SECTION 07525

MODIFIED BITUMEN ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Modified bitumen (SBS) roofing system over tapered rigid insulation over sheathing over metal decking; level structure: Main roof and canopies

B. Related Sections:

1. Section 05300 - Steel Deck: Corrugated steel roof deck.
2. Section 06100 - Rough Carpentry: Wood nailers, curbs, plywood sheathing, and blocking.
3. Section 07620 - Sheet Metal Flashing and Trim: Metal coping, flashings and trim.
4. Section 07720 - Roof Accessories: Prefabricated curbs and roof hatches.
5. Section 09255 - Exterior Sheathing
6. Division 15 - MECHANICAL: Requirements for plumbing connections to roof drains.
7. Division 16 - ELECTRICAL: Lightning protection system on roof.

1.2 REFERENCE STANDARDS

A. Industry Standards: The Industry Standards listed below refer to the latest date of issue or edition, unless otherwise indicated in this Section.

1. ASTM: American Society for Testing and Materials
2. FM: Factory Mutual Engineering and Research, FM 1-28 Bulletin for wind uplift rating.
3. NRCA: National Roofing Contractors Association
4. RIEI: Roofing Industry Educational Institute
5. IBC: International Building Code
6. SMACNA: Sheet Metal and Air Conditioning Contractors National Association
7. SWR: Southwest Research Institute; San Antonio, TX (512) 648-5111
8. UL: Underwriters Laboratories

1.3 DEFINITIONS

A. Roofing System Definition: The roofing system, as defined in this Section, includes all roofing related materials and methods used, from the structural roof deck up, including but not limited to the membrane, insulation, cant strips, flashing and stripping, and surfacing. Not included are metal cap flashings, scuppers, manufactured roof specialties, and similar roof-related items specified in other Sections.

1.4 DESCRIPTION OF ROOFING SYSTEMS

A. Level Structure: Roofing Membrane System over Tapered Rigid Insulation over Metal Deck:

1. Deck: Metal decking as indicated on Drawings and specified in Division 5.
2. Sheathing: As specified in Section 09255 - Exterior Sheathing
3. Insulation - Bottom Layer: 2-1/2" rigid isocyanurate board (mechanically attached).
4. Insulation - Top Layer: Must comply with manufacturer's requirements for specified guarantees and with required fire resistive and wind uplift ratings.
   a. Tapered perlite insulation board (Solidly mopped).

   OR

   b. Tapered panels and standard fill panels composed of isocyanurate with a ¼" gypsum based overlay board. Panels shall be in compliance with ASTM C 728. The tapered system shall provide for a roof slope of ¼ inch per foot minimum. (Solidly mopped)
5. Roof Membrane System: Two-ply modified bitumen system with granular-faced cap sheet applied with Type IV asphalt.
6. Flashing System: Aluminum-clad modified bitumen flashing sheet.
7. Specified Guarantee: 20 years, NDL, Non-Pro-Rated.
8. Slope: 1/4" per foot (achieved with tapered perlite or isocyanurate insulation).
9. Crickets: Tapered perlite or tapered isocyanurate, ½" per foot slope.

1.5 ROOF MEMBRANE DESCRIPTION

A. Modified Bitumen Roofing Membrane Assembly: The roof membrane assembly shall consist of two (2) plies of a prefabricated, fiberglass reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) copolymer modified asphalt membrane secured to a prepared substrate.

1. The modified base ply shall be identical in design and manufacture, excluding granular surfacing to the modified cap sheet.
2. The modified base ply shall be fully adhered to the prepared substrate as specified herein, and shall possess waterproofing capability.
3. The modified cap sheet membrane shall be fully adhered to the modified base ply membrane as specified herein.

B. Modified Bitumen Flashing Membrane Assembly: The flashing membrane assembly shall consist of a prefabricated, fiberglass scrim-mat reinforced, Styrene-Butadiene-Styrene (SBS) copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing.

1. A low softening point asphalt shall be incorporated into the membrane between the metal foil surfacing and the SBS modified asphalt membrane, at the channels, in order to preclude foil delamination during daily thermal cycling.
2. The foil-clad modified asphalt membrane shall be fully adhered to a prepared substrate as specified herein.

1.6 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Install modified bituminous sheet roofing to withstand wind loads, structural movement, thermally induced movement, and exposure to weather, without failure.

B. UL Listing: Provide modified bituminous sheet roofing and flashing systems including mopping asphalt that have been tested for application and slopes indicated and 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.

C. FM Compliance: Installation of roofing system and component materials shall comply with Factory Mutual Approved Standard 4470. The roof configuration, (including insulation, etc.), shall be approved by FM for a minimum 1A-90 wind uplift construction.

1.7 GENERAL REQUIREMENTS

A. Deviations: In the event these Specifications or the Drawings deviate from the manufacturer's current specifications, these specifications prevail, except where they conflict with the manufacturer's requirements for the specified guarantee. In this case, the manufacturer's specifications prevail.

B. Specification Amendments: Drawings, addenda and modifications may be issued subsequent to the printing of these Specifications. Ascertain that such amendments to these Specifications are workable alterations.

C. Contractor Acceptance: Prior to the project start, ascertain that all aspects of these Specifications and possible modifications are workable and do not conflict with the manufacturer's requirements for the specified guarantee. Upon commencement of the work, it will be presumed that these Specifications and drawings, addenda and modifications are satisfactory to both the Contractor and the manufacturer in their entirety.

D. Supplied Materials: Supply all materials of the roofing system, including accessory products. The bidding Contractor, by making his bid, represents that his bid price is based on the use of the materials listed in Part 2 - Products.

1.8 SUBMITTALS

A. Submittals prior to Contract Award shall include:

1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor at the highest level, authorized to install the proposed system.
2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.
    a. Warranty shall not exclude random areas of ponding water from coverage.

