

SECTION 07212

BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Thermal and acoustical batt and blanket insulation.
 - 2. Installation accessories.

1.2 PERFORMANCE REQUIREMENTS

- A. Materials of this Section shall provide continuity of thermal barrier at building enclosure elements.
- B. Materials of this Section shall provide continuity of vapor and air barrier at building enclosure elements.

1.3 SUBMITTALS

- A. General: Submit following items under provisions of Section 01330.
- B. Product Data: Including performance specifications, composition, and applicable standards.
- C. Manufacturer's Instructions: Written installation instructions including attachment recommendations.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle, and protect products under provisions of Section 01600.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install insulation during inclement weather or when surfaces are moist.

1.6 SEQUENCING AND SCHEDULING

- A. Coordinate work in accordance with Section 01310.
- B. Do not begin work until substrate work is complete and work of other trades which will be concealed by work of this Section has been approved.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following. Refer to Articles below for specific products.
 - 1. Johns Manville, Denver, CO
 - 2. United States Gypsum Co., Chicago, IL
 - 3. Owens Corning Fiberglas Corp., Toledo, OH
 - 4. Fibrex Co., Aurora, IL
 - 5. Certainteed Corp., Valley Forge, PA

2.2 THERMAL BATT INSULATION

- A. Glass fiber composition with integral foil faced, fire retardant vapor barrier, minimum one pound per cubic foot density, meeting following standards:
 - 1. ASTM E 84: FHC 25/50 maximum.
 - 2. ASTM C 518: R value of 3.2 per inch of thickness.
 - 3. ASTM C 665: Type III, Class A.

- B. Acceptable Products:
 - 1. Flame Spread 25 Insulation by Owens Corning Fiberglas Corp.
 - 2. FSK25 by Certainteed Corp.
 - 3. FSK25 by Johns Manville.

2.3 ACOUSTICAL SEMI-RIGID, INSULATION

- A. Mineral or fiber composition, unfaced, semi-rigid, 3 ½" thickness meeting following standards:
 - 1. ASTM E 84: FHC 15/10 maximum.
 - 2. ASTM C 518: R value of 4.0 per inch of thickness.
 - 3. ASTM C 665: Type I.
- B. Following products are acceptable:
 - 1. Quiet Zone Acoustic Batts by Owens Corning
 - 2. Sound Control Blankets by Fibrex Co.

2.4 ACCESSORIES

- A. Joint Tape: Pressure sensitive type, recommended by insulation manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrates and conditions are ready to receive work of this Section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.

3.2 INSTALLATION

- A. Install insulation either friction fit, using adhesive, or mechanical fasteners in accordance with manufacturer's recommendations after mechanical and electrical services have been installed.
- B. Fit insulation tight within stud spaces, above soffits, behind fascias, and tight to and behind mechanical and electric services within plane of insulation, leaving no gaps or voids. Butt insulation tightly. Cut and fit tightly around items penetrating insulation. Stagger and butt joints, or cavity of a cavity wall system.
- C. Within metal stud or joist systems install full height and width in such manner that voids or openings do not occur. Insulation is required for full width between studs, including cavity of each stud. Do not allow insulation to obstruct vents.
- D. Cut and trim insulation neatly, to fit spaces. Cut insulation oversize to ensure tight butt joints when installed. Cut insulation to fit around protrusions and irregularly shaped projections. Use batts free of ripped backs or edges.
- E. Batt Insulation with Vapor Barrier Membrane
 - 1. Install insulation with factory applied membrane facing warm in winter side of building spaces.
 - 2. Lap ends and side flanges of membrane over framing members; fasten in place at maximum 6 inches on center or tape in place.
 - 3. Tape seal butt ends; lap side flanges and ends; do not tear membrane.
- F. Install sound attenuating blankets above ceilings and in stud cavities where detailed or scheduled. Butt tightly.

3.3 PROTECTION

- A. Protect insulation from moisture until building is made watertight.

3.4 SCHEDULES

- A. Provide R values for thermal insulation in locations as follows
 - 1. R-19 for all exterior stud walls and soffits.
- B. Provide acoustical batt insulation in all interior walls, including surrounding each restroom. Fill stud cavity.

END OF SECTION

SECTION 07265

BUILDING SHEET DAMPPROOFING

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 building sheet dampproofing system, indicated on Drawings as moisture barrier, in the following locations:
 - 1. Over sheathing behind masonry veneer.
 - 2. Over sheathing behind stucco veneer.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with provisions of Section 01330.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage and Protection: Protect materials from rain and physical damage. Provide cover on top and on all sides, allowing for adequate ventilation. Store flashing where temperatures will not exceed 90 degrees F (32 degrees C) for extended periods. Store all products in a dry area away from high heat, flames or sparks.
- C. Store products in manufacturer's unopened packaging until ready for installation and dispense the needed amounts of materials from the manufacturer box.

1.5 QUALITY ASSURANCE

- A. Exterior wall mockups specified in other Sections shall incorporate the materials specified in this Section.
- B. Install job mock-up using specified air barrier/secondary weather resistant barrier with system of fastening and taping seams as per manufacturer's instructions. Obtain architect's approval of system for appearance and workmanship standard.

1.6 PROJECT CONDITIONS

- A. Substrate: Proceed with sheet dampproofing and flashing work only after substrate construction and penetrating work have been completed, and joints in sheathing have been sealed and taped.
- B. Environmental Limitations: Do not install flexible flashing on wet or damp surfaces. Surfaces shall be free from dirt, oils, lubricants or other debris that may inhibit adhesion of the flashing and flashing tape to the substrate. After precipitation, allow a minimum of 24 hours for drying before installing flashing and flashing tape. For optimal performance, install flashing at temperatures above 40 degrees F (or 4 degrees C).

