  - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
  - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.

2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
  3. Provide summary documentation for stored materials indicating the following:
    - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit one (1) signed and notarized electronic copy of each Application for Payment to Architect. One copy shall include waivers of lien and similar attachments if required.
1. With each application for payment, include a transmittal form listing attachments and recording appropriate information about application.
- H. Partial Lien Waivers (Waivers of Mechanic's Lien): Starting with Application for Payment No. 2, submit waivers of mechanic's liens from each subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  5. Waiver Forms: Submit executed waivers of lien on forms, included in the Project Manual.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of values.
  3. Contractor's construction schedule (preliminary if not final).
  4. Products list (preliminary if not final).
  5. Schedule of unit prices.
  6. Submittal schedule (preliminary if not final).
  7. List of Contractor's staff assignments.
  8. List of Contractor's principal consultants.
  9. Copies of building permits.
  10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  11. Initial progress report.
  12. Report of preconstruction conference.
  13. One (1) electronic copy of all Contractor and Subcontractor Certified Payroll Reports.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  6. AIA Document G707, "Consent of Surety to Final Payment."
  7. Copy of the Affidavit of Compliance with Prevailing Wage Determination sent to the State.
  8. Asbestos-Free and Lead-Free Certification Letter in form acceptable to Owner.

9. Evidence that claims have been settled.
10. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
11. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 012900**

**Application and Certificate for Payment**

**TO OWNER:** Raytown Quality Schools  
6608 Raytown Road  
Raytown, MO 64133

**PROJECT:** 17047.00 Raytown HS and Raytown  
South HS Baseball Stadium  
Improvements  
Raytown High School  
6019 Blue Ridge Blvd.  
Raytown South High School  
8211 Sterling Ave.  
Raytown, Missouri 64138

**APPLICATION NO:** 001  
**PERIOD TO:**

**Distribution to:**  
OWNER:  ARCHITECT:   
CONTRACTOR:  FIELD:   
OTHER:

**FROM CONTRACTOR:** Hollis + Miller Architects  
1828 Walnut Street  
Suite 922  
Kansas City, Missouri 64108

**VIA ARCHITECT:** CONTRACT FOR: General Construction  
CONTRACT DATE: / /  
PROJECT NOS: / /

**CONTRACTOR'S APPLICATION FOR PAYMENT**

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM .....	\$0.00
2. NET CHANGE BY CHANGE ORDERS .....	\$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2) .....	\$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) .....	\$0.00
5. RETAINAGE:	
a. 0 % of Completed Work (Column D + E on G703)	\$0.00
b. 0 % of Stored Material (Column F on G703)	\$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703) .....	\$0.00

6. TOTAL EARNED LESS RETAINAGE .....	\$0.00
(Line 4 Less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT .....	\$0.00
(Line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE .....	\$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	\$0.00

**ARCHITECT'S CERTIFICATE FOR PAYMENT**

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

**AMOUNT CERTIFIED** ..... \$0.00  
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

**ARCHITECT:**

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

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
<b>TOTALS</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>NET CHANGES by Change Order</b>		<b>\$0.00</b>

DRAFT

# DRAFT AIA® Document G703™ - 1992

## Continuation Sheet

AIA Document G702™-1992, Application and Certification for Payment, or G736™-2009, Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 001		APPLICATION DATE:		PERIOD TO:		ARCHITECT'S PROJECT NO:				
A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)				TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00
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## SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Coordination drawings.
  - 3. Requests for Information (RFIs).
  - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
  - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
  - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

#### 1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Subcontract List: As soon as practical after award of Contract, but not later than fifteen (15) days, prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design Use form acceptable to Architect. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within fifteen (15) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
  - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

#### 1.4 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.



- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

## 1.5 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    - f. Indicate required installation sequences.
    - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
  3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
  4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
  5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  6. Mechanical and Plumbing Work: Show the following:
    - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    - c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:
    - a. Runs of vertical and horizontal conduit 1-1/2 inches in diameter and larger.
    - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
    - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
  8. Fire-Protection System: Show the following:
    - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
  9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
    - a.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
  2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
  3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
    - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    - b. Digital Drawing Software Program: The Contract Drawings are available in Revit version 17 using Windows 10 operating system.
    - c. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

#### 1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.

- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for approval of Contractor's means and methods.
    - d. Requests for coordination information already indicated in the Contract Documents.
    - e. Requests for adjustments in the Contract Time or the Contract Sum.
    - f. Requests for interpretation of Architect's actions on submittals.
    - g. Incomplete RFIs or inaccurately prepared RFIs.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
  3. Architect's action on RFI shall not indicate approval of a change to the Contract Time or the Contract Sum.
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
    - b. Change Proposals shall be made according to Section 012600 "Contract Modification Procedures."
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly in form acceptable to Architect. Include the following:
1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect.
  4. RFI number including RFIs that were returned without action or withdrawn.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven (7) days if Contractor disagrees with response.
1. Change in Work shall be recorded to the Project Record set per Section 017839 "Project Record Documents."

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three (3) days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
  2. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Lines of communications.
    - f. Procedures for processing field decisions and Change Orders.
    - g. Procedures for RFIs.
    - h. Procedures for testing and inspecting.
    - i. Procedures for processing Applications for Payment.
    - j. Distribution of the Contract Documents.
    - k. Submittal procedures.

- l. Preparation of record documents.
  - m. Use of the premises and existing building.
  - n. Work restrictions.
  - o. Working hours.
  - p. Owner's occupancy requirements.
  - q. Responsibility for temporary facilities and controls.
  - r. Procedures for moisture and mold control.
  - s. Procedures for disruptions and shutdowns.
  - t. Construction waste management and recycling.
  - u. Parking availability.
  - v. Office, work, and storage areas.
  - w. Equipment deliveries and priorities.
  - x. First aid.
  - y. Security.
  - z. Progress cleaning.
4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
  - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Options.
    - c. Related RFIs.
    - d. Related Change Orders.
    - e. Purchases.
    - f. Deliveries.
    - g. Submittals.
    - h. Review of mockups.
    - i. Possible conflicts.
    - j. Compatibility requirements.
    - k. Time schedules.
    - l. Weather limitations.
    - m. Manufacturer's written instructions.
    - n. Warranty requirements.
    - o. Compatibility of materials.
    - p. Acceptability of substrates.
    - q. Temporary facilities and controls.
    - r. Space and access limitations.
    - s. Regulations of authorities having jurisdiction.
    - t. Testing and inspecting requirements.
    - u. Installation procedures.
    - v. Coordination with other work.
    - w. Required performance results.
    - x. Protection of adjacent work.
    - y. Protection of construction and personnel.
  - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
  - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 21 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Requirements for delivery of material samples, attic stock, and spare parts.
    - f. Requirements for demonstration and training.
    - g. Preparation of Contractor's punch list.
    - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - i. Submittal procedures.
    - j. Installation of Owner's furniture, fixtures, and equipment.
    - k. Responsibility for removing temporary facilities and controls.
  4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at weekly or biweekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
  2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access and work hours.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Progress cleaning.
      - 10) Quality and work standards.
      - 11) Status of correction of deficient items.
      - 12) Field observations.
      - 13) Status of RFIs.
      - 14) Status of proposal requests.
      - 15) Pending changes.
      - 16) Status of Change Orders.
      - 17) Pending claims and disputes.
      - 18) Documentation of information for payment requests.
  4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
    - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

- F. Coordination Meetings: Conduct project coordination meetings at intervals necessary for coordination of the Project. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    - c. Review present and future needs of each contractor present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access and work hours.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Work hours.
      - 10) Hazards and risks.
      - 11) Progress cleaning.
      - 12) Quality and work standards.
      - 13) Change Orders.
  3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 013100**



## SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Contractor's construction schedule.
  - 2. Construction schedule updating reports.
  - 3. Weekly construction progress reports.
  - 4. Material location reports.
  - 5. Site condition reports.
  - 6. Special reports.
- B. Related Requirements:
  - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
  - 2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

#### 1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. PDF electronic file.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- C. Construction Schedule Updating Reports: Submit every two weeks. Coordinate one of the updating reports with Application for Payment.
- D. Daily Construction Reports: Submit at weekly intervals, prior to next meeting.
- E. Material Location Reports: Submit at weekly intervals.
- F. Site Condition Reports: Submit at time of discovery of differing conditions.

#### 1.4 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
  - 1. Review software limitations and content and format for reports.
  - 2. Verify availability of qualified personnel needed to develop and update schedule.
  - 3. Discuss constraints, including work stages, area separations and interim milestones.
  - 4. Review delivery dates for Owner-furnished products.
  - 5. Review submittal requirements and procedures.
  - 6. Review time required for review of submittals and resubmittals.
  - 7. Review requirements for tests and inspections by independent testing and inspecting agencies.
  - 8. Review time required for Project closeout and Owner startup procedures.
  - 9. Review and finalize list of construction activities to be included in schedule.



10. Review procedures for updating schedule.

## 1.5 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  1. Secure time commitments for performing critical elements of the Work from entities involved.
  2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## PART 2 - PRODUCTS

### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
  1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  1. Activity Duration: Define activities so no activity is longer than seven (7) days, unless specifically allowed by Architect.
  2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  4. Startup and Testing Time: Include no fewer than 14 days for startup and testing.
  5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  6. Punch List and Final Completion: Include not more than 14 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  1. Phasing: Arrange list of activities on schedule by phase.
  2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
  3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  5. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. Use of premises restrictions.
    - e. Provisions for future construction.
    - f. Seasonal variations.
    - g. Environmental control.
  6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.
    - d. Mockups.
    - e. Fabrication.
    - f. Sample testing.
    - g. Deliveries.
    - h. Installation.
    - i. Tests and inspections.

- j. Adjusting.
  - k. Curing.
  - l. Startup and placement into final use and operation.
7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
  - b. Temporary enclosure and space conditioning.
  - c. Permanent space enclosure.
  - d. Completion of mechanical installation.
  - e. Completion of electrical installation.
  - f. Substantial Completion.

- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- 1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
  - 2. Unanswered Requests for Information.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.
  - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 7 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

## 2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within fourteen (14) days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
- 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

## 2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
- 1. Name of Project.
  - 2. Name of Contractor.
  - 3. Date of report.
  - 4. Outline of current week's construction activities.
  - 5. Outline of anticipated (look ahead) activities for subsequent week.
  - 6. Critical path items for current and subsequent week.
  - 7. List of subcontractors at Project site.
  - 8. Approximate count of personnel at Project site.
  - 9. Equipment at Project site.
  - 10. Material deliveries.
  - 11. High and low temperatures and general weather conditions, including presence of rain or snow.
  - 12. Accidents.
  - 13. Meetings and significant decisions.

14. Unusual events (see special reports).
15. Stoppages, delays, shortages, and losses.
16. Meter readings and similar recordings.
17. Emergency procedures.
18. Orders and requests of authorities having jurisdiction.
19. Change Orders received and implemented.
20. Construction Change Directives received and implemented.
21. Services connected and disconnected.
22. Equipment or system tests and startups.
23. Partial completions and occupancies.
24. Substantial Completions authorized.

- B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
  2. Material stored prior to previous report and since removed from storage and installed.
  3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## 2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner and Architect, within two (2) day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Failure to submit reports can be cause for delay in progress payments by the Owner until reports are made current.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule three days before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
  2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

**END OF SECTION 013200**

## SECTION 013300 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
  - 2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
  - 3. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
  - 5. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

#### 1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

#### 1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
  - 3. Format: Arrange the following information in a tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
    - c. Submittal category: Action; informational.
    - d. Name of subcontractor.
    - e. Description of the Work covered.
    - f. Scheduled date for Architect's final release or approval.
    - g. Scheduled date of fabrication.

#### 1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor, at a nominal cost, for use in preparing submittals.
  - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

- a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
  - b. Digital Drawing Software Program: The Contract Drawings are available in Revit version 17 using Windows 10 operating system.
  - c. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
- B. General:
1. Submittals shall be neat and legible, of uniform scale matching contract Documents, with all sheets of similar information of same size.
  2. Electronic copies of CAD Drawings of the Contract Drawings may be provided by Architect for Contractor, at a nominal cost, subject to the requirements of Section 017839 "Project Record Documents."
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. It is expected that all submittals will be submitted within the durations outlined in the bid form as provided by each trade.
    - a. The completion time of the contract will not be extended for delays caused by tardiness of submittals. Cost of such delays shall not be borne by the Owner and may be back-charged as necessary.
      - 1) Contractor shall assume full responsibility for providing materials as specified at their risk to maintain schedule if submittals are not submitted within durations provided on the bid form.
    - b. Upon receipt of unapproved submittals, Contractors will have seven (7) calendar days to revise and resubmit.
  2. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  3. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  4. Resubmittal Review: Allow five (5) working days for review of each resubmittal.
  5. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 days for initial review of each submittal.
  6. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- E. Electronic Submittals: Identify and incorporate information in each electronic (pdf) submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., RQS-079200.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., RQS-079200.01.A).
    - b. Specific material/product identifier: After listing the project identifier and section number as described above, clearly indicate the material/product submitted corresponding to specific paragraph in the specification (e.g., Silicone Joint Sealant – 2.2 A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
  4. Transmittal Form for Electronic Submittals: Use electronic (pdfs) form acceptable to Owner, containing the following information:
    - a. Project name.

- b. Date.
  - c. Name and address of Architect.
  - d. Name of Contractor.
  - e. Name of firm or entity that prepared submittal.
  - f. Names of subcontractor, manufacturer, and supplier.
  - g. Category and type of submittal.
  - h. Submittal purpose and description.
  - i. Specification Section number and title.
  - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
  - k. Drawing number and detail references, as appropriate.
  - l. Location(s) where product is to be installed, as appropriate.
  - m. Related physical samples submitted directly.
  - n. Indication of full or partial submittal.
  - o. Transmittal number, numbered consecutively.
  - p. Submittal and transmittal distribution record.
  - q. Other necessary identification.
  - r. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
- a. Project name.
  - b. Number and title of appropriate Specification Section.
  - c. Manufacturer name.
  - d. Product name.
- F. Options: Identify options requiring selection by Architect.
- G. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal and noting on attached separate sheet, prepared on Contractor's letterhead.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- 1. Post electronic submittals as PDF electronic files directly to Architect, refer to Project Team Directory.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Submit electronic submittals via email as PDF electronic files.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
    - b. Along with the electronic submittal, Contractor shall submit to the Architect, one (1) full sized hard copy of each shop drawing for review and approval, as deemed necessary by the Architect.
    - c. Along with the electronic submittal, contractors shall submit to the Architect, one (1) color deck or color card for each submittal requiring color selection for review, approval and color selection, as deemed necessary by the Architect.

3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to clearly show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples and Shop Drawings, as applicable.
  6. Submit Product Data in the following format:
    - a. PDF electronic file according to Paragraph 2.1.A.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file according to Paragraph 2.1.A.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

- a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  - 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Samples for "initial selection" shall be listed as a separate item in the submittal schedule.
    - b. Number of Samples: Unless specifically required otherwise in Specification Section, Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
  - 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit one (1) set of Samples to Architect for review. Owner shall reserve the right to request up to three (3) total sets of Samples for review and records.
      - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least one (1) set of paired units that show approximate limits of variations.
  - 7. Electronic Transmittal: Provide PDF transmittal for all physical Samples. Include digital image file illustrating Sample characteristics, and identification information for record.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
- 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  - 2. Manufacturer and product name, and model number if applicable.
  - 3. Number and name of room or space.
  - 4. Location within room or space.
  - 5. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.



- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  1. Name of evaluation organization.
  2. Date of evaluation.
  3. Time period when report is in effect.
  4. Product and manufacturers' names.
  5. Description of product.
  6. Test procedures and results.
  7. Limitations of use.
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## 2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear the Contractor's approval stamp and will return them without action.
- B. Action Submittals: Contractor is responsible for conforming and correlating dimensions at job sites for tolerances, clearances, quantities, fabrication processes, coordination of the Work with multiple trades, and full compliance with the Contract Documents. The Architect will review submittals for general conformance with the Contract Documents. Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
  - 1. No Exception Taken: Signifies item represented in the submittal conforms with the design intent, complies with the intent of the Contract Documents and is acceptable for incorporation into the Work. Contractor is to proceed with fabrication or procurement and related work.
  - 2. Exceptions Noted: Signifies item represented in the submittal conforms with the design concept, complies with the intent of the Contract Documents and is recommended for incorporation into the Work in accordance with the Architect's and/or Consultant's notations. Contractor is to proceed with the work in accordance the Architect's and/or Consultant's notations marked on the returned submittal or letter of transmittal. Resubmittal is not required.
  - 3. Revised and Resubmit: Signifies item represented in the submittal appears to conform with the design concept and comply with the intent of the Contract Documents, but information is either insufficient or contains discrepancies which prevent the Architect and/or his Consultant from completing his review. Contractor is to resubmit revised information. Fabrication or procurement of the item and related work is not to proceed until the submittal is acceptable.
  - 4. Not Accepted: Signifies item represented in the submittal does not conform with the design concept or comply with the intent of the Contract Documents and is not recommended for incorporation into the Work. Contractor shall submit items responsive to the Contract Documents.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- F. Submittals not required by the Contract Documents may be returned by the Architect without action.

## END OF SECTION 013300



## SECTION 014000 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
  - 4. Specific test and inspection requirements are not specified in this Section.

#### 1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups/Field Samples: Full-size physical assemblies that are constructed on-site. Mockups/field samples are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups/Field Samples are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  - 1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
  - 2. Integrated Field Samples: Field samples of select portions exterior envelope or interior construction erected as part of the Work. Field samples may consist of multiple products, assemblies, and subassemblies.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

- J. Experienced: When used with an entity or individual, "experienced" means, unless otherwise specified in the individual specification section, having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

### 1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. Whenever Contract Documents reasonably infer materials or installation as necessary to produce the intended results, but do not fully detail or specify such materials, the Contractor shall provide the more expensive method or material, or greater quantity, unless he has obtained a written decision from the Architect.

### 1.4 ACTION SUBMITTALS

- A. Shop Drawings: For field samples mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
  1. Indicate manufacturer and model number of individual components.
  2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

### 1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
  1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
  2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  1. Specification Section number and title.
  2. Entity responsible for performing tests and inspections.
  3. Description of test and inspection.
  4. Identification of applicable standards.
  5. Identification of test and inspection methods.
  6. Number of tests and inspections required.
  7. Time schedule or time span for tests and inspections.
  8. Requirements for obtaining samples.
  9. Unique characteristics of each quality-control service.

### 1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
  - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

#### 1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of technical representative making report.
  - 2. Statement on condition of substrates and their acceptability for installation of product.
  - 3. Statement that products at Project site comply with requirements.
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 6. Statement whether conditions, products, and installation will affect warranty.
  - 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
  - 1. Name, address, and telephone number of factory-authorized service representative making report.
  - 2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

- d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
  - e. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
- 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  - 2. Notify Architect seven (7) days in advance of dates and times when mockups will be constructed.
  - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
  - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven (7) days for initial review and each re-review of each mockup.
  - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 7. Unless otherwise indicated in the Contract Documents, demolish and remove mockups when directed unless otherwise indicated.
- L. Field Samples: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

## 1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
- 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
- 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.



- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
  - 1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

#### 1.10 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 014000**



## SECTION 014200 - REFERENCES

### PART 1 - GENERAL

#### 1.1 DEFINITIONS

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

#### 1.2 INDUSTRY STANDARDS

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

#### 1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
  - 1. AABC - Associated Air Balance Council; [www.aabc.com](http://www.aabc.com)
  - 2. AAMA - American Architectural Manufacturers Association; [www.aamanet.org](http://www.aamanet.org).
  - 3. AAPFCO - Association of American Plant Food Control Officials; [www.aapfco.org](http://www.aapfco.org).
  - 4. AASHTO - American Association of State Highway and Transportation Officials; [www.transportation.org](http://www.transportation.org).
  - 5. AATCC - American Association of Textile Chemists and Colorists; [www.aatcc.org](http://www.aatcc.org).
  - 6. ABMA - American Bearing Manufacturers Association; [www.americanbearings.org](http://www.americanbearings.org).
  - 7. ABMA - American Boiler Manufacturers Association; [www.abma.com](http://www.abma.com).
  - 8. ACI - American Concrete Institute; (Formerly: ACI International); [www.abma.com](http://www.abma.com).
  - 9. ACPA - American Concrete Pipe Association; [www.concrete-pipe.org](http://www.concrete-pipe.org).
  - 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); [www.aeic.org](http://www.aeic.org).

11. AF&PA - American Forest & Paper Association; [www.afandpa.org](http://www.afandpa.org).
12. AGA - American Gas Association; [www.aga.org](http://www.aga.org).
13. AHAM - Association of Home Appliance Manufacturers; [www.aham.org](http://www.aham.org).
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); [www.ahrinet.org](http://www.ahrinet.org).
15. AI - Asphalt Institute; [www.asphaltinstitute.org](http://www.asphaltinstitute.org).
16. AIA - American Institute of Architects (The); [www.aia.org](http://www.aia.org).
17. AISC - American Institute of Steel Construction; [www.aisc.org](http://www.aisc.org).
18. AISI - American Iron and Steel Institute; [www.steel.org](http://www.steel.org).
19. AITC - American Institute of Timber Construction; [www.aitc-glulam.org](http://www.aitc-glulam.org).
20. AMCA - Air Movement and Control Association International, Inc.; [www.amca.org](http://www.amca.org).
21. ANSI - American National Standards Institute; [www.ansi.org](http://www.ansi.org).
22. AOSA - Association of Official Seed Analysts, Inc.; [www.aosaseed.com](http://www.aosaseed.com).
23. APA - APA - The Engineered Wood Association; [www.apawood.org](http://www.apawood.org).
24. APA - Architectural Precast Association; [www.archprecast.org](http://www.archprecast.org).
25. API - American Petroleum Institute; [www.api.org](http://www.api.org).
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; [www.asphaltroofing.org](http://www.asphaltroofing.org).
29. ASCE - American Society of Civil Engineers; [www.asce.org](http://www.asce.org).
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; [www.ashrae.org](http://www.ashrae.org).
32. ASME - ASME International; (American Society of Mechanical Engineers); [www.asme.org](http://www.asme.org).
33. ASSE - American Society of Safety Engineers (The); [www.asse.org](http://www.asse.org).
34. ASSE - American Society of Sanitary Engineering; [www.asse-plumbing.org](http://www.asse-plumbing.org).
35. ASTM - ASTM International; [www.astm.org](http://www.astm.org).
36. ATIS - Alliance for Telecommunications Industry Solutions; [www.atis.org](http://www.atis.org).
37. AWEA - American Wind Energy Association; [www.awea.org](http://www.awea.org).
38. AWI - Architectural Woodwork Institute; [www.awinet.org](http://www.awinet.org).
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; [www.awmac.com](http://www.awmac.com).
40. AWPA - American Wood Protection Association; [www.awpa.com](http://www.awpa.com).
41. AWS - American Welding Society; [www.aws.org](http://www.aws.org).
42. AWWA - American Water Works Association; [www.awwa.org](http://www.awwa.org).
43. BHMA - Builders Hardware Manufacturers Association; [www.buildershardware.com](http://www.buildershardware.com).
44. BIA - Brick Industry Association (The); [www.gobrick.com](http://www.gobrick.com).
45. BICSI - BICSI, Inc.; [www.bicsi.org](http://www.bicsi.org).
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); [www.bifma.org](http://www.bifma.org).
47. BISSC - Baking Industry Sanitation Standards Committee; [www.bissc.org](http://www.bissc.org).
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); [www.bissc.org](http://www.bissc.org).
49. CDA - Copper Development Association; [www.copper.org](http://www.copper.org).
50. CEA - Canadian Electricity Association; [www.electricity.ca](http://www.electricity.ca).
51. CEA - Consumer Electronics Association; [www.ce.org](http://www.ce.org).
52. CFFA - Chemical Fabrics and Film Association, Inc.; [www.chemicalfabricsandfilm.com](http://www.chemicalfabricsandfilm.com).
53. CFSEI - Cold-Formed Steel Engineers Institute; [www.cfsei.org](http://www.cfsei.org).
54. CGA - Compressed Gas Association; [www.cganet.com](http://www.cganet.com).
55. CIMA - Cellulose Insulation Manufacturers Association; [www.cellulose.org](http://www.cellulose.org).
56. CISCA - Ceilings & Interior Systems Construction Association; [www.cisca.org](http://www.cisca.org).
57. CISPI - Cast Iron Soil Pipe Institute; [www.cispi.org](http://www.cispi.org).
58. CLFMI - Chain Link Fence Manufacturers Institute; [www.chainlinkinfo.org](http://www.chainlinkinfo.org).
59. CPA - Composite Panel Association; [www.pbmdf.com](http://www.pbmdf.com).
60. CRI - Carpet and Rug Institute (The); [www.carpet-rug.org](http://www.carpet-rug.org).
61. CRRC - Cool Roof Rating Council; [www.coolroofs.org](http://www.coolroofs.org).
62. CRSI - Concrete Reinforcing Steel Institute; [www.crsi.org](http://www.crsi.org).
63. CSA - Canadian Standards Association; [www.csa.ca](http://www.csa.ca).
64. CSA - CSA International; (Formerly: IAS - International Approval Services); [www.csa-international.org](http://www.csa-international.org).
65. CSI - Construction Specifications Institute (The); [www.csinet.org](http://www.csinet.org).
66. CSSB - Cedar Shake & Shingle Bureau; [www.cedarbureau.org](http://www.cedarbureau.org).
67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); [www.cti.org](http://www.cti.org).
68. CWC - Composite Wood Council; (See CPA).
69. DASMA - Door and Access Systems Manufacturers Association; [www.dasma.com](http://www.dasma.com).
70. DHI - Door and Hardware Institute; [www.dhi.org](http://www.dhi.org).
71. ECA - Electronic Components Association; (See ECIA).
72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).

73. ECIA - Electronic Components Industry Association; [www.eciaonline.org](http://www.eciaonline.org).
74. EIA - Electronic Industries Alliance; (See TIA).
75. EIMA - EIFS Industry Members Association; [www.eima.com](http://www.eima.com).
76. EJMA - Expansion Joint Manufacturers Association, Inc.; [www.ejma.org](http://www.ejma.org).
77. ESD - ESD Association; (Electrostatic Discharge Association); [www.esda.org](http://www.esda.org).
78. ESTA - Entertainment Services and Technology Association; (See PLASA).
79. EVO - Efficiency Valuation Organization; [www.evo-world.org](http://www.evo-world.org).
80. FCI - Fluid Controls Institute; [www.fluidcontrolsinstitute.org](http://www.fluidcontrolsinstitute.org).
81. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); [www.fiba.com](http://www.fiba.com).
82. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); [www.fivb.org](http://www.fivb.org).
83. FM Approvals - FM Approvals LLC; [www.fmglobal.com](http://www.fmglobal.com).
84. FM Global - FM Global; (Formerly: FMG - FM Global); [www.fmglobal.com](http://www.fmglobal.com).
85. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; [www.floridarroof.com](http://www.floridarroof.com).
86. FSA - Fluid Sealing Association; [www.fluidsealing.com](http://www.fluidsealing.com).
87. FSC - Forest Stewardship Council U.S.; [www.fscus.org](http://www.fscus.org).
88. GA - Gypsum Association; [www.gypsum.org](http://www.gypsum.org).
89. GANA - Glass Association of North America; [www.glasswebsite.com](http://www.glasswebsite.com).
90. GS - Green Seal; [www.greenseal.org](http://www.greenseal.org).
91. HI - Hydraulic Institute; [www.pumps.org](http://www.pumps.org).
92. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
93. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
94. HPVA - Hardwood Plywood & Veneer Association; [www.hpva.org](http://www.hpva.org).
95. HPW - H. P. White Laboratory, Inc.; [www.hpwhite.com](http://www.hpwhite.com).
96. IAPSC - International Association of Professional Security Consultants; [www.iapsc.org](http://www.iapsc.org).
97. IAS - International Accreditation Service; [www.iasonline.org](http://www.iasonline.org).
98. IAS - International Approval Services; (See CSA).
99. ICBO - International Conference of Building Officials; (See ICC).
100. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
101. ICEA - Insulated Cable Engineers Association, Inc.; [www.icea.net](http://www.icea.net).
102. ICPA - International Cast Polymer Alliance; [www.icpa-hq.org](http://www.icpa-hq.org).
103. ICRI - International Concrete Repair Institute, Inc.; [www.icri.org](http://www.icri.org).
104. IEC - International Electrotechnical Commission; [www.iec.ch](http://www.iec.ch).
105. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); [www.ieee.org](http://www.ieee.org).
106. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); [www.ies.org](http://www.ies.org).
107. IESNA - Illuminating Engineering Society of North America; (See IES).
108. IEST - Institute of Environmental Sciences and Technology; [www.iest.org](http://www.iest.org).
109. IGMA - Insulating Glass Manufacturers Alliance; [www.igmaonline.org](http://www.igmaonline.org).
110. IGSHPA - International Ground Source Heat Pump Association; [www.igshpa.okstate.edu](http://www.igshpa.okstate.edu).
111. ILI - Indiana Limestone Institute of America, Inc.; [www.iliai.com](http://www.iliai.com).
112. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); [www.intertek.com](http://www.intertek.com).
113. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); [www.isa.org](http://www.isa.org).
114. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
115. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); [www.isfanow.org](http://www.isfanow.org).
116. ISO - International Organization for Standardization; [www.iso.org](http://www.iso.org).
117. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
118. ITU - International Telecommunication Union; [www.itu.int/home](http://www.itu.int/home).
119. KCMA - Kitchen Cabinet Manufacturers Association; [www.kcma.org](http://www.kcma.org).
120. LMA - Laminating Materials Association; (See CPA).
121. LPI - Lightning Protection Institute; [www.lightning.org](http://www.lightning.org).
122. MBMA - Metal Building Manufacturers Association; [www.mbma.com](http://www.mbma.com).
123. MCA - Metal Construction Association; [www.metalconstruction.org](http://www.metalconstruction.org).
124. MFMA - Maple Flooring Manufacturers Association, Inc.; [www.maplefloor.org](http://www.maplefloor.org).
125. MFMA - Metal Framing Manufacturers Association, Inc.; [www.metalframingmfg.org](http://www.metalframingmfg.org).
126. MHIA - Material Handling Industry of America; [www.mhia.org](http://www.mhia.org).
127. MIA - Marble Institute of America; [www.marble-institute.com](http://www.marble-institute.com).
128. MMPA - Moulding & Millwork Producers Association; [www.wmmpa.com](http://www.wmmpa.com).
129. MPI - Master Painters Institute; [www.paintinfo.com](http://www.paintinfo.com).
130. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; [www.mss-hq.org](http://www.mss-hq.org).
131. NAAMM - National Association of Architectural Metal Manufacturers; [www.naamm.org](http://www.naamm.org).
132. NACE - NACE International; (National Association of Corrosion Engineers International); [www.nace.org](http://www.nace.org).

133. NADCA - National Air Duct Cleaners Association; [www.nadca.com](http://www.nadca.com).
134. NAIMA - North American Insulation Manufacturers Association; [www.naima.org](http://www.naima.org).
135. NBGQA - National Building Granite Quarries Association, Inc.; [www.nbgqa.com](http://www.nbgqa.com).
136. NBI - New Buildings Institute; [www.newbuildings.org](http://www.newbuildings.org).
137. NCAA - National Collegiate Athletic Association (The); [www.ncaa.org](http://www.ncaa.org).
138. NCMA - National Concrete Masonry Association; [www.ncma.org](http://www.ncma.org).
139. NEBB - National Environmental Balancing Bureau; [www.nebb.org](http://www.nebb.org).
140. NECA - National Electrical Contractors Association; [www.necanet.org](http://www.necanet.org).
141. NeLMA - Northeastern Lumber Manufacturers Association; [www.nelma.org](http://www.nelma.org).
142. NEMA - National Electrical Manufacturers Association; [www.nema.org](http://www.nema.org).
143. NETA - InterNational Electrical Testing Association; [www.netaworld.org](http://www.netaworld.org).
144. NFHS - National Federation of State High School Associations; [www.nfhs.org](http://www.nfhs.org).
145. NFPA - National Fire Protection Association; [www.nfpa.org](http://www.nfpa.org).
146. NFPA - NFPA International; (See NFPA).
147. NFRC - National Fenestration Rating Council; [www.nfrc.org](http://www.nfrc.org).
148. NHLA - National Hardwood Lumber Association; [www.nhla.com](http://www.nhla.com).
149. NLGA - National Lumber Grades Authority; [www.nlga.org](http://www.nlga.org).
150. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
151. NOMMA - National Ornamental & Miscellaneous Metals Association; [www.nomma.org](http://www.nomma.org).
152. NRCA - National Roofing Contractors Association; [www.nrca.net](http://www.nrca.net).
153. NRMCA - National Ready Mixed Concrete Association; [www.nrmca.org](http://www.nrmca.org).
154. NSF - NSF International; [www.nsf.org](http://www.nsf.org).
155. NSPE - National Society of Professional Engineers; [www.nspe.org](http://www.nspe.org).
156. NSSGA - National Stone, Sand & Gravel Association; [www.nssga.org](http://www.nssga.org).
157. NTMA - National Terrazzo & Mosaic Association, Inc. (The); [www.ntma.com](http://www.ntma.com).
158. NWFA - National Wood Flooring Association; [www.nwfa.org](http://www.nwfa.org).
159. PCI - Precast/Prestressed Concrete Institute; [www.pci.org](http://www.pci.org).
160. PDI - Plumbing & Drainage Institute; [www.pdionline.org](http://www.pdionline.org).
161. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); [www.plasa.org](http://www.plasa.org).
162. RCSC - Research Council on Structural Connections; [www.boltcouncil.org](http://www.boltcouncil.org).
163. RFCI - Resilient Floor Covering Institute; [www.rfci.com](http://www.rfci.com).
164. RIS - Redwood Inspection Service; [www.redwoodinspection.com](http://www.redwoodinspection.com).
165. SAE - SAE International; [www.sae.org](http://www.sae.org).
166. SCTE - Society of Cable Telecommunications Engineers; [www.scte.org](http://www.scte.org).
167. SDI - Steel Deck Institute; [www.sdi.org](http://www.sdi.org).
168. SDI - Steel Door Institute; [www.steeldoor.org](http://www.steeldoor.org).
169. SEFA - Scientific Equipment and Furniture Association (The); [www.sefalabs.com](http://www.sefalabs.com).
170. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
171. SIA - Security Industry Association; [www.siaonline.org](http://www.siaonline.org).
172. SJI - Steel Joist Institute; [www.steeljoist.org](http://www.steeljoist.org).
173. SMA - Screen Manufacturers Association; [www.smainfo.org](http://www.smainfo.org).
174. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; [www.smacna.org](http://www.smacna.org).
175. SMPTE - Society of Motion Picture and Television Engineers; [www.smpte.org](http://www.smpte.org).
176. SPFA - Spray Polyurethane Foam Alliance; [www.sprayfoam.org](http://www.sprayfoam.org).
177. SPIB - Southern Pine Inspection Bureau; [www.spib.org](http://www.spib.org).
178. SPRI - Single Ply Roofing Industry; [www.spri.org](http://www.spri.org).
179. SRCC - Solar Rating & Certification Corporation; [www.solar-rating.org](http://www.solar-rating.org).
180. SSINA - Specialty Steel Industry of North America; [www.ssina.com](http://www.ssina.com).
181. SSPC - SSPC: The Society for Protective Coatings; [www.sspc.org](http://www.sspc.org).
182. STI - Steel Tank Institute; [www.steelstank.com](http://www.steelstank.com).
183. SWI - Steel Window Institute; [www.steelwindows.com](http://www.steelwindows.com).
184. SWPA - Submersible Wastewater Pump Association; [www.swpa.org](http://www.swpa.org).
185. TCA - Tilt-Up Concrete Association; [www.tilt-up.org](http://www.tilt-up.org).
186. TCNA - Tile Council of North America, Inc.; [www.tileusa.com](http://www.tileusa.com).
187. TEMA - Tubular Exchanger Manufacturers Association, Inc.; [www.tema.org](http://www.tema.org).
188. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); [www.tiaonline.org](http://www.tiaonline.org).
189. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
190. TMS - The Masonry Society; [www.masonrysociety.org](http://www.masonrysociety.org).
191. TPI - Truss Plate Institute; [www.tpinst.org](http://www.tpinst.org).
192. TPI - Turfgrass Producers International; [www.turfgrasssod.org](http://www.turfgrasssod.org).
193. TRI - Tile Roofing Institute; [www.tilerroofing.org](http://www.tilerroofing.org).
194. UL - Underwriters Laboratories Inc.; [www.ul.com](http://www.ul.com).

