

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Sound insulation at interior walls
 - 2. Building insulation at exterior walls
 - 3. Building insulation at rafters
 - 4. Vapor retarders

1.3 DEFINITIONS

- A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: Full-size units for each type of exposed insulation indicated.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for insulation products.
- D. Research/Evaluation Reports: For foam-plastic insulation.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.

2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic insulation as follows:
 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SLAG-WOOL-FIBER/ROCK-WOOL-FIBER BLANKET INSULATION

- A. Manufacturers:
 1. Fibrex Insulations Inc.
 2. Owens Corning.
 3. Thermafiber.
- B. Sound Insulation at Interior Walls: Unfaced, Slag-Wool-Fiber/Rock-Wool-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
 1. STC Rating: 50.
- C. Building Insulation at Exterior Walls: Faced, Slag-Wool-Fiber/Rock-Wool-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with facing), Class A (membrane-faced surface with a flame spread of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-polyethylene vapor-retarder membrane on 1 face.
 1. Performance Criteria: White, R-19.

2. 3-1/2 inches thick with a thermal resistance of 13 deg F x h x sq. ft./Btu at 75 deg F.
3. 6 inches thick with a thermal resistance of 22 deg F x h x sq. ft./Btu at 75 deg F.

D. Building Insulation at Rafters: Faced, Slag-Wool-Fiber/Rock-Wool-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with facing), Class A (membrane-faced surface with a flame spread of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-polyethylene vapor-retarder membrane on 1 face.

1. Performance Criteria: White, R-19.
2. 6 inches thick with a thermal resistance of 22 deg F x h x sq. ft./Btu at 75 deg F.

2.3 AUXILIARY INSULATING MATERIALS

- A. Vapor-Retarder Basis of Product Design: Dupont Tyvek Commercial.
- B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by insulation manufacturers for sealing joints and penetrations in vapor-retarder facings.
- C. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.
- D. Asphalt Coating for Cellular-Glass Block Insulation: Cutback asphalt or asphalt emulsion of type recommended by manufacturer of cellular-glass block insulation.
- E. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

2.4 INSULATION FASTENERS

- A. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
 1. Products:
 - a. AGM Industries, Inc.; RC150.
 - b. AGM Industries, Inc.; SC150.
 - c. Gemco; Dome-Cap.
 - d. Gemco; R-150.
 - e. Gemco; S-150.
- B. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.
 1. Products:
 - a. AGM Industries, Inc.; TACTOO Adhesive.
 - b. Eckel Industries of Canada; Stic-Klip Type S Adhesive.

- c. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
- E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

- C. Set vapor-retarder-faced units with vapor retarder in location indicated of construction, unless otherwise indicated.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

- D. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures.
 - 4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
 - 5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
 - 6. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:
 - a. With faced blankets having stapling flanges, secure insulation by inset, stapling flanges to sides of framing members.
 - b. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

- E. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07210



SECTION 07420 - PRE-FORMED METAL SIDING AND SOFFITS

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS: General provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and Drawings, apply to this Section.
- 1.2 SCOPE OF WORK: Furnish all necessary materials, labor and equipment for the complete installation of pre-formed fascia, prefinished metal siding and soffit panels including all flashing, trim, closures, fasteners, sealant, for accessories and other items, as shown on the Drawings, specified herein, or otherwise required for a complete and watertight installation. Provide all necessary supplementary items for a complete installation intended by documents.
- 1.3 RELATED WORK SPECIFIED ELSEWHERE
- A. Section 04810: Unit Masonry Assemblies
 - B. Section 05100: Structural Steel
 - C. Section 05400: Cold Formed Metal Framing
 - D. Section 05500: Metal Fabrications
 - E. Section 06100: Rough Carpentry
 - F. Section 07310: Asphalt Shingle Roofing
 - G. Section 07620: Sheet Metal Flashing and Trim
 - H. Section 07920: Joint Sealants
 - I. Section 08411: Aluminum-Framed Entrances and Storefronts
 - H. Section 08520: Aluminum Windows
- 1.4 QUALITY ASSURANCE
- A. Siding Panels: Company specializing in fabricating pre-formed metal siding panels shall have three years documented experience.
 - B. Installer: Company specializing in installation of pre-formed metal siding panels shall have three years documented experience and documented approval as an authorized installer of metal panel manufacturer. Installer shall be responsible for careful study of and adherence to the erection drawings and information provided by manufacturer, and shall be responsible for accurate and skillful execution and installation of the related components.