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Breathable spun-bonded olefin sheet of high-density polyethylene fibers combined with a UV stabilizing additive. Fabricated by spinning continuous strands of fine interconnected fibers and bonded together through a process of heat and pressure. Non-woven, non-perforated.
- B. Acceptable Products:
 - 1. Tyvek Commercial Wrap D, by E.I. Dupont, and having the following performance properties:
 - a. Air penetration: Meets ASTM E1677, type 1.
 - b. Water Vapor Transmission: 50 perms per ASTM E096, Method B.
 - c. Water Penetration Resistance: 210 cm per AATCC-127.
 - d. Weight: 2.1 oz/s.y. per TAPPI T-410.
 - e. Breaking Strength: 30 lbs/in. Per ASTM D882, Method A.
 - f. Tear Resistance: 9 lbs per ASTM D-117.
 - g. Surface Burning Characteristics: Class A per ASTM E-84.
 - 2. Tyvek StuccoWrap, by E.I. Dupont
- C. Self-Adhering Flexible Flashing:
 - 1. Elasticized flexible flashing tape complying with the following
 - a. Face Material Composition: Elasticized polyethylene laminate.
 - b. Face color: White.
 - c. Adhesive Composition: Butyl adhesive containing non-halogen fire retardant additive.
 - d. Thickness: > 60 mils.
 - e. Release Liner: 2 part siliconized paper.
 - f. Elastic Elongation , MD (length @ Full Extension/ Length @ Relaxed): >230% @ 70 F.
 - g. Basis of Design Products/Systems: Self-Adhering Flexible flashing tape, DuPont™ FlexWrap™.
 - 2. Durable Polyethylene Laminate Flashing Tape complying with the following:
 - a. Face Material composition: Polyethylene laminate.
 - b. Face color: White.
 - c. Adhesive Composition: Butyl adhesive containing fire retardant additive.
 - d. Thickness: 30 mils.
 - e. Release Liner: 1 piece siliconized paper.
 - f. Proprietary Products/Systems: Self Adhering Straight flashing tape, DuPont™ StraightFlash™.
- D. Fasteners:
 - 1. Rust resistant nails with caps as recommended by sheet dampproofing manufacturer.
 - 2. Caps: Minimum 1 inch diameter high density polyethylene cap with triple-feather seal.
 - a. Acceptable Product: DuPont Tyvek Wrap Caps by Dupont Company, Wilmington, DE.
- E. Seaming and Joint Tape:
 - 1. Material: Pressure sensitive, polypropylene substrate with acrylic based adhesive. Provides permanently elastic, nonsag, nontoxic, nonstaining tape, and compatible with specified sheet dampproofing and flexible flashing products.
 - 2. Acceptable Product: DuPont Tyvek Contractor's Tape by DuPont Company

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared to receive, constructed to fully support dampproofing and flashing, and sloped where required to provide positive drainage of water to building exterior.
- B. Verify that surfaces to receive sheet dampproofing and flashing are thoroughly dry, free from loose materials, and reasonably smooth.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Examine surfaces to receive sheet dampproofing and report any unsatisfactory conditions.
- B. Clean surfaces smooth and free from projections or holes which might cause punctures of the membrane.
- C. Remove existing weather barriers, flashings, carrier or protective films and similar materials that would impede adhesion from substrates indicated to receive elasticized flexible flashing tape. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

- A. Install sheet dampproofing in accordance with sheet dampproofing manufacturer's published instructions including:
 - 1. Cut and seal around penetrations and openings.
 - 2. Extend bottom edge of barrier over the sill plate interface.
 - 3. Secure to foundation with polyurethane or latex base joint sealer.
 - 4. Seal horizontal seams, vertical breaks or overlaps, and damaged areas with tape.
 - 5. Secure at approximately 12 to 18 inches on the vertical stud line.
 - 6. Horizontal laps: Minimum 6 inches.
 - 7. At top plate, cover interface of upper and lower top plates.
- B. Openings and Penetrations: Provide flashings for openings as required to provide weathertight barrier. Install lapped components to direct water to exterior of building.

3.4 CLEANING

- A. Remove unused materials, containers, and equipment from the Site.
- B. Clean and repair surfaces that are marred or otherwise damaged as a result of work under this Section.

END OF SECTION

SECTION 07540

THERMOPLASTIC MEMBRANE ROOFING & INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rigid roof insulation.
 - 2. Fully adhered single ply membrane roofing.
 - 3. Base flashings.
 - 4.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 06100 - Rough Carpentry.
 - 3. Section 07620- Sheet Metal Flashing and Trim.

1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International (ASTM):
 - 1. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 2. D471 - Standard Test Method for Rubber Property - Effect of Liquids.
 - 3. D751 - Standard Specification for Coated Fabrics.
 - 4. D1149 - Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber.
 - 5. D1204 - Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
 - 6. D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
 - 7. D2137 - Standard Test Method for Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics.
 - 8. D3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.
 - 9. E96 - Standard Test Method for Water Vapor Transmission of Materials.
 - 10. E108 - Standard Test Methods for Fire Tests of Roof Coverings.
 - 11. G26 - Standard Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
- C. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design roofing system to resist minimum wind loads in accordance with ASCE 7 and applicable Building Code and UL-90 rating.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Manufacturer's product specifications, installation instructions, and general recommendations for each product.
 - 2. Warranty: Sample roofing warranty.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Certification from an independent testing laboratory that roofing system meets fire hazard and windstorm classification requirements.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Minimum 3 years experience in work of this Section.
 - 2. Approved by roofing materials manufacturer.

