SECTION 07100

WATERPROOFING AND DAMPPROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes but is not limited to the materials and installation of:
   1. Under slab vapor barrier.
   2. Air barrier building wrap.
   3. Waterproofing membrane installed at elevator pit slab and walls.
   4. Vapor barrier for insulated nail deck.

1.02 RELATED SECTIONS

A. Division 2: Installation of dampproofing membrane over prepared subgrade.

B. Section 03300 - Cast-In-Place Concrete: Coordination of installation of dampproofing membrane under slabs-over-grade.

C. Section 07464 - Fiber-Cement Trim and Soffit: Application of siding material over dampproofed and weather barrier sealed surfaces.

D. Section 09250 - Gypsum Wallboard: Dampproofing applied over gypsum sheathing.

1.03 SUBMITTALS

A. Submit copies of complete technical data and application instructions shall be furnished to the Architect for approval in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 UNDER SLAB VAPOR BARRIER

A. Dampproofing material below the building concrete slab-on-grade shall be Barrier-Bac, Product Number VB-350 as manufactured by Interplast Group of Livingston, New Jersey, or equal as approved by the Architect.

B. Provide manufacturer's product warranty.

2.02 AIR BARRIER BUILDING WRAP

A. Weather Barrier Sheets: Nonwoven olefin sheet permeable to water vapor but not liquid water; ASTM E1677 Type I air retarder.
   1. Water Vapor Transmission: Minimum 10 perms when tested per ASTM E96, Procedure A.
   2. Flame Spread Rating: Maximum 25 per ASTM E84.
   3. Acceptable Products: DuPont "Tyvek CommercialWrap", or equal approved by the architect.
   4. As required by the manufacturer, provide all products and accessories required to qualify for the manufacturer's 10 year warranty.

B. Sealing Tape, Flashing Tape: Types recommended by weather barrier manufacturer for Project applications.
   1. Acceptable Products: DuPont "Tyvek Tape", "FlexWrap", and "StraightFlash", or approved equal.

C. Fasteners: Rust-resistant screws with 2-inch diameter plastic cap supplied by weather barrier manufacturer.
   1. Acceptable Product: DuPont "Tyvek Wrap Cap Screws", or approved equal.

D. All accessories, including but not limited to tapes and fasteners, shall be as required by the weather barrier manufacturer. Any accessories not allowed by the weather barrier manufacturer, or that would void their warranty, shall not be used.

E. Fasteners: DuPont Wrap Caps (or approved equal), 2" diameter plastic cap self-tapping screws.

F. Warranty: Provide manufacturer's standard 10 year warranty for weather barrier. Conduct all meetings and inspections required by the manufacturer for the issuance of their 10 year warranty certificate. Provide manufacturer's standard warranties for all accessories.

2.03 VAPOR BARRIER FOR INSULATED NAIL DECK

A. 6 mil polyethylene vapor barrier installed over metal deck below insulated nail deck panels. See Section 07220.

2.04 FLASHING AT FIBER CEMENT SIDING BUTT JOINT

A. See Section 07600 – Flashing and Sheet Metal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Slab-Over-Grade: Install specified vapor barrier membrane over thoroughly compacted fill. Lap vapor barrier over footings and seal to foundation walls as applicable. Seal all joints with manufacturer's tape designed for this purpose. Seal all penetrations in accordance with membrane manufacturer's printed instructions. Membrane shall be laid in widest practical widths, lapped at least 6 inches and sealed at all pipes, conduit, etc. Any damage to the membrane prior to pouring of concrete slab shall be repaired with a vapor barrier patch, 6" larger on all sides than the damaged area. Seal patch with manufacturer-supplied tape.

3.02 AIR BARRIER INSTALLATION

A. Install air barrier over exterior side of exterior wall sheathing. Follow manufacturer's recommendations for installation.
   1. Install air barrier after sheathing is installed and before windows and doors are installed. Install lower level barrier prior to upper layers to ensure proper shingling of layers.
   2. Overlap air barrier at corners of building by a minimum of 12 inches.
   3. Overlap air barrier vertical seams by a minimum of 6 inches.
   4. Ensure barrier is plum and level with foundation, and unroll extending air barrier over window and door openings.
   5. Attach air barrier using specified fasteners with washers spaced at 12" to 18" on vertical stud line with framing.
   6. Prepare window and door rough openings as follows:
      a. Prepare each window rough opening by cutting a modified "I" pattern in the air barrier.
      b. Horizontally cut air barrier along bottom of header.
      c. Vertically cut air barrier down the center of window openings from the top of the window opening down to 2/3 of the way to the bottom of the window openings.
      d. Diagonally cut air barrier from the bottom of the vertical cut to the left and right corners of opening.
      e. Fold side and bottom flaps into window opening and fasten every 6 inches. Trim off excess.
      f. Prepare each rough door opening by cutting a standard "I" pattern in the air barrier.
      g. Horizontally cut air barrier along bottom of door frame header and along top of sill.
      h. Vertically cut air barrier down the center of door openings from the top of the door opening (header) down to the bottom of the door opening (sill).
      i. Fold side flaps inside around door openings and fasten every 6 inches. Trim off excess.

7. Tape all horizontal and vertical seam of air barrier with DuPont Tyvek Tape (or approved equal).
8. Seal all tears and cuts in air barrier with DuPont Tyvek Tape (or approved equal).

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation the insulation materials. Work includes but is not limited to the following:
   1. Batt insulation in framed walls.
   2. Batt insulation in framed roof areas.
   3. Slab perimeter insulation.

1.02 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Coordination of the placement of the slab-on-grade concrete with the installation of the perimeter insulation.

B. Section 04200 - Reinforced Unit Masonry: Substrate for rigid insulation board.

C. Section 05400 - Cold Formed Metal Framing: Batt insulation installed between metal framing members.

D. Section 06100 - Rough Carpentry: Batt insulation installed between wood framing members.

E. Section 07100 - Waterproofing and Dampproofing

F. Section 09250 - Gypsum Wallboard: Coordinate installation of insulation with installation of gypsum wallboard systems and gypsum sheathing.

G. Section 09530 - Acoustical Treatment

1.03 QUALITY ASSURANCE

A. Comply with fire-resistance, flammability and insurance ratings indicated, and comply with regulations as interpreted by governing authorities.

1.04 SUBMITTALS

A. Submit copies of technical data describing each type of insulation to the Architect for review, in accordance with Section 01340.

1.05 PROTECTION OF MATERIALS

A. Store insulation on the job site above ground in weathertight shelter and in manufacturer's original unopened bundles. Damaged and/or wet insulation and insulation that has been wet shall be immediately removed from the job site. Insulation must remain dry at all times.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acceptable Manufacturers for Thermal Insulation:
   1. Manville Fiber Glass Division of Denver, Colorado.
   2. Owens-Corning Fiberglas Corp. of Toledo, Ohio.
   3. Certainteed of Dallas, Texas.
   4. The Dow Chemical Company of Midland, Michigan.

B. Batt Insulation:
   1. Metal Framed Walls
      a. 6" Thickness, R-19, unfaced, in widths suitable for friction fitting between metal framing members. Provide wire ties as required to hold insulation in place until the wall sheathing / gypsum wallboard is installed.
      b. 8" Thickness, R-25, unfaced, in widths suitable for friction fitting between metal framing members.
      c. 10" Thickness, R-30, unfaced, placed as shown in the drawings, on poultry wire in bottom chord of trusses. Install tightly fitted with no gaps.

C. Slab Perimeter Insulation: Provide 1", R 5.0, of Dow Styrofoam SM Board.

D. Poultry wire fabric of gauge required to support insulation; wire ties to fasten poultry wire to trusses and framing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wall and Ceiling Batt Insulation:
   1. Install with sides and ends tightly butted to form an effective thermal barrier. At metal framing, friction fit into place and wire tie as required to prevent displacement of the insulation when the gypsum systems are installed. Where nailing flange cannot be utilized, provide fire-resistant netting or hexagon wire mesh to retain insulation between framing members.
   2. Insulate behind cold side of all electrical outlet boxes, ductwork and piping at exterior walls. Butt all ends tightly together.
   3. Stuff insulation into all cracks around exterior doors and windows and closely-spaced framing members.
   4. At non-standard wide spaces, install insulation horizontally across framing space. Do not piece two vertical strips of insulation.
   5. Hold insulation back a minimum of 3" from items recessed in walls and ceilings, such as light fixtures and other heat generating appliances and electrical apparatus.
   6. At trusses, tie poultry wire tightly to truss and framing to prevent sagging.