195. UNI - Uni-Bell PVC Pipe Association; [www.uni-bell.org](http://www.uni-bell.org).
  196. USAV - USA Volleyball; [www.usavolleyball.org](http://www.usavolleyball.org).
  197. USGBC - U.S. Green Building Council; [www.usgbc.org](http://www.usgbc.org).
  198. USITT - United States Institute for Theatre Technology, Inc.; [www.usitt.org](http://www.usitt.org).
  199. WASTEC - Waste Equipment Technology Association; [www.wastec.org](http://www.wastec.org).
  200. WCLIB - West Coast Lumber Inspection Bureau; [www.wclib.org](http://www.wclib.org).
  201. WCMA - Window Covering Manufacturers Association; [www.wcmanet.org](http://www.wcmanet.org).
  202. WDMA - Window & Door Manufacturers Association; [www.wdma.com](http://www.wdma.com).
  203. WI - Woodwork Institute; [www.wicnet.org](http://www.wicnet.org).
  204. WSRCA - Western States Roofing Contractors Association; [www.wsrca.com](http://www.wsrca.com).
  205. WWPA - Western Wood Products Association; [www.wwpa.org](http://www.wwpa.org).
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut fur Normung e.V.; [www.din.de](http://www.din.de).
  2. IAPMO - International Association of Plumbing and Mechanical Officials; [www.iapmo.org](http://www.iapmo.org).
  3. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
  4. ICC-ES - ICC Evaluation Service, LLC; [www.icc-es.org](http://www.icc-es.org).
- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; [www.usace.army.mil](http://www.usace.army.mil).
  2. CPSC - Consumer Product Safety Commission; [www.cpsc.gov](http://www.cpsc.gov).
  3. DOC - Department of Commerce; National Institute of Standards and Technology; [www.nist.gov](http://www.nist.gov).
  4. DOD - Department of Defense; [www.quicksearch.dla.mil](http://www.quicksearch.dla.mil).
  5. DOE - Department of Energy; [www.energy.gov](http://www.energy.gov).
  6. EPA - Environmental Protection Agency; [www.epa.gov](http://www.epa.gov).
  7. FAA - Federal Aviation Administration; [www.faa.gov](http://www.faa.gov).
  8. FG - Federal Government Publications; [www.gpo.gov/fdsys](http://www.gpo.gov/fdsys).
  9. GSA - General Services Administration; [www.gsa.gov](http://www.gsa.gov).
  10. HUD - Department of Housing and Urban Development; [www.hud.gov](http://www.hud.gov).
  11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; [www.eetd.lbl.gov](http://www.eetd.lbl.gov).
  12. OSHA - Occupational Safety & Health Administration; [www.osha.gov](http://www.osha.gov).
  13. SD - Department of State; [www.state.gov](http://www.state.gov).
  14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; [www.trb.org](http://www.trb.org).
  15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; [www.ars.usda.gov](http://www.ars.usda.gov).
  16. USDA - Department of Agriculture; Rural Utilities Service; [www.usda.gov](http://www.usda.gov).
  17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; [www.ojp.usdoj.gov](http://www.ojp.usdoj.gov).
  18. USP - U.S. Pharmacopeial Convention; [www.usp.org](http://www.usp.org).
  19. USPS - United States Postal Service; [www.usps.com](http://www.usps.com).
- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; [www.gpo.gov/fdsys](http://www.gpo.gov/fdsys).
  2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; [www.quicksearch.dla.mil](http://www.quicksearch.dla.mil).
  3. DSCC - Defense Supply Center Columbus; (See FS).
  4. FED-STD - Federal Standard; (See FS).
  5. FS - Federal Specification; Available from DLA Document Services; [www.quicksearch.dla.mil](http://www.quicksearch.dla.mil).
    - a. Available from Defense Standardization Program; [www.dsp.dla.mil](http://www.dsp.dla.mil).
    - b. Available from General Services Administration; [www.gsa.gov](http://www.gsa.gov).
    - c. Available from National Institute of Building Sciences/Whole Building Design Guide; [www.wbdg.org/ccb](http://www.wbdg.org/ccb).
  6. MILSPEC - Military Specification and Standards; (See DOD).
  7. USAB - United States Access Board; [www.access-board.gov](http://www.access-board.gov).
  8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).



- E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; [www.bearhfti.ca.gov](http://www.bearhfti.ca.gov).
  2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; [www.calregs.com](http://www.calregs.com).
  3. CDHS; California Department of Health Services; (See CDPH).
  4. CDPH; California Department of Public Health; Indoor Air Quality Program; [www.cal-iaq.org](http://www.cal-iaq.org).
  5. CPUC; California Public Utilities Commission; [www.cpuc.ca.gov](http://www.cpuc.ca.gov).
  6. SCAQMD; South Coast Air Quality Management District; [www.aqmd.gov](http://www.aqmd.gov).
  7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; [www.txforestservation.tamu.edu](http://www.txforestservation.tamu.edu).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 014200**

## **SECTION 014529 – TESTING AND INSPECTIONS**

### **PART 1 - GENERAL**

#### **1.1 GENERAL**

- A. The preceding “General Conditions” are a part of these specifications and the Contractor shall consult them in detail in connection with this part of the work.

#### **1.2 SCOPE OF WORK**

- A. Employment of a testing and inspection firm acceptable to the Owner. Approximate scope of testing and inspection shall be as indicated on the drawings and herein specified in the sections of the specifications.

#### **1.3 TESTING AND INSPECTION CHARGES**

- A. For the following conditions, costs of testing and inspection services shall be paid for by the Contractor, apart from the Testing and Inspection.
  1. Costs arising from errors or omissions by the Contractor.
  2. Costs of concrete cores, of re-testing materials that fail, and of required identification of materials (mill tests, manufacturers certifications, etc.).
  3. Costs of test and inspections required to expedite the Contractors operations.

#### **1.4 CONCRETE WORK**

- A. Reinforcement shall be positively identified by heat numbers and mill analysis. Otherwise, Contractor shall provide test by qualified laboratory, one test for each 5 tons or fraction thereof, each size and type of reinforcing steel. Cement shall be from tested bins and properly identified at the mixing plant. Contractor shall provide to the testing laboratory, aggregate samples for approval. Testing laboratory shall prepare 3 concrete cylinders for each 25 cubic yards, or fraction thereof placed – 2 cylinders to be tested at 7 days, and 1 cylinder at 28 days. Follow ASTM standards throughout.

#### **1.5 GENERAL TESTS AND INSPECTIONS**

- A. Observe all building code test and inspection requirements. Notify proper State, County and City authorities, for their required inspections.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

**END OF SECTION 014529**



## SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

#### 1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
  - 1. Water service is available at each school.
  - 2. No "bulk" water will be provided. Contractor shall provide and pay for his/her own bulk water.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
  - 1. Contractor shall make his/her own provisions for and pay for power used for on-site welding.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
  - 1. Locations of dust-control partitions at each phase of work.
  - 2. HVAC system isolation schematic drawing.
  - 3. Location of proposed air-filtration system discharge.
  - 4. Waste handling procedures.
  - 5. Other dust-control measures.

#### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

## 1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Provide the following:
  - 1. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide bases for supporting posts.
- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

### 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: A temporary field office is not required.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  - 1. Store combustible materials apart from building.

### 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
  - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 017700 "Closeout Procedures".

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

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

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
  - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
  - 1. Provide electric distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  - 2. Install lighting for Project identification sign.
- I. Telephone Service: Superintendent shall be available via cellular telephone from the hours of 7:00 a.m. to 5:00 p.m.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide portable storage containers as required. Containers may be located on School District property located as approved by the Owner. Storage containers shall be noncombustible according to ASTM E 136. Comply with NFPA 241.
  - 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

- B. Temporary Use of Existing Roads and Paved Areas: Use of existing paved areas shall be coordinated and scheduled with the Owner. Limit use of paved areas to those areas adjacent to areas of work indicated on the Drawings.
  - 1. Use of existing roads and paved areas shall be acceptable if traffic is coordinated and does not damage existing roads and paved areas.
  - 2. Contractor shall repair any damage to finished surfaces of roads and paved areas, including sidewalks, to the satisfaction of the Owner. Repair work, if any, must be completed just prior to date established for Substantial Completion.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
  - 1. Do not load elevators beyond their rated weight capacity.
  - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
- G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Enclosure Fence: Before construction operations begin, furnish and install staging area enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As indicated on Drawings.
- D. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- F. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

- H. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise as deemed necessary by Architect.
  - 1. Construct dustproof partitions with Type X gypsum wallboard with joints taped on occupied side or fire-retardant treated plywood on occupied side, and 6 mil polyethylene on construction operations side.
  - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  - 3. Insulate partitions to control noise transmission to occupied areas.
  - 4. Provide foam gasketing, attached to framing and not to construction to remain, to seal joints and perimeter of temporary partition. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  - 5. Protect air-handling equipment.
  - 6. Provide walk-off mats at each entrance through temporary partition.
  
- I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in construction areas.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### 3.5 MOISTURE AND MOLD CONTROL

- A. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  - 1. Use permanent HVAC system to control humidity.

### 3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
  
- B. Maintenance: Maintain facilities in good operating condition until removal.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
  
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
  
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  - 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

**END OF SECTION 015000**





## SECTION 016000 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for products selected under an allowance.
  - 2. Section 012200 "Unit Prices" for products selected under a unit price.
  - 3. Section 012300 "Alternates" for products selected under an alternate.
  - 4. Section 012500 "Substitution Procedures" for requests for substitutions.
  - 5. Section 014200 "References" for applicable industry standards for products specified.

#### 1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

#### 1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
  - 2. Architects Action: For comparable products submitted for "Cause", if necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later. For comparable products submitted for "Contractor's Convenience", Contractor must submit all information necessary to make a direct comparison to specified product for Architect's review, no additional information may be submitted.
    - a. Form of Approval: As specified in Section 012500 "Substitution Procedures."
    - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

#### 1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

#### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  1. Store products to allow for inspection and measurement of quantity or counting of units.
  2. Store materials in a manner that will not endanger Project structure.
  3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  6. Protect stored products from damage and liquids from freezing.

#### 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Products:
  - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered prior to bidding only.
  - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
2. Manufacturers:
  - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered prior to bidding only.
  - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

**END OF SECTION 016000**



## SECTION 017300 - EXECUTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
  
- B. Related Requirements:
  - 1. Section 011000 "Summary" for limits on use of Project site.
  - 2. Section 013300 "Submittal Procedures."
  - 3. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
  - 4. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

#### 1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
  
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Certificates: Contractor shall certify that location and elevation of improvements comply with requirements.
  
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

#### 1.4 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
  1. Description of the Work.
  2. List of detrimental conditions, including substrates.
  3. List of unacceptable installation tolerances.
  4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
  - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.



### 3.4 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize /prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### 3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.6 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 017300**

## SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition waste.
  - 2. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
  - 1. Section 024119 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

#### 1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

#### 1.4 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
  - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
  - 2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

### 3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  - 3. Store items in a secure area until installation.
  - 4. Protect items from damage during transport and storage.
  - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
  - 1. Clean salvaged items.
  - 2. Store items in a secure area until delivery to Owner.
  - 3. Transport items to Owner's storage area designated by Owner.
- C. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- D. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- E. Plumbing Fixtures: Separate by type and size.
- F. Lighting Fixtures: Separate lamps by type and protect from breakage.
- G. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

### 3.3 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
  - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

**END OF SECTION 017419**

## SECTION 017700 - CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for progress cleaning of Project site.
  - 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
  - 4. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

#### 1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

#### 1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
  - 5. Submit test/adjust/balance records.

6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  2. Complete startup and testing of systems and equipment.
  3. Perform preventive maintenance on equipment used prior to Substantial Completion.
  4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
  5. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  7. Complete final cleaning requirements, including touchup painting.
  8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### 1.6 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### 1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Page number.

4. Submit list of incomplete items in the following format:
  - a. PDF electronic file. Architect will return annotated file.

## 1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  1. General: Provide one (1) electronic copy of warranties.
  2. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - f. Sweep concrete floors broom clean in unoccupied spaces.
    - g. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    - h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - i. Remove labels that are not permanent.
    - j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.



- I. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - m. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
  - n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - o. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

### 3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION 017700**

## SECTION 017823 - OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product maintenance manuals.
  - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
  - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

#### 1.2 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
  - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
    - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    - b. Enable inserted reviewer comments on draft submittals.
- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least fourteen (14) days before commencing demonstration and training. Architect will return copy with comments.
  - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within ten (10) days of receipt of Architect's comments and prior to commencing demonstration and training.

### PART 2 - PRODUCTS

#### 2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
  - 1. List of documents.
  - 2. List of systems.
  - 3. List of equipment.
  - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

## 2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. General: Submit one (1) copy in pdf electronic file format.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  1. Title page.
  2. Table of contents.
  3. Manual contents.
- C. Title Page: Include the following information:
  1. Subject matter included in manual.
  2. Name and address of Project.
  3. Name and address of Owner.
  4. Date of submittal.
  5. Name and contact information for Contractor.
  6. Name and contact information for Architect.
  7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
  8. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
  1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
  1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

## 2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
  1. Type of emergency.
  2. Emergency instructions.
  3. Emergency procedures.

- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
  1. Fire.
  2. Flood.
  3. Gas leak.
  4. Water leak.
  5. Power failure.
  6. Water outage.
  7. System, subsystem, or equipment failure.
  8. Chemical release or spill.
  
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
  
- D. Emergency Procedures: Include the following, as applicable:
  1. Instructions on stopping.
  2. Shutdown instructions for each type of emergency.
  3. Operating instructions for conditions outside normal operating limits.
  4. Required sequences for electric or electronic systems.
  5. Special operating instructions and procedures.

## 2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
  1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  2. Performance and design criteria if Contractor has delegated design responsibility.
  3. Operating standards.
  4. Operating procedures.
  5. Operating logs.
  6. Wiring diagrams.
  7. Control diagrams.
  8. Piped system diagrams.
  9. Precautions against improper use.
  10. License requirements including inspection and renewal dates.
  
- B. Descriptions: Include the following:
  1. Product name and model number. Use designations for products indicated on Contract Documents.
  2. Manufacturer's name.
  3. Equipment identification with serial number of each component.
  4. Equipment function.
  5. Operating characteristics.
  6. Limiting conditions.
  7. Performance curves.
  8. Engineering data and tests.
  9. Complete nomenclature and number of replacement parts.
  
- C. Operating Procedures: Include the following, as applicable:
  1. Startup procedures.
  2. Equipment or system break-in procedures.
  3. Routine and normal operating instructions.
  4. Regulation and control procedures.
  5. Instructions on stopping.
  6. Normal shutdown instructions.
  7. Seasonal and weekend operating instructions.
  8. Required sequences for electric or electronic systems.
  9. Special operating instructions and procedures.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## 2.5 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

## 2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.

- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  1. Test and inspection instructions.
  2. Troubleshooting guide.
  3. Precautions against improper maintenance.
  4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  5. Aligning, adjusting, and checking instructions.
  6. Demonstration and training video recording, if available.
  
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
  1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
  
- F. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
  
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  1. Include procedures to follow and required notifications for warranty claims.

## PART 3 - EXECUTION

### 3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
  
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
  
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
  
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
  1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
  
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
  1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
  
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  1. Do not use original project record documents as part of operation and maintenance manuals.
  
- G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

## END OF SECTION 017823



## SECTION 017839 - PROJECT RECORD DOCUMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
  - 4. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for final property survey.
  - 2. Section 017700 "Closeout Procedures" for general closeout procedures.
  - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

#### 1.2 CLOSEOUT SUBMITTALS

- A. General: Final Payment will not be made until Project Record Documents are submitted to, reviewed by and are acceptable to the Architect.
- B. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit one paper-copy set(s) of marked-up record prints.
      - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit PDF electronic files of scanned and marked-up record prints.
      - 2) Print each drawing, whether or not changes and additional information were recorded.
- C. Record Specifications: Comply with the following:
  - a. Initial Submittal:
    - 1) Submit one paper-copy set(s) of marked-up record specifications.
    - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
  - b. Final Submittal:
    - 1) Submit PDF electronic files of scanned and marked-up record specifications.
- D. Record Product Data: Submit one (1) paper copy of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- E. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.
- F. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

### PART 2 - PRODUCTS

#### 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one (1) set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.



1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by Change Order or Construction Change Directive.
    - k. Changes made following Architect's written orders.
    - l. Details not on the original Contract Drawings.
    - m. Field records for variable and concealed conditions.
    - n. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
  2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  3. Refer instances of uncertainty to Architect for resolution.
  4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
    - a. See Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
    - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Format: Annotated PDF electronic file with comment function enabled.
  3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  4. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
  - 5. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Refer to previous Article.

## 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Refer to previous Article.
  - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

## 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Refer to previous Article.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

## PART 3 - EXECUTION

### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

**END OF SECTION 017839**



## SECTION 017900 - DEMONSTRATION AND TRAINING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Pre-Produced demonstration and training videos.

#### 1.2 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
  - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Pre-Produced Demonstration and Training Video Recordings: Submit two (2) copies within seven-days of end of each training module.
  - 1. Identification: On each copy, provide an applied label with the following information:
    - a. Name of Project.
    - b. Name of Architect.
    - c. Name of Contractor.
  - 2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
  - 3. At completion of training, submit complete training manual(s) for Owner's use. One copy shall be, in PDF electronic file format on compact disc.

#### 1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- B. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

#### 1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

- C. Coordinate content of training with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

## PART 2 - PRODUCTS

### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project record documents.
    - e. Identification systems.
    - f. Warranties and bonds.
    - g. Maintenance service agreements and similar continuing commitments.
  - 3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.
    - f. Special operating instructions and procedures.
  - 4. Operations: Include the following, as applicable:
    - a. Startup procedures.
    - b. Equipment or system break-in procedures.
    - c. Routine and normal operating instructions.
    - d. Regulation and control procedures.
    - e. Control sequences.
    - f. Safety procedures.
    - g. Instructions on stopping.
    - h. Normal shutdown instructions.
    - i. Operating procedures for emergencies.
    - j. Operating procedures for system, subsystem, or equipment failure.
    - k. Seasonal and weekend operating instructions.
    - l. Required sequences for electric or electronic systems.
    - m. Special operating instructions and procedures.
  - 5. Adjustments: Include the following:
    - a. Alignments.
    - b. Checking adjustments.
    - c. Noise and vibration adjustments.
    - d. Economy and efficiency adjustments.
  - 6. Troubleshooting: Include the following:
    - a. Diagnostic instructions.
    - b. Test and inspection procedures.

7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.
8. Repairs: Include the following:
  - a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

#### 3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  1. Coordinate with Owner for number of participants, instruction times and location.
  2. Describe system design, operational requirements, criteria and regulatory requirements.
  3. Owner will furnish Contractor with names and positions of participants.
    - a. Owner will have in attendance a participant to describe Owner's operational philosophy.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  1. Schedule training with Owner, through Architect, with at least seven (7) days' advance notice.
- C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- D. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

#### 3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. Preproduced Video Recordings: Video recordings may be used as a component of each training module. Upon completion of training, furnish to Owner one (1) copy of each video used for training.

**END OF SECTION 017900**



## SECTION 024119 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Demolition and removal of selected portions of building or structure as indicated, and as required to accommodate new construction.
  - 2. Demolition and removal of selected site elements.
  - 3. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 017300 "Execution" for cutting and patching procedures.

#### 1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

#### 1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
  - 1. Owner will retain "first right of refusal" for all demolished items.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

#### 1.4 PREINSTALLATION MEETINGS

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

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control and, for noise control. Indicate proposed locations and construction of barriers.



- C. Schedule of Selective Demolition Activities: Indicate the following:
  1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
  4. Use of elevator and stairs.
  5. Coordination of Owner's continuing occupancy of portions of existing building to ensure uninterrupted progress of Owner's on-site operations and of Owner's partial occupancy of completed Work.
- D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.
- E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
  1. Prior to commencement of demolition, representatives of the Owner and the Contractor will inspect the project areas where work will be conducted, and designate items to be salvaged. Items to be salvaged shall be identified by tagging/labeling and listed on the inventory.

#### 1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

#### 1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

#### 1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
  1. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.
  2. EXISTING ROOF WARRANTY – Refer to Section 070150 "Preparation for Re-Roofing".