B. Product Data: Submit latest edition of the roofing system manufacturer's specifications and installation instructions.

C. Sample Warranty: Submit manufacturer's sample warranty with a list of components of the roofing system, which will be guaranteed.

1. Submit letter from manufacturer stating that this warranty shall not exclude random areas of ponding water from coverage.

D. Samples: Submit two (2) 12 inch x 12 inch samples of the primary roofing and flashing sheets.

1. Submit two (2) representative samples of each type of roofing insulation.

2. Submit representative samples of fasteners and roofing accessories as requested by Authorized Representative for verification of compliance with these specifications.

E. 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.

F. Material List: Submit a descriptive list of all component parts of the roofing system that shall be guaranteed.

G. Certificates: Submit the following:

1. Evidence of Underwriter's Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt). No other testing agency approvals will be accepted.
2. Evidence of Factory Mutual Approval Standard 4470 for the proposed membrane system.
3. Evidence of the roof configuration (including fastening of base sheet, etc.), is approved by FM for minimum 1A-90 wind uplift construction.
4. Manufacturer's Certificate of Analysis: Provide manufacturer's certificate of analysis for each production run of base ply and finish ply. If a production run is longer than 24 hours, a new lot number shall be assigned and a new Certificate of Analysis shall be generated. Information required on Certificate of Analysis shall be:
    a. Length (ft.).
    b. Width (in.)
    c. Thickness at Selvage (mils).
    d. Total Thickness (mils).
    e. Weight (lbs/roll).
    f. Selvage Width (in.).
    g. Low Temperature Flexibility (0 deg. F.), ASTM D-5147.
    h. Granule Embedment (avg. grams loss/sample), ASTM D-5147.
    i. Breaking Load (lbf/in.), ASTM D-5147.
    j. Ultimate Elongation (%).
    k. Compound Stability (0 deg F.), ASTM D-5147.
    l. Dimensional Stability (%), ASTM D-5147.
    m. Resistance to Thermal Shock (%), UEAtc.

H. Manufacturer’s Letter: Submit letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.

I. **Manufacturer's Experience:** Submit a list of three (3) of the 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 10 years.

J. **Fastening pattern,** including both field and perimeter conditions, as required by FM per 1A-90 requirements for fasteners to secure insulation boards over steel decks.

K. **Delivery Tickets:** Provide Contractor and Authorized Representative with bills of lading for roofing system products, including bitumen, at time of delivery to the project site.

L. **Roofing Manuals:** Submit, in a 3-ring binder, three (3) copies each of all roofing data, including manufacturer's catalogs/manuals of materials and accessories used in the Project, including manufacturer's guarantee and maintenance recommendations as specified in "Section 01770".

1. Submit copies of record (as-built) roof specifications, drawings, and roofing-related details, and copies of submittals required under Division 1

1.9 QUALITY ASSURANCE

A. **Acceptable Products:** The Contractor shall provide primary roofing products, including each type of sheet, all manufactured in the United States, supplied by a single manufacturer, which has been successfully producing the specified types of primary products for not less than ten (10) years.

1. The Contractor shall provide secondary or accessory products, which are acceptable to the manufacturer of the primary roofing products.

B. **Roofing Manufacturer Requirements:** Obtain primary products, including each type of roofing and composition flashing sheet, from a single manufacturer. Provide insulation and other related products recommended by manufacturer of primary products for use with roofing system specified.

1. The roofing manufacturer shall have been continuously producing roofing products of the type required for this project in the same climactic zone as the geographic location of this project.

C. **Acceptable Roofing Contractor:** The Contractor shall have a minimum of five (5) years experience in successfully installing the same or similar roofing materials and shall be certified in writing by the roofing materials manufacturer at the highest level to install the primary roofing products.

1. Provide a list of five (5) complete projects installed in this area.
2. The roofing superintendent shall take readings and LDG temperature of asphalt at point of application with an infrared hand-held gun.

D. **Project Acceptance:** The Contractor shall submit a completed manufacturer's application for roof guarantee form along with shop drawings of the roofs showing all dimensions, penetrations, and details.

1. The form shall contain all the technical information applicable to the project including deck types, roof slopes, base sheet and/or insulation assemblies (with method of attachment, and fastener type), and manufacturer's membrane assembly proposed for installation.
2. The form shall also contain accurate and complete information requested including proper names, addresses, zip codes and telephone numbers.

3. The project must receive approval, through this process, prior to shipment of materials to the project site.

E. Scope Of Work: The work to be performed under this specification shall include but is not limited to the following:

1. The Contractor shall attend necessary job meetings and shall furnish competent and full time supervision, experienced roof mechanics, all materials, tools and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification.
2. Application shall be in strict compliance with the latest written application instructions of the manufacturer of the primary roofing products.
3. Application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.
4. Comply with latest edition of SMACNA "Architectural Sheet Metal Manual".

F. Local Regulations: The Contractor shall conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

G. Material Safety Data: The roofing system manufacturer shall furnish Material Safety Data Sheet/Sheets (MSDS), in the OSHA-approved form current at the time data is furnished. Installer shall assure that these MSDS are available at the project site at all times until project completion.

H. Testing Agency: The Owner at its option and expense, select and employ:

1. A roofing systems consultant to review the Construction Documents and/or perform surveillance during installation of substrate, roofing, flashing and any other part of the total roofing system. The Owner reserves the right to sample roofing products for testing on site without advance notice.
2. An independent roofing inspection service, specializing in non-destructive evaluations (NDE), for moisture detection purposes, before final acceptance, or before the end of the roofing guarantee period.
3. A full-time representative on site during the roofing installation who may conduct a moisture survey prior to approval and acceptance of the roofing system(s).

I. Recommended Maintenance: In addition to the guarantee, the Contractor shall furnish to the Owner the manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repair, and leak call procedures.

1.10 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials to work site in manufacturer's unopened and undamaged container and in quantities required to allow continuity of application.