3. Class A Fire Hazard Classification, tested to ASTM E108.
- 1.6 DELIVERY, STORAGE AND HANDLING
 - A. Store materials, other than membrane, in protected, dry area, between 60 and 80 degrees F until used; provide proper ventilation.
 - B. Protect sheet goods from damage and wetting.
 - 1.7 PROJECT CONDITIONS
 - A. Do not apply roofing to damp or frozen substrate.
 - B. Do not apply roofing during inclement weather or at temperatures below 40 degrees F, or above 100 degrees F or if freezing weather is anticipated within 24 hours after application. Do not use frozen materials.
 - 1.8 WARRANTIES
 - A. Furnish manufacturer's 10 year warranty providing coverage against water leakage through roofing system including flashings, not limited to specific dollar amount.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 1. Firestone Building Products Co.
 2. Johns Manville.
 3. Carlisle SynTec Inc.

2.2 MATERIALS

- A. Rigid Insulation:
 1. Type: ASTM C1289, Type II, rigid polyisocyanurate faced both sides with glass fiber mat facings.
 2. Edges: Square.
 3. Thickness: 3 inches typical and minimum, and tapered as indicated on drawings.
 4. Thermal Resistance: Minimum R value of 5.6 per inch of thickness.
- B. Roof Membrane:
 1. Type: Thermoplastic polyolefin (TPO), ultraviolet resistant, reinforced.
 2. Physical properties:
 - a. Elongation at break: Minimum 25 percent, tested to ASTM D751.
 - b. Tear strength: Minimum 55 pound-force, tested to ASTM D751.
 - c. Brittleness point: Minus 40 degrees F, tested to ASTM D2137.
 - d. Shrinkage: Plus or minus 1.0 percent maximum, tested to ASTM D1204.
 - e. Ozone resistance: No cracks, tested to ASTM D1149.
 - f. Resistance to water absorption: Maximum 4 percent change in mass, tested to ASTM D471.
 - g. Resistance to microbial surface growth: Minimum rating of 9, tested to ASTM D3274.
 - h. Field seam strength: Minimum 40 pound-force/inch, tested to ASTM D1876.
 - i. Water vapor permeance: Maximum 0.10 perms, tested to ASTM E96.
 - j. Resistance to xenon-arc weathering: No cracks or loss of breaking or tear strength, tested to ASTM G26.
 3. Size: Maximum sheet size permitted by application and job conditions.
 4. Thickness: 60 mils.
 5. Color: White, except at any exposed vertical surface to be Gray.
- C. Flashing Sheet: Manufacturer's standard flashing sheet, color to be Gray or metal counterflashing.

2.3 ACCESSORIES

- A. Accessories: By manufacturer of roofing system, including adhesives, tapes, solvents, sealants, water cutoff mastic, and prefabricated pipe flashings.
- B. Walkway Pads: Preformed resilient pads, recommended by roofing manufacturer, 1/4 inch thick.
- C. Fasteners: Galvanized or corrosion resistant coated steel, approved by roofing system manufacturer, type and length suited to project conditions.
- D. Insulation Fasteners: Galvanized or corrosion resistant coated steel, approved by roofing

- system manufacturer, type and length suited to project conditions, with galvanized steel plates.
- E. Nailers and Curbs:
 - 1. Preservative treated wood, specified in Section 06100.
 - 2. Nailers: 3-1/2 inch face dimension x insulation thickness.
 - F. Metal Flashings: Specified in Section 07620.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove projections that could puncture membrane from substrate.
- B. Clean substrate of loose and foreign material, oil, and grease.
- C. Complete roof penetrations and preparation for drains, flashings, and other penetrations prior to beginning roofing.
- D. Protect adjacent and underlying surfaces.

3.2 INSTALLATION - GENERAL

- A. Install roofing system in accordance with roofing system manufacturer's instructions, NRCA Manual, and approved Shop Drawings.

3.3 INSTALLATION OF INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Place panels perpendicular to deck flutes with ends staggered and sheet ends over firm bearing.
- C. Leave 1/8 inch expansion space at panel ends and edges.
- D. Secure to supports with fasteners spaced as directed by manufacturer.

3.4 INSTALLATION OF ROOF MEMBRANE

- A. Position sheets without stretching; minimize wrinkles. Allow membrane to relax before proceeding.
- B. Provide minimum 5-1/2 inch lap at joints between adjacent sheets.
- C. Splice sheets by solvent welding or heat welding method.
- D. Bond membrane to substrate with full adhesive bed.

3.5 INSTALLATION OF FLASHINGS

- A. Construct in accordance with roofing system manufacturer's standard details.
- B. Juncture of Horizontal and Vertical Surfaces:
 - 1. Use longest practical length flashing to minimize joints.
 - 2. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Extend splice 3 inches beyond fasteners that attach membrane to horizontal surface.
 - 3. Adhere flashing to substrate with full bed of adhesive.
 - 4. Fasten top of flashing at 12 inches on center maximum, under metal flashing.
- C. Penetrations through Membrane:
 - 1. Flash pipe with premolded pipe flashings wherever possible.
 - 2. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
 - 3. Seal clusters of pipes and unusually shaped penetrations with minimum 2 inch high flashing containing pourable sealer.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING, SIDING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Roof flashings and fascias.
 - 2. Metal siding on wall faces, metal panels on soffits and a/c rooftop screens.
 - 3. Gutters and downspouts.