1.10 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary"
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    - b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    - d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

### 3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

### 3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  - 4. Maintain adequate ventilation when using cutting torches.
  - 5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - 8. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Transport items to Owner's storage area designated by Owner.
  - 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
  - 1. Clean and repair items to functional condition adequate for intended reuse.
  - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  - 3. Protect items from damage during transport and storage.
  - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

### 3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Comply with requirements specified in Section 015000.
- B. Burning: Do not burn demolished materials.

### 3.8 CLEANING

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

**END OF SECTION 024119**



## SECTION 061000 - ROUGH CARPENTRY

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Framing with dimension lumber.
  - 2. Wood blocking, cants, and nailers.

#### 1.2 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NLGA: National Lumber Grades Authority.
  - 2. SPIB: The Southern Pine Inspection Bureau.
  - 3. WCLIB: West Coast Lumber Inspection Bureau.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
  - 1. Wood-preservative-treated wood.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

### PART 2 - PRODUCTS

#### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Provide dressed lumber, S4S, unless otherwise indicated.

#### 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Application: Treat all rough carpentry unless otherwise indicated.
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing.
  - 2. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
  - 3. Miscellaneous Wood Framing.

### 2.3 DIMENSION LUMBER AND MISCELLANEOUS FRAMING

- A. Miscellaneous Framing: No. 2 grade.
  - 1. Application: refer to section 2.2.C
  - 2. Species:
    - a. Mixed southern pine; SPIB.
    - b. Spruce-pine-fir; NLGA.
    - c. Spruce-pine-fir (south);WCLIB.
- B. For miscellaneous framing, blocking, and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

### 2.4 FASTENERS

- A. General: Provide hot-dip galvanized fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.

### 2.5 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spun-bonded polyolefin to produce an overall thickness of not less than 0.025 inch.
- B. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- C. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- D. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  - 1. Use inorganic boron for items that are continuously protected from liquid water.

- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- F. Use galvanized steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

### 3.2 WOOD GROUND, BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preserved-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

### 3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

**END OF SECTION 061000**





## SECTION 071500 – REHABILITATION OF BUILT-UP ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Roof re-coating preparation including roof patching and cleaning preparation for coating.
  - 2. Rehabilitation or replacement of base flashings.
  - 3. Application of fluid-applied roof membrane and flashings over existing modified bituminous membrane roofing.
- B. Related Requirements:
  - 1. Division 01 Section "Summary" for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
- C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

#### 1.3 MATERIALS OWNERSHIP

- A. Demolished materials shall become Contractor's property and shall be removed from Project site.

#### 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: SBS-modified bituminous roofing, and components and accessories between deck and roofing membrane.
- C. Roofing Re-Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.
- D. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials.
- E. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- F. Existing to Remain: Existing items of construction that are not indicated to be removed.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.
- B. Warranties: Executed copies of approved warranty forms.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and the following:
  - 1. Qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
  
- B. Manufacturer Qualifications: Approved manufacturer with minimum five years experience in manufacture of specified products in successful use in similar applications.
  - 1. Approval of Other Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
    - a. Product data, including certified independent test data indicating compliance with requirements.
    - b. Samples of each component.
    - c. Sample submittal from similar project.
    - d. Project references: Minimum of five installations of specified products not less than five years old, with Owner and Architect contact information.
    - e. Sample warranty.
  
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
  - 1. An authorized full-time technical employee of the manufacturer.
  
- D. Roofing Rehabilitation Preinstallation Conference: Conduct conference at Project site to review methods and procedures related to roofing system.
  - 1. Meet with Owner; roofing materials manufacturer's representative; roofing installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.
  - 2. Review methods and procedures related to re-coating preparation, including membrane roofing system manufacturer's written instructions.
  - 3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
  - 4. Review roof drainage during each stage of re-coating and review roof drain plugging and plug removal procedures.
  - 5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 6. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.
  - 7. Review HVAC shutdown and sealing of air intakes.
  - 8. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
  - 9. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.
  - 10. Review governing regulations and requirements for insurance and certificates if applicable.
  - 11. Review existing conditions that may require notification of Owner before proceeding.

## 1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
  
- B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.
  
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

- D. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
  - 1. Store all materials prior to application at temperatures between 60 and 90 deg. F.
  - 2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer. Do not apply materials when air temperature is below 50 or above 110 deg. F.
  - 3. Do not apply roofing in snow, rain, fog, or mist.
- E. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.

## 1.8 WARRANTY

- A. Special Warranty for Roof Rehabilitation: Written warranty in which Manufacturer agrees to repair roof rehabilitation installations that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Membrane failures including rupturing, cracking, or puncturing.
    - b. Deterioration of membranes, coatings, metals, metal finishes, and other associated materials beyond normal weathering.
  - 2. Limit of Warranty Coverage for Repair of Roof Rehabilitation: Not to exceed original purchase price of manufacturer's recoating materials, except that manufacturer may elect to apply the limit amount toward the following:
    - a. Purchase of a new replacement roof within the first 5 years following completion of rehabilitation work.
  - 3. Qualified Installer Requirement: Installer must meet requirements of Quality Assurance Article.
  - 4. Installation Inspection Requirement: By Roofing Inspector in accordance with requirements of Part 3 Field Quality Control Article.
  - 5. Annual Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum. Warranty Period: 10 years from date of completion of rehabilitation work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by a manufacturer meeting qualification requirement in Quality Assurance Article.

### 2.2 MATERIALS

- A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.
- B. Temporary Roofing Materials: Selection of materials and design of temporary roofing is responsibility of Contractor.
- C. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.

### 2.3 FLUID-APPLIED ROOFING MEMBRANE

- A. Polyurethane Elastomeric Fluid-Applied System: ASTM D 7311, elastomeric, two-coat two-component polyurethane fluid-applied roofing formulated for application to existing modified bitumen roofing, with the following minimum physical properties:

1. Polyurethane Top Coat:
  - a. Volume Solids, ASTM D 2697: 100%.
  - b. Weight Solids, ASTM D1644: 100%
  - c. Volatile Organic Compounds (VOC), ASTM D 3960: <6 g/L.
  - d. Reflectivity, ASTM C 1549: 84%
  - e. Emissivity, ASTM C 1371: 87%.
2. Polyurethane Base Coat:
  - a. Volume Solids, ASTM D 2697: 100%.
  - b. Weight Solids, ASTM D1644: 100%
  - c. Volatile Organic Compounds (VOC), ASTM D 3960: 1 g/L.

- B. Polyester Reinforcement: 100% stitch-bonded, polyester fabric for fluid-applied membrane and flashing.

## 2.4 AUXILIARY ROOFING COATING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system and fluid-applied roofing system.
- B. Metal Surface Primer: Single-component, water-based primer to promote adhesion of base coat to metal surfaces.
- C. Asphaltic Surfaces Primer: Single-component, multi-substrate primer to promote adhesion of base coat to surfaces recommended by manufacturer.
- D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine existing roofing substrates, with Installer present, for compliance with requirements and for other conditions affecting application and performance of roof coatings.
  1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
  2. Verify compatibility of approved re-coating system with and suitability of substrates.
  3. Verify that substrates are visibly dry and free of moisture.
  4. Verify that roofing membrane surfaces have adequately aged to enable proper bond with re-coating system base coat.
  5. Verify that existing roofing membrane is free of blisters, splits, open laps, indications of shrinkage, and puncture damage or other indications of impending roof system failure.
  6. Application of fluid-applied re-coating membrane indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Protect existing roofing system that is indicated not to be rehabilitated, and adjacent portions of building and building equipment.
  1. Comply with warranty requirements of existing roof membrane manufacturer.
  2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
  3. Maintain temporary protection and leave in place until roofing has been completed.
- B. Shut down air intake equipment in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.
  1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.

- C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  - 1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

### 3.3 ROOFING RE-COATING PREPARATION

- A. Membrane Surface Preparation:
  - 1. Remove loose granules from modified bitumen roofing with a power washer and wet vacuum.
  - 2. Remove blisters, ridges, buckles and other substrate irregularities from existing roofing membrane that would inhibit application of uniform, waterproof coating.
  - 3. Repair membrane at locations where irregularities have been removed.
  - 4. Broom clean existing substrate.
  - 5. Clean substrate of contaminants such as dirt, debris, oil, and grease that can affect adhesion of coating by power washing at maximum 3,000 psi. Allow to dry thoroughly.
  - 6. Verify that existing substrate is dry before proceeding with application of coating. Spot check substrates with an electrical capacitance moisture-detection meter.
  - 7. Verify adhesion of new products.
- B. Roof Patching: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed.

### 3.4 FLASHING & MEMBRANE REPAIR

- A. Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.
  - 1. Reinforce all flashing and field membrane end laps, side laps, corners, horizontal laps and any overlap areas.
    - a. Install water-based primer over area of repairs.
    - b. Install restoration mastic at 2 to 3 gallons per square and immediately embed polyester reinforcement directly over lapped areas.
      - 1) Polyester shall be 100% embedded into coating with no voids or wrinkles.
      - 2) Cover polyester reinforcement with a top coat of restoration base coat at 1 to 2 gallons per square.
  - 2. Reinforce all projection such as pitch pans, stack flashing, and plumbing pipe flashing with three course reinforcement.
    - a. Install water-based primer over area of repair.
    - b. Install restoration mastic at 2 to 3 gallons per square and immediately embed polyester reinforcement.
      - 1) Polyester shall be 100% embedded into coating without voids or wrinkles.
      - 2) Cover polyester with a top layer of restoration base coat at 1 to 2 gallons per square.
      - 3) Prime all metal and lead components with restoration metal primer.
      - 4) All metal components shall be grinded down to clean, bare, metal.
- B. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal.
  - 1. Install polyester target patch around drains, approximately 40" x 40".
    - a. Set in a layer of restoration base coat, 2 to 3 gallons per square.
    - b. Remove clamping ring and extend target patch into drain bowl without and wrinkles or voids.
    - c. Install top layer of restoration base coat, 2 gallons per square, to fully encapsulate polyester.
    - d. Replace broken or missing drain ring bolts and connections.
- C. Prime metal surfaces with manufacturers recommended primer.

### 3.5 FLUID-APPLIED MEMBRANE APPLICATION

- A. Fluid-Applied Flashing Application: Complete reinforcement at parapets, curbs, penetrations, drains, and all flashing and field end and side laps prior to application of fluid-applied membrane.
- B. Base Coat: Apply base coat to flashing and field membrane surfaces in accordance with manufacturer's written instructions at 4 to 5 gallons per square. Back roll to achieve minimum wet mil coating thickness of 64 mils unless otherwise recommended by manufacturer; verify thickness of base coat as work progresses. Granular surfaced weathered modified bitumen membranes may require additional product based on the severity of the weathered surface.
  - 1. Apply water-based primer over all exposed modified bitumen membrane areas.
  - 2. Apply base coat on prepared and primed surfaces and spread coating evenly.
  - 3. Allow base coat to cure prior to application of top coat.
  - 4. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of polyester reinforcement.
- C. Top Coat: Apply top coat uniformly in a complete installation to field and flashing membrane at minimum 2 gallons per square.
  - 1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
  - 2. Apply top coat to flashings extending coating up vertical surfaces and out onto horizontal surfaces 4 inches. Install top coat over field base coat and spread coating evenly.
  - 3. Back roll to achieve wet mil thickness of 32 mils unless otherwise recommended by manufacturer.
  - 4. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.
- D. Slip-Resistant Walkway Topcoat: Apply walkway with a second topcoat following application and curing of top coat. Locate as indicated, or as directed by Owner.
  - 1. Mask walkway location with tape.
  - 2. Prime top coat prior to application of walkway top coat if walkway top coat is not applied within 72 hours of the first top coat application, using manufacturer's recommended primer.
  - 3. Apply top coat to primed surface at 1.25 gallons per square. Back roll restoration top coat to achieve wet mil thickness of 20 mils unless otherwise recommended by manufacturer.
  - 4. Broadcast 20 to 30 lbs. per 100 sq. ft. of 3M colored granules into wet top coat.
    - a. Color to be determined by Owner.
  - 5. Back roll aggregate and top coat creating even dispersal. Remove masking immediately.
  - 6. Use wet vacuum to remove all loose granules approximately 24-hours after installation.

### 3.6 FIELD QUALITY CONTROL

- A. Roof Inspection: Contractor shall engage roofing system manufacturer's technical personnel to inspect roofing installation, and submit report to the Architect. Notify Owner 48 hours in advance of dates and times of inspections. Inspect work as follows:
  - 1. Upon completion of preparation of first component of work, prior to application of re-coating materials.
  - 2. Following application of re-coating to flashings and application of base coat to field of roof.
  - 3. Upon completion of re-coating but prior to re-installation of other roofing components.
- B. Repair fluid-applied membrane where test inspections indicate that they do not comply with specified requirements.
- C. Arrange for additional inspections, at Contractor's expense, to verify compliance of replaced or additional work with specified requirements.

### 3.7 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.

- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 071500**





## SECTION 071520 – REHABILITATION OF FULLY ADHERED EPDM ROOF SYSTEM

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Roof re-coating preparation including roof patching and cleaning preparation for coating.
  - 2. Rehabilitation or replacement of base flashings.
  - 3. Application of fluid-applied roof membrane and flashings over existing fully adhered EPDM roof system.
- B. Related Requirements:
  - 1. Division 01 Section "Summary" for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
- C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

#### 1.3 MATERIALS OWNERSHIP

- A. Demolished materials shall become Contractor's property and shall be removed from Project site.

#### 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: Fully adhered EPDM membrane, and components and accessories between deck and roofing membrane.
- C. Roofing Re-Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.
- D. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials.
- E. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- F. Existing to Remain: Existing items of construction that are not indicated to be removed.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.
- B. Warranties: Executed copies of approved warranty forms.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and the following:
  - 1. Qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
  - 2. Licensed to perform asbestos abatement work in Project jurisdiction.
  
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of specified products in successful use in similar applications.
  - 1. Approval of Other Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
    - a. Product data, including certified independent test data indicating compliance with requirements.
    - b. Samples of each component.
    - c. Sample submittal from similar project.
    - d. Project references: Minimum of five installations of specified products, with Owner and Architect contact information.
    - e. Sample warranty.
  
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
  - 1. An authorized full-time technical employee of the manufacturer.
  
- D. Roofing Rehabilitation Preinstallation Conference: Conduct conference at Project site to comply with Owners requirements. Review methods and procedures related to roofing system.
  - 1. Meet with Owner; roofing re-coating materials manufacturer's representative; roofing re-coating Installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.
  - 2. Review methods and procedures related to re-coating preparation, including membrane roofing system manufacturer's written instructions.
  - 3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
  - 4. Review roof drainage during each stage of re-coating and review roof drain plugging and plug removal procedures.
  - 5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 6. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.
  - 7. Review HVAC shutdown and sealing of air intakes.
  - 8. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
  - 9. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.
  - 10. Review governing regulations and requirements for insurance and certificates if applicable.
  - 11. Review existing conditions that may require notification of Owner before proceeding.

## 1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
  
- B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.

- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
  - 1. Store all materials prior to application at temperatures between 60 and 90 deg. F.
  - 2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer. Do not apply materials when air temperature is below 50 or above 110 deg. F.
  - 3. Do not apply roofing in snow, rain, fog, or mist.
- E. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.

## 1.8 WARRANTY

- A. Special Warranty for Roof Rehabilitation: Written warranty in which Manufacturer agrees to repair roof rehabilitation installations that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Membrane failures including rupturing, cracking, or puncturing.
    - b. Deterioration of membranes, coatings, metals, metal finishes, and other associated materials beyond normal weathering.
  - 2. Limit of Warranty Coverage for Repair of Roof Rehabilitation: Not to exceed original purchase price of manufacturer's recoating materials, except that manufacturer may elect to apply the limit amount toward the following:
    - a. Purchase of a new replacement roof within the first 5 years following completion of rehabilitation work.
  - 3. Qualified Installer Requirement: Installer must meet requirements of Quality Assurance Article.
  - 4. Installation Inspection Requirement: By Roofing Inspector in accordance with requirements of Part 3 Field Quality Control Article.
  - 5. Annual Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum.
  - 6. Warranty Period: 10 years from date of completion of rehabilitation work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by a manufacturer meeting qualification requirement in Quality Assurance Article.

### 2.2 MATERIALS

- A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.
- B. Temporary Roofing Materials: Selection of materials and design of temporary roofing is responsibility of Contractor.
- C. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.

## 2.3 FLUID-APPLIED ROOFING MEMBRANE

- A. Polyurethane Elastomeric Fluid-Applied System: ASTM D 7311, elastomeric, two-coat two-component polyurethane fluid-applied roofing formulated for application to existing modified bitumen roofing, with the following minimum physical properties:
  - 1. Polyurethane Top Coat:
    - a. Volume Solids, ASTM D 2697: 100%.
    - b. Weight Solids, ASTM D1644: 100%
    - c. Volatile Organic Compounds (VOC), ASTM D 3960: <6 g/L.
    - d. Reflectivity, ASTM C 1549: 84%
    - e. Emissivity, ASTM C 1371: 87%.
  - 2. Polyurethane Base Coat:
    - a. Volume Solids, ASTM D 2697: 100%.
    - b. Weight Solids, ASTM D1644: 100%
    - c. Volatile Organic Compounds (VOC), ASTM D 3960: 1 g/L.
- B. Polyester Reinforcement: 100% stitch-bonded, polyester fabric for fluid-applied membrane and flashing.

## 2.4 AUXILIARY ROOFING COATING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system and fluid-applied roofing system.
- B. Metal Surface Primer: Single-component, water-based primer to promote adhesion of base coat to metal surfaces.
- C. Asphaltic Surfaces Primer: Single-component, multi-substrate primer to promote adhesion of base coat to surfaces recommended by manufacturer.
- D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine existing roofing substrates, with Installer present, for compliance with requirements and for other conditions affecting application and performance of roof coatings.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
  - 2. Verify compatibility of approved re-coating system with and suitability of substrates.
  - 3. Verify that substrates are visibly dry and free of moisture.
  - 4. Verify that roofing membrane surfaces have adequately aged to enable proper bond with re-coating system base coat.
  - 5. Verify that existing roofing membrane is free of blisters, splits, open laps, indications of shrinkage, and puncture damage or other indications of impending roof system failure.
  - 6. Application of fluid-applied re-coating membrane indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Protect existing roofing system that is indicated not to be rehabilitated, and adjacent portions of building and building equipment.
  - 1. Comply with warranty requirements of existing roof membrane manufacturer.
  - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
  - 3. Maintain temporary protection and leave in place until roofing has been completed.

- B. Shut down air intake equipment in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.
  - 1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.
- C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  - 1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

### 3.3 ROOFING RE-COATING PREPARATION

- A. Membrane Surface Preparation:
  - 1. Remove loose granules from modified bitumen roofing with a power washer and wet vacuum.
  - 2. Remove blisters, ridges, buckles and other substrate irregularities from existing roofing membrane that would inhibit application of uniform, waterproof coating.
  - 3. Repair membrane at locations where irregularities have been removed.
  - 4. Broom clean existing substrate.
  - 5. Clean substrate of contaminants such as dirt, debris, oil, and grease that can affect adhesion of coating by power washing at maximum 3,000 psi. Allow to dry thoroughly.
  - 6. Verify that existing substrate is dry before proceeding with application of coating. Spot check substrates with an electrical capacitance moisture-detection meter.
  - 7. Verify adhesion of new products.
- B. Roof Patching: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed.