1. Each pallet, container or unit shall have the material manufacturers name and brand designation clearly listed.

B. Storage: Store materials out of direct exposure to the elements.

1. Store rolled goods on a clean, flat and dry surface.
2. All material stored on the roof overnight shall be stored on pallets.
3. Rolls of roofing must be stored on ends.

4. Store materials on the roof in a manner so as to preclude overloading of deck and building structure.
5. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat.
6. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

C. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter; rolled goods shall be handled to prevent damage to edges or ends.

D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above shall be automatically rejected and shall be removed and replaced at the Contractor's expense.

1.11 REQUIREMENTS PRIOR TO JOB START

A. Notification: Give a minimum of five (5) days notice to the Authorized Representative and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

B. Permits: Obtain all permits required by local agencies and pay all fees that may be required for the performance of the work.

C. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by NRCA and other industry or local governmental groups.

1.12 ENVIRONMENTAL REQUIREMENTS

A. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

B. Water Infiltration: If water infiltrates under or in between the roof membranes, that area of the roof shall be removed, including roof insulation that is contaminated with moisture.

1. New, dry roofing components shall then be installed to that area.

C. Night Seals: The installed roof shall be made watertight at the end of every work day, as per manufacturer's requirements, and this night seal shall be removed at the beginning of the next work day, if so directed by manufacturer's instructions.

D. Temperature Restrictions - Asphalt:

1. At ambient temperatures of forty, (40) degrees F and below, special precautions must be taken to ensure that the specified Type IV asphalt maintains a minimum acceptable 400 degrees F temperature at the point of sheet application.
2. The asphalt must not be overheated to compensate for cold conditions.
3. The use of insulated handling equipment is strongly recommended.
4. Hot luggers, mop carts, and kettle-to-roof supply lines should be insulated.
5. Hand mops should be constructed with a smaller yarn head to facilitate short moppings.

6. Luggers and mop carts should never be more than half filled at all times.

1.13 PROTECTION REQUIREMENTS

A. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.

B. Torch Safety: Designate one person on each crew to perform a daily fire watch. The designated crewmember shall watch for fires or smoldering materials on all areas of roof construction. Continue the fire watch for one hour after roofing material application has been suspended for the day.

C. Limited Access: Prevent access by the public to materials, tools and equipment during the course of the project.

D. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

E. Site Condition: Complete, to the owner's satisfaction, all job-site clean up including building interior, exterior and landscaping where affected by the construction.

1.14 SEQUENCING AND SCHEDULING

A. Sequence installation of modified bitumen roofing with related units of Work specified in other Sections to ensure that roof assemblies, including roof accessories, flashing, trim, and joint sealers, are protected against damage from effects of weather, corrosion, and adjacent construction activity.

1.15 ROOFING CONFERENCES

A. Pre-Installation Conference: A pre-installation conference shall be arranged by Contractor, and shall be attended by Roof Contractor, roofing foreman, modified bitumen manufacturer's representative, General Contractor's representative, Authorized Representative, and Architect.

1.16 ROOFING WARRANTIES

A. Special Project Guarantee: Submit two executed copies of 2-year Roofing Guarantee on the form included at end of this Section, covering the work of this Section and related work of “Section 07620 - Sheet Metal Flashing and Trim” including roofing membrane, membrane flashings, roof insulation, roofing accessories and sheet metal flashings, signed and countersigned by Roofing Contractor.

B. Manufacturer's Warranty: Upon inspection and acceptance of the completed roofing system, the Roofing System Manufacturer shall furnish the Owner with it's twenty (20) year No Dollar Limit (NDL), Non-Pro-Rated factory warranty covering leaks from all roof membrane, insulation, fasteners, flashings, sheet metal details (pitch pans, counter-flashings, edge flashings, drain flashings, etc.), and other specified components. Warranty shall also cover all labor required for proper repairs as required under the warranty including replacement of wet insulation and roof membrane caused by a covered leak.

1. Manufacturer's warranty shall also cover damage due to windstorms up to Hurricane force winds, and define limits in MPH as to what extent wind damage is covered.
2. This warranty shall not exclude random areas of ponding water from coverage.
    a. This requirement requires prior approval from Manufacturer. Contractor must obtain prior approval and shall be required to include this in warranty.

PART 2 - PRODUCTS

2.1 MODIFIED BITUMEN MEMBRANE SYSTEM MANUFACTURERS

A. Approved Manufacturers/Products: The following systems are approved. Systems of other manufacturers require pre-bid approval in accordance with the Instructions to Bidders.

1. **JOHNS MANVILLE, INC.: "DynaLastic 180S/DynaGlas FR"**
    a. Cap Sheet: "DynaGlas FR (160 mils thick; weight 106 lbs. per square; with fiberglass mat.
    b. Base Ply: "DynaLastic 180 Smooth" (120 mils thick; weight 90 lbs. per square; with fiberglass mat.
    c. Flashing: "DynaClad Aluminum" (160 mils/4.0 mm thick; weight 101 lbs. per square; with fiberglass mat).
2. **SIPLAST, INC.: "Paradiene 20 EG/30FR"**
    a. Cap Sheet: "Paradiene 30 FR" (130 mils thick; weight 90 lbs. per square; with fiberglass mat).
    b. Base Ply: "Paradiene 20 EG" (118 mils thick; weight 85 lbs. per square; with fiberglass mat).
    c. Flashing: "Veral Aluminum" (138 mils thick; weight 92 lbs. per square; with fiberglass scrim mat).
3. **FIRESTONE BUILDING PRODUCTS COMPANY**
    a. Cap Sheet: "SBS FR Cap" (148 mils thick; weight 91 lbs. per square; with fiberglass mat).
    b. Base Ply: "SBS Smooth" (140 mils thick; weight 84 lbs. per square; with fiberglass mat).
    c. Flashing: "SBS Metal Flash-Al" (150 mils thick; weight 100 lbs. per square; with fiberglass scrim mat).
4. **SOPREMA ROOFING & WATERPROOFING, INC.: "System 25/42 FR"**
    a. Cap Sheet: "Sopralene 250 FR" (160 mils thick; weight 116 lbs. per square; with polyester mat).
    b. Base Ply: "Sopralene 250 smooth" (163 mils thick; weight 112 lbs. per square; with polyester mat).
    c. Flashing: "Sopralast 50 TV ALU" (168 mils thick; weight 104 lbs. per square; with fiberglass scrim mat).
5. **TAMKO, INC.: "Versa Smooth/Awa Plan Premium FR"**
    a. Cap Sheet: "Awa Plan Premium FR" (155 mils thick; weight 100 lbs. per square; with polyester mat).
    b. Base Ply: "Versa Smooth" (160 mils thick; weight 100 lbs. per square; with polyester mat).

c. Flashing: "Awa Plan Premium FR" (155 mils thick; weight 100 lbs. per square; with polyester mat).

B. All sloped roofs exceeding slope of 1/2" per foot shall be Siplast, Inc. Paradiene 20/30 IA Specification for cold adhesive application or approved equal.

2.2 ROOFING MEMBRANE ASSEMBLY/PRODUCTS

A. Roofing Membrane Assembly: Two (2) plies, each constructed of a blend of high quality asphalt and Styrene-Butadiene-Styrene (SBS) copolymer thermoplastic rubber, having a fiber glass reinforcement. Each sheet of the roof membrane assembly shall meet the following physical requirements as a minimum.

1. Modified Bitumen Base Ply:
   a. Approvals: UL Class A, FM Class 1 (products shall bear seals of approval).
   b. Elongation of base modified bitumen (%): 1000+.
2. Modified Bitumen Cap Sheet:
   a. Approvals: UL Class A, FM Class 1 (products shall bear seals of approval).
   b. Elongation of base modified bitumen (%): 1000+.
   c. Granule Color as selected by Architect
3. Modified Bitumen Stripping Ply:
   a. (Same as modified base ply).

B. Flashing Membrane Assembly: The flashing membrane shall consist of a prefabricated woven glass-mat scrim reinforced, Styrene-Butadiene-Styrene (SBS) copolymer modified asphalt having a continuous, channel embossed metal foil surfacing. The flashing membrane shall meet the following minimum physical requirements.

1. Metal-Clad Modified Bitumen Flashing Membrane:
   a. Approvals: UL Class A, FM Class 1, (products shall bear seals of approval).
   b. Elongation of base modified bitumen (%): 1000+.
   c. Tensile strength in pound force:
      @ 23 degree C - 135 md/135 xd.
      @ -18 degree C - 200 md/200 xd.
2. Modified Bitumen Flashing Reinforcing Sheet: (Same as modified base ply).

2.3 ROOF INSULATIONS

A. Isocyanurate Foam Board Insulation: 2-1/2" nominal thickness (or as otherwise indicated on Drawings), closed cell, rigid isocyanurate foam core material, integrally laminated between glass fiber facers. Comply with ASTM C-1289, Type II.

1. Approved Products/Manufacturers:
   a. "AC FOAM II"; Atlas Energy Products; Atlanta, GA (404) 438-9700.
   b. "E'NRG'Y 3 "; Johns Manville, Inc.; Denver, CO (303) 978-2000.

B. Isocyanurate Tapered Roof Insulation: Tapered panels and standard fill panels composed of isocyanurate with a 1/2-inch gypsum-based overlay board. Panels shall be in compliance with ASTM C 728. The tapered system shall provide for a roof slope of ¼ inch per foot minimum.

1. Gypsum board overlay: nonstructural, water-resistant gypsum core panel Product/Manufacturers:
    a. 1/2" "DENS-DECK FIREGUARD Roof Board"; G-P Gypsum Corporation.

C. Perlite Board Insulation: Panel composed of expanded volcanic minerals combined with waterproofing binders and top surfaced with an asphalt based coating. Provide perlite panels that are in full compliance with ASTM C 728. Provide panels having a nominal thickness of 3/4".

1. Approved Products/Manufacturers:
    a. "FESCO BOARD"; Johns Manville, Inc.; Denver, CO
    b. "PERMALITE SEALSKIN"; International Permalite, Inc.; Ontario, CA

D. Perlite Tapered Roof Insulation: Tapered panels and standard fill panels composed of expanded volcanic minerals combined with waterproofing binders and top surfaced with an asphalt based coating. Provide panels that are in compliance with ASTM C 728. The panels shall provide for a roof slope of 1/4" per foot.

1. Approved Products/Manufacturers:
    a. "TAPERED FESCO BOARD"; Johns Manville, Inc.; Denver, CO
    b. "PERMALITE TAPERED INSULATION SYSTEMS"; International Permalite, Inc.; Ontario, CA

2.4 CRICKET AREAS

A. Perlite Tapered Roof Insulation: Tapered panels and standard fill panels composed of expanded volcanic minerals combined with waterproofing binders and top surfaced with an asphalt based coating. Panels shall comply ASTM C 728. The panels shall provide for a roof slope of ½" per foot.

1. Approved Products/Manufacturers:
    a. "PRECUT TAPERED FESCO BOARD"; Johns Manville, Inc.; Denver, CO
    b. "PERMALITE TAPERED INSULATION SYSTEMS"; International Permalite, Inc.; Ontario, CA

2.5 MISCELLANEOUS ROOFING MATERIALS

A. Mopping Asphalt: Mopping asphalt shall be certified for full compliance with the requirements for type IV asphalt listed in Table I, ASTM D-312-84. Each container or bulk shipping ticket shall indicate the equiviscous temperature, EVT, the finished blowing temperature, FBT, and the flash point, FP.

B. Cold Adhesive: A blend of special adhesive asphalts and safe, high flash, quick drying solvents that meets or exceeds ASTM D 4479, TYPE II requirements.

C. Asphaltic Primer: Asphalt primer shall consist of a high flash, quick drying, asphalt solvent blend which meets or exceeds ASTM D41 requirements:

D. Mastic: The mastic, used as a base for setting metal flanges, shall be asphalt cutback, reinforced with non-asbestos fibers, conforming to ASTM-D 4586 Type II requirements:

E. Pitch Pan Filler: A single component, cold applied urethane compound of pouring consistency, exhibiting no weathering or cracking when tested according to ASTM D 920 Type S. (See pitch pan preparation for proper mixing and use.)

F. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying and non-migrating sealant.

G. Caulking/Sealants: Silicone, single component, high performance, elastomeric sealant conforming to ASTM C 920 in accordance with "Section 07920 - Joint Sealants".

H. Ceramic Granules: Ceramic granules of same composition and color as the modified bitumen cap sheet membrane.

I. Metallic Powder: The metallic powder, used for covering of bitumen overruns over the foil surfaced membrane, shall consist of a finely graded metal dust as supplied or approved by the membrane manufacturer.

J. Preformed Cants: Perlite board, ASTM C 728, 3 ½" x 3 ½" x 45 degrees.

2.6 FASTENERS

A. Fasteners for Insulation and Wood Nailers: Provide insulation fasteners and plates that are FM Approved, and/or approved by the manufacturer of the primary roofing products. The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging, etc. The fastening pattern for each insulation panel to be used shall be as recommended by the insulation manufacturer and approved by the manufacturer of the primary roofing products. Acceptable insulation fastener manufacturers for specific deck types are listed below.

1. Metal Decks: Provide insulation mechanical fasteners and metal plates for metal decks that have been factory coated for corrosion resistance, and when subjected to 30 Kesternich cycles, must show less than 10% red rust, conforming to Factory Mutual 4470. Acceptable insulation fastener types for metal decks are listed below.

    a. A single unit, precision formed, fluorocarbon coated screw type roofing fastener having a minimum one hundred seventy-two thousandths (.172) inch diameter shank and a minimum two hundred-twenty thousandths (.220) inch diameter thread. All plates used with the fastener shall be a metal type having a minimum three (3) inch diameter, as supplied by the fastener manufacturer.

        1) "ROOFGRIP" with "BUILDEX METAL PLATES"; ITW Buildex; Itasca, IL (312) 595-3500

        2) "DEKFAST #12" with "DEKFAST STEEL HEXAGONAL PLATES"; Construction Fasteners, Inc., Wyomissing, PA (215) 376-5751

        3) "UltraFast Fastener and Plate"; Johns Manville; Denver, CO (303) 978-2000

2.7 RELATED COMPONENTS

A. Lumber for Nailers and Blocking: Nominal sizes are indicated except as shown by detail dimensions. Provide actual sizes as required by PS 20 for maximum 19% moisture content.

1. Grade and Species: No. 2 grade light framing size lumber, any west coast or southern pine species; southern pine board size lumber.
2. Preservative Treatment: Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC/s Board of Review.
    a. Pressure-treat all lumber with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft (6.4 kg/cu. m).
3. Nailers used for edge metal securement shall be a minimum six (6) inches wide with a thickness to match the height of the new insulation assembly.

B. Lead Drain Flashings: Lead flashing for drains shall be formable type weighing a minimum of 2 ½ pounds per square foot, in sheets of minimum 36" x 36" dimension or as required, complying with FED SPEC NO. QQ-L-201.

C. Lead Pipe Flashings: Lead pipe flashing sleeves shall be preformed and soldered with a minimum four (4) inch perimeter flange and a sleeve opening fabricated to fit closely around the penetration without forcing, complying with FED SPEC NO. QQ-L-201. Lead sleeves shall be two-piece, of sufficient height to allow a minimum of one (1) inch to be crimped inside of the pipe stack.

D. Fabricated Metal: All fabricated metal components incorporated into the roofing system shall comply with "Section 07620 - Sheet Metal Flashing and Trim".

1. Metal pipe flashings shall consist of a two (2) component assembly:
    a. The first component shall be a metal roof jack having a minimum four (4) inch perimeter flange, and a sleeve opening to fit closely around the penetration without forcing, with a minimum six (6) inch height. All metal laps shall be fastened and soldered.
    b. The second component shall be a metal, watertight umbrella, fabricated to be mechanically secured tightly around the roof penetration and extend beyond the roof jack opening by a minimum radius of three (3) inches. The top edge of the watertight umbrella shall be caulked using an approved sealant.

E. Roof Protection Material: Modified bitumen sheet material composed of an asphalt-impregnated, puncture-resistant polyester fabric core, coated with a polymer-modified bitumen and topped with a ceramic-coated granule-wearing surface. Manufacture in roll form with a 30 inch width and minimum thickness of 217 mils:

PART 3 - EXECUTION

3.1 INSPECTION

A. Meetings: Conduct a pre-job conference including the Architect, Authorized Representative, Roofing Contractor and Manufacturer's Representative prior to application of roofing.

B. Foreman: The roofing foreman shall have a copy of these specifications on the job site at all times. The presence of specifications and an inspector shall not relieve the Contractor of strict compliance with the manufacturer's specifications, detail drawings, and/or approved material requirements.

C. Deck Penetrations: Contractor shall verify that work penetrating the roof deck, or which may otherwise affect the roofing application, has been properly completed.

3.2 PREPARATION

A. General: All surfaces shall be swept or vacuumed, removing all loose aggregate and foreign substances prior to commencement of roofing.

B. Examine substrate surfaces to receive modified bitumen sheet roofing system and associated work and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.3 SUBSTRATE REQUIREMENTS

A. Roof Decks - General: Structural roof decks shall properly provide sufficient strength to support anticipated dead and live loads and normal construction traffic without excessive deflection or movement. All openings, walls or projections through the roof deck shall be completed before application of the roof membrane is begun. The deck shall be constructed, and necessary deck repairs made according to the deck manufacturer's specifications following best established practices.

1. Metal Decks: Metal roof decks shall be constructed in accordance with Factory Mutual structural requirements listed in the current Factory Mutual Approval Guide and Factory Mutual Loss Prevention Data Sheet 1-28 dated May 1983. Steel roof decks shall be as specified (See Section 05300) factory galvanized or factory coated with aluminum zinc alloy for corrosion protection. Galvanized protection shall comply with ASTM A-525, Class G-90. Zinc alloy protection shall comply with ASTM A-792. The deck manufacturers shall be notified prior to application over highly corrosive environments. Steel decks shall be shop primed, clean, and dry, with ribs of deck free of snow, ice or water. Top flanges of installed steel deck should be flat. Mechanical fastening should be provided at all side laps; spacing between side lap fasteners and bar joists or beams should not exceed 3 feet.

3.4 INSULATION INSTALLATION

A. Insulation, General: Insulation panels shall be installed with ends offset; edges of the panels shall be in moderate contact, and without forcing, applied in strict accordance with the insulation manufacturer's requirements and the following instructions:

B. Insulation - Double Layer (Metal Deck): Isocyanurate insulation panels shall be mechanically attached to the metal decking using approved fasteners at a minimum rate of one (1) fastener for every two (2) square feet of insulation panel area. ***This shall be verified by manufacturer***. Tapered perlite shall be solidly mopped. Install joints of each succeeding layer staggered from joints of previous layer a minimum of 6" in each direction.

C. Tapered Insulation - Double Layer (Metal Deck): Isocyanurate insulation panels shall be mechanically attached to the metal decking using approved fasteners at a minimum rate of one (1) fastener for every two (2) square feet of insulation panel area. ***This shall be verified by manufacturer***. Tapered perlite shall be solidly mopped. Install joints of each succeeding layer staggered from joints of previous layer a minimum of 6" in each direction.

D. Cricket Areas: Construct crickets of tapered perlite panels between roof drains, or where otherwise indicated. Install each cricket directly over the surface of the top layer of insulation. Construct to facilitate prompt and complete removal of water to each roof drain.

3.5 ROOF MEMBRANE INSTALLATION - GENERAL

A. Membrane Application: Application of roofing shall be in accordance with roofing system manufacturer's instructions and the following requirements.

1. Application of roofing shall immediately follow application of base sheet and/or insulation as a continuous operation.

B. Aesthetic Considerations: The overall appearance of the finished roofing application is a standard requirement for this project. The Roofing Contractor shall make necessary preparations, utilize recommended application techniques, apply the specified materials (ie. granules and metallic powder) and ensure that the finished application is acceptable to the Owner.

C. Priming: Prime both sides of metal flanges (all jacks, edge metal, lead drain flashings, etc.) and concrete and masonry surfaces with a uniform coating of asphalt primer ASTM D-41, 24 hours prior to use.

D. Kettles and Tankers: Kettles and tankers shall be equipped with accurate, fully readable thermometers. Asphalt shall not be heated to or above its flash point. Avoid heating at or above the FBT, should conditions make this impractical, heating must be no more than 25 degrees below the EVT and no more than 25 degrees F above EVT.

E. Asphalt Temperatures: If the EVT information is not provided, the following asphalt temperature shall be observed. Maximum heating temperature shall be 525 degrees F. Minimum application temperature shall be 400 degrees F.

F. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealant will NOT be permitted.

G. Asphalt Moppings: All moppings shall be maximum 25 pounds/square, and shall be total in coverage, leaving no breaks or voids.

H. Roofing Application: All layers of roofing shall be laid free of wrinkles, creases or fishmouths. Sufficient pressure shall be exerted on the roll during application to ensure prevention of air pockets. Lap seams in the base ply layer shall be staggered with the lap seams of the cap sheet layer.

1. All layers of roofing shall be laid perpendicular to the slope of the deck.
2. The modified bitumen base ply shall be fully bonded to the prepared substrate and shall have a minimum of three (3) inch side and end laps. Each sheet shall be applied directly behind the asphalt applicator.
3. The modified bitumen cap sheet shall be bonded to the base ply and have a minimum of three (3) inch side and end laps. Each sheet shall be applied directly behind the asphalt applicator.
4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds ½" per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.

I. Granule Embedment: Mineral granules shall be broadcast over all bitumen overruns on the cap sheet surface, while the bitumen is still hot, to ensure a monolithic surface color.

J. Flashing Application: Flashing shall be accomplished using the modified base ply as the reinforcing sheet and metal foil surfaced modified bitumen flashing membrane.

1. The metal foil flashing shall be applied in three foot lengths (cut from the end of roll) using the factory selvage edge for laps.
2. The reinforcing sheet shall be lapped a minimum of three inches to itself and shall extend a minimum of six inches onto the base surface and three inches up the parapet wall above the cant.
3. Lap seams in the reinforcing layer shall never coincide with the laps of the metal foil flashing layer.
4. The reinforcing sheet shall be adhered by a mopping of asphalt (both wall and sheet).
5. After the cap sheet has been applied to the top of the cant, the granular surface area that is to receive flashing coverage shall be prepared by torch heating or application of asphalt primer.
6. The metal foil flashing sheet shall be torched in place. Pressure shall be exerted on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag.
7. All loose laps and edges shall be checked and sealed.
8. The top edge of the metal-foil flashing shall be nailed on nine (9) inch centers.

K. Use Of Metallic Powder: Metallic powder shall be broadcast over all bitumen overruns on the metal foil membrane surface while the bitumen is still hot, to ensure a monolithic surface color.

L. Water Cut-Offs: At end of day's work, or when precipitation is imminent, a water cut-off shall be built at all open edges.

1. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service.
2. Cut-offs must be completely removed prior to the resumption of roofing.

3.6 RELATED COMPONENTS - INSTALLATION

A. General: The following is a list of descriptions for correct installation of components integrated into the roof membrane assembly. In all cases, unless otherwise approved, flanged components shall be incorporated into the system between the application of the modified bitumen base ply and the modified bitumen cap sheet. The flange must be primed with a uniform coating of ASTM D41 asphalt primer and allowed to dry thoroughly; all flanges must be set in approved mastic.

B. Lead Pipe Flashings: The lead flanges shall be completely primed (on both sides) and allowed to dry prior to installation.

1. After the modified bitumen base ply has been applied, the flange shall be set in mastic and stripped in using nine (9) inch wide strips of the modified bitumen base ply.
2. The modified bitumen cap sheet membrane shall then be applied, terminating at the flange-sleeve juncture of the pipe flashing.
3. See Item "Sealant" for finish of this detail.

C. Roof Drain Flashings: The lead drain flashing shall be completely primed and allowed to dry prior to installation.

1. After the modified bitumen base ply has been applied, the lead flashing sheet shall be set in mastic and formed to turn down inside of the drain bowl.
2. The perimeter of the lead flashing shall be plied-in using an additional layer of the base ply material, overlapping the perimeter of the lead a minimum of three (3) inches.
3. The modified bitumen cap sheet membrane shall then be applied, extending beyond the clamping ring seal.
4. The clamping ring shall then be installed with all clamps, bolts, etc. in place.

D. Roof Drain Connection: Roofing contractor shall be responsible for furnishing the roof drain assemblies, excluding the actual connection to the storm drain line which shall be the responsibility of the plumbing contractor.

E. Light Equipment Supports: Air handling units and miscellaneous light equipment which are not supported by wood sleepers shall be separated from the roof assembly using the manufacturer's walk tread-roof protection material.

1. Each walk tread pad shall be cut to a size, which extends a minimum of two (2) inches beyond the perimeter of each sleeper block.
2. The walk tread pad shall be set dry over the roof assembly.
3. Each sleeper block shall be set dry over the walk tread pad.

F. Small Pipe Supports: All gas lines, conduits or other pipes which are a maximum of one (1) inch diameter and run horizontally to the roof deck shall be supported using wood blocking and the manufacturer's walk tread-roof protection material.

1. The blocking shall be four (4) inches by four (4) inches by twelve (12) inches in size.
2. Each walk tread pad shall be cut to a size, which extends a minimum of two (2) inches beyond the perimeter of the blocking.
3. The pipe shall be loosely secured to allow movement over the six (6) inch center of each block; the spacing for the blocks shall be of adequate distance to prevent sagging of the pipe and to prevent the pipe from coming into contact with the roof assembly.
4. The walk tread pad shall be set dry over the new roof assembly.
5. Each pipe support block shall be set dry over the walk tread pad.

G. Edge Metal: The metal flanges shall be completely primed and allowed to dry prior to installation.

1. The modified bitumen base ply shall be turned down two (2) inches past the roof edge, over the nailer.
2. After the base ply and continuous cleat have been installed, the flange shall be set in mastic and stagger nailed every three (3) inches on center.
3. The flange shall be stripped in using nine (9) inch wide strips of the base ply material.
4. The modified bitumen cap sheet shall then be applied, terminating at the gravel stop rise of the edge metal.

H. Pitch Pans: The metal penetration must be completely cleaned of all roofing materials.

1. The inside wall of the pitch pan must be cleaned of any residual oil shop coatings using Naptha solvent. The pitch pan wall shall then be etched using a 5% acetic acid solutions.

2. The flange of the pitch pan shall be completely primed and allowed to dry prior to installation.
3. After the base ply has been applied, the flange shall be set in mastic and secured to the deck.
4. The flanges shall be stripped-in using nine (9) inch wide strips of the base ply material.
5. The pitch pan shall be filled with non-shrink grout to a level approximately 1 ½" below the top rim.
6. Duct tape shall be installed around the pitch pan wall to act as a form for the pitch pan filler.
7. Follow pitch pan filler manufacturer's instructions and recommendations for mixing.
8. Slowly and carefully fill pitch pan to the top level of the duct tape ensuring the finished level is above the top rim.
9. The cap sheet shall then be applied, terminating at the flange-pitch pan wall juncture. Refer to paragraph "Sealant" for finish of this detail.
10. A watertight umbrella shall be installed to the penetration completely covering the opening of the pitch pan.

I. Walk Pads: Cut the walk pads into maximum five (5) foot panels. Install the walk pads where designated, inverted, which will display the manufacturer's product label turned up. Use a ribbon mopping of the Type IV asphalt as the adhesive. Use a minimum spacing of one and one half (1 ½) inches between panels to allow for expansion. Install around equipment ladders and roof hatches and as indicated on Drawings.

J. Equipment Support Flashings: The metal pipe flanges shall be completely primed and allowed to dry prior to installation. After the base ply has been applied, the flanges shall be set in mastic and stripped-in using nine (9) inch wide strips of the base ply material. The cap sheet shall then be applied, terminating at the flange-sleeve juncture of the pipe flashing. A watertight umbrella shall be installed to the penetration, completely covering the opening of the pipe flashing. Refer to paragraph "Sealant" for finish of this detail.

K. Sealant: All modified bitumen cap sheet edges exposed at gravel stops, waste stacks, pitch pans, vent stacks, etc., shall be caulked with a smooth continuous bead of approved sealant.

3.7 FIELD QUALITY CONTROL

A. Notification of Completion: Contractor shall notify manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.

3.8 FINAL INSPECTION

A. Post-Installation Meeting (Final Inspection): A meeting shall be held and attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. The Contractor shall complete, sign, and mail the punch list form to the manufacturer's headquarters.

B. Drain Verification: At final inspection of all work, contractor shall verify that all drains, scuppers, etc., are functioning properly.

C. Air Handling Units: Contractor shall be responsible for the proper connecting and/or reconnecting of all duct work, electrical and supply connections. At final inspection, contractor shall verify that all connections are restored to a complete working, watertight, and safe condition.

D. Standing Water: There shall be no visual evidence of standing water on the roof 48 hours after it stops raining.

3.9 WARRANTY/GUARANTEE

A. Special Project Guarantee: Submit two executed copies of 2-year Roofing Guarantee on the form included at end of this Section

B. Issuance of the Warranty: All post installation procedures shall be completed and meet the manufacturer's final endorsement for issuance of the specified warranty.

3.10 TWO-YEAR INSPECTION

A. Two-Year Inspection: Contact the manufacturer during the ninety (90) day period immediately preceding the two (2) year anniversary of the guarantee date to arrange for a mandatory two-year inspection. The inspection shall be attended by the Contractor and the manufacturer's representative. A two-year inspection punchlist shall be compiled by the manufacturer and submitted to the Contractor for his completion. Upon completion, the Contractor shall sign and mail the punchlist form to the manufacturer's headquarters, verifying that all items are in accordance with the manufacturer's recommendations.

3.11 CLEANING

A. Remove bituminous markings from finished surfaces.

B. Cleaning: In areas where finished surfaces are soiled by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.12 PROTECTION

A. Protect building surfaces against damage from roofing work.

B. Roof Traffic: Where traffic must continue over finished roof membrane, protect surfaces.

END OF TEXT (Roofing Guarantee follows)

ROOFING GUARANTEE

OWNER: LOUISIANA DOTD

WHEREAS: _____

ADDRESS: _____

_____

Telephone: (___)_____, herein called the "Roofing Contractor," has performed roofing and flashing in accordance with the Contract Documents, for _____ (hereinafter called the "Work") under a

Subcontract with_____

General Contractor on the Following Project: _____

Name of Project: _____

Location/Address: _____

Name of Building: _____

Type(s) of Roof Deck(s): _____

Total Roof Area: _____SF; Flashing, Edge: _____ LF; Base: _____ LF

Guarantee Period: Two(2) years.

Date of Acceptance: _____ Date of Expiration: _____

AND WHEREAS the Roofing Contractor has contracted (as a Subcontractor) to guarantee said work against water entry due to faulty or defective materials and workmanship for designated Guarantee Period,

AND WHEREAS the General Contractor, by its acceptance of the Contract for the above described project, has jointly assumed with the Roofing Contractor the obligations to the Owner of said guarantee against leaks and faulty or defective materials and workmanship;

NOW THEREFORE the Roofing Contractor and the General Contractor jointly and severally guarantee, subject to the terms and conditions herein set forth, that during the Guarantee Period they will at their own cost and expense, make or cause to be made with approved procedures and materials such repairs to or replacements of said work resulting from water entry or faults or defects of said Work as are necessary to correct faulty and defective work and as are necessary to maintain said Work in watertight conditions and further to respond on or within two (2) working days upon written notification of leaks or defects by the Owner. Furthermore, they will at their own cost and expense maintain the roof for (2) years after acceptance, in accordance with the current edition of the Roof Maintenance Manual published by the Roofing Industry Educational Institute. The roof shall be inspected a minimum of twice each year, and a report

prepared documenting the conditions observed at each inspection. These inspections shall be made once during the months of April or May and once during the months of September and October. Two copies of each report shall be forwarded to the Owner.

This Guarantee is made subject to the following terms and conditions:

1. Specifically excluded from this Guarantee are damages to the Work and other parts of the building, and to building contents, caused by: a) earthquake, lightning, hailstorm or windstorm, including hurricanes and tornadoes; b) fire; and c) structural failures causing excessive roof deck, edgings and related roof components movement. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.

2. During Guarantee Period, if the Owner allows alteration of work by anyone other than a Contractor approved in writing by the Roofing Contractor, General Contractor, and Roofing Material Manufacturer prior to the work being performed, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Guarantee shall become null and void upon date of said alterations. If the Owner engages the Roofing Contractor to perform said alterations, Guarantee shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified the Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the Work, thereby reasonably justifying a limitation or termination of this Guarantee.

3. During the Guarantee Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Guarantee shall become null and void upon date of said change, but only to extent said change affects work covered by this Guarantee.

4. During the Guarantee Period, if the buildings or areas of buildings are changed to uses creating extremes of interior temperature and/or humidity, but for which it was not originally designed and specified, without provisions and alterations made to the building which effectively contain or control these conditions, this Guarantee shall become null and void upon the date of said change.

5. The Owner shall promptly notify the Roofing Contractor in writing of observed, known or suspected leaks, defects, or deterioration, and shall afford reasonable opportunity for Roofing Contractor to inspect the Work, and to examine evidence of such leaks, defects, or deterioration.

6. This Guarantee is recognized to be the only guarantee of General Contractor and Roofing Contractor on said work and shall not operate to restrict or cut off the Owner from other remedies and resources lawfully available to him in cases of roofing failure. Specifically, this Guarantee shall not operate to relieve the Roofing Contractor of responsibility for performance of the original work, in accordance with requirements of the Contract Documents, regardless of whether the Contract was a contract directly with the Owner or a subcontract with the Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this _____day of _____ , 20____ .

Roofing Contractor's Signature: _____

Typed Name: _____

Representing: _____

Telephone No: _____

And has been countersigned by the General Contractor issuing the Roofing Contractor's Subcontract for said work:

Name of General Contractor: _____

Date: _____ Authorized Signature: _____

Representing: _____

Typed Name: _____

Telephone Number: _____

WITNESS:
_____

END OF SECTION