1.2 SUBMITTALS

- A. General: Submit following items under provisions of Section 01330.
- B. Product Data: Indicating performance and physical characteristics of rolled products and accessories proposed for use.
- C. Shop Drawings: Indicate each type and configuration of flashing and trim work in profile including jointing pattern and details, fastening methods and frequency, locations of expansion and control joints, thickness of materials and finishes.
- D. Submit samples under provisions of Section 01330.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in sheet metal flashing work with 3 years minimum experience in similar sized installations.
- B. Fabricate and install parapet caps and roof edgings to meet **SMACNA Architectural Sheet Metal Manual** standard and all local codes.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect products under provisions of Section 01600.
- B. Stack pre-formed material to prevent twisting, bending, and abrasions, and to provide ventilation.
- C. Prevent contact with materials which may cause discoloration or staining.

1.5 WARRANTY

- A. Provide warranties under provisions of Section 01780.
- B. Provide 2 year water tightness guarantee beginning at substantial completion including repair or replacement of defective materials and workmanship.

PART 2 PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS - SHEET MATERIAL

- A.
 - 1. G-90 galvanized steel, bonderized with phosphate coating ("Paint Grip / Zinc Grip")
 - 2. Surface: Smooth, flat finish, except panels to be 12" with 1" deep interlocking returns.
 - 3. Exposed Finishes: none
 - 4. Sheet Metal Thickness: 26 gauge, gutters 24 gauge. Flashing: In accordance with SMACNA .
- C. Substitutions: Submit under provisions of Section 01600.

2.2 FABRICATION

- A. Form sections true to shape, accurate in size, square, free from distortion and defects, to profiles indicated in accordance with SMACNA Architectural Sheet Metal Manual.
- B. Fabricate cleats and starter strips of same material as sheet, interlockable with sheet.
- C. Form pieces in longest practical lengths.
- D. Hem exposed flashings on underside 1/2 inch; miter and seam corners.
- E. Form materials which are typically concealed from view by the public with lap seams. On exposed seams, use butt- seam/back-up plate type unless noted or detailed otherwise.
- F. Solder and seal metal joints except those indicated or required to be expansive type joints. After soldering, remove flux. Wipe and wash solder joints clean.
- G. Fabricate corners from one place with minimum 18 inch long legs; solder for rigidity; seal with sealant.
- H. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- I. Fabricate flashings to allow toe to extend minimum 2 inches over wall surfaces.
- J. Fabricate as much as possible in shop with machinery to eliminate as much hand tooling on the job as possible. Shop fabricate to allow for adjustments in the field for proper anchoring and joining.

2.3 ACCESSORIES

- A. Fasteners
 - 1. Nails: AISI Series 300 for galvanized steel. Use annular ring shank type, No. 12 gage or larger to suit application, of sufficient length to penetrate backing material at least 7/8 inch.
 - 2. Screws and Bolts: AISI Series 300 for galvanized steel; of sufficient size and length to sustain imposed stresses.
- B. Solder: Solder with compatible material for continuous watertight joints where required on gutters and downspouts.
- C. Sealants: Two component polyurethane, non-sagging, sealant as specified in Section 0792
- D. Plastic Cement: FS SS-C-153, Bituminous plastic cement.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- C. Verify membrane termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.

3.3 INSTALLATION

- A. Install using skilled workmen in accordance with manufacturer's printed instruction and recommendations.
- B. Conform to drawing details included in manuals published by SMACNA.
- C. Insert flashings into reglets to form tight fit. Secure in place with wedges at maximum 12 inches on center. Seal flashings into reglets with sealant.
- D. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.
- E. Lap seam flashings and work not normally exposed to view. Use butt joint with back-up plate joint method all exposed flashings, coping caps, and guards. Seal all joints.
- F. Apply plastic cement compound between metal flashings and felt flashings.

- G. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- H. Seal metal joints watertight.
- I. Provide electrolytic separation between dissimilar metals with protective back paint.
- J. On soldered metal joints, make watertight for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- K. Install expansion joints at frequency as recommended in SMACNA Architectural Sheet Metal Manual. Do not fasten seams such that movement is restricted. Coordinate expansion joint locations with joints in adjacent materials.

3.4 QUALITY CONTROL

- A. Install surfaces flat such that from normal viewing distances, no waviness or oil canning is visible.

3.5 CLEANING

- A. Perform final cleaning under provisions of Section 01740.

3.6 PROTECTION

- A. Protect finished installation under provisions of Section 01500.

3.7 SCHEDULE OF PRODUCTS USED

- A. Flashing and Counter Flashing: Fabricate as indicated on Drawings and in accordance with SMACNA Architectural Sheet Metal Manual, Chapter 4.
- B. Facia/Gravel Stop: As indicated on Drawings and in accordance with SMACNA Figure 2-1B.
 - 1. Joint System: In accordance with SMACNA Figure 2-5A.

END OF SECTION

SECTION 07650

FLEXIBLE FLASHING

PART I GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Thru wall flashings for masonry construction.

1.2 SUBMITTALS

- A. General: Submit following items under provisions of Section 01330.
- B. Product Data: Describing technical and performance characteristics of products proposed for use.
- C. Manufacturer's Instructions: Including complete installation instructions and methods of attachment/embedment into substrate.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installation of thru-wall flashings with 3 years minimum experience.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle, and protect products under provisions of Section 01600.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not allow plastic flashing to remain exposed to the elements for longer than 30 days.

1.6 SEQUENCING AND SCHEDULING

- A. Coordinate installation in accordance with Section 01310. Do not begin work until substrate preparation is complete.

PART 2 PRODUCTS

2.1 MODIFIED BITUMEN

- A. Acceptable Products:
 - 1. Perm-A-Barrier Wall Seam Tape & Wall Flashing System by W.R. Grace & Co.
 - 2. 400 Through Wall Flashing by Polyguard.
- B. Substitutions: Submit in accordance with Section 01600.
- C. Material:
 - 1. Sheet membrane: Rubberized asphaltic sheet laminated to a polypropylene film, 40 mil minimum total thickness, width as required for joints and flashing conditions.
 - 2. Primer: Rubber based solvent type recommended by membrane manufacturer.
 - 3. Mastic: Rubberized asphaltic type recommended by membrane manufacturer.
 - 4. Liquid Membrane: Two component elastomeric, mastic grade.