B. Slab Perimeter Insulation: Install at slab perimeter as detailed. Care shall be exercised to avoid displacement during placement of concrete floor slab. Coordinate installation with the installation of the slab vapor barrier.

3.02 CLEANUP

A. Upon completion of the installation of insulation products, remove from the job site all excess debris, material and equipment.

END OF SECTION

SECTION 07220

ROOF INSULATION SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Nailable Insulated Roof Deck with wood substrate for roofing materials at pitched roofs to receive shingles.

B. Polyisocyanurate rigid board type roof insulation(s) for thermal protection as part of low sloped roofing assemblies to receive single ply membrane roofing.

1.02 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Rigid insulation installed over concrete roof structure.

B. Section 05310 - Steel Deck: Insulated nail deck installed over steel deck.

C. Section 07411 - Metal Roof and Wall Panels: Metal roof panels installed over insulated nail deck.

D. Section 07530 - Single Ply Membrane Roof System: Membrane roof installed over rigid insulation.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with requirements of SBC Sections on Foam insulation.

B. For installation conference requirements, see Section 01200 - Project Meetings.

C. Installer shall demonstrate not less than five years' experience installing the brand and type materials and systems specified herein.

D. Conduct pre-installation conferences, led by manufacturer's installation representative, as required under Section 01200 - Project Meetings.

1.04 SUBMITTALS

A. Submit copies of technical data describing each type of insulation to the Architect for review, in accordance with Section 01340 - Submittals.

B. Product Data: Submit manufacturer's product technical information.

C. Samples
   1. Submit 6 by 6 inch samples of each board type required.
   2. Submit samples of each fastener type required.

D. Shop Drawings
   1. Roof plan showing layout of boards, fastening patterns, ventilation, and roof edge details.
   2. Provide manufacturer's engineered fastener diagram and calculations.

E. Certificates: Submit certificate from approved shingle manufacturer that shingles are warranted over insulation board.

F. Thermal Warranty: Submit sample warranty indicating conditions and limitations.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with general requirements specified in Section 01600.

B. Deliver insulation in packages labeled with material name, thermal value, and product code.

C. When stored outdoors, stack insulation on pallets above ground or roof deck and cover with tarpaulin or other suitable waterproof coverings.

1.06 PROJECT CONDITIONS

A. Comply with insurance underwriter's requirements applicable for products of this Section.

B. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet.

PART 2 - PRODUCTS

2.01 NAILABLE INSULATED ROOF DECKING PANELS

A. Atlas Roofing Corporation: ACFoam CrossVent, or approved equal.

B. Provide roof board insulation from a single manufacturer.

C. Cross Vent: Closed-cell HCFC free "Green" polyisocyanurate foam core board manufactured using HCFC blowing agent and bonded to 5/8 inch thick APA rated CDX Plywood with 1 inch ventilation spacing on top side and a fiber-reinforced felt facer on the bottom; FM Standard 4450/4470 approval 1-60 for use with Class (A) shingles; compressive strength – 20 psi.

D. Thickness
   1. Provide two layers of foam, of approximately equal thicknesses. See Part 3 of this section for installation instructions.
   2. First panel of foam board, second panel of foam with integral nail deck and vented channel.
   3. Total panel thickness shall provide R-value listed herein, AND shall be not less than 7" total thickness.

E. R-Value: Minimum 30.

F. UL Standard 263 Fire Resistance Classification (ASTM E119).

G. Accessory Materials
   1. Fasteners: Factory Mutual approved.
   2 Base Ply: As recommended by membrane manufacturer.
   3. Fasteners: Cross Vent: Atlas Nail Base Fasteners.
   4. 6-mil. Polyethylene vapor barrier installed below foam board insulation panels.

2.02 POLYISOCYANURATE RIGID INSULATION BOARD

A. GAF Roofing Products: Energy Guard Polyisocyanurate tapered roof insulation, or approved equal.
   1. R-Value: Minimum 20.5
   2. Thickness: Minimum to provide R-value listed herein, AND not less than 3.5" thickness.
   3. Provide tapered insulation to provide roof slope as shown in the drawings.

B. Provide roof board insulation, cants, and protection board from a single manufacturer.

C. EnergyGuard (or approved equal): CFC & HCFC free Polyisocyanurate Rigid Insulation Board. 4' x 8' sheets, in thickness as shown in drawings, with compressive strength of 20 psi or greater.

D. Accessories
   1. Cants: GAF EnergyGuard Perlite Cants (or approved equal).
   2. Crickets: GAF EnergyGuard Polyisocyanurate Tapered Rigid Insulation Board (or approved equal).
   3. Protection Board: GAF Perlite Recover Board (or approved equal); 1/2" thick; standard 4' x 8' sheets.
   4. Fasteners and Fastener Plates: As required to meet building code wind speed and uplift resistance.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and free of foreign material that would damage insulation or impede installation.

B. Verify that nailers, equipment supports, vents and other roof accessories are secured properly and installed in conformance with Contract Drawings and submittals.

C. Verify that deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.
   1. Start of installation indicates installer accepts conditions of existing deck surfaces.

3.02 INSULATED NAIL DECK INSTALLATION

A. Install polyethylene vapor barrier over metal roof deck, per the nail deck manufacturer's instructions.

B. Install specified insulation using approved mechanical fasteners in accordance with manufacturer's latest written instructions and as required by governing codes and Owner's insurance carrier.
   1. Install the first layer of foam insulation board, fastened to the deck as required. Install in staggered pattern such that joints do not align.
   2. Install the second layer of foam board, with integral nail deck, in staggered pattern over the first layer of board. Joints shall not align with boards below. Fasten per the manufacturer's engineered fastening diagram.
   3. Fill valley and hip joints with expanding foam insulation or other method approved by the nail deck manufacturer.

3.03 RIGID INSULATION INSTALLATION

A. Install insulation board and protection board with end joints staggered to avoid having insulation joints coinciding with joints in deck. In multi-layer installations, stagger joints in top and bottom layers. Install with slope as shown in the drawings.

B. Install Cants, Crickets and Protection boards using approved mechanical fasteners in accordance with manufacturer's latest written instructions and as required by governing codes and Owner's insurance carrier.

3.04 CLEANING/PROTECTION

A. Remove trash and construction debris from insulation surface prior to application of roofing membrane.

B. Do not leave installed insulation exposed to the weather. Cover and waterproof with completed roof system immediately after installation.
   1. Temporarily seal exposed insulation edges at the end of each day.
   2 Remove and replace installed insulation that has become wet or damaged with new insulation.

C. Protect installed insulation and roof cover from traffic with of protective covering materials during and after installation.

D. Upon completion of the installation of insulation products, remove equipment and excess debris and material from the jobsite.

END OF SECTION

SECTION 07270

FIRESTOPPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation of the firestopping.

B. Code Requirements: The intent and extent of firestopping work is described in governing Local and State Building Codes and Amendments thereto. Comply with all requirements of therein, except where more restrictive are described herein.

C. Firestopping is required to prevent the passage of flame and products of combustion through concealed spaces and openings including, but not limited to, the following:
   1. Openings above fire-rated walls or partitions indicated to extend to underside of structure above ceilings.
   2. Openings in concealed furred spaces behind finished wall surfaces.
   3. Openings around pipes, conduits, ducts, and other construction passing through wall, floor and roof construction and fire-rated assemblies.
   4. Openings in locations that would permit the free travel of flame and products of combustion through fire-rated assemblies.
   5. Openings related to mechanical and electrical panels and systems, and all other construction that penetrates or in any other way interrupts fire-rated wall, floor and roof assemblies.

1.02 QUALITY ASSURANCE

A. Fire-Resistance Ratings: Provide products which have been tested in accordance with ASTM E 119 (or UL 263, ANSI A2.1 or NFPA 251) for fire resistance, and rated by UL or other industry-recognized agency for required resistances.

B. Surface-Burning Ratings: Provide products which have been tested and listed by UL for required surface burning characteristics (flame spread, fuel contributed, smoke developed) in accordance with ASTM E 84.
   1. General Rating: Except as otherwise indicated, provide compete installations with maximum flame spread of 25.

C. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions for each type of material and application method required. Submit data in accordance with Section 01340.

B. Certified Test: For each material, submit certified test reports on performances including (as applicable) heat resisting and burning characteristics, densities, compressive strengths, and thermal insulating values.