### 3.4 FLASHING & MEMBRANE REPAIR

- A. Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.
  - 1. Reinforce all flashing and field membrane end laps, side laps, corners, horizontal laps and any overlap areas.
    - a. Install water-based primer over area of repairs.
    - b. Install restoration base coat at 3 gallons per square and immediately embed polyester reinforcement directly over lapped areas.
      - 1) Polyester shall be 100% embedded into coating with no voids or wrinkles.
- B. Prime metal surfaces with manufacturers recommended primer.

### 3.5 FLUID-APPLIED MEMBRANE APPLICATION

- A. Fluid-Applied Flashing Application: Complete base coat and polyester reinforcement at parapets, curbs, penetrations, and drains prior to application of field of fluid-applied membrane.
  - 1. Extend coating minimum of 8 inches up vertical surfaces and 4 inches onto horizontal surfaces.
  - 2. Roof Drains: Install base coat onto surrounding membrane surface and metal drain bowl flange. Install target piece of fiberglass reinforcement immediately into wet base coat and roll to fully embed and saturate fabric. Reinstall clamping ring and strainer following application of top coat. Replace broken drain ring clamping bolts.
- B. Base Coat: Apply base coat to flashing surfaces in accordance with manufacturer's written instructions at 3 gallons per square. Back roll to achieve minimum wet mil coating thickness of 48 mils unless otherwise recommended by manufacturer; verify thickness of base coat as work progresses. Granular surfaced

weathered modified bitumen membranes may require additional product based on the severity of the weathered surface.

1. Apply water-based primer over all exposed modified bitumen membrane areas.
  2. Apply base coat on prepared and primed surfaces and spread coating evenly.
  3. Allow base coat to cure prior to application of top coat.
  4. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of polyester reinforcement.
- C. Top Coat: Apply top coat uniformly in a complete installation to field of roof and flashings at 2 gallons per square.
1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
  2. Apply top coat to flashings extending coating up vertical surfaces and out onto horizontal surfaces 4 inches. Install top coat over field base coat and spread coating evenly.
  3. Back roll to achieve wet mil thickness of 32 mils unless otherwise recommended by manufacturer.
  4. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.
- D. Slip-Resistant Walkway Topcoat: Apply walkway second topcoat following application and curing of top coat. Locate as indicated, or as directed by Owner.
1. Mask walkway location with tape.
  2. Prime first top coat prior to application of walkway top coat if walkway top coat is not applied within 72 hours of the first top coat application, using manufacturer's recommended primer.
  3. Back roll restoration top coat to achieve wet mil thickness of 20 mils unless otherwise recommended by manufacturer.
  4. Broadcast 20 to 30 lbs. per 100 sq. ft. of Slip-Resistant Top Coat Aggregate in wet top coat.
    - a. Use 3M colored granules for aggregate on slip resistant walkway.
    - b. Color to be determined by Owner.
  5. Back roll aggregate and top coat creating even dispersal. Remove masking immediately.

### 3.6 FIELD QUALITY CONTROL

- A. Roof Inspection: Contractor shall engage roofing system manufacturer's technical personnel to inspect roofing installation and submit report to the Architect. Notify Owner 48 hours in advance of dates and times of inspections. Inspect work as follows:
1. Upon completion of preparation of first component of work, prior to application of re-coating materials.
  2. Following application of re-coating to flashings and application of base coat to field of roof.
  3. Upon completion of re-coating but prior to re-installation of other roofing components.
- B. Repair fluid-applied membrane where test inspections indicate that they do not comply with specified requirements.
- C. Arrange for additional inspections, at Contractor's expense, to verify compliance of replaced or additional work with specified requirements.

### 3.7 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 071520**

## SECTION 072100 - THERMAL INSULATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Mineral-wool blanket (072100.A17).
- B. Related Requirements:
  - 1. Section 078446 "Sheet Metal Flashing and Trim" for insulation installed as part of an exterior roof expansion joint system.

#### 1.2 ACTION SUBMITTALS

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

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

#### 1.5 PERFORMANCE CRITERIA

- A. Foam insulation use in an exterior continuous insulation application must comply with Chapter 26 of the International Building Code, current edition as adopted by authority having jurisdiction. The "Code" requires an NFPA 285 test of the entire assembly, inclusive of each proprietary material used within the wall assembly. No substitutions for materials are allowed without retesting of that entire wall assembly.

### PART 2 - PRODUCTS

#### 2.1 MINERAL-WOOL INSULATION

- A. Mineral-Wool Blanket, Unfaced (072100.A17): ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
  - 1. Thickness: As indicated.

#### 2.2 ACCESSORIES

- A. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
  - 1. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
  - 2. Adhesives shall be compatible with fluid-applied air barrier coating specified in Section 072729.
  - 3. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.



### 3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement. Seal/tape all joints in polyisocyanurate insulation on exterior face.
- D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

### 3.3 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

**END OF SECTION 072100**

## SECTION 074213 - METAL WALL PANELS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Concealed-fastener, lap-seam metal wall panels (074213.A03).
  - 2. Miscellaneous Metal Subframing and Furring (074213.A06).

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, weep system, trim, flashings, closures, locations and types of sealants, accessories; and special details. Show locations of all cutouts.
  - 1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
    - a. Flashing and trim.
      - 1) Indicate flashing and trim to be provided under work of this Section and to be provided by others.
      - 2) Indicate shape and method of attachment.
    - b. Anchorage systems. Show locations for any exposed fasteners.
    - c. Sealants: Indicate locations and types for factory-applied and field-installed sealants.
- C. Samples for Verification: For each type of exposed finish and panel type required, prepared on Samples of size indicated below.
  - 1. Metal Wall Panels: 6 to 12 inches long by actual panel width for each color. Include fasteners, closures, and other metal wall panel accessories.
  - 2. Trim and Closures: 6 to 12 inches in length for each trim profile. Include fasteners and other exposed accessories.
  - 3. Accessories: 6 to 12-inch-long Samples for each type of accessory.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Field quality-control reports.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.
- B. Warranties: Sample of special warranties.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer, with not less than seven (7) years of successful experience under the current company name installing metal panels similar to those required for this Project.
- B. Manufacturer Qualifications: Manufacturer shall have a minimum of five (5) years of experience in production of metal panels similar in design to those specified.
- C. Source Limitations: Obtain each type of metal panel, associated trim and flashing from single source from single manufacturer.
- D. Integral Field Sample: Build in-place field samples each type of metal wall panel to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build field samples of typical wall panels as shown on Drawings, including insulation, supports, attachments, trim, and accessories.
  2. Water-Spray Test: Conduct water-spray test of field samples of metal panel assembly, testing for water penetration according to AAMA 501.2.
  3. Approval of field samples does not constitute approval of deviations from the Contract Documents contained in field samples unless Architect specifically approves such deviations in writing.
  4. Subject to compliance with requirements, approved field samples may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Pre-installation Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
  2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
  4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
  6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
  7. Review temporary protection requirements for metal panel assembly during and after installation.
  8. Review procedures for repair of metal panels damaged after installation.
  9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels for period of metal panel installation.

#### 1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and opening dimensions by field measurements before metal panel fabrication, and indicate measurements on Shop Drawings.

#### 1.8 COORDINATION

- A. Coordinate metal panel installation with air barrier coating, subframing, roofing, coping, flashing, trim, construction of soffits, aluminum storefront, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### 1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel assemblies that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.

- b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal wall panel assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Air Infiltration: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of wall area when tested according to ASTM E 283 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 1.57 lbf/sq. ft.
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 6.00 lbf./sq. ft..
- D. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 1592:
  - 1. Wind Loads: Determine loads based on the following minimum design wind pressures:
    - a. Uniform pressure as indicated on Drawings.
  - 2. Deflection Limits: Metal wall panel assemblies shall withstand wind loads with horizontal deflections no greater than 1/240 of the span.
- E. Thermal Movements: For metal wall and soffit panels, allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

### 2.2 PANEL MATERIALS

- A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
- B. Surface: Smooth, flat finish.
- C. Exposed Coil-Coated Finish:
  - 1. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
- D. Panel Sealants:
  - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with

- release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

## 2.3 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS (074213.A03)

- A. General: Provide factory-formed metal wall panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
- B. Flush Profile, Concealed-Fastener Metal Wall Panels (074213.A03): Formed with vertical panel edges with narrow reveal joint between panels.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Berridge Manufacturing Company; "FW-12 Panel", or comparable product by one of the following:
    - a. Atas, comparable product.
    - b. Centria; "IW-10A"
    - c. Fabral, comparable product.
    - d. Morin (Kingspan).
    - e. Comparable products from other manufacturers will be considered that match specified colors and that are submitted to and accepted by Architect prior to bidding.
  2. Material: Zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet, 22 gauge thickness.
  3. Exterior Finish: 3-coat fluoropolymer for color selected and as standard by panel manufacturer for colors specified.
    - a. Colors: As selected by Architect from manufacturer's full range to match existing as indicated on drawings.
  4. Panel Coverage: 12 inches.
  5. Panel Height: 1 to 1-1/2 inches.

## 2.4 ACCESSORIES

- A. Panel Accessories: Provide components required for a complete metal panel assembly including trim, clips, flashings, sealants and similar items. Match material and finish of metal panels, unless otherwise indicated.
  1. Closures: Provide closures at perimeter, fabricated of same metal as metal wall panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim (074213.A07): Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
  1. Trim and closure flashing shall include, but not be limited to the following. Trim shall be finished to match adjacent wall panel, unless specifically indicated otherwise.
    - a. Inside corners and outside corners.
    - b. End-lap, end wall and soffit flashing.
    - c. Flashing at perimeters of openings and window panning adjacent to metal wall panels.
    - d. Expansion joints.
- C. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
  1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
- B. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Where exposed fasteners cannot be avoided, provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.
    1. Provide at all connections between aluminum and steel (including galvanized steel).
  - C. Weep Strips: Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, 1/4 -inch thick by 2-inch high strips and continuous for entire width of panel installation; in grey color. Weep strips shall be custom cut to height specified.
    1. Products: Subject to compliance with requirements, provide the following:
      - a. Mortar Net USA, Ltd.
  - D. Miscellaneous Metal Subframing and Furring (074213.A06): ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, *G90* coating designation or ASTM A 792/A 792M, *Class AZ50* aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

## 2.5 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
  1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
  3. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
  4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal wall panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

## 2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
  1. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of work.
  - 1. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.
  - 2. Verify that prefinished metal flashing "by others" has been installed and weather-lapped to drain moisture to exterior.
  - 3. Verify that weather barrier/air and moisture barrier coating has been installed over sheathing or backing substrate behind metal wall panels to prevent air infiltration and water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before metal wall panel installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Miscellaneous Framing: Install base angles, sills, zee furring, and other miscellaneous wall panel support members and anchorages according to ASTM C 754 and metal wall panel manufacturer's written recommendations.
- B. Install subframing/furring in strict accordance with wall panel system manufacturer's written recommendations. Install system oriented vertically and spaced at 16 inches on center to align with wall framing.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by metal wall panel manufacturer.
- D. Weep Strip Installation: Prior to installing panel trim moldings, install weep strips between weather-resistive barrier and panel trim moldings at tops and bottoms of panels. Temporarily hold strips in place with manufacturer's recommended adhesive. Adhesive shall be applied in  $\frac{3}{4}$ -inch diameter dots spaced at 12-inch centers. Bottom of weep strips shall align with top and bottom of wall panel system.

### 3.3 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts and subgirts unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Commence metal panel installation and install minimum of 100 sq. ft. in presence of factory-authorized representative.
  - 2. Shim or otherwise plumb substrates receiving metal panels.
  - 3. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather/air barrier and flashings that will be concealed by metal panels are installed.
  - 4. Install screw fasteners in predrilled holes.
  - 5. Locate and space fastenings in uniform vertical and horizontal alignment.
  - 6. Install flashing and trim as metal panel work proceeds.
  - 7. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  - 8. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
  - 9. Align bottom of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  - 10. Provide weathertight escutcheons for pipe and conduit penetrating exterior walls.
- B. Fasteners:
  - 1. Wall Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized steel fasteners for surfaces exposed to the interior. Exposed fasteners shall be colored to match adjacent panel.

- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by metal wall panel manufacturer.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal wall panel manufacturer.
  - 1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer.
  - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- E. Metal Wall Panels: Fasten metal panels to supports with fasteners at each interconnected joint at location and spacing recommended by manufacturer.
  - 1. Apply panels to avoid "panel creep" or application not true to line.
  - 2. Fasten panels to supporting substrate with concealed fasteners to best extent possible. Where exposed fasteners are unavoidable, provide colored metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
  - 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  - 4. At mechanically seamed wall panels, install with clips and other mounting accessories as recommended by panel manufacturer. Install clips to supports with self-tapping fasteners.
  - 5. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
  - 6. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
  - 7. Provide sealant tape at lapped joints of metal wall panels and between panels and protruding equipment, vents, and accessories.
  - 8. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps; on side laps of nesting-type panels; on side laps of corrugated nesting-type, ribbed, or fluted panels; and elsewhere as needed to make panels weathertight.
  - 9. At panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

### 3.4 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install components required for a complete metal panel assembly including trim, flashings, sealants, gaskets, fillers, and similar items.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
  - 1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
  - 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch *deep*, filled with mastic sealant (concealed within joints).

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing agency to perform field tests and inspections.
- B. Water-Spray Test: After installation, test area of assembly as directed by Architect for water penetration according to AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect completed metal composite material wall panel installation, including accessories.



- D. Metal wall panels will be considered defective if they do not pass test and inspections.
- E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- F. Prepare test and inspection reports.

### 3.6 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 074213**

## SECTION 075110 - HOT-APPLIED ASPHALT MODIFIED BITUMEN ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Hot-applied asphalt modified bitumen (MB) roofing system on concrete and metal decks.
  - 2. Roof insulation.
  - 3. Flashings.
  - 4. Roof surfacing consisting of hot adhesive and aggregate surfacing.
- B. Related Sections include the following:
  - 1. Division 1 Section "Summary" for scope of work and general requirements.
  - 2. Division 6 Section "Miscellaneous Carpentry" for wood nailers, curbs, and blocking.
  - 3. Division 7 Section "Sheet Metal Flashing and Trim" for custom metal roof penetration flashings, flashings, and counterflashings.

#### 1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Flashings: Comply with requirements of Division 7 Sections "Sheet Metal Flashing and Trim". Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
  - 1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
  - 2. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.

## 1.5 DESIGN CRITERIA

- A. General: Installed roofing membrane system shall remain watertight; and resist specified wind uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Roofing material shall be compatible with one another under conditions of service and application required, as demonstrated by roofing system manufacturer based on testing and field experience.

## 1.6 SUBMITTALS

- A. Product Certificate: Submit notarized certificate, indicating complete list of products intended for use under Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
  - 1. Base, perimeter, and detail flashings, cants, and membrane terminations.
  - 2. Tapered insulation, including slopes.
  - 3. Crickets, saddles, and tapered edge strips, including slopes.
  - 4. Insulation and base sheet fastening patterns.
- C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of meeting performance requirements.
- D. Manufacturer Certificates: Indicating compliance of proposed products with requirements, including:
  - 1. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing base and ply sheets, membrane backer and flashing sheets, reinforcement fabric felts and mats, adhesives, mastics, coatings, and sealants.
- E. The Material Suppliers Representative will be required by the Owner to observe the work under this section. The Material Suppliers Representative shall provide a written report to the owner of the Progress. Reports shall be submitted weekly. The presence of this representative is for the Owners interest and any information or assistance furnished by the representative shall not relieve the Contractor of his responsibilities for the Work. The Contractor shall provide reasonable notification to the representative whenever work is being done in sufficient time to arrange observations.
- F. The Owner reserves the right to provide independent inspectors at the districts expense. The inspector will report to the Project Manager any deviations in materials or workmanship, which the Owner has specified.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Maintenance Data and Training Materials: For roofing system to include in maintenance manuals and Owner's training library.
- I. Warranties: Special warranties and service agreements specified in this Section.
- J. Inspection Reports: Copy of daily and final technical inspection reports of roofing installation.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

- B. **Manufacturer Qualifications:** A qualified manufacturer that has identical roofing system to that used for this Project.
- C. **Manufacturer's Technical Representative Qualifications:**
  - 1. An authorized local full-time employee of the manufacturer.
    - a) Shall not be a sales representative.
  - 2. Experienced in the installation and maintenance of the specified roofing system
  - 3. Qualified to determine Installer's compliance with the requirements of this Project.
- D. **Source Limitations:** Obtain components for roofing system from or approved in writing by roofing system manufacturer.
- E. **Preliminary Roofing Conference:** Before starting reroofing preparation, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 1 Section "Project Management and Coordination." Review methods and procedures related to reroofing preparation, and roofing system including, but not limited to, the following:
  - 1. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
  - 5. Review governing regulations and requirements for insurance and certificates if applicable.
  - 6. Review temporary protection requirements for roofing system during and after installation.
  - 7. Review roof observation and repair procedures after roofing installation.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

#### 1.9 PROJECT CONDITIONS

- A. **Weather Limitations:** Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

## 1.10 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Manufacturer's Warranty: Submit roofing system Manufacturer's Labor and Material warranty form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
  - 1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, sheet metal flashings and trim, copings, roof edge flashings, roof edge drainage systems, counterflashings and reglets, and roof expansion assemblies specified in other Division 7 Sections and other components of roofing system. Covers wind speeds up to 74 mph.
  - 2. Warranty Period: 15 years from date of Substantial Completion.
- C. Special Project Warranty: Submit roofing Installer's MRCA 2-year warranty, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, sheet metal flashings and trim, copings, roof edge flashings, roof edge drainage systems, counterflashings and reglets, and roof expansion assemblies:
  - 1. Warranty Period: Two years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MODIFIED BITUMEN CAP SHEET MEMBRANE

- A. Adhered Cap Sheet For Top Of Roof Membrane: Reinforced SBS/SEBS modified bitumen membrane which meets or exceeds the requirements of ASTM D 6163, Type III, Grade S, and the following properties:
  - 1. Tensile Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 190 lbf/in; cross direction, 190 lbf/in.
  - 2. Tensile Strength @ 0 deg F, minimum, ASTM D 5147: machine direction, 240 lbf/in.; cross direction, 240 lbf/in.
  - 3. Tear Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 320 lbf; cross direction, 320 lbf.
  - 4. Thickness, minimum, ASTM D 5147: 83 mils
  - 5. Elongation @ 73 deg F, minimum, ASTM D 5147: machine direction, 7.%; cross direction, 4%
  - 6. Low Temperature Flexibility, minimum, ASTM D 5147: -35 deg F.