1.5 STANDARDS: Meet requirements and recommendations of the applicable portions of the latest editions of all local and state governing codes including the following standards:

- A. Metal Building Manufacturers Association (MBMA)
- B. American Iron and Steel Institute (AISI) - Specification for the Design of Cold Formed Steel Structural Members
- C. Underwriters Laboratories, Inc. (UL) - Building Materials Directory - UL Test Procedure 580
- D. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) - Architectural Sheet Metal Manual
- E. American Society for Testing Materials (ASTM)
 - 1. ASTM A-525 Steel Sheet, Zinc-Coated (Galvanized)
 - 2. ASTM E-283-84
 - 3. ASTM E-331-86
 - 4. ASTM F-330 (Modified)
- F. Spec Data Sheet: Galvalume Sheet Metal by Bethlehem Steel Process

1.6 SUBMITTALS

- A. Samples: Submit color chips on metal for selection and acceptance of Architect. Provide full width sample panel, accessories, and fastenings, when required by Architect.
- B. Shop Drawings: Indicate construction particular to this project of all parts, material thicknesses, installation and erection details, including connections, anchorage, joint details, trim, flashing, closures, fastening, and sealing. Show details of weatherproofing, terminations and penetrations of metal work.
- C. Manufacturer's Literature: Recommended installation and maintenance procedures.
- D. Certificates: Manufacturers certificate for literature indicating that materials meet Specification requirements; specified guarantees.
- E. Submit results indicating compliance with minimum requirements of the following performance tests:
 - 1. Air Infiltration ASTM E 283-84
 - 2. Water Infiltration ASTM E 331-86
- F. Submit calculations with registered engineer seal, verifying siding panel and attachment method resists wind pressures imposed on it pursuant to applicable building codes.

- G. Coordinate all construction conditions, structural steel, wood blocking, penetrations, other like items and indicated on Shop Drawings.
- H. Submit in accordance with requirements of Division 1.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Upon receipt of panels and other materials, installers shall examine the shipment for damage and completeness.
- B. Panels should be stored in a clean, dry place. One end should be elevated to allow moisture to run off.
- C. Panels with strippable film must not be stored in the open, exposed to the sun.
- D. Stack all materials to prevent damage and to allow for adequate ventilation.
- E. Remove and replace damaged items that cannot be restored to like-new condition at no cost to the Owner.

1.8 GUARANTEE

- A. Prior to acceptance of work furnish written guarantee, co-executed by Contractor and subcontractor, for two years which covers repairs required to maintain siding, trim, flashing, and other accessories, in watertight condition. Limit to ordinary wear and tear by the elements or defects due to faulty materials and workmanship. Make repairs within 24 hours of notification, at no expense to Owner.
- B. Provide manufacturer's twenty (20) year guarantee on color finish against cracking, peeling, and fade (not to exceed 5 N.B.S. units).
- C. Galvalume material shall have a twenty-year guarantee against failure due to corrosion, rupture or perforation.
- D. Submit in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. For purposes of designating type and quality for the work under this Section, Drawings and Specifications are based on products manufactured or furnished by Berridge Manufacturing Company.
- B. Subject to compliance with requirements, acceptable manufacturers must submit for approval.

- C. All acceptable manufacturers' panels must meet these Specifications as minimum concerning metal gauges, lengths, and finishes.

2.2 ASSEMBLY DESCRIPTION: The wall panel assembly includes pre-formed sheet metal panels, related accessories, corners, trim, miscellaneous flashing and attaching devices.

2.3 DESIGN:

- A. Design light gauge cold-formed structural members and exterior covering in accordance with the latest edition of the AISI Specification for the Design of light Gauge Cold-Formed Steel Structural Members.
- B. Design shall meet or exceed the following:
 - 1. MBMA Recommended Design Practices Manual and Recommended Code of Standard Practice.
 - 2. AISI Light Gauge Steel Design Manual.
 - 3. ASTM A 307 for Low Carbon Steel Externally and Internally Threaded Standard Fasteners.
- C. Wind Load: In accordance with the local governing code, design fastenings to resist a horizontal wind pressure on all surfaces exposed to the wind, allowing for wind in any direction (in or out), in accordance with the following criteria. Make no allowance for the shielding effect of other buildings or structures. Measure the height above the average level of the ground adjacent to the building or structure. Meet all requirements of the Standard Building Code. Verify edition of Code presently being enforced. In any case, design shall be for at least 40 psf.