1.04 SEQUENCING AND COORDINATION

A. Integrate the scheduling/coordination of work of this section with other units of work so that this work will not be damaged, will be installed prior to installation of enclosing or concealing work, and will be installed as soon as practicable.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ceramic-Fiber and Mastic Coating: Ceramic fibers in bulk form formulated for use with mastic coating, and ceramic fiber manufacturer's mastic coating. Subject to compliance with requirements, manufacturers offering specified items which may be incorporated in the work include the following:
   1. FireMaster Bulk and FireMaster Mastic, by Thermal Ceramics; Augusta, Georgia.
   2. Nelson FSB Bulk, by Nelson Firestop Products; Tulsa, Oklahoma.

B. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side. Subject to compliance with requirements, manufacturers offering specified items which may be incorporated in the work include the following:
   1. Dow Corning Fire Stop Intumescent Wrap Strip 2002, by Dow Corning Corporation; Midland, Michigan.
   2. CP643/642 Firestop Collar, by Hilti Construction Chemicals, Inc.; Tulsa, Oklahoma.
   3. Fire Barrier FS-195 Wrap/Strip, by 3M Fire Protection Products; St. Paul, Minnesota.
   4. Nelson FRS Wrapstrip, by Nelson Firestop Products; Tulsa, Oklahoma.

C. Silicone Foams: Two-component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, nonshrinking foam. Subject to compliance with requirements, manufacturers offering specified items which may be incorporated in the work include the following:
   1. Dow Corning Fire Stop Foam 2001, by Dow Corning Corp.; Midland, Michigan.
   2. Pensil 200 Foam, by General Electric Co.; Waterford, New York.

D. Silicone Sealants - Subject to compliance with requirements, manufacturers offering specified items which may be incorporated in the work include the following:
   1. Dow Corning Firestop Sealant 2000, by Dow Corning Corp.; Midland, Michigan.
   2. Dow Corning Firestop Sealant SL 2003, by Dow Corning Corp.; Midland, Michigan.
   3. Pensil 100 Firestop Sealant, by General Electric Co.; Waterford, New York.
   4. FS-ONE Intumescent Firestop Sealant, by Hilti Construction Chemicals, Inc.; Tulsa, Oklahoma.
   5. Metacaulk 835, by the RectorSeal Corporation; Houston, Texas.
   6. Fyre-Sil, by Tremco Inc.; Beachwood, Ohio.
   7. Fyre-Sil S/L, by Tremco Inc.; Beachwood, Ohio.
   8. Nelson CLK Non-Sag Sealant, by Nelson Firestop Products; Tulsa, Oklahoma.
   9. Nelson CLK Self-Leveling Sealant, by Nelson Firestop Products; Tulsa, Oklahoma.

E. Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant of grade indicated below:
   1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping / gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
   2. Grade for Horizontal Surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.
   3. Grade for Vertical Surfaces: Nonsag grade for openings in vertical and other surfaces.

F. Firestopping Putty: Where an outlet box is installed in a rated assembly (1 and 2 hour) with an outlet box on the opposite side within 24 inches, both boxes shall be protected with firestopping putty per the manufacturer's instructions. Only the following firestopping putty pad materials are acceptable:
   1. MPP-4S by 3M; St. Paul, Minnesota.
   2. FSP by Nelson Firestop Products; Tulsa, Oklahoma.
   3. SpecSeal by Specified Technologies; Somerville, New Jersey.
   4. CP617 Firestop Pad, by Hilti Construction Chemicals, Inc.; Tulsa, Oklahoma.

G. Mineral Fiber Safing Insulation: Provide manufacturer's standard felted semi-rigid board of nonasbestos mineral fibers plus binders, rated noncombustible (ASTM E 136), listed and labeled by UL, and listed in UL Designs similar to applications indicated.
   1. Acceptable Products/Manufactures: Thermafiber, LLC (United States Gypsum) "Thermafiber Safing Insulation".
   2. Thermal: K-value at 75 F of 0.25.
   3. Thickness: 4" unless indicated otherwise, and not less than the thickness required to obtain required fire-rating.
   4. Fire Safing Density: Nominal 4 lb./cu. ft.

H. Mineral Wool: Loose mineral wool, rated noncombustible (ASTM E 136), free of asbestos fiber and glass fiber, suitable for stuffing into metal deck flute openings above steel structural members, to an in-place density of 6 to 12 lbs. per cu. ft.

I. Accessories: For each application provide manufacturer's standard board-anchorage system complying with related UL Design, and as indicated.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

A. Examine substrates and conditions under which work is to be performed, and correct all unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Architect.

B. Review required firestopping with governing authority (building official). Before proceeding with installation, obtain approval of thicknesses and installation methods, including extension of typical details for coverage of non-typical locations.

3.02 INSTALLATION

A. General
   1. Comply with manufacturer's instructions for particular conditions of installation in each case. Consult with manufacturer's technical representative for conditions not covered by printed instructions.
   2. Provide firestopping material and number of layers as required to provide indicated ratings (hours of fire endurance protection). Where not otherwise indicated, comply with UL Designs as required by governing regulations. In multiple-layer work, offset joints by 6".
   3. Anchor firestopping to substrate with manufacturer's recommended anchorage system and in compliance with UL Designs. Space anchors and anchor supports (if any) as indicated by applicable.
      a. Selection of Anchorage system in Contractor's option where not otherwise indicated; comply with applicable UL Designs.
   4. Install firestopping without gaps and voids. Do not use damaged materials. Remove and replace misfitted work.
   5. Install fire resistance sealant to seal around penetrations through fire rated assemblies.

3.03 COORDINATION AND PROTECTION

A. Coordinate installation of firestopping with other work to minimize cutting into or removal of installed firestopping by other trades. As trades successively compete installations which have been damaged or removed. Maintain complete coverage of full thickness in locations to be protected.

B. Protection: Installer of firestopping shall advise Contractor of protection requirements for work, which will ensure that his work will be without damage or deterioration at time of substantial completion of project. Provide protection from harmful exposures. Repair or replace work which has been damaged.

END OF SECTION

SECTION 07411

METAL ROOF AND WALL PANELS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Materials and installation of metal roof panels and wall panels.

B. Mechanically-seamed, standing seam metal roof panels, with related metal trim and accessories.

C. Concealed fastener, vertically oriented metal wall panels.

1.02 RELATED REQUIREMENTS

A. Section 05440 - Cold-Formed Metal Trusses: For cold-formed metal trusses supporting roof decking and metal panels.

B. Section 07100 - Waterproofing and Dampproofing: For roofing underlayment over roof deck, and below metal panels.

C. Section 07600 - Flashing and Sheet Metal: For formed sheet metal flashings, and roof drainage items in addition to items specified in this Section.

D. Section 07920 - Sealants and Caulking: Field-applied joint sealants not specified in this section.

1.03 REFERENCES

A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:
   1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
   2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.

B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM): www.astm.org:
   1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
   3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
   4. ASTM A 980 - Standard Specification for Steel, Sheet, Carbon, Ultra High Strength Cold Rolled.
   5. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
   6. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
   7. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
   8. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
   9. ASTM E 1514 - Standard Specification for Structural Standing Seam Steel Roof Panel Systems.
   10. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
   11. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.

12. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
13. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. FM Global (FM): www.fmglobal.com:
   1. ANSI/FM 4471 - Approval Standard for Class 1 Panel Roofs.

E. International Accreditation Service (IAS):
   1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

F. Underwriters Laboratories, Inc. (UL): www.ul.com:
   1. UL 580 - Tests for Uplift Resistance of Roof Assemblies

1.04 REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.
   1. Coordinate building framing in relation to metal panel system.
   2. Coordinate openings and penetrations of metal panel system.
   3. Coordinate work from other Divisions related to the installation of the roof panels.

1.05 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.
   1. Substitutions submitted in accordance with Section 01600 will be considered by the Architect.
   2. Approved manufacturers must meet separate requirements of Submittals Article.

C. Installer Qualifications: Experienced Installer certified by metal panel manufacturer with minimum of five years experience with successfully completed projects of a similar nature and scope.
   1. Installer's Field Supervisor: Experienced mechanic certified by metal panel manufacturer supervising work on site whenever work is underway.

1.06 ACTION SUBMITTALS

A. Submit copies of complete technical data and physical samples to the Architect in accordance with Section 01340.

B. Product Data: Manufacturer's data sheets for specified products.

C. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, roof accessories, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.
   1. Indicate points of supporting structure that must coordinate with metal panel system installation.
   2. Include data indicating compliance with performance requirements.
   3. Include structural data indicating compliance with requirements of authorities having jurisdiction.

D. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

E. Samples for Verification: Provide 12-inch- (305 mm-) long section of each metal panel profile. Provide color chip verifying color selection.

F. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.

G. Qualification Information: For Installer firm and Installer's field supervisor.

H. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.

I. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.07 CLOSEOUT DOCUMENTS

A. Provide closeout documents in accordance with Sections 01700 and 01720.

B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.
   1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
   2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.09 COORDINATION

A. Coordinate with installation of the gutters and aluminum cross.

1.10 WARRANTY

A. Manufacturer's 30 Year Warranty for panels finished with 70% Fluoropolymer coating. On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Basis of Design Manufacturer: MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.; Houston TX. Tel: (877)713-6224; Email: info@mbci.com; Web: www.mbci.com.

2.02 PERFORMANCE REQUIREMENTS

A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

B. Radiative Property Performance
   1. Solar Reflectance Index: Minimum 78 for roof slopes of 2:12 or less and 29 for roof slopes greater than 2:12 under medium wind conditions, per ASTM E 1980.

C. System Performance: Comply with ASTM E 1514 and requirements of this Section.

D. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:
   1. Structural criteria shown in the structural drawings or specifications shall be considered the minimum standards. Where the standards or criteria here differ from those shown in the structural drawings and specifications, the most stringent shall be required.
   2. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
      a. Wind Uplift Testing: Certify capacity of metal panels by actual testing of proposed assembly per ASTM E 1592.
   3. Snow Loads: See the structural drawings and specifications.
   4. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of 1/240 of the span with no evidence of failure.
   5. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."

E. Wind Uplift Resistance: Comply with UL 580 for wind-uplift class UL-90.

F. FM Approvals Listing: Comply with FM Approvals 4471 as part of a panel roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 construction. Identify materials with FM Approvals markings.
   1. Fire/Windstorm Classification: Class 1A-90
   2. Hail Resistance Rating: SH.

G. Air Infiltration, ASTM E 1680: Maximum 0.09 cfm/sq. ft. (0.457 L/s per sq. m) at static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).

H. Water Penetration Static Pressure, ASTM E 1646: No uncontrolled water penetration at a static pressure of 12 lbf/sq. ft. (575 Pa).

I. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

2.03 METAL ROOF PANELS

A. Mechanically-seamed, Concealed Fastener, Metal Roof Panels: Structural metal roof panel consisting of formed metal sheet with vertical ribs at panel edges, installed by lapping and mechanically interlocking edges of adjacent panels, and attaching panels to supports using concealed clips and fasteners in a weathertight installation.
   1. Basis of Design: MBCI, SuperLok, www.mbci.com/superlok.html.
      a. Nominal Coated Thickness: 24 gage minimum, or as required to prevent oil-canning.
      b. Panel Surface: Smooth with no striations in pan.
      c. Exterior Finish: Signature 300, with 70% Fluoropolymer two-coat system.
      d. Color: As selected by Architect from manufacturer's standard colors.
   2. Panel Width: 16 inches (406 mm).
   3. Panel Seam Height: 2 inch (50.8 mm).
   4. Joint Type: Mechanically seamed.

2.04 METAL ROOF PANEL ACCESSORIES

A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in flat, smooth finish. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

C. Panel Clips: Provide panel clip of type specified, at spacing indicated on approved shop drawings.
   1. Two-piece Floating: ASTM C 645, with ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
      a. Provide clips as required for attachment to insulated nail deck.

D. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by roof panel manufacturer. Exposed fasteners are not allowed.

E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
   1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
   2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.

F. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

G. Roof Accessories: Approved by metal roof panel manufacturer.

2.05 METAL WALL PANELS

A. Concealed Fastener, Metal wALL Panels: Structural metal panel consisting of formed metal sheet with integral fastening system at panel edges, installed by lapping and mechanically interlocking edges of adjacent panels, and attaching panels to supports using concealed clips and fasteners in a weathertight installation.
   1. Basis of Design: MBCI, MasterLine 16, www.mbci.com/superlok.html.
      a. Nominal Coated Thickness: 22 gage minimum, or as required to prevent oil-canning.
      b. Panel Surface: Smooth.
      c. Exterior Finish: Signature 300, with 70% Fluoropolymer two-coat system.
      d. Color: As selected by Architect from manufacturer's standard colors.
   2. Panel Width: 16 inches (406 mm).
   3. Panel Orientation: Vertical
   4. Joint Type: Concealed

2.06 METAL WALL PANEL ACCESSORIES

A. General: Provide complete metal panel assembly incorporating trim, closures, and miscellaneous materials, in flat, smooth finish. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet. Provide standard shapes and shapes shown in the drawings.

C. Panel Clips: Provide panel clip of type specified, at spacing indicated on approved shop drawings.
   1. Provide clips as required for attachment to metal furring channels or other backup shown in the drawings.

D. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by panel manufacturer. Exposed fasteners are not allowed.

E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
   1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
   2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.

F. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

G. Other Accessories: Approved by metal roof panel manufacturer.

2.07 FABRICATION

A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.

B. Fabricate metal panel joints configured to accept factory-applied sealant providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.

C. Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.08 FINISHES

A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

B. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621.
   1. Basis of Design: MBCI, Signature 300.

2.09 ROOF UNDERLAYMENT

A. Metal Panel Underlayment, over entire roof deck, below panels: Moisture Guard Plus, by Tamko Building Products of Joplin, MO.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect wood decking prior to installation of underlayment. Correct all defects that would produce an uneven substrate for installation of the metal panels or compromise the underlayment.

B. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.
   1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
   2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:
      a. 1/4 inch (6 mm) over any single roof plane.

C. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal roof panel system installation.

3.02 PREPARATION

A. Miscellaneous Supports: Install miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.

B. Flashings: Install flashings to cover exposed underlayment per Section 07600 " Flashing and Sheet Metal".

3.03 METAL PANEL INSTALLATION

A. Metal Panel Underlayment: Install specified self-adhering underlayment per the manufacturer's instructions. Install over entire roof deck, shingle fashion beginning at the eave and working to the ridge. Overlap per the manufacturer's requirements.

B. Mechanically-Seamed, Standing Seam Metal Roof Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal roof panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.

C. Attach panels to supports using clips, screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.
   1. Fasten metal panels to supports with concealed clips at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
   2. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
   3. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
   4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.04 ACCESSORY INSTALLATION

A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Provide for thermal expansion. Coordinate installation with flashings and other components.
   1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
   2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
   3. Provide concealed fasteners except where noted on approved shop drawings.
   4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.

B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.
   1. Prepare joints and apply sealants per requirements of Section 07600 – Flashing and Sheet Metal, or as otherwise specified in this section, or required by the manufacturer to achieve the required watertight roof system described in this section.

3.05 CLEANING AND PROTECTION

A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 07464

FIBER-CEMENT SIDING, TRIM AND SOFFITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation of fiber cement siding, trim and soffit.

1.02 RELATED SECTIONS

A. Section 05400 - Cold Formed Metal Framing: Metal framing required for the installation and support of the fiber cement products.

B. Section 06100 - Rough Carpentry: Wood framing and blocking required for the installation and support of the fiber cement products.

C. Section 07600 - Flashing and Sheet Metal: Applicable portions of Section 07600 apply to this Section as if repeated herein. Flashings installed in conjunction with the fiber cement elements.

D. Section 07920 - Sealants and Caulking: Sealant installed in conjunction with the fiber cement elements for weathertight installations.

E. Section 09900 - Painting: Surface preparation and finish painting of siding, soffit, and trim materials.

F. Section 10210 - Building Louver: Building louvers installed in conjunction with the fiber-cement elements.

1.03 QUALITY ASSURANCE

A. Preliminary Installation Conference: As soon as possible after award of fiber-cement work, meet with the fiber-cement board installer, installer of substrate construction (sheathing board) and other work adjoining siding system, including penetrating work and windows; the Architect; the Owner; and representatives of other entities directly concerned with performance of siding system.
   1. Review requirements of the Contract Documents, submittals, status of coordinating work and availability of materials and installation facilities; establish preliminary installation schedule. Review requirements for inspections, testing, certifications, forecasted weather conditions, governing regulations and proposed installation procedures.
   2. Record discussion, including agreement or disagreement on matters of significance; furnish copy of recorded discussions to each participant.
   3. Discuss siding system protection requirements for construction period extending beyond siding system installation.
   4. If meeting ends with substantial disagreements, determine how disagreements will be resolved and set date for reconvened meeting.

B. Pre-Installation Conference: Approximately 2 weeks before scheduled commencement of siding system installation and associated work, meet at project site with installer; installer of each component of associated work; installers of sheathing material; installers of window units and other work in and around the siding which must precede or follow the siding work; the Architect; the Owner; siding system manufacturer's representative; and other representatives directly concerned with performance of the work.
   1. Record in writing discussions, decisions, and agreements (or disagreements) reached at conference; furnish copy of report to each entity attending.