### 2.2 ROOFING MEMBRANE PLIES

- A. Ply Sheet: ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt, which meets or exceeds the requirements of ASTM D 2178, Type VI, and the following properties:
  - 1. Breaking Strength, ASTM D 146-97: machine direction, 90 lbf; cross direction, 70 lbf.
  - 2. Mass of desaturated mat, minimum, ASTM D 146-97: 2.2 lb/100 sq. ft.
  - 3. Net dry mass of asphalt impregnated glass felt, ASTM D 146-97: 9.5 lb/100 sq. ft.
  - 4. Bituminous saturant, ASTM D 146-97: 6.6 lb/100 sq. ft.
  - 5. Pliability, 1/2" radius bend, ASTM D 146-97: No failures

### 2.3 BASE FLASHING MATERIALS

- A. Flashing Top Cap Sheet: ASTM D 6163, Type III, SBS/SEBS/SIS granule surfaced modified bitumen membrane with fire resistant characteristics, and the following physical properties:
  - 1. Tensile Strength @ 77 deg F, ASTM D 5147-02a: 220 lbf/in. MD and 220 lbf/in. XMD
  - 2. Tear Strength @ 77 deg F, ASTM D 5147-02a: 280 lbf MD and 300 lbf XMD

3. Elongation @77 deg F, ASTM D 5147-02a: 6.4% MD and 7.0% XMD
4. Low Temperature Flexibility: ASTM D 5147-02a: -25 deg F.
5. Thickness, minimum, ASTM D 5147-02a: 3.4 mm

B. Flashing Backer Sheet: ASTM D 4601, Type II, trilaminate reinforced and coated with waterproofing asphalt, which meets or exceed the following properties:

1. Weight, ASTM D 5147: 38 lb/100 sq. ft.
2. Mass of desaturated mat, minimum, ASTM D 228-90: 3 lb/100 sq. ft.
3. Thickness, ASTM D 5147: 60 mils
4. Tensile Strength @ 77 degrees, ASTM D 5147: machine direction 165 lbf/in, cross machine direction 150 lbf/in.
5. Tensile Strength @ 0 degrees, ASTM D 5147: machine direction 190 lbf/in, cross machine direction 180 lbf/in.
6. Tear Strength @ 77 deg F, ASTM D 5147: machine direction 260 lbf/in, cross machine direction 230 lbf/in.
7. Surfacing stabilizer, max., ASTM D 4601: 65%
8. Asphalt, ASTM D 228-90: 10.0 lb/100 sq. ft.
9. Pliability, ½" radius bend, ASTM D 146-97: No failures

## 2.4 BASE SHEET

A. Adhered Base: ASTM D 4601, Type II, trilaminate reinforced and coated with waterproofing asphalt, which meets or exceed the following properties:

1. Weight, ASTM D 5147: 38 lb/100 sq. ft.
2. Mass of desaturated mat, minimum, ASTM D 228-90: 3 lb/100 sq. ft.
3. Thickness, ASTM D 5147: 60 mils
4. Tensile Strength @ 77 degrees, ASTM D 5147: machine direction 165 lbf/in, cross machine direction 150 lbf/in.
5. Tensile Strength @ 0 degrees, ASTM D 5147: machine direction 190 lbf/in, cross machine direction 180 lbf/in.
6. Tear Strength @ 77 deg F, ASTM D 5147: machine direction 260 lbf/in, cross machine direction 230 lbf/in.
7. Surfacing stabilizer, max., ASTM D 4601: 65%
8. Asphalt, ASTM D 228-90: 10.0 lb/100 sq. ft.
9. Pliability, ½" radius bend, ASTM D 146-97: No failures

## 2.5 ASPHALT MATERIALS

A. Water-Based Asphalt Primer: Water-based, polymer modified, asphalt primer with the following physical properties:

1. Asbestos Content, EPA 600/R13/116: None.
2. Non-Volatile Content, minimum, ASTM D 2823: 32 percent.
3. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 65 g/L.

B. Roofing Asphalt Adhesive for Insulation, Cover Board, Interply Adhesive and Flood Coat: ASTM D 312, Type IV, hot-melt asphalt, with the following physical properties:

1. Softening Point, min/max, ASTM D 36: 215-225 deg F.
2. Penetration at 77 deg. F, min/max, ASTM D 5: 15-25 dmm.
3. Flash point, minimum, ASTM D 92: 525 deg F.
4. Ductility at 77 deg. F, minimum, ASTM D 113: 1.5 cm.
5. Equiviscous temperature range, ASTM D 4402: 425 – 475 deg. F.

C. Asphalt Roofing Mastic: ASTM D 4586, Type II, Class 1, one-part, asbestos-free, cold-applied mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:

1. Asbestos Content, ASTM D 276-00: None.
2. Nonvolatile Matter, minimum, ASTM D 4586: 85 percent.

3. Density at 77 deg F, ASTM D 1475: 9.5 lb/gal.
4. Viscosity @ 77 deg. F., ASTM D 2196-99: 480,000 – 1,000,000 cP

## 2.6 AUXILIARY ROOFING MEMBRANE MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.
- C. Aggregate Surfacing: ASTM D 1863, No. 6 or No. 67, clean, dry, opaque, Kunshek water-worn gravel or crushed stone, free of sharp edges.
- D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

## 2.7 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated in Section 01100 Summary.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, HCFC-free, with felt or glass-fiber mat facer on both major surfaces.
- C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

## 2.8 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- E. Cover Board: ASTM C 208, Type II, Grade 2, Cellulosic-fiber and water-resistant binders, asphalt coated on six sides and chemically treated for deterioration.

## 2.9 COATING MATERIALS

- A. Aluminum Coating: Fibered, metallic pigmented roof coating with the following physical properties:
  1. Weight per gallon, ASTM D 1475: 8.8 lbs.
  2. Solids % by weight: 61%
  3. Solids % by volume: 47%
  4. Viscosity: 126 K.U.
  5. Metallic content, ASTM D 2824: Min. 15%
  6. Flashpoint, ASTM D 3278: 105 deg. F.

7. Reflectance, ASTM D 1549-02: >60

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
  1. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Prime masonry surface with asphalt primer at a rate of 3/4 gal./100 sq. ft. and allow primer to dry.

### 3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's recommendations.
- B. Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations; modify as required to comply with requirements of FMG references above:
  1. Base Flashing at Parapet Wall: Plates BUR-1 and BUR-1S.
  2. Base Flashing and Counterflashing at Parapet Wall: Plates BUR-4 and BUR-4S.
  3. Perimeter Edge, Gravel-stop: Plates BUR-3 and BUR-3S.
  4. Scupper: Plates BUR-21 and BUR-21S.
  5. Gutter at Draining Edge: Plates BUR-22 and BUR-22S.
  6. Curb Detail at Rooftop HVAC Units, Premanufactured: Plates BUR-12 and BUR-12S.
  7. Curb Detail at Rooftop HVAC Units, Job-Built, Wood: Plates BUR-13 and BUR-13S.
  8. Curb Detail at Skylight, Roof Hatch, and Smoke Vents: Plates 14 and 14S
  9. Penetration, Structural Member: Plates BUR-14 and BUR-14S.
  10. Penetration, Sheet Metal Enclosure: Plates 15 and 15S
  11. Penetration, Stack Flashing: Plates BUR-17 and BUR-17S.
  12. Penetration, Pocket: Plates BUR-19 and BUR-19S.
  13. Roof Drain: Plates BUR-20 and BUR-22S.

### 3.4 INSULATION INSTALLATION

- A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of built-up roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.



- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
  - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- F. Install insulation at minimum thickness as listed under specification section "01100 Summary".
- G. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- H. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- I. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- J. Adhere Insulation:
  - 1. Concrete Decks:
    - a. Install first layer of insulation over primed concrete decks in solid mopping's of hot asphalt at 25-lbs per square.
    - b. Install subsequent layers of insulation in a solid mopping of hot roofing asphalt at 25-lbs per square.
- K. Mechanically Fastened Insulation:
  - 1. Metal Decks:
    - a. Install first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
    - b. Install subsequent layers of insulation in a solid mopping of hot roofing asphalt.
- L. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck. Tape joints if required by roofing system manufacturer.
  - 1. Apply hot roofing asphalt to underside and immediately bond cover board to substrate.

### 3.5 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
- B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Cooperate with testing and inspecting agencies engaged or required to perform services for installing built-up roofing system.
- D. Coordinate installing roofing system components, so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
  - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.
  - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
  - 3. Remove and discard temporary seals before beginning work on adjoining roofing.

- E. Asphalt Heating for insulation, coverboard, base sheet, and ply sheets: Heat roofing asphalt and apply within plus or minus 25 deg F of equiviscous temperature unless otherwise required by roofing system manufacturer. Do not raise roofing asphalt temperature above equiviscous temperature range more than one hour before time of application. Do not exceed roofing asphalt manufacturer's recommended temperature limits during roofing asphalt heating. Do not heat roofing asphalt within 25 deg F of flash point. Discard roofing asphalt maintained at a temperature exceeding finished blowing temperature for more than 4 hours.
- F. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

### 3.6 ROOFING MEMBRANE INSTALLATION

- A. Install two-ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.
  - 1. Embed each ply sheet in a solid mopping of hot roofing asphalt applied at rate required by roofing system manufacturer, to form a uniform membrane without ply sheets touching.
- B. Install one lapped course of smooth MB top cap sheet, extending sheet over and terminating beyond cants. Shingle in direction to shed water.
  - 1. Embed cap sheet in a solid mopping of hot roofing asphalt applied at rate required by roofing system manufacturer, to form a uniform membrane without ply sheets touching.
- C. Aggregate Surfacing: Promptly after installing roofing membrane and base flashing, flood-coat roof surface with hot roofing asphalt applied at rate required by roofing system manufacturer, 60-lbs minimum. Immediately after installing flood coat, cast the following average weight of aggregate in a uniform course:
  - 1. Aggregate Weight: 450 to 500-lb/100 sq. ft.
  - 2. Cover flood coat adhesive completely.

### 3.7 FLASHING AND STRIPPING INSTALLATION

- A. Install 2-ply base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:
  - 1. Prime substrates with asphalt primer if required by roofing system manufacturer.
  - 2. Flashing Sheet Application: Adhere flashing sheets to substrate in a solid application of hot roofing asphalt applied at rate required by roofing system manufacturer.
- B. Extend base flashing up walls, parapets, or projection curbs a minimum of 8 inches above roofing membrane and 6 inches onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing with termination bar.
- D. Roof Drains: Set 30-by-30-inch 4-lb lead flashing in bed of asphalt roofing cement on completed roofing membrane. Cover lead flashing with 2-ply of base sheet stripping and extend a minimum of 4 inches beyond edge of lead flashing onto field of roofing membrane. Clamp roofing membrane, lead flashing, and 2-ply stripping into roof-drain clamping ring.
- E. Grave Guard: Install gravel guard around all drains, gutters, and scuppers: Set 4' x 4' 24-gauge L-shaped gravel guard in a bed of asphalt mastic. Extend flood coat onto flange and cover with metal. Install smooth surfaced MB membrane and coat with a metallic pigmented aluminum.

### 3.8 COATING INSTALLATION

- A. Apply aluminum coating to base flashings, soil stacks, gas lines, drain strainers, and rusted equipment according to manufacturer's written instructions, by roller or other suitable application method.
  - 1. Adhere one coat at 2-gallon per 100 square feet.

### 3.9 FIELD QUALITY CONTROL

- A. Manufacturer's Technical Representative: Contractor will engage a qualified manufacturer's technical representative acceptable to Owner for on site roof tests and inspections.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner.
  - 1. Notify Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.10 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 075110**

## SECTION 075530 - SBS-MODIFIED BITUMEN MEMBRANE ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Hot applied modified bitumen membrane roofing.
  - 2. Hot applied base-ply felt.
  - 3. process adhesive for membrane system.
  - 4. applied modified bitumen base flashings
  - 5. Roofing insulation.
- B. Related Sections include the following:
  - 1. Division 6 Section "Miscellaneous Carpentry" for wood blocking, curbs, and nailers.
  - 2. Division 7 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

#### 1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 for definitions of terms related to roofing work not otherwise defined in this Section.
- B. Cold Applied Asphalt Adhesive – An asbestos free formulation of asphalt, solvent, thixotrope, mineral stabilizer and reinforcing fibers used as an interply adhesive and surfacing.
- C. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General: Install a watertight, modified bitumen membrane roofing and base flashing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Flashings: Comply with requirements of Division 7 Sections "Sheet Metal Flashing and Trim". Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
  - 1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.

2. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.

## 1.5 SUBMITTALS

- A. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work, for the following:
  1. Base flashings, cants, and membrane terminations.
  2. Tapered insulation, including slopes.
  3. Crickets, saddles, and tapered edge strips, including slopes.
- C. Samples for Verification: Of the following products:
  1. 12-by-12-inch (300-by-300-mm) square of modified bitumen, granule-surfaced cap sheets, of color specified.
  2. 12-by-12-inch (300-by-300-mm) square of roofing insulation.
  3. 6 insulation fasteners of each type, length, and finish.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system and is eligible to receive the standard roofing manufacturer's warranty.
- E. Manufacturer Certificates: Signed by roofing system manufacturer certifying that the roofing system complies with requirements specified in the "Performance Requirements" Article. Upon request, submit evidence of complying with requirements.
- F. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- G. Product Test Reports: Based on evaluation of comprehensive testing of current products performed by manufacturer and witnessed by a qualified independent testing agency, indicate the roof system components comply with specified requirements and are compatible with each other and suitable for use within the of roofing system.
- H. Maintenance Data: For roofing system to include in the maintenance manuals specified in Division 1.
- I. Warranty: Provide a sample copy of standard roofing manufacturer's warranty, stating obligations, remedies, limitations, and exclusions of warranty.
- J. Inspection Report: Provide a copy of the roofing system manufacturer's final inspection report of the completed roof installation.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform Work of this Section who has specialized in installing roofing similar to that required for this Project; who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product; and who is eligible to receive the standard roofing manufacturer's warranty.
- B. Preinstallation Conference: Before installing roofing system, conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings." Notify participants at least 5 working days before conference.
  1. Meet with Owner; roofing installer; roofing system manufacturer's representative; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and attachment to structural members.
4. Review loading limitations of deck during and after roofing.
5. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
6. Review governing regulations and requirements for insurance, certifications, and inspection and testing, if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.
9. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated, weathertight location to ensure no significant moisture pickup and maintain at a temperature which does not exceed the maximum temperature given in the roofing system manufacturer's written instructions. Store rolls of felt and other sheet materials on end on pallets or other raised surfaces. Do not double-stack rolls.
  1. Handle and store roofing materials and place equipment in a manner to avoid significant or permanent damage to deck or structural supporting members.
- B. Do not leave unused felts and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather and moisture and unless maintained at a temperature exceeding 50 deg F (10 deg C).
- C. Deliver and store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer.
- D. Protect roofing insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

#### 1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.
- B. Prevent dust, vapors, gases, and odors from entering into the building during roof installation. When shutting down or blocking air intakes, provide makeup air or additional intake air from sources away from the work area.

#### 1.9 WARRANTY

- A. Standard Roofing Manufacturer's Warranty: Submit a written warranty, signed by roofing system manufacturer agreeing to promptly repair leaks in the roof membrane and base flashings resulting from defects in materials or workmanship for the following warranty period:
  1. Warranty Period: 15 years.
- B. Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section, including membrane roofing, base flashing, roofing insulation, fasteners, and vapor retarders, if any, for the following warranty period:

1. Warranty Period: 15 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with specification requirements:
  1. SBS-Modified Bitumen Roof System:
    - a. Any roofing material manufacturer who can meet or exceed all specification requirements.
- B. Adhered Cap Sheet for Top of Roof Membrane: Reinforced SBS/SEBS/SIS modified bitumen membrane which meets or exceeds the requirements of ASTM D 6163, Type III, Grade G, and the following properties:
  1. Tensile Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 220 lbf/in; cross direction, 220 lbf/in.
  2. Tear Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 280 lbf; cross direction, 300 lbf.
  3. Thickness, minimum, ASTM D 5147: 134 mils
  4. Elongation @ 73 deg F, minimum, ASTM D 5147: machine direction, 6.4%, cross direction, 7%
  5. Low Temperature Flexibility, minimum, ASTM D 5147: -25 deg F.

### 2.2 ROOFING MEMBRANE PLIES

- A. Ply Sheet: ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt, which meets or exceeds the requirements of ASTM D 2178, Type VI, and the following properties:
  1. Breaking Strength, ASTM D 146-97: machine direction, 90 lbf; cross direction, 70 lbf.
  2. Mass of desaturated mat, minimum, ASTM D 146-97: 2.2 lb/100 sq. ft.
  3. Net dry mass of asphalt impregnated glass felt, ASTM D 146-97: 9.5 lb/100 sq. ft.
  4. Bituminous saturant, ASTM D 146-97: 6.6 lb/100 sq. ft.
  5. Pliability, ½" radius bend, ASTM D 146-97: No failures

### 2.3 BASE FLASHING MATERIALS

- A. Flashing Top Cap Sheet: ASTM D 6163, Type III, SBS/SEBS/SIS granule surfaced modified bitumen membrane with fire resistant characteristics, and the following physical properties:
  1. Tensile Strength @ 77 deg F, ASTM D 5147-02a: 220 lbf/in. MD and 220 lbf/in. XMD
  2. Tear Strength @ 77 deg F, ASTM D 5147-02a: 280 lbf MD and 300 lbf XMD
  3. Elongation @77 deg F, ASTM D 5147-02a: 6.4% MD and 7.0% XMD
  4. Low Temperature Flexibility: ASTM D 5147-02a: -25 deg F.
  5. Thickness, minimum, ASTM D 5147-02a: 3.4 mm
- B. Flashing Backer Sheet: ASTM D 4601, Type II, trilaminate reinforced and coated with waterproofing asphalt, which meets or exceed the following properties:
  1. Weight, ASTM D 5147: 38 lb/100 sq. ft.
  2. Mass of desaturated mat, minimum, ASTM D 228-90: 3 lb/100 sq. ft.
  3. Thickness, ASTM D 5147: 60 mils
  4. Tensile Strength @ 77 degrees, ASTM D 5147: machine direction 165 lbf/in, cross machine direction 150 lbf/in.
  5. Tensile Strength @ 0 degrees, ASTM D 5147: machine direction 190 lbf/in, cross machine direction 180 lbf/in.
  6. Tear Strength @ 77 deg F, ASTM D 5147: machine direction 260 lbf/in, cross machine direction 230 lbf/in.
  7. Surfacing stabilizer, max., ASTM D 4601: 65%
  8. Asphalt, ASTM D 228-90: 10.0 lb/100 sq. ft.
  9. Pliability, ½" radius bend, ASTM D 146-97: No failures

## 2.4 BASE SHEET

- A. Adhered Base: ASTM D 4601, Type II, trilaminate reinforced and coated with waterproofing asphalt, which meets or exceed the following properties:
1. Weight, ASTM D 5147: 38 lb/100 sq. ft.
  2. Mass of desaturated mat, minimum, ASTM D 228-90: 3 lb/100 sq. ft.
  3. Thickness, ASTM D 5147: 60 mils
  4. Tensile Strength @ 77 degrees, ASTM D 5147: machine direction 165 lbf/in, cross machine direction 150 lbf/in.
  5. Tensile Strength @ 0 degrees, ASTM D 5147: machine direction 190 lbf/in, cross machine direction 180 lbf/in.
  6. Tear Strength @ 77 deg F, ASTM D 5147: machine direction 260 lbf/in, cross machine direction 230 lbf/in.
  7. Surfacing stabilizer, max., ASTM D 4601: 65%
  8. Asphalt, ASTM D 228-90: 10.0 lb/100 sq. ft.
  9. Pliability, ½" radius bend, ASTM D 146-97: No failures

## 2.5 ASPHALT MATERIALS

- A. Water-Based Asphalt Primer: Water-based, polymer modified, asphalt primer with the following physical properties:
1. Asbestos Content, EPA 600/R13/116: None.
  2. Non-Volatile Content, minimum, ASTM D 2823: 32 percent.
  3. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 65 g/L.
- B. Roofing Asphalt Adhesive for Insulation, Cover Board, Interply, Flashing and Flood Coat Adhesive: ASTM D 312, Type IV, hot-melt asphalt, with the following physical properties:
1. Softening Point, min/max, ASTM D 36: 215-225 deg F.
  2. Penetration at 77 deg. F, min/max, ASTM D 5: 15-25 dmm.
  3. Flash point, minimum, ASTM D 92: 525 deg F.
  4. Ductility at 77 deg. F, minimum, ASTM D 113: 1.5 cm.
  5. Equiviscous temperature range, ASTM D 4402: 425 – 475 deg. F.
- C. Asphalt Roofing Mastic: ASTM D 4586, Type II, Class 1, one-part, asbestos-free, cold-applied mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
1. Asbestos Content, ASTM D 276-00: None.
  2. Nonvolatile Matter, minimum, ASTM D 4586: 85 percent.
  3. Density at 77 deg F, ASTM D 1475: 9.5 lb/gal.
  4. Viscosity @ 77 deg. F., ASTM D 2196-99: 480,000 – 1,000,000 cP

## 2.6 AUXILIARY MEMBRANE MATERIALS

- A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with SBS-modified bitumen roofing.
- B. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.
- C. Sealant: Polyurethane, standard or modified bituminous, elastomeric, single or multi-component.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470; designed for fastening base sheets, base-ply felts, base flashings and for backnailing the modified bitumen membrane to the substrate; tested by manufacturer for required pullout strength; and acceptable to the roofing system manufacturer.