2.2 ACCESSORIES

- A. Joint Cement and Adhesive: Of type and composition recommended by membrane manufacturer.
- B. Fasteners: Same metal as flashing material, or other non-corrosive metal as recommended by sheet manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
- B. Verify that reglets have been set and are ready to receive the work of this section.

3.2 INSTALLATION

- A. Install using skilled workmen in accordance with manufacturer's printed instructions and recommendations.
- B. Extend flashing 1/4 inch beyond outside face of wall, extend thru veneer, turn up 8 inches and bed into mortar joints of masonry backup.
- C. Attach or adhere (at manufacturer's recommendation) flashing to sheathing backup on stud wall systems as work progresses. Allow flashing to drop a minimum of 8 inches before bedding into mortar joint of exterior veneer. Stop flashing 1/4 inch beyond outside face of wall. Seal flashing tightly to vapor barrier.
- D. Where reglets are detailed, slip flashing into reglet and secure in place per manufacturer's recommendations. Allow flashing to drop a minimum of 8 inches before bedding into mortar joint of exterior veneer. Stop flashing 1/2 inch from outside face of wall. Seal tightly to vapor barrier.
- E. Seal joints in flashing and joint treatment watertight with lap distance and method as recommended by manufacturer. Create end dams to channel water back to nearest weep hole.

3.3 PROTECTION

- A. Protect finished installation under provisions of Section 01500.
- B. Protect flashing until placement within wall is complete. Do not allow wind to displace or damage flashing.

3.4 CLEANING

- A. Perform final cleaning under provisions of Section 01740.

END OF SECTION

SECTION 07920

JOINT SEALANTS

PART I GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Preparing sealant substrate surfaces.
 - 2. Sealant and backing.

1.2 DEFINITIONS

- A. Use definitions in ASTM C 717.
- B. Non-Bleeding: Not capable of exuding liquid chemical components of sealant.
- C. Non-Staining: Not capable of discoloring joint substrate.
- D. Sealant System: Sealant, sealant backing, and primer intended for use in particular condition.

1.3 SUBMITTALS

- A. Submit product data under provisions of Section 01330.
- B. Product Data:
 - 1. Submit product data for each product.
 - 2. Include data to indicate performance criteria, limitations, substrate preparation, installation requirements, and curing requirements.
 - 3. Include information for accessories and other required components.
 - 4. Include color charts indicating manufacturer's full color range available of each sealant type for Architect's initial selection.
- C. Samples: Submit four 1/4 inch diameter by 2 inch long samples illustrating sealant colors for each product exposed to view.
- D. Closeout Submittals:
 - 1. Submit under provisions of Section 01780.
 - 2. Warranty: Submit specified warranty.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility:
 - 1. Provide products for each sealant system from one manufacturer for entire Project, unless otherwise acceptable to Architect.
 - 2. Provide products from a single manufacturer to ensure material compatibility where different sealant materials come in direct contact with each other.
 - 3. Provide each sealant system as complete unit, including accessory items necessary for proper function.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum 10 years documented experience.
- C. Applicator Qualifications: Acceptable to manufacturer, specializing in applying sealants, with documented experience on at least 10 projects of similar nature in past 5 years.
- D. Certifications:
 - 1. Manufacturer's certification that products:
 - a. Furnished for the specific project meet or exceed specified requirements.
 - b. Assembled for each joint are compatible with each other and with joint substrates under conditions of service and application.
 - c. Are suitable for the indicated use.
 - 2. Manufacturer's certification that sealants, primers, and cleaners, comply with local regulations controlling the use of volatile organic compounds.
 - 3. Contractor's and installer's certification that products are installed in accordance with Contract Documents, based on inspection and testing as part of Field Quality Control.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section 01600.
- B. Deliver materials to site in unopened containers and bundles with labels indicating:
 - 1. Manufacturer's name.
 - 2. Product name and designation.
 - 3. Color.
 - 4. Expiration period for use.
 - 5. Working life.
 - 6. Curing time.
 - 7. Mixing instructions for multi-component materials.
- C. Storage and Protection:
 - 1. Store products within manufacturer's required temperature and humidity ranges.
 - 2. Prior to use, condition products within manufacturer's required temperature range, humidity range, and time period.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Perform sealing when the following are within manufacturer's limits during and for 24 hours after sealant installation:
 - a. Ambient and surface temperatures.
 - b. Relative humidity.
 - 2. Do not apply sealants to wet or frozen surfaces.
 - 3. Comply with manufacturer's requirements regarding application of sealants in vicinity of curing sealants of a different material.
 - 4. Preformed Foam Sealants:
 - a. When ambient temperature is 50 degrees F or lower, store at room temperature for at least 24 hours prior to installation.
 - b. Do not store foam seals in direct sunlight.

1.7 WARRANTY

- A. Provide warranties under provisions of Section 01780.
- B. Warrant installed products to be free from defects in material, labor, or installation techniques for 2 years.
- C. Include coverage for installed sealants and accessories which:
 - 1. Fail to achieve air tight seal.
 - 2. Fail to achieve watertight seal.
 - 3. Exhibit loss of adhesion.
 - 4. Exhibit loss of cohesion.
 - 5. Do not cure.