2. Review foreseeable methods and procedures related to the siding work.
3. Tour representative areas of siding substrates; inspect and discuss condition of substrate and other preparatory work performed by other trades.
4. Review siding system requirements (drawings, specifications, and other Contract Documents). Ensure installation method and techniques are in full compliance with manufacturer's requirements and that all warranties will apply.
5. Review required submittals, both completed and yet to be completed.
6. Review and finalize construction schedule related to the siding work; verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
7. Review weather and forecasted weather conditions, as well as procedures for coping with favorable conditions.

1.04 SUBMITTALS

A. Submit manufacturer's product data and complete installation details and requirements to the Architect for review. Show relationships to actual materials and substrates. Indicate fasteners, fastener types and spacings for each type installation.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ship, receive and store materials in a flat, dry condition. Protect materials for the elements and the intrusion of foreign materials.

1.06 WARRANTY

A. Installer's Warranty: Provide 2-year warranty protecting against faulty installation, coverings materials and installation.

B. Manufacturer's Warranty: Provide manufacturer's standard 50-year warranty, guaranteeing that the fiber cement products not to crack, rot, or delaminate.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturer: James Hardie Building Products, Inc. of Mission Viejo, California, or equal as approved by the Architect.

B. Siding
   1. Lap Siding: Hardiplank Lap Siding, smooth finish with PrimePlus factory primer, 5/16" thickness by 6-1/4" wide, installed with a 5" exposure.

C. Soffit: Hardisoffit, smooth finish with PrimePlus factory primer. Provide width(s) to suit project conditions.

D. Trim: Harditrim, smooth finish with PrimePlus factory primer, in sizes noted on drawings.

E. Joint Flashing behind butt joints in fiber cement siding:
   1. 6" tall, prefinished aluminum flashing. Color selected by the Architect.
   2. Premanufactured flashing with integral leg for hanging on planks. Fully coated to prevent reaction with fiber cement siding.
   3. Products/Manufacturers:
      a. XtremeTrim Plank Flash by Tamlyn of Stafford, Texas
      b. Junction Flashing by Simplicity Tool Corp, of Portland Oregon

2.02 ACCESSORIES

A. Fasteners
   1. Fasteners for all fiber cement installation conditions shall be self-tapping, hardened 400 series Stainless Steel. Fastener type(s) shall be as recommended by the fiber cement products manufacturer.
      a. Self-tapping bugle head screws with nibs for clearing countersink for siding and soffit.
      b. Self-tapping trim head screws for trim. Pre-drill all holes in trim.

B. Building Wrap: Refer to Section 07100.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Verify that substrate is ready to receive the fiber cement items. Verify that all support framing is in place and is dimensionally correct. Install sheathing in accordance with Section 09250. Apply dampproofing material and building wrap in accordance with Section 07100.

B. Coordinate siding, soffit, and trim installations with adjoining work on which this work is in any way dependent for its proper installation.

C. Follow the manufacturer's printed instructions furnished with each carton of siding material. If instructions are not furnished with the product, obtain them from the manufacturer before proceeding with installation.

D. Lap Siding
   1. Install a 1/4" thick treated wood starter strip at the bottom course of the wall. Leave occasional gaps at ends of starter strips for drainage.
   2. Install siding with 1-1/4" lap, and exposure hereinbefore specified.
   3. Vertical joints shall always be placed over framing or solid wood blocking.
      a. Install manufacturer-provided metal joiner where such blocking and/or framing cannot be installed where vertical joints occur.
      b. All joints shall be true and plumb.
      c. Maintain moderate contact at plank butt joints. Do not apply caulk or sealant to butt joints.
      d. Maintain 1/8" width joint between siding planks. Seal joint with approved sealant.
      e. Where planks are cut to length, prime per manufacturer's instructions.
   4. Install Plank Flashing behind joints, per the manufacturer's instructions.
   5. Stagger joints in succeeding courses a minimum of 48".
   6. Blind fastening only shall be allowed, per the manufacturer's instructions. Face-fastening and pin-backs shall not be allowed.
   7. Comply with fiber-cement product manufacturer's recommendations and printed instructions for installation and flashing of all items.
   8. Cut panels back from all openings and stops to allow for expansion and contraction. Distance of cut shall be as recommended by the siding manufacturer.
   9. All fasteners shall be driven snug with the surface of the siding plank.

E. Fiber Cement Trim
   1. Install trim in locations shown in the drawings.
   2. Trim corners shall be pre-built prior to installation on the framing.
   3. All horizontal joints in running trim and corner boards shall be 45 degree weather cut. Maintain 12" minimum separation between weather cuts at corners. Where boards are cut, prime as required by the manufacturer.

4. Trim at windows and doors shall be installed as shown in the drawings, in the fashion recommended by the manufacturer.
5. Pre-drill holes for anchoring with trim-head screws.
6. Fasteners for pre-built corners shall be 1/2" from edges of board, and 16" maximum apart.
7. Fasteners for attaching trim to framing shall be 3/4" from the edges, and 2" from the ends, and 16" maximum apart.
8. Horizontal boards at base of wall, above openings, etc., where siding is installed above, shall have flashing over the trim as shown in the drawings and manufacturer's instructions.
9. Trim at the base of wall shall have flashing below as shown in the drawings and manufacturer's instructions.
10. All fasteners in trim shall be driven shy of the face. Holes shall be sanded and filled with a wood putty compatible with fiber cement siding, then re-sanded prior to painting.

END OF SECTION

SECTION 07530

SINGLE PLY MEMBRANE ROOF SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. All equipment, labor, materials required for the installation of the roof insulation and fully-adhered membrane roof system. System shall include but not be limited to:
   1. Substrate preparation.
   2. Insulation.
   3. Roof membrane.
   4. Membrane flashings.
   5. Accessories required for a complete and weathertight installation.
   6. Lava boxes.

1.02 RELATED SECTIONS

A. Concrete: Concrete decks as substrate for roof system.

B. Section 06100 - Rough Carpentry: Treated wood blocking and nailers required for the complete roof system installation. Comply with roof membrane manufacturer's requirements for type of wood treatment compound. Roof system installed over decking and insulation.

C. Section 07600 - Flashing and Sheet Metal: Coordination of installation of related metal flashings.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data, installation instructions, and recommendations for each type of roofing product required. Include data substantiating that materials comply with requirements.

B. Shop Drawings: Submit complete shop drawings showing roof configuration and sheet layout, installation details and special conditions. Submit layout drawings showing taper system, installation diagrams and installation instructions and details.

C. Samples
   1. Roof Membrane: Submit 12-inch-square samples of finished roofing sheets, including "T-shaped" side/end lap seams, as applicable.
   2. Insulation: Submit 12-inch-square samples.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: This roofing system must be installed by an authorized applicator.
   1. Installer certification: Obtain written certification from manufacturer of primary materials certifying that installer is approved by manufacturer for installation of specified roof system. Provide copy of certification to the Architect prior to award of roofing work.

B. Installer Field Supervision: Installer must maintain full-time supervisor/foreman on project site during times in which roofing work is in progress. Supervisor must have a minimum of 5 years' experience in roofing work similar in nature and scope to the specified roofing.

C. Substrate Observation: Once the roof deck has been installed and the deck is ready to receive the roof insulation (the roof deck exposed), the Architect must be notified in order for him to visually observe the condition of the substrate prior to installation of any roof system components. Items/materials installed without such Architect's observation must be removed.

D. U.L. Listing: Provide roof system and component materials which have been tested for application and slopes indicated and which are listed by Underwriters Laboratories Inc. (UL) for Class A external fire exposure.
   1. Provide roof covering materials bearing UL Classification marking on bundle, package, or container indicating that materials have been produced under UL's Classification and Follow-up Service.

E. Wind Loading (Uplift): Provide roof system conforming with Factory Mutual Engineering Corporation Roof Assembly Classification, I-90 Construction.

F. Upon completion of the installation, an inspection shall be conducted by a technical representative of the roofing manufacturer to ascertain that the roofing system has been installed according to the manufacturer's most current published specifications and details and for warranty issuance.

1.05 PROJECT CONDITIONS

A. Weather Conditions Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

B. Exposed roof decks shall be protected from rain, ice, frost, contaminants, etc., to allow the roof insulation and roof membrane to be installed over a solid, dry, uncontaminated substrate.

1.06 PRODUCT HANDLING

A. Deliver materials to project site in original, tightly sealed containers or unopened packages, with manufacturer's labels intact.