- E. Metal Flashing Sheet: Metal flashing sheet is specified in Division 7 Section "Sheet Metal Flashing and Trim."
- F. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 (2.36-mm) sieve and 98 percent of mass retained on No. 40 (0.425-mm) sieve.
  - 1. Color: White/gray.
- G. Glass-Fiber Fabric: Woven glass cloth, coated with organic resin, complying with ASTM D 1668, Type III.
- H. Miscellaneous Accessories: Provide miscellaneous accessories recommended by the roofing system manufacturer for intended use.

## 2.7 INSULATION MATERIALS

- A. General: Provide preformed, roofing insulation boards that comply with requirements, selected from manufacturer's standard sizes and of thicknesses indicated.
  - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, HCFC-free, with felt or glass-fiber mat facer on both major surfaces.
- C. Coverboard and Substrate Boards: ASTM C 1177/C 1177M-99, glass-mat, water-resistant gypsum substrate, with low perm heat cured top coating ¼-inch thick.
- D. Substrate Board: ASTM C 1177/C 1177M-99, glass-mat, water-resistant gypsum substrate, with low perm heat cured top coating, ½-inch thick.
  - 1. Coverboard: 1/4-inch thick.
  - 2. Substrate Board: 1/2-inch thick.
- E. General: Furnish roofing insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.
- F. Tapered Edge and Cant Strips: Rigid, cellulosic-fiber insulation board, complying with ASTM C 208, Type 2.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.
- B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.
- C. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at roof penetrations and terminations and match the thicknesses of insulation required.
- D. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

### 3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install modified bitumen membrane roofing system according to roofing system manufacturer's written instructions and applicable recommendations of NRCA/ARMA's "Quality Control Recommendations for Polymer Modified Bitumen Roofing."
  - 1. Install roofing system according to applicable specification plates of NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Begin the first day of modified bitumen roof membrane installation in the presence of roofing system manufacturer's technical personnel.
- C. Install and secure preformed 45-degree cants at all horizontal / vertical interfaces.
- D. Coordinate installation of roofing system components so insulation and roofing plies are not exposed to moisture or remain exposed at the end of the workday or when rain is forecast.
  - 1. Provide water cutoffs at the end of each day's work to cover exposed ply sheets and insulation with a course of coated felt with joints and edges sealed.
  - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of the roofing system.
- E. Remove and discard temporary seals before beginning work on adjoining
- F. Shingling Plies: Install modified bitumen membrane roofing system with ply sheets shingled uniformly to achieve required number of membrane plies throughout. Shingle in direction to shed water.
- G. Cooperate with inspecting and testing agencies engaged or required to perform services for installing modified bitumen membrane roofing system.
- H. Phased construction is not permitted. Install base plies and modified bitumen membrane on the same day.
- I. Substrate-Joint Penetrations: Prevent cold process asphalt adhesive from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

### 3.4 INSULATION INSTALLATION

- A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roofing insulation.
- C. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches (50 mm) or greater, install required thickness in 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush with ring of drain.

- F. Install insulation with long joints of insulation in continuous straight lines with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
  - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- G. Adhered Insulation: Set each layer of insulation in a ribbon coverage of Insulation Adhesive at 3/4" wide adhesive beads spaced a minimum 12" o.c.; decrease depending on wind uplift requirements. Once adhesive begins to rise install insulation boards. Do not allow adhesive to skin over before placing the boards. Walk on boards to fully press them into the wet adhesive.
  - 1. Adhesive full-length beads shall be a minimum of two-inches off each insulation joint.

### 3.5 PLY FELT INSTALLATION

- A. Install fiberglass ply felts according to roofing system manufacturer's written instructions, starting at low point of roofing system. End lap and shingle each base-ply felt to ensure the specified number of base-ply felts covers the substrate at any point. Extend base-ply felts over and terminate beyond cants. Embed each base-ply felt in a continuous application of hot applied adhesive applied at the rate required by the roofing system manufacturer, to form a uniform membrane so that ply felts do not touch each other.
  - 1. Install 2-ply of fiberglass felt.

### 3.6 ROOF MEMBRANE INSTALLATION

- A. General: Install modified bitumen membrane over area to receive roofing, according to manufacturer's written instructions. Extend modified bitumen membrane over and terminate beyond cants.
  - 1. Unroll sheet and allow it to relax for the minimum time period required by manufacturer.
- B. Single-Ply, Modified Bitumen Membrane: Install a single ply of modified bitumen membrane starting at low point of roofing system.
  - 1. Application: Adhere to substrate in a continuous application of hot process adhesive applied at rate required by roofing system manufacturer.
  - 2. Immediately roll membrane with a 70-lbs. steel roller.
- C. Laps: Accurately align sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
  - 1. Repair tears and voids in laps and lapped seams not completely sealed.
  - 2. Apply granules, while asphalt is hot, to cover asphalt bead exuded at laps.
- D. Install modified bituminous membranes with side laps shingled with slope of roof deck.

### 3.7 FLASHING AND STRIPPING INSTALLATION

- A. Install 2-ply MB base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:
  - 1. Prime substrates with water-based asphalt primer if required by roofing system manufacturer.
  - 2. Adhere 2-ply base flashing system in a full and continuous application of hot asphalt, applied at the rate required by the roofing system manufacturer.
- B. Extend base flashing up the wall a minimum of 8 inches (200 mm) above roof membrane and 4 inches (100 mm) onto field of roof membrane.
- C. Mechanically fasten top of MB base flashing securely at terminations and perimeter of roofing.
  - 1. Seal top termination of base flashing.

2. Seal bottom and side lap termination of reinforced elastomeric sheet base flashing with a strip of glass-fiber fabric set in elastomeric flashing adhesive and covered with a course of elastomeric mastic.
- D. Install modified bitumen stripping where metal flanges and edgings are set on membrane roofing, according to roofing system manufacturer's written instructions.
  - E. Roof Drains: Set 30-by-30-inch (760-by-760-mm) 4-lb lead flashing in bed of asphalt roofing cement on completed modified bitumen membrane roofing. Cover lead flashing with modified bitumen stripping extending a minimum of 4 inches (100 mm) beyond edge of lead flashing onto field of roof membrane. Clamp roof membrane, lead flashing, and stripping into roof-drain clamping ring.

### 3.8 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner.
  1. Notify Owner 48 hours in advance of the date and time of inspection.

### 3.9 PROTECTING AND CLEANING

- A. Protect modified bitumen membrane roofing from damage and wear during remainder of construction period. When remaining construction will not affect or jeopardize roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.
- B. Correct deficiencies in or remove modified bituminous roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 075530**



## SECTION 075910 – ROOF MEMBRANE PREPARATION AND RESTORATION FOR BUILT-UP ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Protection of existing roofing system that is not re-coated.
  - 2. Roof re-coating preparation including roof patching.
  - 3. Low-odor, cold process roof re-coating of built-up membrane roofing.
  - 4. Repair of base flashings.
  - 5. Protection of existing roofing systems.
  - 6. Roof Restoration as specified in Section 01100 Summary:
- B. Related Sections include the following:
  - 1. Division 01 Section "Cutting and Patching" for cutting and patching procedures for re-coating preparation.
  - 2. Division 01 Section "Summary" for procedures of the scope of work.

#### 1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site and disposed of legally.

#### 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Cold process BUR with gravel surfacing, and components and accessories between deck and roofing membrane.
- C. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system. Areas indicated as wet by thermal scan.
- D. Roofing Re-Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.
- E. Partial Roof Tear-Off and Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials. Remove areas indicated as wet by thermal scan.
- F. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

- G. Existing to Remain: Existing items of construction that are not indicated to be removed.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide recoated roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

#### 1.6 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

#### 1.7 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane-roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
  - 1. An authorized full-time technical employee of the manufacturer.
- C. Roof Restoration Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
  - 1. Meet with Owner; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to reroofing preparation, including membrane roofing system manufacturer's written instructions.
  - 3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
  - 4. Review roof drainage during each stage of reroofing and review roof drain plugging and plug removal procedures.
  - 5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 6. Review existing deck removal procedures and Owner notifications.
  - 7. Review procedures to determine condition and acceptance of existing deck for reuse.
  - 8. Review structural loading limitations of deck during reroofing.
  - 9. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
  - 10. Review HVAC shutdown and sealing of air intakes.
  - 11. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
  - 12. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.
  - 13. Review governing regulations and requirements for insurance and certificates if applicable.
  - 14. Review existing conditions that may require notification of Owner before proceeding.

## 1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not block required exits or path from required exit to public right-of-way. Coordinate with requirements of authorities having jurisdiction.
- D. Owner assumes no responsibility for condition of areas to be reroofed.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner.
- F. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

## 1.9 WARRANTY

- A. Roofing Recoating Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Roof Recoating Warranty, General: Warranties specified in this Section include work of this Section and the following components and systems specified other Sections when supplied by the roof recoating manufacturer:
  - 1. Low slope-roofing system as accessory to roofing recoating.
- C. Special Warranty for Roof Recoating: Written warranty in which Manufacturer agrees to repair roof recoating installations that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Leaks
  - 2. Qualified Installer Requirement: Installer must meet requirements of Quality Assurance Article.
  - 3. Installation Inspection Requirement: By Roofing Inspector in accordance with requirements of Part 3 Field Quality Control Article.
  - 4. Annual Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum.
  - 5. Warranty Period: 10 years from date of completion of recoating work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers/Products: Subject to compliance with requirements, provide products from:
  - 1. Any roofing material manufacture that meets or exceeds all specification requirements.



## 2.2 MATERIALS, GENERAL

- A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.

## 2.3 ROOFING REPAIR MATERIALS

### A. ROOFING MASTIC FOR REINFORCEMENT

- 1. Solvent-Free Elastomeric Roofing Mastic: One-part, solvent-free, asbestos-free, low-odor elastomeric roof mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
  - a. Asbestos Content, EPA 600/R13/116: None.
  - b. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 300 g/L.
  - c. Nonvolatile Matter, minimum, ASTM D 4586: 70 percent.
  - d. Elongation at 77 deg. F, minimum, ASTM D 412: 1000 percent.
  - e. Recovery from 500% Elongation, minimum, ASTM D 412: 500 percent.
  - f. Flexibility at -40 deg. F, ASTM D 3111: No Cracking.

## 2.4 RESTORATION MATERIALS

### A. PRIMER

- 1. Water-Based Asphalt Primer: Water-based, polymer modified, asphalt primer with the following physical properties:
  - a. Asbestos Content, EPA 600/R13/116: None.
  - b. Non-Volatile Content, minimum, ASTM D 2823: 32 percent.
  - c. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 65 g/L.

### B. SURFACING ADHESIVE

- 1. Asphalt Emulsion: One-part, asbestos-free, cold-applied, emulsified blend of special aromatic oils and additives formulated to be compatible with both tar and asphalt built-up roof membranes.
  - a. Asbestos Content, ASTM D 276: None.
  - b. Density at 77 deg. F, minimum, ASTM D 1475: 8.6 lb/gal.
  - c. Water content, minimum, ASTM D 3792: 40%
  - d. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 29 g/L.

### C. REFLECTIVE COATING

- 1. Aluminum Coating: Non-fibered, aluminum pigmented roof coating with the following physical properties:
  - a. Weight per gallon, ASTM D 1475: 8.8 lbs
  - b. Solids % by Weight: 61%
  - c. Solids % by Volume: 47%
  - d. Metallic Content, ASTM D 2824: 15% min.
  - e. Reflectance, ASTM D 1549-02: >60

### D. FLASHING COATING: Two-coat polyurethane elastomeric coating system consisting of a two-part, bio-based base coat and top coat with the following properties:

- 1. Base Coat:
  - a. Tensile Strength, ASTM D412: 1,400 lb/in/sq
  - b. Tear Strength, ASTM D5147: 309 lbf
  - c. Volatile Organic Content, ASTM D 3960: 1 g/L (A+B mix)
  - d. Volume Solids, ASTM D 2697: 100%
  - e. Weight Solids, ASTM D 1644: 100%
  - f. Indentation Hardness, ASTM D2240: 88 Shore A
  - g. Water Absorption, ASTM D471: 0.008
- 2. Top Coat:
  - a. Tensile Strength, ASTM D412: 1,400 lb/in/sq

- b. Tear Strength, ASTM D5147: 309 lbf
- c. Volatile Organic Content, ASTM D 3960: < 6 g/L (A+B mix)
- d. Volume Solids, ASTM D 2697: 100%
- e. Weight Solids, ASTM D 1644: 100%
- f. Indentation Hardness, ASTM D2240: 81 Shore A
- g. Water Absorption, ASTM D471: 0.008
- h. Reflectivity, ASTM C1549: 84%
- i. Emissivity, ASTM C1371: 87%

E. SURFACING

- 1. Aggregate Surfacing: ASTM D 1863, No. 6 or No. 67, clean, dry, opaque, Kunshek water-worn gravel or crushed stone, free of sharp edges.

2.5 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.
- C. Protection Treads: As recommended by roofing material manufacturer.
  - 1. Granule Color: White.
- D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect existing membrane roofing system that is indicated not to be reroofed.
  - 1. Comply with warranty requirements of existing roof membrane manufacturer.
  - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
  - 3. Maintain temporary protection and leave in place until replacement roofing has been completed.
- B. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  - 1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
  - 2. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- D. Verify that rooftop utilities and service piping have been shut off before commencing Work.

### 3.2 FLASHING REPAIR

- A. Do not damage metal counterflashing's that are to remain. Replace metal counterflashing's damaged during removal with counterflashing's of same metal, weight or thickness, and finish.
- B. Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.
  - 1. Install 3-course reinforcement on all vertical laps and corners as specified under Section 01100 "Summary".
  - 2. Install 5-course reinforcement on all drains, plumbing pipes, stacks, and pitch pans as specified under Section 01100 "Summary".

### 3.3 FLASHING RE-COATING

- A. Reinforcement: Apply one layer of base coat to all flashing laps, vertical and horizontal, in accordance with manufacturer's written instructions. Immediately imbed one layer of polyester reinforcement and back roll to fully embed. Apply base coat over reinforcement in accordance with manufacturer's written instructions.
- B. Base Coat: Apply base coat to all flashing surfaces in accordance with manufacturer's written instructions. Back roll to achieve minimum wet mil coating thickness of 2.5 gallons per 100 square feet unless otherwise recommended by manufacturer, verify thickness of base coat as work progresses.
  - 1. Apply base coat on prepared and primed surfaces and spread coating evenly.
  - 2. Allow base coat to cure prior to application of top coat.
- C. Top Coat: Apply top coat to all flashing surfaces uniformly in a complete installation to flashing surfaces.
  - 1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
  - 2. Apply top coat to flashings extending coating up vertical surfaces and out onto horizontal surfaces.
  - 3. Back roll to achieve wet mil thickness of 2 gallon per 100 square feet unless otherwise recommended by manufacturer.

### 3.4 ROOF RE-COATING

- A. Restorative Flood Coat: Promptly after preparing membrane substrate and base flashings and stripping, flood-coat roof surface with 7 gal./100 sq. ft. of restorative coating.
- B. Kunshek Aggregate Surfacing: While flood coat is fluid, cast the following average weight of aggregate in a uniform course:
  - 1. Aggregate Weight: 550 lb./100 sq. ft.
  - 2. Install more gravel as needed to completely cover the new flood coat adhesive.

### 3.5 DISPOSAL

- A. Collect and place demolished materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
  - 1. Storage or sale of demolished items or materials on-site will not be permitted.
- B. Transport demolished materials off Owner's property and legally dispose of them.

### 3.6 WALKWAY INSTALLATION

- A. Reinstall walkways following application of coating. Locate as indicated, or as directed by Owner.
- B. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
  - 1. Set walkway pads in cold-applied adhesive.

3.7 SCHEDULE OF SPECIAL WARRANTIES AND SERVICE AGREEMENTS

- A. The following documents are referenced in this Section and are attached following this Section; complete and submit similar documents in accordance with requirements:
  - 1. Roofing Installer's Warranty
  - 2. Roofing System Manufacturer's Continuing Maintenance Program

3.8 ROOFING INSTALLER'S WARRANTY

A. WHEREAS \_\_\_\_\_ of \_\_\_\_\_, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

- 1. Owner: \_\_\_\_\_
- 2. Address: \_\_\_\_\_
- 3. Building Name/Type: \_\_\_\_\_
- 4. Address: \_\_\_\_\_
- 5. Area of Work: \_\_\_\_\_
- 6. Acceptance Date: \_\_\_\_\_
- 7. Warranty Period: Two years from the date of substantial completion
- 8. Expiration Date: \_\_\_\_\_

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

- 1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
  - a. Lightning;
  - b. Peak gust wind speed exceeding 74 mph;
  - c. Fire;
  - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
  - e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
  - f. Vapor condensation on bottom of roofing; and
  - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
- 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
- 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
- 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other

work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this \_\_\_\_day of \_\_\_\_\_, 2019.