1.8 EXTRA STOCK MATERIALS

- A. Furnish under provisions of Section 01780.
- B. Furnish extra sealant in quantity equal to 2 percent of total material furnished but not less than 6 cartridges of each type of custom colors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provide products from manufacturers listed herein.
- B. Acceptable Acrylic Sealant Manufacturers:
 - 1. Pecora Corporation, Harleysville, PA.
 - 2. Sonneborn Building Products/ChemRex, Inc., Minneapolis, MN.
 - 3. Tremco Corporation, Cleveland, OH.
- C. Acceptable Preformed Foam Seal Manufacturers:

1. Emseal Joint Systems, Ltd., Westborough, MA.
 2. Will-Seal Division, Illbruck, Inc.; Minneapolis, MN.
- D. Acceptable Silicone Sealant Manufacturers:
1. Dow Corning Corporation, Midland, MI.
 2. General Electric Silicone Products Division, Waterford, NY.
 3. Pecora Corporation, Harleysville, PA.
 4. Rhone-Poulenc, Inc., Princeton, NJ.
 5. Tremco Corporation, Cleveland, OH.
- E. Acceptable Urethane Sealant Manufacturers:
1. Mameco International, Inc., Cleveland, OH
 2. Pecora Corporation, Harleysville, PA.
 3. Sika Corporation, Lyndhurst, NJ.
 4. Sonneborn Building Products/ChemRex, Inc., Minneapolis, MN.
 5. Tremco Corporation, Cleveland, OH.

2.2 MATERIALS

- A. Acrylic Latex (Designation AL):
1. Description:
 - a. ASTM C 834.
 - b. Non-sag; non-staining; non-bleeding.
 - c. Joint movement range without cohesive/adhesive failure: Plus 7.5 percent to minus 7.5 percent of joint width.
 - d. Color: As selected by Architect from manufacturer's full color range.
 2. Acceptable Products:
 - a. AC-20, Pecora.
 - b. Sonolac, Sonneborn.
 - c. Acrylic Latex 834, Tremco.
- B. Preformed Foam Above Grade Wall Joint Secondary Seal (Designation F-WS):
1. Description:
 - a. Non-drying non-bleeding polymer-modified asphalt or neoprene rubber impregnated open cell polyurethane foam for use in vertical joints.
 - b. Factory-produced in pre-compressed form to fit indicated joints widths and depths.
 - c. Able to develop a watertight and airtight seal when compressed to the degree required by the manufacturer.
 - d. Joint movement range without cohesive/adhesive failure: Plus 25 percent to minus 25 percent of joint width.
 - e. Color: Black.
 2. Acceptable Products:
 - a. 25V, Emseal.
 - b. 150, Will-Seal
- C. Silicone - General Purpose (Designation S-GP):
1. Description:
 - a. ASTM C 920:
 - 1) Type: S
 - 2) Grade: NS
 - 3) Class: 25
 - 4) Uses: NT, G, A, 0
 - b. Low modulus, single component, neutral curing, non-staining, non-bleeding silicone sealant.
 - c. Joint movement range without cohesive/adhesive failure: Plus 50 percent to minus 50 percent of joint width.
 - d. Color: Selected by Architect from manufacturer's full color range
 2. Acceptable Products:
 - a. 795, Dow Corning.
 - b. Silpruf, General Electric.

- D. Urethane - Multi-Component (Designation U-MC):
1. Description:
 - a. ASTM C 920:
 - 1) Type: M
 - 2) Grade: NS
 - 3) Class: 25
 - 4) Uses: NT, M, A, O
 - b. Chemical curing, non-staining, and non-bleeding.
 - c. Joint movement range without cohesive/adhesive failure: Plus 25 percent to minus 25 percent of joint width.
 - d. Color: Selected by Architect from manufacturer's full color range.
 2. Acceptable Products:
 - a. Vulkem 322DS (Deck Seal), Vulkem 227, Mameco.
 - b. Dynatrol II, Pecora.
 - c. Sikaflex-2c NS, Sika.
 - d. Sonolastic NP-2, Sonneborn.
 - e. Dymeric 511, Tremco.
- E. Urethane - Traffic-Bearing (Designation U-TB):
1. Description:
 - a. ASTM C 920:
 - 1) Type: M
 - 2) Grade: P or NS
 - 3) Class: 25
 - 4) Uses: T, M, O
 - b. Chemical curing, non-staining, non-bleeding.
 - c. Joint movement range without cohesive/adhesive failure: Plus 25 percent to minus 25 percent of joint width.
 - d. Shore A hardness: 35 minimum, when tested in accordance with ASTM D 2240.
 - e. Color: Selected by Architect from manufacturer's full color range.
 2. Acceptable Products:
 - a. Vulkem 245, 202, Mameco.
 - b. Dynatred, Pecora.
 - c. Sikaflex 2c/SL, Sika.
 - d. THC 900/901, Tremco.
- F. Urethane - Abuse-Resistant and Pick-Resistant, Multi-Component (Designation U-AR):
1. Description:
 - a. ASTM C 920:
 - 1) Type: M
 - 2) Grade: NS
 - 3) Class: 12-1/2
 - 4) Uses: NT, M, A, G, O
 - b. Chemical curing, non-staining, non-bleeding.
 - c. Joint movement range without cohesive/adhesive failure: Plus 12-1/2 percent to minus 12-1/2 percent of joint width.
 - d. Shore A hardness: 55 minimum after 7 days, when tested in accordance with ASTM C 661.
 - e. Color: Selected by Architect from manufacturer's full color range
 2. Acceptable product:
 - a. Vulkem 617, Mameco.
 - b. Dynaflex, Pecora.

2.3 ACCESSORIES

- A. Joint Cleaner:
1. Chemical cleaners required by sealant manufacturer for substrates encountered, compatible with sealant backing bond breaker materials.
 2. Free of substances capable of staining, corroding, or harming:
 - a. Joint substrates.