B. Store materials in weather-protected environment, clear of ground and moisture.
   1. Protect foam plastic insulation from direct sunlight exposure.

1.07 GUARANTEE

A. The General Contractor, in conjunction with the authorized Roofing Contractor and the manufacturer of materials used, shall provide written warranty, agreeing to replace/repair defective materials and workmanship as required to maintain completed roofing system in watertight condition.

B. Warranty shall cover, at no cost to the Owner, all labor and materials required to repair or replace roofing, flashing, sheet metal, copings, and metal work against leaks or faulty workmanship. All costs for any of the above shall be absorbed by the General Contractor primarily, and his Roofing Contractor and materials manufacturer secondarily.

C. Warranty period shall be 15 years after date of Substantial Completion for labor and material with an additional five-year warranty (total of 20 years) on membrane material.

D. System shall be warranted for all requirements specified, including for wind uplift as required under factory mutual classifications specified.

1.08 INSTALLER'S WARRANTY SIGNS

A. Furnish and install a roof warranty sign, 10" x 12" (minimum) size, made of .040" aluminum painted gloss white with black lettering.

B. Sign Shall Read: DO NOT MAKE REPAIRS, PENETRATIONS OR ALTERATIONS TO THIS ROOF without the written approval from the Owner or authorized representative of the owner. The roof is maintained until (insert month and fifteen years after Date of Substantial Completion) by (insert Contractor's name, address and telephone number).

C. Permanently post sign where directed by the Owner's representative, prior to submission of, and as a condition for, final invoice and subsequent payment.

PART 2 - PRODUCTS

2.01 SINGLE PLY ROOFING MEMBRANE

A. Compatibility: Provide products which are recommended by manufacturers to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.

B. Fully Adhered System, EPDM Membrane
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work shall be one of the following:
      a. Firestone Building Products: RubberGard EPDM system, Fully adhered.
      b. Johns Manville: "EPDM Adhered" system.
      c. Carlisle: Sure-Seal EPDM system, Fully adhered.
      d. Substitutions for equal product will be considered by the Architect. Refer to Section 01600.

C. Membrane: EPDM Membrane shall be Firestone RubberGard EcoWhite Platinum EPDM - supplied in .090 mil, white, of standard sizes up to 10 feet in width and 100 feet in length, or the longest sheet possible, as required by each installation. The roof membrane shall consist of the following:
   1. Flashing: Shall be minimum .060" thickness, EPDM elastomer with factory applied adhesive backing, or field applied adhesive applied, as recommended by the manufacturer.
   2. Joint Tape: Same material as membrane with adhesive or clean surface for solvent joint adhesion, as recommended by the membrane manufacturer.
   3. Sealant: As recommended by the membrane manufacturer.
   4. Bonding Adhesive: Shall be compatible with substrate materials to which the membrane is to be adhered, as recommended by manufacturer.
   5. Lap and Water Stop Sealant: Shall be gun or trowel consistency for use in sealing flashing edges, as recommended by manufacturer.
   6. Pourable Sealer: Compatible with materials with which it is used, as recommended by manufacturer.
   7. Night Seal: Compatible with materials with which it is used, as recommended by manufacturer, to seal work in progress when inclement weather occurs or is expected.
   8. Splice Wash: Material recommended by manufacturer.
   9. Other Materials: Furnish other materials not shown or specified required for complete and proper installation of roof system, as recommended by the roofing manufacturer.
   10. Sheet Seaming System: Manufacturer's standard materials for sealing lapped joints, including edge sealer to cover exposed spliced edges as recommended by manufacturer of roof system.
   11. Tapered Edge Strips and Flashing Accessories: Types recommended by manufacturer of roof system material, provided at locations indicated and at locations recommended by manufacturer., including adhesive tapes, flashing cements, and sealants.
   12. Membrane Adhesive: As recommended by membrane manufacturer for particular substrate and project conditions, formulated to withstand min. 60 psf uplift force, or as required by the building code.
   13. Molded Pipe Seals: Factory molded pipe seals with stainless steel clamps. Site as required for all roof pipe penetrations. Color shall be white.

14. Expansion Joint: See Section 05800 - Expansion Control.

2.02 ROOF INSULATION

A. Thermal Roof Insulation: See Section 07220 for materials.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSTRATE

A. General: Comply with manufacturers' instructions for preparation of substrate to receive the roof membrane system.

B. Clean substrate of dust, debris, and other substances detrimental to the roof membrane system work. Remove sharp projections. Do not apply sheet roofing to damp, frozen, dirty, dusty, or deck surfaces unacceptable to manufacturer. Roof surface shall be free of ponded water, ice, or snow.

C. Install flashings, and accessory items as shown, and as recommended by manufacturer even though not shown.

D. Prime substrate where recommended by manufacturer of materials being installed.

E. Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces of other work.

3.02 INSPECTION

A. The Contractor shall be responsible for providing a proper substrate to receive the roofing system. Installation shall not proceed until substrate has been observed by the Architect.

B. Substrate shall have positive drainage and shall be verified by Contractor prior to installation of new materials.

C. Surface joints shall be less than 1/4" wide. All joints wider than 1/4" must be repaired with proper materials.

D. Verify that drains, sleeves, scuppers, and curbs which pass through surfaces to receive roofing are rigidly installed and approved/accepted by roof installer.

E. Surfaces to receive new materials shall be as required by manufacturer to ensure a proper bond.

F. Verify that surfaces are free of cracks, depressions, waves, or projections which may be detrimental to successful installation. Remove foreign materials

G. Starting work of this Section means acceptance of substrate and site conditions.

3.03 INSTALLATION - GENERAL

A. Comply with the instructions and recommendations of the roofing materials manufacturer, except to the extent more stringent requirements are indicated.

B. Confinement of Materials: Do not allow fluid and plastic materials to spill or migrate beyond surfaces of intended application, or to flow into drains, conductors, or ceilings below.

C. Performance: It is required that roofing work be watertight for normal weather exposures, and not deteriorate in excess of manufacturer's published limitations.

D. Nailers must be pressure-treated wood with salt preservatives. Creosote and asphaltic preservatives are not acceptable.
   1. Attachment of the wood nailers must be accomplished by using approved fasteners providing no less than 125 lbs. of pullout resistance and spaced no greater than 24" o.c. and equal in thickness to the added insulation and no less than 3 1/2" wide or as required by the roof system manufacturer.

3.04 INSTALLATION OF ROOF INSULATION

A. The insulation shall be installed mechanically-fastened to deck according to the roofing manufacturer's recommendations. Mechanical fasteners shall penetrate into the decking as required by Factory Mutual and manufacturer of roofing materials. Install directly over the prepared roof deck. Ends and sides shall be tightly butted, with butted joints flush and even. Comply with manufacturer's shop drawings for taper layout.

B. The insulation must be independently attached to the prepared substrate using approved fasteners and insulation plates. Fasten all insulation per manufacturer's detailed shop drawings. All fasteners must pass the requirements established by Factory Mutual 4470 for corrosion resistance.

C. Stagger joints in boards and between layers. Butt units tightly together and against wood blocking and nailers; trim to fit penetrations and interruptions, so that gaps between units and between insulation and adjacent construction do not exceed 1/4 inch. Fasteners shall be spaced a maximum of 2'-0" o.c., and there shall be one fastener installed at each and every corner of each board, and in addition, the pattern of fasteners shall conform to specified requirements for wind uplift. For roof tapers, comply with shop drawings for location and directions of taper utilizing specified perlite board; install over thermal insulation board.

D. Do not install more insulation each day than can be covered with membrane before stopping work at end of day or before onset of inclement weather.

E. Trim insulation or provide preshaped units at drains to provide positive slope for 24 inches around drain.

F. Shape insulation or provide preformed units to provide crickets, saddles, and tapered areas as indicated or as required to provide drainage. Taper insulation around all roof drains and projections to ensure proper drainage.

3.05 MEMBRANE INSTALLATION

A. Comply with membrane manufacturer's instructions for handling, laying, seaming, and securing membrane.

B. Edges of roofing shall be sealed at the end of each day's work and if inclement weather is expected during the work period.

C. Any wrinkles found greater than 1" high and wrinkles that impede the flow of water, must be cut laid flat and patched over using the specified roof membrane and standard welding /seaming procedures.

D. Night Seal: At the completion of each day's work, temporarily seal any loose edge of membrane with the specified night seal. Care must be used to guarantee that no water flows beneath any completed sections of roof. Night Seal must be cut out and discarded prior to resumption of work.

3.06 WALKWAYS

Not used.

3.07 EXPANSION JOINT COVERS

A. Install expansion joint covers in conjunction with the roof membrane system. Flash flange at cant into roof system utilizing membrane flashing provided as a component of the roof membrane system. Attach to wall using fasteners and spacing as indicated on Drawings. Fasteners shall be non-corrosive.

3.08 PROTECTING ROOFING

A. After completing roofing (including associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. At the end of the construction period, or at a time when remaining construction will in no way affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner, describing nature and extent or deterioration or damage found.

B. Ensure roof is completely clean of any debris or construction materials.

C. Repair or replace (as required) deteriorated or defective work found at the time of Substantial Completion Inspection to a condition free of damage and deterioration.

3.09 DEFECTIVE WORK

A. Refinish or remove and replace insulation surfaces not acceptable to receive roofing or where physical properties do not meet specified requirements.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes but is not limited to the materials, fabrication, and installation of:
   1. Sheet metal work.
   2. Roof area related flashings, including reglets.
   3. Prefinished flashings and copings.
   4. Prefinished gutters and downspouts, and Splashblocks.
   5. Prefinished rake and eave flashings.
   6. Thru wall flashings.
   7. Fiber Cement Siding Plank Flashing
   8. Other items as required to complete the Work.

1.02 RELATED SECTIONS

A. Section 04200 - Reinforced Unit Masonry: Thru-wall flashings installed in conjunction with the erection of the concrete unit masonry.

B. Section 04210 - Brick Masonry: Thru-wall flashings installed in conjunction with the erection of the brick masonry.

C. Section 06100 - Rough Carpentry: Treated wood nailers and blocking for attachment of flashing and sheet metal items.

D. Section 07411 - Metal Roof and Wall Panels: Flashings installed in conjunction with roof and wall panels.

E. Section 07464 - Fiber-Cement Siding Trim and Soffit: Flashings installed in conjunction with fiber-cement siding.

F. Section 07530 - Single Ply Membrane Roof System: Materials and installation of related flashings.

G. Section 08640 - Aluminum Clad Windows and Doors: Flashings installed in conjunction with the window and door installations for weathertight installations.

1.03 QUALITY ASSURANCE

A. All flashing shall be installed as indicated on drawings. All flashings, including flashings not particularly shown, but required for finish work shall be furnished and installed in strict accordance with Sheet Metal and Air Conditioning Contractors National Association recommendations. Where not otherwise shown, all exposed (exposed to view) flashing shall be 12 oz. copper-plus unless otherwise noted on drawings. Roof area flashing not exposed to view shall be .040 aluminum or 12 oz. copper-plus, as shown on drawings.

1.04 SUBMITTALS

A. Submit detailed shop drawings on items requiring fabrication and manufacturer's technical data on manufactured products. Submittals shall indicate materials, finish, installation techniques and required anchoring devices. Comply with Section 01340. For gutters and downspouts, show material thickness, profiles, anchorage technique and gutter bracket size and spacings. Comply with Section 01340.

1.05 GUARANTEES

A. Guarantee all flashings to remain weathertight for a period of two (2) years.

B. Finish Warranty: Provide 10-year manufacturer's standard written warranty for finish applied to sheet metal items.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Flashing Materials
   1. Sheet aluminum for non-site-exposed roof area flashing shall be natural aluminum color, alloy 3003-H14 and in 10'-0" lengths, minimum. All sheet aluminum shall be marked by the manufacturer with an indelible ink stamp indicating the name of the manufacturer, alloy and temper of each sheet.
   2. Flashing noted to be prefinished shall be fabricated from prefinished aluminum, 3003 alloy, thickness as required by the girth dimension in accordance with SMACNA, but not less than .040" thick, smooth surface and Kynar 500 full strength Fluoropolymer finish, colors as selected by Architect. Provide shapes as detailed.
   3. Copper step flashing and other roof flashing exposed to view, one of the following:
      a. 16 oz. per sq. ft. (0.0216 inch thick) ASTM B370, tempered as required for forming.
      b. 0.0216" thick Copper Plus, copper-stainless alloy.
   4. Aluminum flashing behind lapsiding butt joints: Aluminum Plank Flashing by Tamlyn. Prefinished color selected by Architect.

B. Vent Pipe Flashings and Gas and Fluid-Bearing Pipe Flashings - Single Ply Membrane Roof System: Comply with the requirements of the single ply membrane roof system manufacturer; refer to Section 07530.

C. Vent Pipe Flashings at Shingle Roof: Refer to Section 07311.

D. Gutters and Downspouts - Finish shall be Kynar 500 full strength fluoropolymer in colors as selected by the Architect. Provide thickness of material as required by SMACNA for the girth of the gutters and downspouts to ensure no oil-canning.
   1. Gutters: Minimum thickness aluminum determined by girth of the installed material in accordance with SMACNA requirements to ensure no oil-canning, profile and size as shown on Drawings. Provide with factory-applied finish applied to roll stock prior to fabrication of gutters. Provide color matched gutter flashing and 1/8"x1" wide prefinished downspout strap brackets, finished to match gutters.
   2. Downspouts: Minimum thickness aluminum determined by girth of the installed material in accordance with SMACNA requirements to ensure no oil-canning, profile and size as shown on Drawings. Provide with factory-applied finish applied to roll stock prior to fabrication of downspouts. Provide prefinished 0.060" thickness, color-coordinated support straps for anchorage of the downspouts to the structure.
   3. Refer to drawings for gutter and downspout shapes and sizes.
   4. Gutter Hangers: Stainless Steel "Hidden Hanger" as manufactured by Old World Gutter, www.oldworldgutter.com, (502) 639-3964, or equal. Rod shall be fastened to roof deck below shingles, using stainless steel screws.
   5. Splash Blocks: 12" x 24" x 3-1/2", precast concrete; 8,000 psi minimum compressive strength; wire reinforced. One splash block at each downspout.

E. Joint Flashing behind butt joints in fiber cement siding:
   1. 6" tall, prefinished aluminum flashing. Color selected by the Architect.
   2. Premanufactured flashing with integral leg for hanging on planks. Fully coated to prevent reaction with fiber cement siding.
   3. Products/Manufacturers:
      a. XtremeTrim Plank Flash by Tamlyn of Stafford, Texas
      b. Junction Flashing by Simplicity Tool Corp, of Portland Oregon

F. Strippable film required on all prefinished items, including flashings. There will be no exceptions to this requirement.

G. Accessories
   1. Washers: Type suited to material being attached.
   2. Nails for fastening aluminum shall be aluminum alloy 6061-T6 or cadmium plated stainless steel, alloy Type 305 of wide flathead type and shall be of sufficient length to secure sheet metal firmly in place.
   3. Screws, bolts, and nuts for fastening aluminum shall be aluminum alloy 6061-T6 or cadmium plated stainless steel, alloy Type 305.
   4. Expansion inserts shall be lead or plastic.
   5. Aluminum filler for welding aluminum shall be 1100 alloy.
   6. Flashing cement shall be Owens-Corning Asphalt Plastic Cement, Federal Specification SS-C-153, Type 1.
   7. Reglets: Aluminum, similar to Fry Reglet Corporation of Alhambra, California. Provide type and profile required for the installation requirements and the substrate involved.

H. Thru-wall flashing over lintels, shelf angles, beams, at sills, weeps, window heads, bed joints of exterior walls and elsewhere indicated on the drawings shall be one of the following:
   1. Copper: 16 oz. per sq. ft. (0.0216 inch thick) ASTM B370, tempered as required for forming.
   2. 0.0216" thick Copper Plus, copper-stainless alloy.

PART 3 - EXECUTION

3.01 FABRICATION

A. Form sheet metal items in bending brake. Pre-form in shop where practical. Prime under sides of all sheet metal with asphalt primer before installing. Install with care to assure clean, true and even lines.

B. Make all joints watertight. Seams in flashing which cannot be effectively locked shall be welded (welding permitted only on items not designated to be pre-finished). Oxy-gas welding in which paste fluxes are used shall be done in the shop. Copper flashing shall be soldered.

C. Fabricate sheet metal items in maximum 10' lengths, with straight runs maximum 20' long, joining pieces with locked seams. Join units with loose-lock seams filled with elastic cement as expansion joint.

D. Welding: Field welding shall be by gas tungsten arc or gas metal arc process only.

3.02 CONDITION OF SURFACES

A. Check surfaces to which flashings and trim are to be applied. Verify whether surfaces are smooth, properly prepared and have adequate provisions for fastening metal into position.

B. Surfaces to be covered with sheet metal shall be free from defects of every description. Clean of dirt, rubbish, and other foreign materials before sheet metal work is started. Drive projecting nails flush.

3.03 INSTALLATION

A. Exposed edge of all flashing shall be bent back at least 1/2". Cap Flashing shall lap over base flashing as shown on drawings. Flashing joints shall be 3" looselock slip joints filled with elastic cement, or soldered as noted on drawings.

B. Seams: All seams, except required welded seams, shall be loose lock seams. All seams shall be made in the direction of flow. Loose lock seams shall be loose flat lock seams and shall be completely filled with sealant. Seams shall conform to the following requirements:
   1. Flat Lock seams shall finish not less than 3/4" wide.

2. Plain Lap seams shall lap not less than 3".
3. Cross Folded Seams: Where sheet metal is folded in one direction and then folded at right angles to the first fold, as for example the slip joint of base flashings, expansion joints and similar cross folded joints, the folded portion of the sheet metal at the cross fold shall be split and a patch of sheet metal shall be welded over the split to avoid binding at the cross fold.

C. Reglets: Reglets shall have ends of each length forming a lap slip joint. Reglets shall provide continuous grooves nominal 1/4" at throat, horizontal depth minimum of 1-1/8" with provision for anchoring upturned edge of flashing.

D. Rake and Eave Flashings: Install rake flashings over roof underlayment. Install eave flashings under roof underlayment. Extend back from the edge of the roof a minimum of 3". Nail into place using roof nails specified in Section 07311, spaced at 8" o.c. Coordinate installation of the rake and eave flashings with the installation of the roof underlayment and roof shingles. Refer to drawings and Section 07311 for additional requirements.

E. Gutters and Downspouts
1. Anchor gutters, using specified hangers, at 32" centers maximum. Space closer if required to prevent oil canning.
2. Support downspouts, using specified straps, at 48" centers. Anchor to wall structure using non-corrosive, anchorages.

F. Electrolysis: All sheet metal subject to electrolytic / corrosion action shall be fully protected by approved insulating coatings against dissimilar metals.

G. Flashing of Masonry Work
1. Build in concealed flashing in masonry work at, or above, all shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. At lintels and support angles, adhere flashing to steel using plastic adhesive recommended by flashing manufacturer. Between masonry courses, place masonry on a bed of mortar and cover with mortar to cushion flashing from abrasion by masonry. Seal penetrations in flashing with plastic adhesive before covering with mortar.
2. Seal between flashing and backup, and mechanically fasten flashing to backup. Ensure edges of flashing are smooth and do not tear or puncture weather barrier.
3. Extend flashings laterally the full length of lintels and shelf angles plus a minimum of 4" into masonry each end. Terminate ends of flashing in preformed boot and seal with lap adhesive. At heads and sills, turn up ends of boot not less than 2".

H. All flashing and related metal work shall be installed in a manner to produce a neat appearance and shall be completely watertight.

3.04 CLEANING AND PROTECTION

A. Cleaning: After installation, all flashing shall be thoroughly cleaned and rinsed with potable water.

B. Protection
1. Protect metal flashing from damage, stains, etc. during the progress of the Work. Damaged flashing shall be replaced at no additional expense to the Owner.
2. Remove peel strip from prefinished materials just prior to Substantial Completion Inspection.

END OF SECTION

SECTION 07920

SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation of the sealants and caulking.

1.02 RELATED SECTIONS

A. Section 04200 - Reinforced Unit Masonry: Construction of control joints and expansion joints.

B. Section 04210 - Brick Masonry: Construction of control joints and expansion joints.

C. Section 06200 - Finish Carpentry: Sealant installed at perimeter of exterior wood door frames.

D. Section 06415 - Cabinetry and Millwork: Caulking installed between cabinet/countertop splash and wall.

E. Section 08100 - Hollow Metal Doors and Frames: Sealant installed at perimeter of door frames.

F. Section 08210 - Wood Doors: Sealant installed at perimeter of door framing.

G. Section 08305 - Access Doors: Sealant installed at perimeter of door framing.

H. Section 08640 - Aluminum Clad Windows and Doors: Sealant installed at perimeter of window and door framing.

I. Section 09300 - Tile: Sealant installed in floor and wall control and expansion joints.

J. Section 09900 - Painting: Installation of sealant coordinated with painting.

1.03 SUBMITTALS

A. Submit copies of complete technical data and physical samples to the Architect in accordance with Section 01340.

B. Submit a detailed list of all locations where materials will be used, type of caulking or sealants which will be used at each location, and names of all manufacturers of compounds, primers, and fillers which will be used.

C. Submit certification that the sealant to be installed is compatible with and is approved for installation with the exterior insulation and finish system to be installed.

D. Substitutions submitted in accordance with Section 01600 will be considered.

1.04 PUBLICATIONS

A. Copies of all technical bulletins relating to the installation of the various materials shall be on the job site at all times during the installation of all caulking and sealants. Workmen will be thoroughly familiar with these and the instructions therein shall be followed exactly.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sealants for all exterior locations, except horizontal traffic joints, and at interior locations where color coordination is required, shall be:
   1. Between Other Materials and at Perimeter of Door and Window Framing at Building Façade: Dow-Corning 795.
   2. Provide primer and bond breaker as recommended by the sealant manufacturer for the substrates involved.
   3. Colors shall be as selected by the Architect from the manufacturer's standard colors.
   4. Non-silicon sealants will not be allowed as substitutes for this item.

B. Sealants for control joints in brick veneer shall be BASF MasterSeal NP100 or equal. Color by Architect.

C. Sealant for horizontal installation over the expansion joints in hard tile and concrete surfaces, interior and exterior, shall be self-leveling, Dow-Corning S-L traffic sealant. Colors as selected by the Architect.

D. Caulking at the interior of the building for joints where the caulking will be painted shall be Tremco Acrylic Latex #384, white in color.

E. Sealant for installation between counter tops and splashes, between walls and splashes shall be Dow Corning 786 Mildew Resistant silicone sealant.

F. Sealant for use with copper flashing shall be as recommended by copper supplier.

G. Back-up materials for sealants and caulking shall be closed cell Dow Ethofoam as manufactured by Dow Chemical Company, Inc. Back-up materials shall have a diameter of approximately 25% to 50% greater than the width of the joint.

H. Solvents, primers and cleaning agents as recommended by the caulking and sealant manufacturers.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Caulking and sealants application shall include, but is not limited to the following:
   1. Joints in building facade
   2. Perimeter of door frames.
   3. Perimeter of aluminum window framing system.
   4. Control joints.
   5. Joints in walks, slabs, floor tile and all other traffic bearing surfaces.
   6. Counter tops and splashes at wall.
   7. Between dissimilar materials.
   8. Under thresholds.
   9. At areas to prevent the entrance of moisture.
   10. Other areas as detailed on the drawings.

B. Inspect the work of other trades prior to installation of caulking and sealants. Install no caulking nor sealant in joints which are not in proper condition to receive sealant materials until defects are corrected.

C. Apply sealants and caulking when temperatures are as a recommended by the manufacturers. Storage of all material shall be at room temperature with material being used on a first in, first out basis.

D. Prior to the installation of any caulking or sealants, completely clean all surfaces. All surfaces must be dry. Clean first with brush and dry cloth and then clean with an air brush using dry, oil-free air. Immediately after cleaning, prime, as required, the surfaces to be treated with the appropriate primer using a small clean paint brush reaching all parts of the area to be primed. Allow primer the proper drying time before applying the caulking or sealant.

E. All caulking and sealants applied to the building will be installed with guns having the proper size nozzles. Use even pressure, sufficient to fill all voids and joints solid.

F. A bed of sealant compound shall be spread over the entire seat of thresholds and the thresholds set on the compound.

G. Joints in exterior facade shall be tooled slightly concave.

H. Joints to be painted shall be even and smooth. Caulking that is to be painted shall be installed before the last coat of paint is applied.

I. Sealant to be installed over horizontal expansion joints shall be installed after area is cleaned and primed as outlined above. Pour sealant from container, fill joint to slightly below the top of the paving. Minimum depth of the joint shall be 1/2 inch.

J. Install backer rods in joints more than 1/2 inch deep, of size and type specified. Rod shall be set for approximately 1/2 inch depth of compound.

K. Every caulked and sealed joint shall be watertight.

3.02 CLEANUP

A. Upon completion of the work, all excess materials shall be removed leaving joints, neat, clean and straight. Cured material shall be removed by cutting with a sharp edged tool. Thin films may be removed by abrading, but without damaging the finish of any other materials.

END OF SECTION