1. Authorized Signature: \_\_\_\_\_
2. Name: \_\_\_\_\_

### 3.9 ROOFING SYSTEM MANUFACTURER'S CONTINUING MAINTENANCE PROPOSAL

A. WHEREAS \_\_\_\_\_ of \_\_\_\_\_, herein called the "Manufacturer," has supplied roofing membrane and associated materials and approved all other related materials ("materials") on the following project:

1. Owner: \_\_\_\_\_
2. Address: \_\_\_\_\_
3. Building Name/Type: \_\_\_\_\_
4. Address: \_\_\_\_\_
5. Area of Work: \_\_\_\_\_
6. Acceptance Date: \_\_\_\_\_
7. Warranty Period: 10-years\_
8. Expiration Date: \_\_\_\_\_
9. Roofing Installer: \_\_\_\_\_
10. Contractor: \_\_\_\_\_

B. MANUFACTURER proposes to provide Roofing System Continuing Management and Maintenance services to the Owner, on an annual basis for a period of 10 years, performed under direction of Manufacturer's Authorized Service Representative, as described below:

1. Roof Inspection Report: Provide roof inspection and report of roof conditions based upon roof inspections.
2. Roof Housekeeping: Inspect roof membrane, drains, gutters, and scuppers. Remove, bag and properly dispose of all debris.
3. Roof Membrane Preventive Maintenance and Repair: Repair tears, splits and breaks in the roof membrane with appropriate repair mastic and membranes in accordance with Membrane

- Manufacturer's written repair and maintenance guidelines. Dress up reflective coatings on flashings. Coat all exposed reinforcing membranes with approved mastics.
4. Roof Flashing Preventive Maintenance:
    - a. Metal Edge and Flashing Components: Repair tears, splits, and breaks in membrane flashings and open flashing strip-ins with appropriate repair mastics and membranes. Secure loose metal edge cleats and clips. Tighten and reseal exposed fasteners.
    - b. Parapet, Wall, and Counterflashing Systems: Repair tears, splits, and breaks in metal flashings and open flashing strip-ins with appropriate repair mastics and membranes. Coat all exposed reinforcing membranes with approved mastics. Tighten and reseal exposed fasteners. Clean and seal voids in termination bars, counterflashings and parapet caps. Secure loose termination bars and counterflashings. Check and re-secure loose metal coping caps.
    - c. Equipment/Projection Flashing Components: Repair tears, splits, and breaks in metal flashings and open flashing strip-ins with appropriate repair mastics and membranes. Secure unsecured roof top equipment. Tighten and reseal exposed fasteners. Clean and seal voids in termination bars. Refill pitch pans. Check and reseal metal projections (hoods and clamps).
  5. Drainage Systems Preventive Maintenance: Check and re-secure drain bolts and clamping rings. Advise owner of missing drain dome strainers. Check strip-ins around drain leads and coat with approved mastic. Check gutter straps, joints and strip-ins. Check inside and exterior of scuppers for open solder or caulking seals.
  6. Roof Systems Leak Response:
    - a. In the event of a roof system leak, Manufacturer shall provide to Owner:
      - 1) Toll free 800 number for Owner for leak report, monitored twenty-four hours per day, 365 days a year.
      - 2) Response to Owner on all leak calls within twenty-four hours.
      - 3) Qualified repair crew at the building site within two business days of call.
      - 4) Follow-up inspection by Manufacturer's Authorized Service Representative with written report to Owner.
      - 5) Written summary of leak events, repairs, and inspections to Owner at end of each quarter in which leaks have occurred.
  7. Roofing System Continuing Management and Maintenance Services repair coverage exclude such damage to the roof system excluded from the Manufacturer's Warranty as a result of negligence, vandalism, or other excluded cause as described in manufacturer's published terms and conditions at the original date of this Contract.

C. SUBMITTED this \_\_\_\_\_ day of \_\_\_\_\_, 2019.

1. Authorized Signature: \_\_\_\_\_
2. Name: \_\_\_\_\_
3. Title: \_\_\_\_\_
4. Manufacturer: \_\_\_\_\_
5. Address: \_\_\_\_\_
6. Telephone number: \_\_\_\_\_

**END OF SECTION 075910**



## SECTION 076200 - SHEET METAL FLASHING AND TRIM

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Formed roof-drainage sheet metal fabrications.
  - 2. Formed low-slope roof sheet metal fabrications.
  - 3. Formed wall sheet metal fabrications.
  - 4. Formed equipment support flashing.
  - 5. Premanufactured pitch pockets.
  - 6. Roof Drains.
  
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
  - 2. Section 071500 "Rehabilitation of Built-Up Roofing."
  - 3. Section 071520 "Rehabilitation of Fully Adhered EPDM Roof System."
  - 4. Section 072100 "Thermal Insulation."
  - 5. Section 074213 "Formed Metal Wall Panels."
  - 6. Section 075110 "Hot Applied Asphalt Modified Bitumen Roofing."
  - 7. Section 075530 "SBS Modified Bitumen Membrane Roofing."
  - 8. Section 075910 "Roof Membrane Preparation and Restoration for Built-Up Roofing."

#### 1.2 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
  
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
  - 1. Sheet metal flashings shall be installed in accordance with ANSI/SPRI/FM 4435/ES-1 "Wind Design Standard for Edge systems Used with Low Slope Roofing Systems" as applicable for locations and configurations indicated on Drawings.
  
- B. Fabricate and install roof edge flashing capable of resisting the following forces according to recommendations in FMG Loss Prevention Data Sheet 1-49:
  - 1. Wind Zone 1: For velocity pressures of 21 to 30 lbf/sq. ft.: 60-lbf/sq. ft. perimeter uplift force, 90-lbf/sq. ft. corner uplift force, and 30-lbf/sq. ft. outward force.
  
- C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

#### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
  - 3. Review requirements for insurance and certificates if applicable.
  - 4. Review sheet metal flashing observation and repair procedures after flashing installation.



5. Meet with Owner, Architect, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories and roof-mounted equipment.
6. Review methods and procedures related to sheet metal flashing and trim.
7. Review special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect sheet metal flashing.
8. Review sequencing of sheet metal flashing installation with other related trades to coordinate installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: For sheet metal flashing and trim.
  1. Include plans, elevations, sections, and attachment details.
  2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
  3. Include identification of material, thickness, weight, and finish for each item and location in Project.
  4. Include details for forming, including profiles, shapes, seams, and dimensions.
  5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
  6. Include details of termination points and assemblies.
  7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
  8. Include details of roof-penetration flashing.
  9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
  10. Include details of special conditions and of connections to adjoining work.
  11. Detail formed flashing and trim at scale of not less than 3 inches per 12 inches.
- C. Samples for Verification: For each type of exposed finish.
  1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
  2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
  3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.
- C. Sample Warranty: For special warranty.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

#### 1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
- B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual", Sixth Edition, unless more stringent requirements are specified or shown on Drawings.
- C. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, metal wall panels, aluminum storefront and curtain wall, and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Review special roof, metal wall panel and aluminum storefront/curtain wall details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect sheet metal flashing.
4. Review sequencing of sheet metal flashing installation with other related trades and air barrier coating installer to coordinate installation.
5. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

#### 1.10 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 20 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual", Sixth Edition requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

#### 2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, dead soft, fully annealed.
  1. Finish: 2D (dull, cold rolled).
  2. Surface: Smooth, flat.

- C. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 1. Surface: Smooth, flat
  - 2. Exposed Coil-Coated Finish:
    - a. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - b. Mica Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      - 1) Provide where required to match adjacent aluminum windows and storefront.
  - 3. Color: As selected by Architect from manufacturer's full range.
  - 4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

### 2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet (076200.A01): Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer and compatible with self-adhering air barrier transition membrane.
  - 1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
  - 2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
  - 3. Products: Subject to compliance with requirements, provide one of the following:
    - a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
    - b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
    - c. Henry Company; Blueskin PE200 HT.
- B. Flexible Membrane Closure (076200.A04): EPDM Sheet membrane; at roof expansion joints provide non-reinforced flexible, black EPDM synthetic rubber sheet flashing of 45 to 60 mils thickness. EPDM sheet shall have a tensile strength of not less than 1200 psi, a tear resistance of at least 20 lbs per inch and an ultimate elongation of at least 250 percent. Provide with seam and splice tape, adhesives and all other accessories required for proper and watertight installation.

### 2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  - 2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  - 3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.
- C. Solder:
  - 1. For Stainless Steel: ASTM B 32, Grade Sn60, with an acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Sealant Tape (07 62 00.A02): Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- E. Elastomeric Sealant (07 62 00.A03): ASTM C 920, elastomeric silicone polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

- G. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  - 2. Obtain field measurements for accurate fit before shop fabrication.
  - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in SMACNA's "Architectural Sheet Metal Manual", Sixth Edition.
- D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
  - 2. Use lapped expansion joints only where indicated on Drawings.
- E. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- F. Cleats (076200.A36): Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" and by FMG Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
  - 1. Cleats for coping, gravel stop edges and fascia caps shall be fabricated from not less than 0.040 inch thick (20 gauge) galvanized steel and shall be continuous 10 foot lengths with ¼ inch gap between sections.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Do not use graphite pencils to mark metal surfaces.

## 2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Parapet Scuppers (076200.A08): Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper. Fabricate from the following materials:
  - 1. Galvanized Steel: 0.028 inch thick.

## 2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop 076200.A11) and Fascia Cap (072000.A12): Fabricate in minimum 96-inch-long, but not exceeding 12-foot- long sections. Furnish with 6 inch wide cover plates. Shop fabricate interior and exterior corners.
  - 1. Joint Style: Butted with expansion space and 12-inch-wide, concealed backup plate.
  - 2. Fabricate edging similar to SMACNA (Sixth Edition), Figures 2-1B and 2-5C.
  - 3. Fabricate from the following materials: Coil-Coated Galvanized Steel: 0.028 inch thick.
- B. Copings and Caps (076200.A13): Fabricate in minimum 96-inch- long, but not exceeding 10-foot- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.
  - 1. Coping Profile: Similar to SMACNA figures designation 3-1A, 3-4A and 3-8D.

2. Cap Profile: Similar to SMACNA figure designation 4-5C, with 4inch high flange.
3. Joint Style: Butt, with 12-inch- wide, concealed backup plate.
4. Fabricate from the following materials:
  - a. Coil-Coated Galvanized Steel: 0.028 inch thick.

C. Roof-to- Roof Expansion-Joint Cover (076200.A14): Fabricate from the following materials:

1. Coil-Coated Galvanized Steel: 0.028 inch thick.
2. Fabricate roof-to-roof expansion joint similar to SMACNA (Sixth Edition), Figure 5-5A.
3. Where expansion joint occurs beneath metal wall panels, vertical legs of receiver shall be 4 inches tall and extend up behind rigid insulation.

D. Roof to Wall Transition Expansion-Joint Cover (076200.A15): Fabricate from the following materials:

1. Coil-Coated Galvanized Steel: 0.028 inch thick.
2. Fabricate roof-to-wall expansion joint similar to SMACNA (Sixth Edition), Figures 5-1 and 5-6B.
3. Where expansion joint occurs beneath metal wall panels, vertical legs of receiver shall be 4 inches tall and extend up behind weather resistive barrier/air barrier transition flashing.

E. Counterflashing (076200.A18): Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.
2. Fabricate similar to SMACNA (Sixth Edition), Figure 4-4D, spring action and two piece (with receiver).
3. Where indicated, fabricate counterflashing with integral reglet flange similar to SMACNA (Sixth Edition), Figure 4-4B.

F. Flashing Receivers (076200.A19): Fabricate from the following materials:

1. Stainless Steel: 0.019 inch thick.
2. Where receivers are indicated to project through exterior wythe, horizontal leg of receiver shall be 3 to 3-1/2 inches long.
3. Where receivers are cut-in to masonry joint or partially embedded in masonry joint, fabricate similar to SMACNA (Sixth Edition), Figure 4-4C.
4. Where receivers are mechanically fastened to vertical surface, vertical leg of receiver shall be at least 4 inches tall, similar to SMACNA, Figure 4-5C with receiver formed similar to Figure 4-4D.

G. Roof-Penetration Flashing (076200. A20): Fabricate from the following materials:

1. Coil-Coated Galvanized Steel: 0.028 inch thick.

## 2.8 WALL SHEET METAL FABRICATIONS

A. Opening Flashings in Frame Construction: Fabricate head, sill, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:

1. Coil-Coated Galvanized Steel: 0.028 inch thick.

## 2.9 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing (076200.A33): Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.

B. Pre-Finished Miscellaneous Metal Flashing (076200.A35): Fabricated from the following materials:

1. Coil-Coated Galvanized Steel: 0.028 inch thick.
2. At metal wall panels, fabricate to configurations indicated, with vertical leg not less than 4 inches tall to extend up and behind rigid insulation. Fabricate ends of flashing with end dams not less than 2 inches tall, and extending out to face of wall panel.
3. At pan flashing for windows and storefront, fabricate to configurations indicated, with horizontal leg to extend 2 inches beneath window, storefront or curtain wall sill as occurs.
4. Fabricate pre-finished miscellaneous metal flashing in lengths of 8 to 10 feet. Overlap adjoining pieces 4 inches and seal joint watertight.

C. Premanufactured Pitch Pockets: A pre-fabricated interlocking pitch pocket system filled with fast setting, solvent free, multi-use waterproof sealer. Prefabricated pockets connect with tongue and groove joints and are composed of high strength, flexible polyurethane elastomer. Pieces join together to create pockets of varying sizes.

1. Basis-of-Design product: "Lockin' Pocket Interlocking Pitch Pocket System" by Weather-Tite
2. Product Characteristics
  - a. Pocket and Sealer Color: Black

- b. Height: 4 inches tall above field of roof.
- c. Warranty: Not less than 24 months.
- 3. Prepare Substrates and install pitch pockets in accordance with manufacturer's written instructions to accommodate substrates involved.

## 2.10 ROOF DRAINS

- A. General: Contractor shall provide clamping ring, clamps, and strainer dome replacement for existing roof drains and overflow roof drains as indicated on drawings. Contractor shall coordinate drain selection with existing conditions and manufacturer's installation requirements for a warranted successful installation.
- B. Cast-Iron Roof Drains Components (Clamping Ring, Clamps, and Strainer Dome):
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Josam Company
    - b. Jay R. Smith Manufacturing Company
    - c. Tyler Pipe, Wade Division
    - d. Watts Drainage Products
    - e. Zurn Plumbing Products Group.
  - 2. Provide manufacturer's recommended replacements for components indicated. Contractor shall field verify existing roof drains prior to ordering roof drain components.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.
- B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.
- C. Flexible Membrane Closure EPDM Underlayment: Install EPDM underlayment wrinkle free and continuously sealed between sheets and all laps for watertight installation at roof expansion joints to form a bellows. Install an additional sheet over the top of coping, wall caps, and expansion joint bellows securely attached to wall substrate and adhered to over top of blocking/curb and turned down 1-1/2 inches.

### 3.3 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Space discontinuous cleats not more than 12 inches apart. Attach each cleat with at least two fasteners.
  4. At coping, provide continuous cleats. Bend tabs over fasteners.
  5. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  6. Install sealant tape where indicated.
  7. All lap joints in pre-finished miscellaneous metal flashing shall be sealed watertight.
  8. Torch cutting of sheet metal flashing and trim is not permitted.
  9. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
  2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
  2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not solder metallic-coated steel sheet.
  2. Do not use torches for soldering.
  3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
- H. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints a minimum of 4 inch in direction of water flow. Provide EPDM bellows and EPDM cap flashing beneath expansion joint cover as specified.

### 3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Parapet Scuppers (076200.A08): Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Anchor scupper closure trim flange to exterior wall and solder to scupper.
2. Loosely lock front edge of scupper with conductor head.
3. Solder exterior wall scupper flanges into back of conductor head.

- C. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches in direction of water flow.

### 3.5 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
1. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at 2 inches in from each end and then at not greater than 12-inch centers.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 2 inches in from each end and then at not greater than 12-inch centers.
  2. Anchor interior leg of coping with screw fasteners and washers at 16 inch centers.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Secure in a waterproof manner.
- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.
- G. Pourable Sealer Pocket Installation: Prepare substrates and install pockets in strict accordance with pocket manufacturer's written instructions to accommodate substrates involved.

### 3.6 ROOF DRAIN INSTALLATION

- A. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions.
1. Install roof-drain flashing collar or flange so that there will be no leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
  2. Position roof drains for easy access and maintenance.
- B. Coordinate drain installation with existing site conditions.
- C. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

### 3.7 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.
- B. Pre-Finished Miscellaneous Metal Flashing: Coordinate installation of flashing with adjoining construction and air barrier coating. Seal lap joints watertight.



### 3.8 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

### 3.9 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 076200**

## SECTION 079200 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Silicone joint sealants.

#### 1.2 PRECONSTRUCTION TESTING

- A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
  2. Conduct field tests for each application indicated below:
    - a. Each kind of sealant and joint substrate in exterior walls.
    - b. Sealant around perimeter of exterior windows/storefront.
  3. Notify Architect seven days in advance of dates and times when test joints will be erected.
  4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
    - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
      - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
  6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
1. Submittals must be cross referenced to related Articles and paragraphs in this section for each product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
  2. Joint-sealant manufacturer and product name.
  3. Joint-sealant formulation.
  4. Joint-sealant color.
- D. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- C. Field-Adhesion Test Reports: For each sealant application tested.
- D. Warranties: Sample of special warranties.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

## 1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
  - 2. When joint substrates are wet.
  - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## 1.7 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
  - 1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
  - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
  - 3. Mechanical damage caused by individuals, tools, or other outside agents.
  - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Non-Staining, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
- B. Single-Component, Nonsag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use T.
- C. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

## 2.3 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material 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 (079200.A04): ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape (079200.A05): 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. Provide self-adhesive tape where applicable.

## 2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD in length to accommodate metal panel depth.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
    - b. Masonry.
  - 3. Remove laitance and form-release agents from concrete.
  - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    - a. Metal.
    - b. Glass.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 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.
  - 4. As sealant work progresses, install tube weeps at 24 inches on center along base of metal wall panels and where indicated.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
  - 4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

### 3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE (079200.A01)

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
  - 1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Joints between plant-precast concrete units.
    - c. Joints in formed metal wall panels.
    - d. Joints within storefront assemblies.
    - e. Control and expansion joints.
    - f. Joints between different materials listed above.
    - g. Perimeter joints between materials listed above and frames of doors, windows and louvers.
    - h. Control and expansion joints in ceilings and other overhead surfaces.
  - 2. Silicone Joint Sealant: Single component, non-staining, nonsag, neutral curing, Class 50.
  - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

**END OF SECTION 079200**