- b. Adjacent nonporous surfaces.
 - c. Sealant.
 - d. Sealant backing.
 - 3. Formulated to promote optimum adhesion of sealants to joint substrates.
- B. Primer:
 - 1. Dyed coating material required by sealant manufacturer for enhancing sealant adhesion to joint substrates.
 - 2. Non-staining to joint substrate beyond the substrate surface.
 - 3. Required for use unless not required by results of:
 - a. "Manufacturer's sealant-substrate compatibility and adhesion test" described under Source Quality Control.
 - b. "Field hand-pull adhesion test" under Field Quality Control.
- C. Sealant Backing Bond Breaker Rod:
 - 1. Non-staining material.
 - 2. Compatible and non-adhering to sealant when tested in accordance with ASTM C 1087.
 - 3. Compatible with sealant, joint substrates, primers, and other sealant backing bond breakers.
 - 4. Sealant manufacturer approved.
 - 5. Sized and shaped to provide optimum performance and backing to sealant.
 - 6. Preformed, compressible, resilient, non-staining, non-outgassing, non-waxing, non-extruding, cylinder-shaped plastic foam rods compliant with ASTM D 1056 and D 1565.
 - 7. Open cell polyurethane: Use not permitted unless required by sealant manufacturer.
 - 8. Closed cell polyethylene:
 - a. Non-absorbent to liquid water.
 - b. Use in wall and ceiling joints unless otherwise required by sealant manufacturer.
 - 9. Unless otherwise required by sealant manufacturer, oversize rod to be larger than joint width by following minimum amounts:
 - a. Open cell polyethylene: 50 percent.
 - b. Closed cell polyethylene: 33 percent.
 - c. Reticulated polymeric: 25 percent.
 - d. Closed cell polyethylene for use with abuse-resistant and pick-resistant urethane sealant: 25 percent.
- D. Elastomeric Tubing Joint Filler:
 - 1. Neoprene, butyl, EPDM, or silicone tubing compliant with ASTM D 1056.
 - 2. Shore A hardness of 70.
 - 3. Compatible with sealant, joint substrates, primers, and other sealant backing bond breakers.
 - 4. Use in pavement joints, unless otherwise required by sealant manufacturer.
 - 5. Use sealant backing bond breaker tape to separate sealant from rod.
 - 6. Unless otherwise required by sealant manufacturer, oversize rod to be larger than joint width by 25 percent the following minimum amounts:
- E. Sealant Backing Bond Breaker Tape:
 - 1. Pressure sensitive polyethylene tape or tetrafluoroethylene self-adhesive tape required by sealant manufacturer to suit application.
 - 2. Minimum Thickness of 11 mils.
- F. Masking Tape: Non-staining, non-absorbent material compatible with sealants and surfaces adjacent to joints.
- G. Tooling Liquids: Non-staining material approved by manufacturer to reduce adhesion of sealant to joint finishing tools.

2.4 MIXES

- A. Comply with manufacturer's instructions.
- B. Mix thoroughly with mechanical mixer without mixing air into sealants.
- C. Continue mixing until sealant is uniform in color and free from streaks of unmixed materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with work in accordance with Section 01450.
- B. Ensure that concrete and masonry have cured minimum of 28 days.
- C. Verify that sealant backing is compatible with sealant.
- D. Verify that substrate surface:
 - 1. Is within manufacturer's moisture content range.
 - 2. Complies with manufacturer's cleanliness and surface preparation requirements.
- E. Joint Width:
 - 1. Verify joints are greater than minimum widths required by manufacturer.
 - 2. If joints are narrower than minimum required widths, widen narrow joints to indicated width.
 - 3. Do not place sealant in joints narrower than manufacturer's required minimum.

3.2 PREPARATION

- A. Prepare, clean, and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and matter which might impair adhesion of primer and sealant to substrate.
- C. Remove form release agents, laitance, and chemical retarders, which might impair adhesion of primer and sealant to concrete and masonry surfaces.
- D. Comply with ASTM C 1193.
- E. Protect elements adjoining and surrounding work of this Section from damage and disfiguration.
- F. Priming:
 - 1. Prime joint substrates unless priming is not required by:
 - a. "Manufacturer's sealant-substrate compatibility and adhesion test" described in Source Quality Control article.
 - b. "Field hand-pull adhesion test" described in Field Quality Control article.
 - 2. Apply primer to substrate areas where joint sealant is to adhere.
 - 3. Comply with manufacturer's sequencing requirements for joint priming and sealant backing bond breaker rod installation to assure required primer application coverage and rate without placement of primer on backer rod surface to be in contact with sealant and avoid three-sided sealant adhesion.
 - 4. Do not allow spillage and migration of primer onto surfaces not to receive primer.
 - 5. Install sealant to primed substrates after primer has cured.
- G. Masking Tape:
 - 1. Use masking tape to prevent contact of primer and sealant with adjoining surfaces that would be permanently stained or damaged by:
 - a. Contact with primer and sealant.
 - b. Cleaning methods used to remove primer and sealant smears.
 - 2. Place continuously along joint edges.
 - 3. Apply masking tape so it does not shift in position after placement.

3.3 APPLICATION

- A. General:
 - 1. Comply with requirements of Section 01600.
 - 2. Comply with results and recommendations from:
 - a. "Manufacturer's compatibility and adhesion test" described in Source Quality Control Article.
 - b. "Field hand-pull adhesion test" described in Field Quality Control article.
 - 3. Provide compatible sealant system between dissimilar assemblies and adjacent construction.
 - 4. Seal locations necessary to create and secure continuous enclosure even though Drawings may not indicate all locations; do not seal weep holes.
 - 5. Seal to prevent migration of water, vapor, and air through joints.
 - 6. Comply with manufacturer's required application temperature and relative humidity

- ranges. Consult manufacturer when sealant cannot be applied within these ranges.
- B. Sealant Backing Bond Breaker:
1. Measure joint dimensions and size materials to achieve manufacturer-required width-to-depth ratios.
 2. Install to achieve sealant depth and sealant contact depth no greater than distance required by manufacturer for sealant material, joint width, and joint movement range.
 3. Install using blunt instrument to avoid puncturing.
 4. Do not:
 - a. Twist, puncture, and tear material.
 - b. Leave gaps between ends of material pieces.
 - c. Stretch or compress material along its length.
 - d. Stretch or compress tape material along its width.
 5. Install to provide optimum joint profile and in manner to provide not less than 6 mm (1/4 inch) sealant depth when tooled.
 6. Install tape where insufficient joint depth makes use of rod not possible. Match tape width to joint width to prevent three-side adhesion. Do not wrap tape onto sides of the joint.
 7. Replace backing bond breaker materials which have become wet with dry materials prior to sealant application.
- C. Sealant:
1. Install sealants at same time as installation of backing bond breaker materials.
 2. Do not exceed manufacturer's required:
 - a. Material shelf life.
 - b. Material working life.
 - c. Installation time after mixing.
 3. Comply with manufacturer's requirements for applying different sealant materials in direct contact with each other.
 4. Use gun nozzle size to suit joint size and sealant material.
 5. Install sealant with pressure-operated devices to form uniform continuous bead.
 6. Use sufficient pressure to fill voids and joints full.
 7. Install to adhere to both sides of joint.
 8. Install to not adhere to back of joint; provide sealant backing.
 9. Install sealant free of air pockets and embedded matter.
 10. Recess sealant 3 mm (1/8 inch) from surface of pavements and horizontal surfaces.
- D. Sealant Tooling:
1. Comply with manufacturer's tooling method requirements.
 2. Tool sealant within manufacturer's tooling time limits.
 3. Tooling liquids:
 - a. Comply with manufacturer's requirements regarding use.
 - b. Do not use when not permitted by manufacturer.
 - c. Do not allow tooling liquids to come in contact with surfaces receiving sealant.
 4. Produce smooth exposed surface.
 5. Tool sealant to be free of:
 - a. Air pockets and voids.
 - b. Embedded impurities.
 - c. Surface ridges, sags, and indentations.
 6. Achieve full sealant contact and adhesion with substrate.
 7. Form a concave tooled joint shape indicated in Section A of Figure 5 of ASTM C1193, unless otherwise indicated.
 8. Remove excess sealant from surfaces adjacent to joint.
 9. Allow acrylic latex sealant to achieve firm skin before paint is applied.
- E. Masking Tape:
1. Remove immediately after tooling sealant and before sealant skin forms.
 2. Remove without disturbing sealant.
- F. Preformed foam sealants:
1. Position sealant in joint.
 2. Apply adhesive and top coat for pavement type sealant in accordance with

- manufacturer's requirements.
- 3. Immediately after removing wrapping to expose adhesive side, press adhesive surface onto side of joint.
- 3. Do not stretch or compress material.
- 4. At ends, turns, and intersections, comply with manufacturer's requirements to produce continuity of seal.

3.4 CLEANING

- A. Clean excess sealants and sealant smears from adjacent surfaces as application progresses; comply with sealant manufacturer's requirements and manufacturer of surface in which joints occur.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section and replace where installation techniques result in unsatisfactory joining of materials and unsightly conditions.

3.5 SCHEDULE

- A. Items Not to be Sealed:
 - 1. Joints covered by joint covers and seals specified in Section 05810.
 - 2. Joints, perimeter, and penetrations in fire-rated assemblies. Use firestops specified in Section 07840.
 - 3. Joints, perimeter, and penetrations in sound-rated assemblies. Use acoustical sealant specified with sound-rated assembly in Section 09250.
 - 4. Weep holes in masonry, windows.
- B. Sealant Schedule:
 - 1. Exterior locations:
 - a. Wall joints:
 - 1) Bordered on both sides by porous building material (concrete, stone, masonry, exterior insulation and finish systems): Designation S-GP.
 - 2) Bordered on both sides by non-porous building material (coated and uncoated metals, anodized aluminum, and glass): Designation S-GP.
 - 3) Bordered on one side by porous building material (concrete, stone, masonry) and other side by non-porous building material (coated and uncoated metals, anodized aluminum, and glass): Designation S-GP.
 - b. Perimeter of penetrations through walls: Designation S-GP.
 - c. Expansion joints in ceilings, soffits, and overhead surfaces: Designation S-GP.
 - d. Control joints and perimeter of penetrations in ceilings, soffits, and overhead surfaces: Designation U-MC.
 - e. Wall and ceiling joints between frames and their rough opening: Designation S-GP.
 - f. Wall and ceiling joints between frames and adjoining surfaces: Designation S-GP.
 - g. Joints and perimeter of penetrations in horizontal pedestrian and vehicle traffic surfaces: Designation U-TB.
 - h. Joints in Section 07610: Designation S-GP.
 - 2. Interior Joints:
 - a. Wall and ceiling joints subject to movement: Designation U-MC.
 - b. Wall and ceiling joints not subject to movement: Designation AL.
 - c. Interior side of exterior openings: U-MC.
 - d. Floor joints: Designation U-TB.
 - e. Wall and ceiling joints between frames and their rough opening: Designation AL.
 - f. Wall and ceiling joints between frames and adjoining surfaces: Designation AL.
 - g. Joints indicated to require abuse-resistance and pick-resistance: Designation U-AR.

END OF SECTION