2.4 PRE-FORMED METAL SIDING AND SOFFITS PANELS

- A. Type: Berridge FW-12 Panel with vee grooves at 4" on center.
- B. Fabrication:
 - 1. Panels shall have 12" exposure with 1/8" deep x 1/2" wide vee grooves at 4" on center, 1-1/2" deep, with concealed fasteners and interlocking sidelap.
 - 2. Panels shall be factory formed 40' maximum lengths.
 - 3. Attachment to metal supports with #10 x 1/2" TEKS screws at maximum spacing of 5'-0" on center or per local code, whichever is closer spacing.
- C. Unfinished Metal (all concealed metal): 24-gauge Satin Finish Galvalume, ASTM 792-86, with all mill oils, chemicals and residue removed and coated on back side with clear Chromate and front side with Clear Plastic Strippable Film.
- D. Prefinished Metal (all visible metal):

1. Prefinished Steel - 24-gauge Hot-Dipped Galvanized Steel ASTM A446-85 Grade C, G-90 Coating ASTM A653-94 and A924-94.
2. Finish:
 - a. Finish shall be Kynar 500 Fluorocarbon coating applied on the Berridge Coil Coating Line with a top side dry film thickness of .70 to 0.90 mil over 0.25 to 0.35 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil. Back side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesion, flexibility and longevity as specified by Kynar 500 finish supplier.
 - b. Color shall be as selected by Architect.
 - c. Strippable coating shall be liquid applied on the manufacturer's coil coating line to the top side to protect the finish during fabrication, shipping, and handling. This strippable coating shall be removed immediately before installation.
 - d. Field protection must be provided by the contractor at the job site so material is not exposed to weather and moisture.
3. Flashing (Factory Fabricated): Unless otherwise specified all exposed adjacent flashing shall be of the same material and finish as panel system.

2.5 ACCESSORIES

- A. Flashing, Closures, Corners, and Trim: Minimum 24 gauge, galvanized steel, color coated where exposed to view. Furnish flashing and trim at corners, framed openings, and where required to provide finished appearance and watertight conditions.
- B. Provide all other accessories indicated on drawings or as required to provide complete weathertight installation of new siding panels.

2.6 FASTENERS: Unexposed galvanized steel with washers, provide where required in accordance with manufacturer's installation instructions.

2.7 SEALANT: Two (2) part polysulfide where indicated on drawings and/or specified herein.

PART 3 - EXECUTION

3.1 EXAMINATION: Verify that framing is adequate to receive new siding. Provide all additional supplementary members required and accessories necessary for a complete installation.

3.2 INSTALLATION OF PANELS

A. General:

1. Install all work:
 - a. In accordance with manufacturer's instructions.
 - b. Permanently water and weathertight.

- c. Conform to standards set forth in the SMACNA Architectural Sheet Metal Manual
2. Provide expansion joints as required by job conditions.
3. Accessories and other items essential to the completion of the work through not specifically shown or specified shall be provided.
4. Dissimilar materials juncture shall be executed in a manner that will prevent electrolysis between the two materials.
5. Remove protective strippable plastic film prior to installation.
6. Install panels in such a manner that horizontal lines are true and level and vertical lines are plumb.
7. Protect installed trim from damage caused by adjacent construction until completion of installation.
8. Remove and replace any panels or components that are damaged beyond successful repair.

B. Pre-formed Metal Siding Panels:

1. Install flashing and edge trim before installing panels.
2. Attach anchor clips, trim, and all other accessories as recommended by the manufacturer.
3. Attach pre-formed metal siding panels by use of clips as recommended by the manufacturer.
4. Install prefinished counter flashing and cover trim, caulk or sealant, miscellaneous items and all accessories necessary for a complete installation.

3.3 ACCESSORIES: Install all accessories, flashing, etc. for weather-tight condition.

3.4 TOUCH-UP: Touch-up cut edges of all items to match original factory finish. Remove all excess materials and debris from site.

3.5 CLEANING: Daily and immediately upon completion of the installation of siding panels and adjacent work by other trades, Contractor shall remove all foreign materials and debris from siding panel surfaces and maintain clean condition until acceptance by the Owner.

END OF SECTION 07420

**SECTION 07552 - STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS
MEMBRANE ROOFING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing.
2. Roof insulation.

B. Related Sections:

1. Division 6 Section "Roof Carpentry" for wood nailers, cants, curbs and blocking.
2. Division 7 Section "Sheet Metal Flashing and Trim for gutters and downspouts.
3. Division 7 Section "Manufactured Roof Specialties" for proprietary manufactured roof assemblies tied into SBS-Modified Bituminous Membrane Roofing.

1.3 REFERENCE STANDARDS

- A. References in these specifications to standards, test methods, codes, etc. are implied to mean the latest editions of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.

1. ASTM American Society for Testing and Materials, Philadelphia, PA.
2. FM Factory Mutual Engineering and Research, Norwood MA.
3. NRCA National Roofing Contractors Association, Rosemont, IL.
4. OSHA Occupational Safety and Health Administration, Washington D.C.
5. SMACNA Sheet Metal and Air Conditioning Contractors National Association,
Chantilly, VA
6. UL Underwriters Laboratories, Northbrook, IL.

