January 24, 2025

CDFL ARCHITECTS + ENGINEERS PA
3221 OLD CANTON ROAD, SUITE 200
JACKSON, MISSISSIPPI 39216

ADDENDUM NUMBER TWO (#2)
CoJ 911 OPERATIONS CENTER
CITY OF JACKSON
CDFL 23-114

Plan Holders:

The following changes and clarifications are hereby made a part of and take precedence over conflicting sections of the Drawings and Specifications.

Architect

GENERAL CLARIFICATIONS:

2.1 A pull test was performed previously. The results were as follows:

Using a 1.8" Soprema Twinlok fastener, the lightweight concrete deck was able to achieve 240 psf. Due to the difficulty of installing the Twinlok fastener, a similar system of attachment is not recommended.

PERTAINING TO THE SPECIFICATIONS:

2.2 Section 07 52 00 – Modified Bituminous Membrane Roofing: Delete this Section and replace with attached Section 07 55 00 – Modified Bituminous Membrane Roofing – Cold Applied. Revise the index accordingly.

PERTAINING TO THE DRAWINGS:

2.3 Sheet A-101 ROOF PLAN – Revise notes 1 and 6, replace references to "TPO" with "modified bitumen".
2.4 Sheet A-101 ROOF PLAN – On notes 2,3, and 12, add "prefinished" before "galvanized".

END OF ADDENDUM NUMBER TWO (#2)

SECTION 07 55 00

MODIFIED BITMINOUS MEMBRANE ROOFING - COLD APPLIED

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 1 Specification Sections, apply to this section.

B. Section includes:
   1. Cold-applied modified bituminous roofing membrane
   2. Insulation, flat and tapered
   3. Vapor Retarders
   4. Cover boards
   5. Additional accessories.

1.2 SUMMARY

A. Cold applied, asphalt modified bituminous membrane roofing over prepared substrate and insulation system.
   1. Remove existing roof system in its entirety down to the roof deck.
   2. Install the specified roof insulation system and roof recovery board in accordance with this section.
   3. Adhere one (1) ply of the specified modified base roofing ply in the specified cold applied adhesive.
   4. Adhere one (1) ply of the specified modified membrane roof ply in the specified cold applied adhesive.
   5. Install two (2) ply modified asphalt membrane flashing system with cold applied adhesive.
   6. Apply aluminum coating over field and flashings.

B. The Contractor shall remove the existing roof systems back to the roof deck and install a cold applied, SBS modified bituminous membrane roof system including roof insulation, flashings, metal counterflashings, drains, as specified, shown on the Drawings, and as required for a complete roof installation.

1.3 RELATED SECTIONS

A. Division 07 60 00 - Sheet Metal Flashing and Trim.

B. Section 06 10 00 - Rough Carpentry: Wood nailers and curbs.

C. Section 07 01 50.19 - Preparation for Re-Roofing.

D. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets, etc.

1.4 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. ASCE 7-10, Minimum Design Loads for Buildings and Other Structures.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D41, Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing.
   2. ASTM D312, Specification for Asphalt Used in Roofing.

3. ASTM D451, Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
4. ASTM D1079, Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
5. ASTM D1863, Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
6. ASTM D2178, Specification for Asphalt Glass Felt Used as a Protective Coating for Roofing.
7. ASTM D2822, Specification for Asphalt Roof Cement.
8. ASTM D2824, Specification for Aluminum-Pigmented Asphalt Roof Coating.
9. ASTM D4601, Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
10. ASTM D5147, Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
11. ASTM D6162, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
12. ASTM D6163, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
13. ASTM E108, Test Methods for Fire Test of Roof Coverings.

C. Factory Mutual Research (FM):
   1. Roof Assembly Classifications.

D. National Roofing Contractors Association (NRCA):
   1. Roofing and Waterproofing Manual.

E. Underwriters Laboratories, Inc. (UL):
   1. Fire Hazard Classifications.

F. Warnock Hersey (WH):
   1. Fire Hazard Classifications.

1.5 SYSTEM DESCRIPTION

A. It is the intent of this specification to install a long-term, quality roof system that meets or exceeds all current NRCA guidelines as stated in the most recent edition of the NRCA Roofing and Waterproofing Manual. Please discuss any concerns with the Architect and Roofing System Manufacturer.

1.6 DISCLOSURE OF MATERIALS

A. The materials outlined herein are the materials that are to be used in this project. When a particular make or trade name is specified, it shall be indicative of the minimal standard of material required and to be used.
   1. Bidder will not be allowed to change materials after the bid opening date.
   2. The Architect reserves the right to be the final authority on the acceptance or rejection of any or all bids, or materials that has not met ALL specified requirement criteria.

1.7 SUBMITTALS

A. Submit under provisions of Contract Documents, Division 1 requirements and this section.

B. Product Data: Provide manufacturer’s technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.

C. Samples: Submit two (2) samples of each product specified.

D. Manufacturer’s Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.

E. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.

F. Manufacturer's Certificate: Certify that modified membrane materials to be used on this project are physically manufactured and guaranteed by the distributing manufacturer in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.

G. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001:2008 compliance certificate.

H. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77°F. Tests at 0°F will not be considered.

I. Submit a copy of an unexecuted manufacturer's warranty for review.

J. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.

K. Shop Drawings:
   1. Submit four (4) copies of manufacturer's shop drawings indicating complete installation details of flat insulation system, drain location, sump, roof slopes, thicknesses, tapered crickets and saddles.
   2. Shop drawing shall include: Outline of roof, location of drain, sump, complete board layout of tapered insulation components (crickets and saddles), thickness and the minimum and average "R" value for the completed insulation system.
   3. Insulation adhesive patterns.

1.8 QUALITY ASSURANCE & QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 12 years documented experience and has ISO 9001:2008 certification.

B. Installer: Company specializing in modified bituminous roofing installation with a minimum 5 years experience and certified by roofing system manufacturer as qualified to install manufacturer's roofing materials.

C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work and at any time roofing work is in progress. Maintain proper supervision of workmen. Maintain a copy of the specifications in the possession of the Supervisor/Foremen and on the roof at all times.

D. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner has the right to hire a qualified contractor and back charge the original contractor.

E. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.

1. Upon request of the Engineer or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

G. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001 approval.

1.9 PRE-CONSTRUCTION CONFERENCE

A. Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.

B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing which must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities.

C. Objectives of conference to include:
1. Review foreseeable methods and procedures related to roofing work.
2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
4. Review roofing system requirements (drawings, specifications and other contract documents).
5. Review required submittals both completed and yet to be completed.
6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
7. Review required inspection, testing, certifying and material usage accounting procedures.
8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
10. Review notification procedures for weather or non-working days.

D. The Architect will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.

E. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved the satisfaction of the Owner and Engineer of Record. This shall not be construed as interference with the progress of Work on the part of the Owner or Engineer of Record.

1.10 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged. Store all adhesive containers at 70 to 80 degrees F.

B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure. Store rolls of felt and other sheet materials on

pallets or other raised surface. Stand all roll materials on end. Cover roll goods with a canvas tarpaulin or other breathable material (not polyethylene).

C. In accordance with the manufacturer's recommendations, immediately remove the plastic wrapping on the roof recovery boards and cover with a watertight, ventilated enclosure (i.e. tarpaulins). Prevent the formation of condensation on the boards.

D. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.

E. It is the responsibility of the contractor to secure all material and equipment on the job site. If any material or equipment is stored on the roof, the contractor must make sure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the contractor will be the sole responsibility of the contractor and will be repaired or replaced at his expense.

F. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).

1.11 MANUFACTURER'S INSPECTIONS

A. When the project is in progress, the roofing system manufacturer will provide the following:
   1. Keep the Architect informed as to the progress and quality of the work as observed.
   2. Provide job site inspections a minimum of one (1) day a week with reports to the Architect.
   3. Report to the Architect in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
   4. Confirm after completion that manufacturer has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

B. At the request of the Owner, the roofing system manufacturer shall provide the Owner, or his representative, with an annual inspection of the roofing system. This period shall be for the duration of the delivered warranty period.

1.12 PROJECT CONDITIONS

A. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements. The temperature of the modified membranes, adhesives, substrate surfaces and ambient shall be a minimum of 40 degrees F and rising. It is recommended that the cold applied, solvent free adhesives shall be stored at a temperature of 70 to 80 degrees F.

B. Do not apply roofing insulation or membrane to damp deck surface.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.13 SEQUENCING AND SCHEDULING

A. Sequence installation of modified bituminous sheet 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.

B. Fully complete the installation of insulation system and base roofing ply assembly, and/or the installation of the modified bituminous membrane roof ply each day. Phase construction between the base roofing ply and modified membrane roof ply (top ply) is acceptable.

1.14 WARRANTY

A. Upon completion of the installation, and acceptance by the owner, the manufacturer will supply to the Owner a single-source, 30 year edge-to-edge No Dollar Limited (NDL) Warranty covering the roof system. Warranty shall include the modified bitumen roof system, pre-manufactured metal edge fascia system, pre-manufactured metal coping cap system, aluminum surfacing, flashings, and the transition between all systems.

B. Installer will submit a minimum of a three (3) year warranty to the manufacturer with a copy directly to Owner.

C. At the request of the Owner, the roofing system manufacturer shall provide the Owner, or his representative, with an annual inspection of the roofing system. This period shall be for the duration of the delivered warranty period.

1.15 SITE CONDITIONS

A. Field measurements and material quantities:
   1. Contractor shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that will affect work.

B. Existing Conditions:
   1. Building space directly under roof area covered by this specification will be utilized by on-going operations. Do not interrupt Owner operations unless prior written approval is received from Owner.

C. Waste Disposal:
   1. Do not re-use, re-cycle or dispose of materials except in accordance with all applicable regulations. The use of products is responsible for proper use and disposal of product containers.

D. Safety Requirements:
   1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
   2. Comply with federal, state, local and Owner fire and safety requirements.
   3. Advise Owner whenever work is expected to be hazardous to Owner, employees, and/or operators.
   4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
   5. Maintain fire extinguisher within easy access whenever power tools, roofing kettles, fuels, solvents, torches and open flames are being used.

1.16 DESIGN AND PERFORMANCE CRITERIA

A. Uniform Wind Uplift Load Capacity:
   1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
      a. Design Code: ASCE 7-16, Method 2 for Components and Cladding.
      b. Category III Building with an Importance Factor of 1.0.
      c. Wind Speed: 123 mph
      d. Exposure Category: C
      e. Design Roof Height: 12 feet
      f. Minimum Building Width: 25 feet
      g. Topographic Factor: 1.00
      h. All Roof Areas Design Uplift Pressure:
         Zone 1 - Field of roof 37.7 psf

Zone 2 - Perimeter 49.7 psf
Zone 3 - Corners 67.7 psf
Zones 2 & 3 must extend onto the roof area a minimum distance of 10% of the roof width.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Provide primary products, including each type of roofing membrane, base flashings, flashing membrane ply and miscellaneous flashing materials from a single source roof manufacturer. Provide secondary products (insulation, recovery board, etc.) only as recommended by the roof manufacturer of primary products for use with the roof system specified.

B. The following manufacturers are acceptable, as well as any others, providing they meet these specifications and the minimum standards stated.
   1. The Garland Company, Inc.
   2. Soprema.
   3. Johns Manville.
   4. Or equal.

2.2 DESCRIPTION

A. Modified bituminous roofing work including but not limited to:
   1. Prior to installing the insulation system on the roof deck, repair or replace any defects in accordance with the project specifications.
   2. Installation of polyisocyanurate insulation and recovery board over the properly prepared roof surfaces and nailed base sheet in accordance with Division 7 Roof Insulation Section.
   3. Base Roofing Ply: One (1) ply of an 80 mil SBS (Styrene-Butadiene-Styrene) fiberglass reinforced modified membrane base roofing ply bonded to the prepared substrate with specified asphalt bitumen.
   4. Cold Applied Inter-ply Adhesive: The cold-applied bitumen adhesive shall consist of a V.O.C. compliant, non-asbestos containing, brush grade cold applied adhesive for flashings and roof slopes up to 2:12.
   5. Base Flashing Ply: One (1) ply of a 60 mil SBS (Styrene-Butadiene-Styrene) double-coated Polyester-Fiberglass-Polyester base flashing ply sheet covered by an additional layer of the modified bitumen membrane set in the specified cold applied, solvent free flashing adhesive.
   6. Modified Membrane Roofing Ply: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified FR roofing membrane with polyester/fiberglass reinforced scrim.
   7. Modified Membrane Flashing Ply: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified FR roofing membrane with polyester/fiberglass reinforced scrim.
   8. Surfacing (All Roof Areas U.N.O.): A high solids, fibrated, asphalt-based aluminum roof coating system.

2.3 BITUMINOUS MATERIALS

A. Asphalt Primer: V.O.C. compliant, ASTM D-41.

B. Asphalt Roofing Mastic: V.O.C. compliant, ASTM D-2822, Type II.

C. Temporary Seal Mastic: Cold applied flashing adhesive.

D. Interply Adhesive: Cold-applied field adhesive.

E. Flashing Adhesive: Manufacturer compatible

F. Aluminized Asphalt Roofing Mastic for Vertical Seams of Flashings: Manufacturer compatible

G. Penetration Sealant: Manufacturer compatible

H. Elastomeric Asphaltic Sealant: Manufacturer compatible.

2.4 SHEET MATERIALS

A. Base Roofing Ply:
1. ASTM D6163, Type III; A 80 mil SBS modified membrane with two layers of woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D5147.

Properties (Finished Membrane):
Tensile Strength (ASTM D5147)
2 in/min. @73.4 +/- 3.6°F MD 225 lbf/in CMD 225 lbf/in

Tear Strength (ASTM D5147)
2 in/min. @ 73.4 +/- 3.6°F MD 300 lbf CMD 300 lbf

Elongation at Maximum Tensile (ASTM D5147)
2 in/min. @ 73.4 +/- 3.6°F MD 4.0% CMD 4.0%

Low Temperature Flexibility (ASTM D5147): Passes -30°F

Recycled Content: 15% Post-Consumer

Thickness: 80 mils

B. Base Flashing Ply:
1. Coated Polyester-Fiberglass-Polyester scrim with the following minimum performance requirements according to ASTM D5147.

Properties (Finished Membrane):
Tensile Strength (ASTM D5147)
2 in/min. @73.4 +/- 3.6°F MD 315 lbf/in CMD 315 lbf/in

Tear Strength (ASTM D5147)
2 in/min. @ 73.4 +/- 3.6°F MD 550 lbf CMD 550 lbf

Elongation at Maximum Tensile (ASTM D5147)
2 in/min. @ 73.4 +/- 3.6°F MD 5.0% CMD 6.0%

Low Temperature Flexibility (ASTM D5147): Passes -10°F

Pliability (ASTM D146): Pass

Mass of Desaturated Polyester/Glass Mat: 4.0 lb./100 sq. ft.
(ASTM D146)

Surfacing and Stabilizer (ASTM D4601): Max 50%

Asphalt (ASTM D226): 15 lb./100 sq. ft.

Recycled Content: 31% Post-Consumer

Thickness: 60 mils

C. Modified Membrane Roofing Ply:
   1. D6163, Type III Grade G
      a. Tensile Strength (ASTM D5147):
         2 in/min. @ 73.4 +/- 3.6°F MD 310lbf/in XD 310lbf/in
         50 mm/min. @ 23 +/- 3°C MD 54.25 kN/m XD 54.25kN/m

      b. Tear Strength (ASTM D5147):
         2 in/min. @ 73.4 +/- 3.6°F MD 500 lbf XD 500 lbf
         50 mm/min. @ 23 +/- 3°C MD 2224 N CMD 2224 N

      c. Elongation at Maximum Tensile (ASTM D5147):
         2 in/min. @ 73.4 +/- 3.6°F MD 3.5% XD 3.5%
         50 mm/min. @ 23 +/- 3°C

      d. Low Temperature Flexibility (ASTM D5147): Passes -30°F (-34°C)

      e. Recycled Content: 0.3% Post-Consumer
         Thickness: 155 mils

D. Modified Membrane Flashing Ply:
   1. ASTM D6163, Type III Grade G
      a. Tensile Strength (ASTM D5147)
         2 in/min. @ 73.4 +/- 3.6°F MD 310lbf/in XD 310lbf/in
         50 mm/min. @ 23 +/- 3°C MD 54.25 kN/m XD 54.25kN/m

      b. Tear Strength (ASTM D5147)
         2 in/min. @ 73.4 +/- 3.6°F MD 500 lbf XD 500 lbf
         50 mm/min. @ 23 +/- 3°C MD 2224 N CMD 2224 N

      c. Elongation at Maximum Tensile (ASTM D5147):
         2 in/min. @ 73.4 +/- 3.6°F MD 3.5% XD 3.5%
         50 mm/min. @ 23 +/- 3°C

         Low Temperature Flexibility (ASTM D5147): Passes -30°F (-34°C)

         Recycled Content: 0.3% Post-Consumer

         Thickness: 155 mils

E. Reinforcing Mesh for Flashing Seams – Styrene-Butadiene-Rubber (SBR) coated, woven, fiberglass scrim.

F. Reinforcing Mesh for Fluid Applied Flashing – polyester woven scrim.

G. Polyester Self-Adhered Tape for Fluid Applied Flashing – polyester-backed self-adhered tape.

2.5 SURFACINGS

A. Mineral Surfaced Membrane: Roofing Granules shall meet requirements of ASTM D-451 and/or be recommended by the membrane manufacturer. Loose granules for bleedout shall match size and color of granulated membrane sheet.

B. Mineral Surfaced Membrane: If minerals are not applied properly into the bleedout, apply manufacturers' base coat on field seams of modified bitumen roofing ply and broadcast minerals into the coating while it is still wet. Roofing Granules shall meet requirements of ASTM D-451 and/or be recommended by the membrane manufacturer.

C. Aluminized asphalt mastic for the three-course application on vertical flashing seams.

D. Roof & Flashing Coating (All Roof Areas U.N.O.): ASTM D2824 high solid, fibrated aluminum coating. **Installation of the minerals in the bleed-out are still required for the coating application.**

2.6 RELATED MATERIALS

A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
   1. Thickness: 1/2 inch, fire-resistant.
   2. Products:
      a. Georgia-Pacific; DensDeck
      b. Or equal.

B. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam complying with ASTM C1289.
   1. Classifications:
      a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
         1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3, 8.4 (1.48) at 75 degrees F.
   2. Board Size: 48 by 96 inches.
   3. Board Thickness: 1.5 inches.
   4. Tapered Board: Slope as indicated; minimum thickness 3 inch; fabricate of fewest layers possible.
   5. Board Edges: Square.

C. Nails and Fasteners: Non-ferrous metal or hot dipped galvanized fasteners complying with ASTM A153 and connectors complying with ASTM A653, Class G185; Type 304 or Type 316 stainless steel fasteners and connectors shall be used with new generation of pressure-treated wood; except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel. Fasteners shall be self-clinching type of penetrating type as recommended by the manufacturer of the wood blocking/nailer material. Nails and fasteners shall be flush-driven through flat metal discs of not less than one (1) inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.

D. Metal Discs: Flat discs or caps of zinc-coated sheet metal not lighter than twenty eight (28) gauge and not less than one (1) inch in diameter. Form discs to prevent dishing. Bell or cup shaped caps are not acceptable.

E. Metal Flashing Sheet: Metal flashing sheet is specified in Section 07 60 00 - Sheet Metal Flashing and Trim.

F. Lead Flashing Sheet: Meets Federal Specification QQ-L-201, Grade B, four pounds per square foot.

G. Metal Termination Bars:

1. Shall be heavy flat bar aluminum unless otherwise recommended by membrane manufacturers.
2. Material shall be .125” x 1” (minimum) aluminum conforming to ASTM B-221, mill finish.

H. Protection Pads for Gas Pipe Support: Recycled rubber (97% recycled rubber), anti-skid surface pads, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, ½ inch thick, minimum.
1. Minimum Pad Size: 2’-0” x 3’-0”

I. I. Protection and Walkway Pads Adhesive: Manufacturer compatible.

J. Urethane Sealant: One-part, non-sag sealant as recommended by the membrane manufacturer for moving joints.
1. Tensile Strength (ASTM D412): 250 psi
2. Ultimate Elongation (ASM D412): 950%
3. Hardness, Shore A (ASTM C920): 35
4. Adhesion-in-Peel (ASTM C920): 25 pli
5. 100% Modulus (ASTM D412): 50 psi
6. Bond (Durability-Class 25, ASTM C920): Passes
7. Service Temperature Range: -40°F to +180°F
8. Stain and Color Change (ASTM C920): Passes
9. Tack Free Time (ASTM C679 (max 72 hrs.): 16 hrs.
10. Weep and Sag (ASTM C920 (max 3/16”(4mm))): Passes
11. Weight loss after heat aging (ASTM C920 (max 10%)): Passes

K. Pitch Pocket Sealer and Liquid Flashing System: Two (2) part multi-purpose, asphaltic polyurethane based, low-odor, liquid flashing membrane system reinforced with an approved reinforcing scrim as provided by the roof membrane manufacturer.
1. Tensile Strength, ASTM D 412: 650 psi
2. Tear Strength, ASTM D624: 115 lbf/in
3. Elongation, ASTM D 412: 325%
4. Hardness, Shore A ASTM D2240@77°F: 55
5. Density @77 deg. F: 8.3 lb/gal typical

L. Non-Shrink Grout: Use an all weather fast setting chemical action concrete material to fill pitch Pans.
1. Flexural Strength (ASTM C-78 (modified)): 7 days 1100psi
2. High Strength (ASTM C-109 (modified)): 24 days 8400lbs (3810kg)

M. Acrylic Primer: Acrylic, bleed-out blocking primer to be used on all surfaces that will be receiving the polyurea fluid applied flashing system.

N. New Drains: Existing drains are to be replaced. The new drains shall be J.R. Smith, or equal, and match existing size and configuration. New drains shall be a complete assembly having new drain bowls, deck clamps, threaded receivers, and cast-iron strainers. Drains shall be installed prior to or during the roof installation.

O. Bellows Expansion Joint System: Curb to curb, wall to curb assembly, and Straight Metal Flange (SMF) system as per the project details, documents and manufacturer’s recommendations.

P. Vent Pipe Extenders: Prefabricated PVC plumbing stack/vent pipe extenders.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate surfaces to receive modified bituminous membrane roof 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 the manufacturer.

B. Prior to installing the finish modified membrane roofing ply, the contractor must notify the roof system manufacturer representative, and Architect, to examine the roof area for high and low spots. It may be necessary to mist the roof with water to identify the problem areas. The contractor will correct all problem areas identified. This examination should take place no less than 24 hours in advance of installing the finished membrane.

C. Verify that deck surfaces and project conditions are ready to receive work of this section.

D. Verify that deck is supported and secured to structural members.

E. Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped to drains.

F. Verify that adjacent roof members do not vary more than 1/4 inch in height.

G. Verify that deck surfaces are dry, free of snow or ice, not rotten or deteriorated, do not have bacterial growth and are structurally sound.

H. Confirm that moisture content within the concrete roof deck, wood blocking and nailers does not exceed twelve (12) percent by moisture meter tests.

I. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that wood cant strips, wood nailing strips and reglets are set in place. Verify that all roof curb heights are satisfactory and that the wood blocking height along the perimeter of the building and/or roof levels is satisfactory to provide positive roof pitch away from the building edge.

J. Contractor is responsible to verify existing substrate is sloped as stated in/on the project documents prior to installation of the insulation system. All defects in roof pitch to be accommodated with tapered insulation to insure a positive pitch to all roof drains.

3.2 PREPARATION – REMOVAL

A. Remove existing roof system(s), counter-flashings, roof flashings, drains, and all accessories back to the roof deck and masonry walls.

B. Remove all existing drain assemblies and install new drain assemblies. New drains shall be in accordance with the above specification.

C. Clean substrate of debris and other substances detrimental to roofing installation according to the roof system manufacturer’s written instructions. Remove sharp objects.

D. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Use roof drain plugs as required to prevent materials from entering and clogging roof drains and conductors. Remove roof drain plugs at the end of each

work day or when rain is forecasted. Replace or restore other work damaged by installation of the modified bituminous roofing system.

1. Prior to beginning work, the contractor shall verify/test that existing roof drains are in working, or non-working, order. If the drains are in non-working order, the Owner shall address the non-working drain to working conditions. If the drains are in working order, then the contractor will be required to maintain, and deliver, the drains back to the Owner in working order.

E. All existing roofing shall be torn off and removed completely down to the roof structure decking. Dispose off-site in dumpsters.

F. Tear off only enough roofing, which can be successfully reroofed, in a single day.

G. Fully complete the installation of insulation system and base roofing ply assembly, and/or the installation of the modified bituminous membrane roof ply each day. Phase construction between the base roofing ply and modified membrane roof ply (top ply) is acceptable.

3.3 PREPARATION – LIGHT WEIGHT CONCRETE

A. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height, and grout keys are filled flush.

B. Fill surface honeycomb and variations with latex filler.

C. Do not begin work until elevated concrete substrate has cured at least 28 days and moisture content is five percent or less.

1. Test for Concrete Moisture Content: No beading water under plastic after 16 hours when tested in accordance with ASTM D4263.
2. Test for Relative Humidity in Concrete: Not greater than 75 percent when tested in accordance with ASTM F2170.

D. Conventional Application: Apply mopped two-ply vapor retarder.

E. Protected Membrane Application: Mop cant strips in place with hot bitumen.

3.4 INSTALLATION - VAPOR RETARDER, CONVENTIONAL

A. Mopped Two-ply Vapor Retarder:

1. Apply primer at a rate of 1 gal/100 sq ft and allow to dry.
2. Mop surface with hot bitumen and embed two plies of vapor retarder felt; lap plies 19 inches, full mop each ply.
3. Apply bitumen at 20 lb/100 sq ft.
4. Glaze top surface of the vapor retarder with bitumen if insulation is not placed immediately.

B. Fire-retardant Vapor Retarder: Apply to deck surface with adhesive in accordance with roofing and vapor retarder manufacturers' instructions.

C. Extend vapor retarder under cant strips and blocking.

3.5 NEW DRAIN INSTALLATION

A. All existing drains are to be replaced unless noted otherwise. New drains shall be installed in accordance with project documents. Sizes and configuration shall match existing. Drains will have new deck clamps, threaded receivers, and cast iron metal strainers. Drains shall be installed prior to or during the roof installation.

3.6 GENERAL INSTALLATION REQUIREMENTS

A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.

B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.

C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging gutter downspout drainpipes. Replace or restore other work damaged by installation of the modified bituminous roofing system.

D. Coordinate installation of roofing system components so that base sheet, insulation, recovery board and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed roofing ply modified membranes, insulation and base sheet with one (1) ply of base roofing ply set in specified cold applied adhesive, and with joints and edges sealed with the specified cold applied adhesive. Install reinforcing scrim as needed. Remove cut-offs immediately before resuming work.

E. Cold applied membrane adhesive coverage rates:
   1. Base Roof Ply - application rate is two and one half (2 ½) gallons per one hundred (100) square feet.
   2. Modified Membrane Roof Ply – application rate is two and one half (2 ½) gallons per one hundred (100) square feet.

F. Substrate Joint Penetrations: Prevent adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

G. Apply roofing materials as specified by manufacturer's instructions.
   1. Keep roofing materials dry before and during application.
   2. Begin and apply only as much roofing in one day as can be completed that same day in accordance with following; fully complete the installation of insulation system and base roofing ply assembly, and/or the installation of the modified bituminous membrane roof ply each day. Phase construction between the base roofing ply and modified membrane roof ply (top ply) is acceptable.

H. Existing Roof Envelope Waterstops: At ALL locations where the existing roof is cut and to remain, install a permanent waterstop upon removal of the existing roof system. The temporary roof membrane shall be used as this waterstop. Install an envelope water stop at the edge of insulation to prevent water infiltration into new insulation/roof system. The envelope waterstop flashing shall extend 6 inches onto the prepared and primed concrete roof deck, and 6 inches onto the existing roof system.

I. Daily Envelope Waterstops: Install temporary water cut-offs at completion of each day's work and remove upon resumption of work. Install an envelope water stop at the edge of insulation to prevent water infiltration into new insulation/roof system. Install envelope waterstop flashing 4 - 6 inches under face edge of new insulation and wrapped up face and back onto the newly installed roof system at 4-6 inches from the face in the specified solvent free, cold applied adhesive, top dress waterstop with the specified solvent free, cold applied adhesive and reinforcing scrim as needed. As required, seal joints and edges with the specified cold applied adhesive. Remove envelope waterstop immediately before resuming work.

3.7 ROSIN PAPER INSTALLATION

A. Rosin Paper Installation on Wood Roof Decks: Install a single ply of rosin paper loose laid to the wood decks with cap nails. Overlap the side laps 4 inches and the end laps 8 inches. Carry the rosin paper to the edge of all projections and perimeters.

3.8 INSULATION INSTALLATION

A. Deck types: Light Weight Concrete

B. Insulation: Flat and tapered rigid polyisocyanurate insulation with a minimum thickness and compressive strength as specified, plus a ½" thick roof recovery board.

C. Insulation Attachment: Polyisocyanurate insulation shall be mechanically attached to the roof decks and subsequent layers of the polyisocyanurate insulation shall be installed in the specified insulation adhesive in accordance with manufacturer's recommendations. The recovery board shall be installed over the polyisocyanurate insulation system in the specified insulation adhesive in accordance with manufacturer's recommendations.

3.9 BASE ROOFING PLY INSTALLATION

A. SBS Polymer Modified Membrane Base Ply: Install one (1) reinforced modified base ply membrane in two and one half (2 ½) gallons per ply per one hundred (100) square feet of the specified cold-applied membrane adhesive, shingled uniformly over the prepared substrate. Shingle in proper direction to shed water on each area of roofing. Prior to installation, cut sheets into 18' lengths and allow to relax.

B. The roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.

C. Lap base ply sheet sides four (4) inches and ends eight (8) inches. Stagger end laps twelve inches minimum.

D. For best results, immediately after installing the specified cold applied adhesive, lay the base roof into the adhesive and repeat this process for the top layer of modified membrane roofing ply. The applied amount of the cold applied adhesive will be dependent upon substrate, material and ambient temperature conditions, but no further than will allow the cold applied adhesive to skin over prior to the application of the modified membrane ply.

E. Broom, squeegee and/or roll base roofing ply into the adhesive to ensure all air pockets are removed.

F. Extend membrane to the top edge of all cants in full applications of the specified solvent free, cold applied adhesives as shown on the drawings. Seal top of membrane with the specified cold applied adhesive until modified membrane flashing ply is installed.

G. Install base flashing ply to all perimeter and projection details. Adhere the base flashing ply with the specified cold-applied flashing adhesive noted in this specification at a rate of two and one half (2 ½) gallons per ply per 100 square feet. The base flashing ply shall extend a minimum of eight (8) inches above the finished roof surface.

H. Allow the base roof ply to cure at least thirty (30) minutes before installing the modified membrane roof ply.

3.10 MODIFIED MEMBRANE APPLICATION

A. SBS Polymer Modified Membrane Roof Ply: Solidly bonded to the base roof ply layer with specified cold adhesive at the rate of two and one half (2 ½) gallons per one hundred (100) square feet of the specified cold-applied membrane adhesive, shingled uniformly over the prepared substrate. Shingle in proper direction to shed water on each area of roofing. Prior to installation, cut the modified membrane into maximum 18' lengths and allow to relax.

B. The roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.

C. Subsequent rolls of modified shall be installed across the roof as above with a minimum of four (4) inch side laps and eight (8) inch end laps. The end laps shall be staggered twelve (12) inches minimum. The modified membrane shall be laid in the same direction as the base ply but the laps shall not coincide with the laps of the base ply.

D. For best results, immediately after installing the specified cold applied adhesive, lay the base roof into the adhesive and repeat this process for the top layer of modified membrane roofing ply. The applied amount of the cold applied adhesive will be dependent upon substrate, material and ambient temperature conditions, but no further than will allow the cold applied adhesive to skin over prior to the application of the modified membrane ply.

E. Broom, squeegee and/or roll base roofing ply into the adhesive to ensure all air pockets are removed.

F. Extend membrane to the top edge of all cants in full applications of the specified solvent free, cold applied adhesives as shown on the drawings. Seal top of membrane with the specified solvent free, cold applied adhesive until modified membrane flashing ply is installed.

G. Install modified flashing ply to all perimeter and projection details in the specified cold applied flashing adhesive.

3.11 FLASHING MEMBRANE INSTALLATION

A. Seal all curb, wall and parapet flashings with an application of the specified cold applied membrane adhesive of flashing adhesive and mesh daily. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.

B. Prepare all walls, penetrations, expansion joints, gutters, and where shown on the drawings to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.

C. The wall/cant juncture will be examined for air passage. If airflow is present, the joint between the cant and wall will be sealed with a closed cell joint backing and reglet joint sealant.

D. Install the modified bitumen base flashing ply at all perimeters, walls and curb penetrations and secure at a minimum of eight (8) inches from the finished roof at all vertical surfaces with a continuous termination bar fastened at six (6) inches on center. Install the fluid applied liquid flashing system base coat to the underlying base flashing ply at a rate of three (3) gallons per one hundred (100) square feet. Fully reinforce the base coat with the specified reinforcement covering the termination bar and extending a minimum of 3" past the modified bitumen base flashing ply onto the field. All flashings areas shall be taped off to ensure a clean and straight liquid flashing lap on the mineral modified cap sheet in field.

E. Allow the flashings to cure three (3) days.

F. Coordinate counter flashings, cap flashings, expansion joints, and similar work with the fluid applied liquid flashing system work per project details.

G. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the fluid applied liquid flashing system work per project details.

H. Exhaust Fan/Passive Vent/Air Intake:
   1. Minimum curb height is eight (8) inches off the finished roof surface. Prime vertical curb surface at a rate of one hundred (100) square feet per gallon and allow to dry.
   2. Set cant in cold applied insulation adhesive. Run base roofing ply over cant and stop at the top edge of the cant strip.
   3. Install base flashing ply the specified flashing adhesive covering curb with six (6) inches on to field of the roof.
   4. Install modified membrane over cant and stop at the top edge of the cant strip.
   5. Install a second ply of modified flashing ply installed the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Allow the flashing system to cure a minimum of three (3) days and apply a three-course application of aluminized mastic and mesh at all vertical seams.
   6. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation. If the existing fan cover cannot fit over the installed flashing system, stop the flashing system at the top of the curb and fasten with cap nails at eight (8) inches on center. Install an 0.040" aluminum slip flashing under the fan cover and fasten to the curb at eight (8) inches on center with neoprene gasketed screws. The slip flashing shall cover the top of the flashing system three (3) inches minimum. Install new corner pieces on the fan cover.

I. Plumbing/Soil Stack/Pipe Penetrations:
   1. Minimum stack height is twelve (12) inches.
   2. Run roof system over the entire surface of the roof. Seal the base of the stack with a manufacturer compatible sealant.
   3. Grind, clean and prime existing stack to prepare surface for new liquid flashing system.
   4. Install base flashing ply in the specified flashing adhesive. Caulk the intersection of the membrane with a manufacturer compatible sealant..
   5. Tape area to receive new liquid flashing to ensure a clean and proper install.
   6. Install liquid flashing system base coat at base of stack and turned up minimum six (6) inches at a rate of 2 gal. per sq. Immediately embed the specified reinforcing fabric.
   7. Install liquid flashing system top coat at base of stack and turned up minimum six (6) inches at a rate of 1 gal. per sq. Allow to cure,
   8. Paint liquid flashing with the specified reflective coating.

J. Heat Stack:
   1. Minimum stack height is twelve (12) inches.
   2. Run roof system over the entire surface of the roof. Seal the base of the stack with a manufacturer compatible sealant.
   3. Prime flange of new sleeve. Install properly sized sleeves set in ¼ inch bed of specified solvent free, cold applied flashing adhesive.
   4. Install base flashing ply in the specified flashing adhesive.
   5. Install modified membrane in the specified flashing adhesive.
   6. Caulk the intersection of the membrane with a manufacturer compatible sealant.
   7. Install new collar over cape. Weld collar or install stainless steel draw brand.

K. Pre-manufactured Curb For Equipment Support:
   1. Secure curb to roof deck. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.

2. Run base roofing ply over cant and stop at the top edge of the cant strip.
3. Install base flashing ply the specified flashing adhesive covering curb with six (6) inches on to field of the roof.
4. Install modified membrane over cant and stop at the top edge of the cant strip.
5. Install the modified flashing ply installed the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of curb and nail at eight (8) inches o.c. with cap nails. Allow the flashing system to cure a minimum of three (3) days, and apply a three-course application of aluminized mastic and mesh at all vertical seams.

L. Reglet Mounted Counterflashing:
1. Remove existing reglet mounted counterflashing system to allow the installation of the new roof flashing and counterflashing system.
2. Minimum flashing height is eight (8) inches. Maximum flashing height is thirty (30) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
3. Set cant in bitumen. Run field plies over the cant and up the wall a minimum of three (3) inches.
4. Install base flashing ply covering wall set in the specified adhesive with six (6) inches on to field of the roof.
5. Install modified membrane roofing ply over cant and up the wall a minimum of two (2) inches.
6. Install modified flashing ply in the specified adhesive over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of aluminized mastic and mesh at all vertical seams.
7. Install the specified termination bar even with the top of the flashing and secure the termination bar through flashing and into wall every six (6) inches on center. Seal the top of the termination bar/flashing with a 3-course application of aluminized or elastomeric asphaltic sealant.
8. Cut reglet in masonry one joint above flashing.
9. Install new reglet counterflashing with lead expansion wedges at 12” on center and seal overlapping not less than 3”. Corners shall be mitered and welded to a watertight reglet opening with high grade polyurethane sealant. End joints shall be interlocking and condition. The bottom of the cap flashing insert shall project ¼” from the face of the wall with a down turned drip edge (provide a down turned hem in areas subject to human contact). New counterflashing shall cover the termination bar a minimum of four (4) inches.

M. Roof Drain:
1. Plug drain to prevent debris from entering plumbing.
2. Run complete roof system plies over drain. Cut out plies inside drain bowl.
3. Set 4lb. lead flashing (thirty (30) inch square minimum) in ¼ inch bed of mastic. Run lead into drain a minimum of two (2) inches. Prime lead at a rate of one hundred (100) square feet per gallon and allow to dry.
4. Install base flashing ply (forty (40) inch square minimum) in the specified flashing adhesive.
5. Install modified membrane (forty eight (48) inch square minimum) in the specified flashing adhesive. Stop both flashings plies short of the clamping ring and seal edge of modified flashing plies with a three-course application of aluminized mastic and reinforcing mesh.
6. Install clamping ring over lead flashing.
7. Remove drain plug and install strainer.

N. Curb Detail/Air Handling Station:
1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies, including modified membrane, to the top edge of cant strip and seal with asphalt mastic to a watertight condition.
3. Install base flashing ply in the specified flashing adhesive covering curb with six (6) inches on to field of the roof.

4. Install modified flashing ply in the specified flashing adhesive over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of Silver-Flash mastic and mesh at all vertical seams.
5. Install a 0.040” aluminum slip flashing under the existing counterflashing and over the roof flashing system and fasten to the curb at eight (8) inches on center with neoprene gasketed screws. The slip flashing shall cover the top of the flashing system three (3) inches minimum.

O. Scupper Through-wall Flashing:
1. Install wood nailers as required in scupper opening to allow for the installation and securement of the new through edge scupper.
2. Install new scupper box in a 1/4" bed of mastic and secure to the wood nailers and masonry wall in accordance with manufacturer’s recommendations and details. Assure all box seams are welded and have a minimum 4" flange. Make sure all corners are closed, and welded.
3. Prime metal edge at a rate of 100 square feet per gallon and allow to dry.
4. Install specified liquid applied roof flashing system.

P. Through-wall Counter-Flashing:
1. Ensure the new through-wall flashing and receiver of the two-piece counter-flashing is set at the proper height above the roof deck.
2. Minimum flashing height is eight (8) inches. Maximum flashing height is twenty-four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
3. Set cant in bitumen or cold applied insulation adhesive. Run all field plies, including modified membrane, to the top edge of cant strip and seal with asphalt mastic to a watertight condition.
4. Install base flashing ply covering wall and six (6) inches on to field of the roof.
5. Install the modified flashing ply over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of aluminized mastic and mesh at all vertical seams.
6. Install the specified termination bar even with the top of the flashing and secure the termination bar through flashing and into wall every six (6) inches on center. Seal top of termination bar and flashing system with a sealant or a three-course application of mastic and mesh.
7. Install the new slip counterflashing within the in-wall receiver. End joints shall be interlocking and overlapping not less than 3”. Corners shall be mitered and welded to a watertight condition. The bottom of the cap flashing insert shall project ¼” from the face of the wall with a down turned drip edge (provide a down turned hem in areas subject to human contact). The new slip counterflashing shall cover the roof flashing system a minimum of four (4) inches.

Q. Curb to Curb Expansion Joint:
1. Install new approved wood blocking to achieve a minimum curb height of eight (8) inches above finished roof surface. Chamfer top of curb. Prime vertical curb at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Install cant strip in insulation adhesive. Run all field plies, including modified membrane, to the top edge of cant strip and seal with asphalt mastic to a watertight condition.
3. Install base flashing ply covering curb and six (6) inches onto the field of the roof.
4. Install modified membrane flashing ply over the base flashing ply and nine (9) inches on to the field of the roof. Attach top of two-ply flashing system on the top of the chamfered curb and nail at eight (8) inches on center. Apply a three-course application of Silver-Flash mastic and mesh at all vertical seams.
5. Install vapor retarder to serve as retainer for insulation. Attach to top of the chamfered curb. Install compressible insulation inside vapor retarder.

6. Install pre-manufactured bellows type wall to curb expansion joint cover. Fasten sides at twelve (12) inches o.c. with screws and neoprene washers. NAILS ARE NOT ACCEPTABLE. Furnish continuous prefabricated transitions for all 90 degree junctures/corners. Furnish all joint cover laps with butyl tape between metal covers. Terminate the end of the expansion joint, or connections with other expansion joints in accordance with the manufacturer's recommendations.

R. Base Flashing For Non-Supported Deck (Wall Expansion Joint):
1. Inspect the nailer to assure proper attachment and configuration. The wood cant strip should be mechanically attached to the vertical and horizontal wood nailers.
2. Install compressible insulation in neoprene cradle between wall and vertical wood nailer.
3. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
4. Install base flashing ply covering entire wall and wrapped to top of wood nailer with six (6) inches on to field of the roof. Nail membrane at eight (8) inches o.c.
5. Install modified flashing ply over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of aluminized mastic and mesh at all vertical seams.
6. Install specified pre-manufactured bellows type wall to curb expansion joint cover in accordance with the project details. Fasten the expansion joint to the curb with neoprene gasketed screws at twelve (12) inches o.c. with fasteners and neoprene washers. Fasten the copper expansion joint to the masonry wall with approved fasteners at eight (8) inches o.c. Furnish continuous prefabricated transitions for all 90 degree junctures/corners. Terminate the end of the expansion joint in accordance with the manufacturer's recommendations.

S. Pre-Manufactured Metal Edge Fascia System:
1. Inspect the nailer to assure proper attachment and configuration prior to installing the roof system. Install new wood nailers as required and/or specified to achieve the proper height of one (1) blocking higher than the thickness of the insulation system and recovery board. Wood nailers shall be set for one (1) blocking higher than the highest thickness of insulation and roof recovery board, and shall be maintained constant around the perimeter of the roof.
2. Install tapered edge/cant strip in adhesive to create a smooth transition from roof system to wood blocking.
3. Run base roofing ply over the edge. Assure coverage of all wood nailers. Fasten plies with ring shank nails at eight (8) inches o.c.
4. Run modified membrane roofing ply to the outside edge of the roof.
5. Install new metal fascia/extender system(s) with continuous cleats. Fasten to wood fascia as specified.
6. Install two (2) ¼" wide beads of sealant on the bottom surface of the anchor bar flange. Install the new extruded anchor bar onto the modified membrane roof ply and over the edge of the roof, and face fasten the anchor bar to the wood blocking/structure through pre-punched slots every 12" o.c. staggered. The anchor bars shall be butted up next to each other leaving a minimum gap. Install the splice plate at each anchor bar joint.
7. Install compression seals every 40" o.c. in the slots located at the top of the extruded anchor bar.
8. Install fascia cover over the extruded anchor bar and press downward firmly until "snap" occurs and the cover is engaged along the entire length.
9. Install a splice plate at each end of the extruded anchor bar.

3.12 APPLICATION OF SURFACING

A. Prior to installation of surfacing, the completed roof system must be inspected and approved by the Owner and Manufacturer. All repairs must be made by the Contractor prior to the application of the surfacing system. All bitumen materials have properly cured per the manufacturer's recommendations prior to applying the coating system.

B. Mineral Surfaced Membrane System: While bleed out from the side and end laps are still hot, hand broadcast minerals into asphalt bleed out for a monolithic appearance. If minerals are not properly installed in the bleed-out, apply manufacturers' base coating on all field seams of the modified membrane roofing ply at a rate of two (2) gallons per square, and immediately broadcast loose minerals into the coating while it is still wet.

C. Aluminum Roof Coating: (All Roof Areas U.N.O.)
   1. Allow any cold applied mastics and roofing to properly dry and cure in accordance with manufacturer's recommendations before installing the aluminum coating. If surface is dried out or has dirt and/or debris that cannot be fully swept away, prime the surface of the roof with specified asphalt primer at a rate of 0.5 gallons per one hundred (100) square feet.
   2. Application: Brush or roller apply one (1) coat of the specified aluminum coating at a rate of 2 (two) gallons per one hundred (100) square feet.

3.13 FIELD QUALITY CONTROL

A. Perform field inspection and testing as required by this specification and under provisions of Section 1.

B. Correct defects or irregularities discovered during field inspection.

C. Require attendance of roofing materials manufacturers' representative(s) at site during installation of the roofing system as specified in Section 1.9 above.

3.14 CLEANING

A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.

B. In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.

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

3.15 FINAL INSPECTION

A. At completion of roofing installation and associated work, meet with Contractor, Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.

B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.

C. The roofing system manufacturer and/or Architect reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor at a negotiated price.

D. If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.

E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

F. Notify the Architect, Owner and roofing system manufacturer upon completion of corrections.

G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

END OF SECTION