1.4 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.5 PERFORMANCE REQUIREMENTS

- A. **General Performance:** Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. **Material Compatibility:** Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. **Roofing System Design:** Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
 - 1. **Corner Uplift Pressure:** 112.5 lbf/sq. ft. (kPa/sq. m)>.
 - 2. **Perimeter Uplift Pressure:** 75 lbf/sq. ft. (kPa/sq. m)>.
 - 3. **Field-of-Roof Uplift Pressure:** 45 lbf/sq. ft. (kPa/sq. m)>.
- D. **FM Approvals Listing:** Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for as applicable. Identify materials with FM Approvals markings.
 - 1. **Fire/Windstorm Classification:** Class 1A-90.
 - 2. **Hail Resistance Rating:** SH.

1.6 SUBMITTALS

- A. **Product Data:** For each type of product indicated.
- B. **Shop Drawings:** For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. **Base flashings and membrane terminations.**
 - 2. **Tapered insulation, including slopes.**
 - 3. **Crickets, saddles, and tapered edge strips, including slopes.**
 - 4. **Insulation fastening patterns for corner, perimeter, and field-of-roof locations.**
- C. **Samples for Verification:** For the following products:
 - 1. **Sheet roofing materials, including base sheet, base-ply sheet, roofing membrane sheet, flashing backer sheet, membrane cap sheet and flashing sheet, of color specified.**
 - 2. **Roof insulation.**
 - 3. **Walkway rolls.**
 - 4. **Six insulation fasteners of each type, length, and finish.**
- D. **Qualification Data:** For qualified Installer and manufacturer.
- E. **Manufacturer Certificates:** Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of complying with performance requirements.
2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
3. Evidence that the manufacturer of the proposed roofing system is ISO 9001:2000 certified. Documentation of ISO 9001:2000 approval of foreign subsidiaries without domestic certification will not be accepted.
4. Evidence and description of manufacturer's quality control/quality assurance program for the primary roofing products supplied. The quality assurance program description shall include all methods of testing for physical and mechanical property values. Provide confirmation of manufacturer's certificate of analysis for reporting the tested values of the actual material being supplied for the project prior to issuance of the specified warranty.
5. Evidence of Underwriters' Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings. No other testing agency approvals will be accepted.
6. Evidence of Factory Mutual Approval Standard 4470 for the proposed membrane system.
7. Provide letter or letters from the primary roofing manufacturer confirming the following:
 - a. That the proposed membrane manufacturer has been producing SBS products in the United States for a minimum of 10 years with change in the basic product design or SBS modified bitumen blend, e.g. no substantive changes product composition, polymer specification, asphalt and filler formulation.
 - b. List of 3 of the proposed primary roofing manufacturer's projects, located in the United States, of equal size and degree of difficulty which have been performing successfully for a period of at least 5 years.
 - c. That the filler content in the elastomeric blend of the proposed roof membrane and flashing components does not exceed 35% in weight.
 - d. Complete list of material physical and mechanical properties for each sheet including:
 - 1.) Weight and thicknesses.
 - 2.) Low Temperature flexibility.
 - 3.) Maximum load.
 - 4.) Elongation @ 5% maximum load.
 - 5.) Dimensional stability.
 - 6.) High temperature stability.
 - 7.) Granule embedment.
 - 8.) Resistance to thermal shock (foil faced products).
 - e. That the proposed roof membrane and flashing components meet or exceed the physical and mechanical requirements listed in Part 2 - Products of this specification.
 - f. That the proposed roof membrane system meets the requirements of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14 deg F (-10 deg C). Passing results shall show no signs of membrane cracking or interply delaminating after 500 cycles in an un-aged specimen and 200 cycles in specimen after heat conditioning.
 - g. That a phased roof application, with only the modified bitumen base ply in place for a period of up to 10 weeks, is acceptable and approved for this project.
 - h. That the roofing installation Contractor is and acceptable Contractor authorized to install the proposed system.
 - i. That the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified warranty.

- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- G. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.
- H. Maintenance Data: For roofing system to include in maintenance manuals.
- I. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Approvals approved for membrane roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. Source Limitations: Obtain components including roof insulation, fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. Protection Requirements: Torch Safety: Crew members handling torches shall be trained by and Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractors Association (NRCA) and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.
- F. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- G. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 20 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years.
- H. Product Quality Assurance Program: Primary roofing materials shall be manufactured under a quality control/quality assurance program that is monitored regularly by a third party auditor such as the ISO 9001:2000 audit process. A certificate of analysis for reporting/confirming the tested values of the actual material being supplied for the project will be required prior to project close-out.
- I. Acceptable Contractor: Contractor shall have a minimum of 5 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials