SECTION 07500
BUILT UP ROOFING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Prior to the job start, the applicator will decide that all the specifications are workable as specified, to his satisfaction, also that there is nothing that would prevent his required 2 year labor and twenty year material warranty, and that no existing conditions at the job site prevent the applicator from performing the job in a professional and safe manner. It is concluded that the specifications are approved by the applicator upon job start.

1. The Contractor shall follow all Soprema roof specifications.

PART 2 – MATERIALS

2.1 RELATED MATERIALS FOR A COMPLETE INSTALLATION

A. All flashing, vents, piping, curbs, mechanical equipment, and parapet caps shall be installed as per Soprema Specifications.

PART 3- Owners Preferences

3.1 The owner prefers Florida Roof Systems 286 Clearlake Road, Cocoa, FL. 32922 P-321-636-4448 to perform the work. Although any qualified roofing company approved by Soprema may be used.

END OF SECTION
07500
BUILT UP ROOFING

SOPREMA

SECTION 07536

MODIFIED BITUMEN ROOFING

PART 1 GENERAL

1.01 SUMMARY

A. The Work generally involves providing a two-ply reinforced S.B.S. Modified membrane mopped to nailable type G-2 sheet on ( ) decking complete with related flashings, scuppers, expansion joints, control joints, cant strips, insulation, and performing such incidental or other work as may be necessitated by these operations and called for by the Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE: (The following items may be covered in other sections of the specifications).

1. Section ( ): Roof Deck Surface Substrate
2. Section 06100: Rough Carpentry
3. Section 06114: Wood Blocking and Curbing
4. Section 07220: Insulation Board
5. Section 07600: Sheet Metal
6. Section 07724: Roof Hatches
7. Section 07810: Skylights
8. Section 15430: Plumbing Specialties

1.03 REFERENCES

A. ANSI/ASTM D41 - Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.

B. ANSI/ASTM D312 - Asphalt Used in Roofing.

C. ANSI/ASTM D2178 - Asphalt Impregnated Glass Mat Used in Roofing and Waterproofing.

D. Factory Mutual (FM) Engineering Corporation - Roof Assembly Classifications.

E. FS HH-I-526 - Insulation Board, Thermal (Mineral Fiber).

F. FS HH-I-529 - Insulation Board, Thermal (Mineral Aggregate).

G. FS HH-I-530 - Insulation Board, Thermal (Urethane).

H. FS HH-I-551 - Insulation Block and Boards, Thermal (Cellular Glass).

I. FS LLL-I-535 - Insulation Board, Thermal (Cellulosic Fiber).

J. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

K. Underwriters Laboratories (UL) - Fire Hazard Classifications.

L. Sheet Metal and Air-Conditioning Contractors National Association, inc. (SMACNA).

M. CGSB 37GP56M Classification: Type 2, Class C, and Grade 1.

1.04 SYSTEM DESCRIPTION

A. System 02-2047 Description:
Type G-2
Two ply – base and top - S.B.S. Modified Membrane - Mopped
Insulation (Tapered - if required)
(Vapor Barrier - if required)
( ) Decking

1.05 SUBMITTALS

A. Manufacturer's product data sheets and installation instructions on all materials proposed for use.

B. Specimen copy of the manufacturer's standard roofing warranty.

C. U. L. and F. M. compliance data (Contact Soprema Technical Department (1-800-543-3085) for additional information).

D. Shop Drawings indicating setting plan for tapered insulation.

E. Submit two 12-inch square samples of membrane illustrating the color and thickness to be used.

F. Submit a copy of the manufacturer's installation instructions.

1.06 CONTRACTOR'S QUALIFICATIONS

A. Applicator qualifications: Approved by the manufacturer prior to the bidding period and throughout the installation and able to present a copy of his certification upon request by the Architect or Owner.

1. (Applicator must have installed at least five roofs of the same materials and methods specified for this project that have been warranted for the same number of years as required under this specification by the manufacturer of the product that will be used in the Work).

2. Copies of such warranties are to be submitted at time of Bid.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable codes for roof assembly fire hazard requirements.

B. Underwriters Laboratories, Inc. (UL):

1. Class __A__ Fire Hazard Classification

C. Factory Mutual Engineering & Research Corporation (FM):

1. Roof assembly classification of Class __A__ Construction, wind uplift requirements of (I-90) in accordance with FM Construction Bulletin 1-28.

2. (Contact Soprema's Technical Department (1-800-543-3085) for additional information).

1.08 PRE-INSTALLATION CONFERENCE

A. Convene prior to commencing work of this section at a time and location to be determined by the (Architect)(Contractor)(Owner)( ).

1. All parties responsible for work of this section are required to attend including the Architect, Owner, Contractor, Manufacturer and ( ).

B. Review installation procedures and coordination required with related Work.

1.09 DELIVERY, HANDLING AND STORAGE

A. Deliver all materials and store in their unopened original packaging, bearing the manufacturer's name, related standards and any other specification or reference accepted as standard.

1. When stored outdoors, insulation is to be stacked on pallets or dunnage at least four (4) inches above ground level and covered with "non-sweating" tarpaulins.

B. Protect and permanently store all materials in a dry, well-vented and weatherproof location. Only materials to be used the same day shall be removed from this location. During winter, store materials in a heated location with a 50 degrees F. minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.

C. Carefully store on end materials delivered in rolls with selvage edges up, a minimum of 6-inches above grade. Store metal flashings and counter flashings in such a way as to prevent wrinkling, twisting, scratching and other damage.

D. Avoid stockpiling of materials on roofs without first obtaining acceptance from an Architect/Engineer.

1.10 QUALITY ASSURANCE

A. Submit certification by the manufacturer of the system materials used that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied.

1. If details for any manufacturer's systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer's reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements.

2. No deviation is to be made from this Specification without prior written approval by the manufacturer; submit such approval to the Architect.

B. Inspection: Prior to, during installation and at completion of the installation, an inspection shall be made by a representative of the manufacturer in order to ascertain that the roofing system has been installed according to their published specifications, standards and details.

1. Warranty will be issued upon approval of the installation (See 1.12 of this section).

1.11 JOB CONDITIONS

A. Surfaces on which the roofing membrane system is to be applied shall be clean, smooth, dry, and free of fins, sharp edges, loose and foreign materials, oil and grease.

1. Before beginning work, a representative of the manufacturer shall examine the roof surfaces in order to ensure that the substrate is acceptable.

2. Do not begin installation until all defective conditions have been corrected.

3. All surface voids greater than 1/4" wide shall be properly filled with an acceptable fill material.

1.12 WARRANTY

A. Upon completion of the work, furnish to the Owner the manufacturer’s written and signed standard warranty, certifying the performance of his products and the consistency of the properties of such products affecting their performance for a period of (20) years from date of acceptance.

B. The Contractor is to cover damages to the building resulting from failure to prevent penetration of water during construction.

C. The Contractor is to guarantee all work against defects in materials and workmanship for a period of (2) years following final acceptance of the Work.

1.13 LABORATORY TESTING

A. Upon request from the Owner or Architect the elastomeric membrane manufacturers shall supply, at their expense, the results of mechanical and chemical testing performed on the elastomeric asphalt materials supplied.

B. The tests shall be performed to certify compliance with the standards referenced under this section.

1.14 SITE PROTECTION

A. During roofing work, exposed surfaces of finished walls shall be protected with tarps in order to prevent damage. Contractor shall assume full responsibility for any damage.

PART 2 <u>PRODUCTS</u>

2.01 GENERAL

A. Base Bid:

1. Soprema Inc.
6060 Lake Acworth Drive, Suite J
Acworth, GA 30101

B. Applicators seeking approvals for substitute materials shall submit their request in writing to the Architect seven (7) days prior to bid opening.

2.02 MEMBRANE

A. Base Ply: SOPRA **G**

1. Description: Sopra G is made with a high tensile mat. Both sides of the sheet are equally coated with a non-filled asphalt coating. Tensile strengths greatly exceed those minimums set by ASTM D-4601. Sopra-G may be bonded with hot asphalt or with Sopracolle. May also be used as a nailable base sheet over certain types of decks.

2. Components: Reinforcement shall be 1.9 lbs/sq fiberglass.

3. Physical properties:

   a. Tensile strength:
   Longitudinal - 60 lbs./in.
   Transversal - 44 lbs.

B. Membrane Base Ply: ELASTOPHENE **180 SANDED**

1. Description: Flashing membrane shall have non-woven polyester reinforcement and thermofusible elastomeric asphalt. Both sides to have a sanded surface. This membrane is to be applied by **Mopping only**.

2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical Properties:

   a. Tensile strength:
   Longitudinal - 119 lbs./in.
   Transversal - 88 lbs./in.

   b. Ultimate elongation,
   Longitudinal, 58%
   Transversal, 64%

   c. Static puncture strength - 67 lbs.

   d. Low temperature flexibility, no cracking at -22 degrees F.

   e. SBS elongation - 1500%

   f. Load strain product:
   Longitudinal - 6902
   Transversal - 5632

   g. Approximate roll weight - 84 lbs (38.1 kgs)

   h. Approximate thickness - 90 mils (2.2 mm)

C. Membrane Top Ply: **SOPRALENE 250 GRANULES FR**

1. Description: Waterproofing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt, with a fire retardant agents added. The top side shall be self-protected with colored granules. The underside shall be lightly sanded. This membrane is to be applied by **mopping only.**

   a. Color to be ( ).

2. Components: Reinforcement shall be 5.12 lbs/sq non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical properties:

   a. Tensile strength:
   Longitudinal - 163 lbs./in.
   Transversal - 122 lbs./in.

   b. Ultimate elongation:
   Longitudinal - 60%
   Transversal - 69%

   c. Static puncture strength - 55 lbs.

   d. Low temperature flexibility, no cracking at -22 degrees F.

e. SBS elongation - 1500%

f. Load strain product:
Longitudinal - 9780
Transversal - 8418

g. Approximate roll weight - 86 lbs (38.1 kgs)

h. Aproximate thickness - 150 mils (3.8 mm)

D. Base Ply Flashing: ELASTOPHENE **180 SANDED**

1. Description: Flashing membrane shall have non-woven polyester reinforcement and thermofusible elastomeric asphalt. Both sides to have a sanded surface. This membrane is to be applied by **Mopping only**.

2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical Properties:

a. Tensile strength:
Longitudinal - 119 lbs./in.
Transversal - 88 lbs./in.

b. Ultimate elongation,
Longitudinal, 58%
Transversal, 64%

c. Static puncture strength - 67 lbs.

d. Low temperature flexibility, no cracking at -22 degrees F.

e. SBS elongation - 1500%

f. Load strain product:
Longitudinal - 6902
Transversal - 5632

g. Approximate roll weight - 84 lbs (38.1 kgs)

h. Approximate thickness - 90 mils (2.2 mm)

E. Top Ply Flashing: SOPRALENE **180 GR**

1. Description: Waterproofing membrane shall have non-woven polyester reinforcement and thermofusible elastomeric asphalt. The topside shall be self-protected with colored granules. The underside shall be lightly sanded. This membrane is to be applied by **mopping only**.

a. Color to be ( ).

2. Components: Reinforcement shall be 3.68 lbs/sq non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical properties:

a. Tensile strength:
Longitudinal - 119 lbs./in.
Transversal - 88 lbs./in.

b. Ultimate elongation:
Longitudinal - 58%
Transversal - 64%

c. Static puncture strength - 67 lbs.

d. Low temperature flexibility, no cracking at -22 degrees F.

e. SBS elongation - 1500%

f. Load strain product:
Longitudinal - 6902
Transversal - 5632

g. Approximate roll weight - 105 lbs (47.8 kgs)

h. Approximate thickness - 160 mils (4 mm)

]

2.03 FASTENERS

A. Roofing nails: Galvanized steel, long enough to penetrate the wood by at least 3/4-inch on flashings and parapet walls.

B. Mechanical fasteners for securement of insulation to decking shall be approved by the insulation manufacturer for the system specified.

1. The same brand fastener is to be used throughout the work.

2. Number of fasteners and layout will be as recommended by the manufacturer and as per FM Approval Guide for (I-90) wind uplift.

3. Length of fastener shall be determined by the thickness of the decking and any fill, and will vary with the thickness of the insulation. Fasteners shall be of appropriate length to achieve a minimum of 1-inch penetration.

SPEC NOTE:
Contact SOPREMA'S technical department for minimum fastener securement for various deck types and required pullout testing.

2.04 WOOD BLOCKING

A. All nailers and blocking material to be free of wane, shake, decay or checks, and pressure treated with water-borne preservatives for above ground use, AWPB LP-2.

1. Blocking shall be not less than Construction Grade, Southern Pine.

2.05 INSULATION (IF Applicable)

A. Insulation shall be a rigid (fill in type) board with facing material acceptable to the membrane manufacturer for the system specified.

(Acceptable products are:
Polyisocyanurate + Perlite (FM)
Polyisocyanurate + HD Fiberboard (FM)
Polyisocyanurate + Densdeck (FM)
Polyisocyanurate + Sopraboard (FM)

1. Standard board size to be ( ) with an aged R-value of ( ).

2. The insulation manufacturer shall substantiate in writing its recommendations for the use of their product under the asphalt based waterproofing membrane bonded with hot asphalt.

3. (Tapered insulation is required at various locations - see roof plan for areas. Minimum average aged R - value is to be (_____)). (Minimum thickness:_____). (Slope:_____).

2.06 PRIMER

A. Asphalt Primer: ELASTOCOL **500**

SPEC NOTE:
Refer to section 1.03 for compliance of ASTM.

1. Primer shall be applied on all dissimilar materials except insulation.

2. Description: Black bituminous varnish.

3. Composition: Asphalt modified bitumen with thermoplastic polymers and volatile solvents.

2.07 (VAPOR BARRIER) if applicable

A Materials:

1. Elastophene Sanded

2. Sopra-G

2.08 ASPHALT

A. Asphalt shall be certified in full compliance with the requirements of 190-Type III (Type IV for south) asphalt listed in Table 1, ASTM D-312-71. Each container, or bulk, shipping ticket shall indicate the equiviscous temperature (EVT), the finished blowing temperature (FBT), and the flash point.

2.09 MISCELLANEOUS

A. Expansion Joint Covers: Soprajoint as produced by the membrane manufacturer.

B. Traffic Topping: Shall be Soprawalk.

C. Water Cut-Off: Sopracolle or Sopramastic.

D. Sopralene Flam 180 for gusset material.

E. Pitch Box: Construct and install metal pitch box as per details assuring minimum 2-inch clearance around penetrations and fully welded or hemmed seams.

PART 3 EXECUTION

3.01 SURFACE INSPECTION AND PREPARATION

A. Before commencing work, all surfaces shall be smooth, clean, dry and free of any debris that would adversely effect the installation of the membrane.

1. See 1.11 of this section.

B. Before commencing work, the manufacturer's representative, together with the roofing contractor, shall inspect and approve the deck condition (slopes and nailing supports if applicable) as well as verticals on parapet walls, roof drains, stack vents, vent outlets and others, building joints, etc. If applicable, a non-compliance notice shall be submitted to the contractor so that adjustments can be made. Commencement of work shall imply acceptance of surfaces and conditions.

C. Verify that the work of other trades has been properly completed.

D. Do not install materials in conditions of inclement weather.

3.02 SURFACE PREPARATION

A. (Wood Deck): Verify securement, flatness, joint spacing and slope of wood decking.

1. Replace damaged or defective areas prior to commencement of work under this section.

2. Seal joints of plywood with tape.

3. Fill knots with latex filler.

B. (Light weight): Verify slope and condition of lightweight.

1. Replace damaged or defective areas prior to commencement of work under this section.

2. A nailable type Channel vent sheet is required. Fastened per manufacturers requirements.

3.03 INSTALLATION

A. Install roofing membrane on clean and dry surfaces, in accordance with the manufacturer's requirements and recommendations.

B. Perform roofing work on a continuous basis as surface and weather conditions allow.

C. Protect adjoining surfaces against any damage that could result from roofing installation.

D. Install only as much roofing as can be completed in one day. If weather conditions do not permit such completion, exposed areas shall be temporarily weatherproofed to prevent any water or snow infiltration from damaging other materials already installed, in particular, the thermal insulation.

3.04 EQUIPMENT

A. Maintain all equipment and tools in good working order.

B. Equip kettles and tankers with accurate, fully readable thermometers. Do not heat asphalt to or above its FP. Avoid heating at or above FBT, should conditions make this impracticable, and exception is granted by the Architect, heating above the FBT must not be done for more than four (4) hours. Application temperatures must not be more or less than 25 degrees F of the EVT.

3.05 ASPHALT PRIMER APPLICATION

A. Prime all dissimilar surfaces to which asphalt or membrane will come in contact. Apply at the rate of 150 - 200 sq. ft. / gallon. Coat all metal flashings and fascia with primer, which will come in contact with membrane.

3.06 NAILABLE G-2 INSTALLATION

A. Install base sheet in accordance with the Architect or manufacturer's requirements. The base sheet shall provide a smooth surface to accept the roof membrane.

B. Contact Soprema's Technical Department regarding alternate securement methods on various deck types.

SPEC NOTE:
Additional fasteners may be required along perimeter depending upon height and location of building. Check FM guidebook.

C. Run base ply tight up against any vertical surfaces such as curbs, parapets, and vents.

3.07 INSTALLATION OF INSULATION (If applicable)

A. Install insulation in accordance with the Architect or manufacturer's requirements. The insulation shall provide a smooth surface to accept the roof membrane.

B. Apply only as much insulation to the roof as can be covered the same day with roofing membrane. At the conclusion of each day's work, seal exposed edges of the insulation. Cut and remove seal upon continuation of the work.

SPEC NOTE:
If vapor barrier is required, insulation must be secured by mopping.

Contact Soprema's Technical Department regarding alternate insulation securement methods on various deck types.

D. Place tapered insulation in accordance with manufacturer's recommendations and according to approved shop drawings. (If applicable)

E. Taper boards a distance of 18 inches back from roof drains for positive drainage.

F. Place insulation perpendicular to deck flutes with edges over flutes surfaces for bearing support. Place a minimum of one fastener for every two square feet of insulation.

SPEC NOTE:
Additional fasteners may be required along perimeter depending upon height and location of building. Check FM guidebook.

3.08 ASPHALT APPLICATION

A. For insulation and membrane application apply asphalt at a minimum temperature of approximately 425 degrees F - Type III (Type IV for south). The maximum heating temperature shall be 450 degrees F -Type III. Apply asphalt at a rate of 20-30 lbs./sq. at a distance not to exceed three (3) feet ahead of the roll to provide a sufficient adhesion with the asphalt of the membrane.

B. For low temperature application, it may be necessary to heat asphalt at higher temperatures so that application temperature is adequate. However, the heating temperature of the asphalt shall not exceed 450 degrees F or the indicated flash point. Care must be taken so the asphalt in the kettle is continuously used to prevent distillation.

3.09 BASE PLY INSTALLATION

A. Unroll dry base ply membrane on insulation for alignment. Each strip shall have three (3) inch side laps and six (6) inch end laps.

1. Begin at low point of roof.

2. Place membrane so edge lap will be centered on drain.

B. Reroll base ply (halfway) one end at a time in accordance with recommendations of SOPREMA, onto an approved substrate.

C. Roll the membrane into a full width mopping of asphalt. The membrane must be firmly and uniformly set, without voids, into the asphalt, which is applied at a nominal uniform rate of 23 lbs. per square.

D. The temperature of the asphalt at application should be such that, when the membrane is set its temperature is approximately 20 F above EVT.

E. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

F. Run membrane tight up against any vertical surfaces such as curbs, parapets, and vents.

G. The "Mop and Flop" technique is not an acceptable installation procedure.

3.10 BASE PLY FLASHING INSTALLATION

A. Prior to application, the vertical surface receiving the base ply flashing shall receive a coat of primer at the rate of 150-200 sq. ft./gallon. This primer coating must be dry before application of the base sheet flashing.

1. For gusset application refer to 3.22 of this section.

B. Lay base ply flashing in strips three (3) feet wide to the vertical surfaces, extending onto the flat surface of the roof a minimum of four (4) inches. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches with the laps of the base ply.

C. Mop base ply flashing directly on its support from bottom to top followed by the torching of the roof tie-in.

D. After installation of base ply flashing, check all lap seams on the flashing by running a heated trowel along the edge of the seams.

1. THOROUGHLY SEAL ALL VOIDS IN THE CORNERS AND SEAMS.

3.11 TOP PLY INSTALLATION

A. Once the base ply is applied and does not show any defects, install the top ply.

B. Unroll top ply starting from the low point of the roof. Care must be taken to insure good alignment of the first roll (parallel with the edge of the roof). A 45-degree cut shall be made on the selvage edge of underlying membrane prior to application to insure a good seal between the membranes.

C. Stagger base ply and top ply seams a minimum of twelve (12) inches.

D. Top ply shall have side laps of three (3) inches and end laps of six (6) inches. Prior to installation of following ply surface granules on laps shall be embedded by torch heating the membrane surface and pressing the granules into the melted asphalt with a hot trowel.

E. Roll the membrane into a full width mopping of asphalt. The membrane must be firmly and uniformly set, without voids, into the asphalt, which is applied at a nominal uniform rate of 23 lbs. per square.

F. The temperature of the asphalt at application should be such that, when the membrane is set its temperature is approximately 20 F above EVT.

G. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

H. Seal all laps by running a hot trowel along the edge of the seam.

I. Run membrane tight up against any vertical surfaces such as curbs, parapets, and vents.

J. The "Mop and Flop" technique is not an acceptable installation procedure.

K. After installation of the top ply, check all lap seams on the top ply using the edge of a hot trowel. Correct defect.

L. During installation, avoid asphalt seepage greater than 1/4 inch at seams.

1. Cover asphalt seepage with a sprinkling of loose granules, color to match membrane.

3.12 TOP PLY FLASHING INSTALLATION

A. Lay top ply flashing in strips three (3) feet wide.

1. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches from top ply laps in order to avoid excessive thickness.

B. Using a chalk line, lay-out a straight line on the top ply surface, parallel to the roof edge, six (6) inches inside the roof from the base of the cant strip or right angle to be flashed.

C. Using a torch and heated flat trowel, embed the surface granules into the heated and soft bitumen from the chalk line to the edge of the top ply, and to the top of the cant or right angle.

D. Extend top ply flashing down the vertical surface and onto the flat roof at a distance of six (6) inches, to the extent of the area of embedded granules. For ease of application, cut roll into required lengths and use width of roll three (3) feet down length of roof, maintaining specified three (3) inch laps.

1. Mop top ply flashing in accordance with recommendations of SOPREMA, directly on its base ply, proceeding from bottom to top followed by the torching of the roof tie-in.

2. Firmly press flashing into position using a damp sponge.

E. Thoroughly seal all voids in the corners and seams.

F. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

G. During installation, avoid asphalt seepage greater than 1/4 inch at seams.

3.13 WATER CUT-OFF

A. At the end of the day's work, and when precipitation is eminent, a water cut-off shall be constructed at all open edges. Construct the cut-off with the same membrane and asphalt. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system.

3.14 CLEANING

A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.

B. Remove asphalt markings from finished surfaces.

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

3.15 PROTECTION

A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.

B. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8-inch thick.

C. In addition to the plywood listed above, an underlayment of minimum 1/2-inch recover board is required on new roofing.

1. Special permission must be obtained from the Manufacturer before any traffic will be permitted over new roofing.

3.16 FIELD CONTROL

A. Field inspection will be performed as outlined under 1.10 of this section.

3.17 PITCH BOXES

A. Install metal pitch box as per details assuring minimum 2-inch clearance around penetrations.

1. Provide minimum 6-inch height above finished roofing.

2. Set primed flanges onto base ply after heating metal with a torch assuring box rim is level and true.

B. Seal by torching a reinforcing strip of base ply material that extends beyond the flange a minimum of 6-inches onto the roof.

1. Seal all edges and seams with a heated trowel.

C. Install top ply as specified under 3.11 of this section.

D. Fill box with lightweight concrete filler to a minimum of 2-inches below the top edge. Seal boxes full with pourable urethane sealer acceptable to the membrane manufacturer.

1. Provide a constant slope to the outside edge of the box on all sides.

2. (Optional - Provide a metal storm collar on all boxes).

3.18 ROOF DRAINS

A. Provide a smooth transition from drain bowl to deck surface.

1. Taper insulation back from drain a minimum of 18-inches to provide for positive drainage.

2. Prime all metal surfaces, including both sides of the lead.

3. Using a trowel, set a 6-inch wide layer of mastic around the drain bowl edge as water cut-off.

B. Install base ply membrane with lap centered on bowl and as specified under 3.09 of this section ensuring a tight seal at drain.

1. Install a 30 x 30 inch lead sheet over center of drain.

2. Mop into place a reinforcing sheet of SBS base ply material three feet square centered on drain.

3. Cut back membranes flush with the inside edge of the drain bowl and temporarily secure with clamping ring.

C. Install top ply as specified under 3.11 of this section.

1. Cut back membrane flush with the inside edge of the drain bowl.

2. Position membrane so as to avoid the occurrence of any seams at drains.

3. Seal off drain by running a hot trowel along the edge and firmly pressing against the rim.

D. Install clamping ring and drain covers supplied with drain.

E. Test all drains for proper flow and water tightness. Correct defects.

3.19 VENT (STACK)

A. Inspect base ply installation and ensure tight seal around pipe.

B. Construct and install ( ) sheet metal vent sleeve as per details over base ply.

1. Provide a minimum 5-inch base flange.

2. Prime all metal surfaces.

3. Heat metal flange with torch prior to setting in place and firmly pressing on flange to ensure even contact with roof surface.

C. Mop into place a reinforcing sheet of base ply material three feet square over the vent.

1. Seal all seams and edges with a heated trowel.

D. Install top ply as specified under 3.11 of this section.

1. Cut membrane to fit tight against stack sleeve and seal by running a heated trowel around vent base.

E. Install metal vent cap.

3.20 WALKWAYS

A. At areas outlined on the drawings, install POLYESTER reinforced membrane, 36-inch wide by 4-foot long sheet of top ply as walkway. (A different color granular membrane should be used.)

B. Layout sheets dry, adjusting spacing to be uniform, cut and trim pieces as required to fit conditions, direction changes and closing.

1. No piece shall be less than 24-inches.

2. Provide a 2-inch gap between sheets for drainage.

C. Align the sheets to be straight and true, using a straight edge or snap lines as required.

D. Follow specifications for top ply installation.

3.21 EXPANSION JOINT

A. Ensure all surfaces are soundly secured and fully primed prior to the installation of any membrane or flashing.

B. Install base ply as specified under 3.09 of this section.

1. Stop base ply membrane at juncture of horizontal to vertical surface.

C. Install base ply flashing as detailed and in accordance with 3.10 of this section.

1. Flashing must extend a minimum of 4-inches onto the base ply and continue up the vertical surface onto the top edge of the expansion joint support and secure using roofing nails.

2. Fill the expansion joint with compressible insulation supported by a layer of polyethylene film nailed off at top.

SPEC NOTE:
Architect is to verify any fire code ratings for expansion joints.

D. Provide a continuous joint cover of mineral cushion as detailed.

1. Width of cushion to be three times that of the joint.

E. Install pre-fabricated expansion joint cover by torching flanges onto expansion support and ensuring a minimum of 4-inch surface contact.

F. Install top ply flashing as per 3.12 of this section.

1. Run flashing to top of vertical surface of support and onto roof surface a minimum of 6-inches.

2. Set all granules into membrane using a hot trowel where flashing overlap occurs.

3. Install a slip-sheet over joint as separation between joint cover and top ply.

G. Cover the entire expansion joint with a single layer of top ply flashing as detailed and following specifications outlined under 3.12 of this section.

3.22 CORNER FLASHING

A. Inside Corner:

1. Pre-cut all flashing pieces and prime all surfaces prior to installation.

2. Fabricate gusset 4-inch wide by 8-inch long with a 2-inch triangular tip.

a. Install gusset into corner using a torch and firmly pressing with a hot trowel.

b. Set gusset with triangular tip on base ply and wrapping the corner a minimum 2-inches on each side.

3. Pre-cut base flashing membranes to provide a 4-inch tie-in to roof surface and 3-inch return at corner.

4. Mop first base flashing sheet into corner over gusset pressing overlap and tie-in firmly into position with a hot trowel.

5. Mop second base flashing sheet into position with edge tight into corner.

a. Cut off base tie-in selvage at 45-degree from vertical.

b. Seal all edges with a hot trowel.

6. Pre-cut top flashing membranes to provide a 6-inch tie-in to roof surface and 3-inch return at corner.

7. Mop first top flashing sheet into corner over second base ply pressing overlap and tie-in firmly into position with a damp sponge.

8. Mop second top flashing sheet into position with edge tight into corner.

a. Cut off base tie-in selvage at 45-degree from vertical.

b. Press flashing firmly into position with a damp sponge.

c. Seal all edges with hot trowel and sprinkle granules to cover seeping asphalt.

B. Outside Corners:

1. Pre-cut all flashing pieces and prime all surfaces prior to installation.

2. Fabricate gusset 4-inch wide by 8-inch long with a 2-inch triangular tip.

a. Install gusset into corner using a torch and firmly pressing with a hot trowel.

b. Set gusset with triangular tip on base ply and wrapping the corner a minimum of 2-inches on each side.

3. Pre-cut base flashing membranes to provide a 4-inch tie-in to roof surface and 3-inch return at corner.

4. Mop first base flashing sheet into corner over gusset pressing overlap and tie-in firmly into position with a hot trowel.

5. Mop second base flashing sheet into position with returns wrapped around corners.

a. Cut off base tie-in selvage at 45-degree from vertical.

b. Seal all edges with a hot trowel.

6. Pre-cut top flashing membranes to provide a 6-inch tie-in to roof surface and 3-inch return at corner.

7. Mop first top flashing sheet into corner over second base ply pressing overlap and tie-in firmly into position with a damp sponge.

8. Mop second top flashing sheet into position with edge tight into corner.

a. Cut off base tie-in selvage at 45-degree from vertical.

b. Press flashing firmly into position with a damp sponge.

c. Seal all edges with hot trowel and sprinkle granules to cover seeping asphalt.

3.23 CURBS

A. Inspect and verify that all curbs are properly secured to deck, are level, a minimum 6-inches above finished roof, primed and ready to receive flashings.

B. Base ply membrane is to run horizontally tight up against the vertical curb or cant as required.

1. When base ply membrane is to act as temporary seal for an extended length of time, carry membrane up vertical surface a minimum of 1-inch.

C. Gusset to be fabricated 4-inch wide by 8-inch long with a 2-inch triangular tip.

1. Install gusset onto corner using a torch and firmly pressing with a hot trowel.

2. Set gusset with triangular tip on base ply and wrapping the corner a minimum 2-inches on each side.

D. Install base ply flashing according to 3.10 of this section.

1. Pre-cut flashing to the total sum of curb height, thickness plus 1-inch for inside curb securement and 4-inch tie-in along base with width to match that of curb plus 3-inch overlap on each end.

2. Secure along inside of curb with roofing nails.

3. Cut back corner base selvage at 45-degree angle from vertical.

E. Install top ply as specified under 3.11 and 3.12 of this section.

1. Pre-cut flashing to the total sum of curb height plus 6-inches for base tie-in with width to match that of curb plus 3-inch overlap at each end.

2. Set granules with heated trowel on all surfaces to receive flashing.

3. Cut flashing flush with the top of curb and seal edges with heated trowel.

4. Cut back corner base selvage at 45-degree angle from vertical.

5. Firmly press flashing into position using a damp sponge.

F. Provide metal counter flashing.

3.24 ROOF EDGE

A. Install base ply membrane as specified under 3.09 of this section. Carry membrane over roof edge a minimum of 3-inches and temporarily fasten using galvanized roofing nails.

B. Install a continuous metal cleat (material) and edge as detailed.

1. Prime all dissimilar surfaces prior to membrane or flashing installation.

2. Flange on edge to be 4-inch minimum.

3. Nail flange to decking or wood blocking at 4-inch center - staggered.

C. Cover edge with a reinforcing strip of base membrane mopped into place. Membrane is to carry beyond the metal flange onto base ply a minimum of 4-inches.

1. Hold the reinforcing strip back from outside edge of metal by 3/4-inch.

2. Seal all edges with a hot trowel.

D. Install top ply of membrane according to 3.11 of this section with the edge tight against the metal and sealed with a hot trowel.

3.25 COPING / PARAPETS

A. Verify all surfaces are properly secured and fully primed, ready to receive flashings.

B. Base ply membrane is to run horizontally tight up to the vertical or cant as required.

C. Install base ply flashing according to 3.10 of this section. Carry flashing up the vertical surface, over the top and down the outside face of the parapet a minimum of 3-inches. Fasten along outside edge at 4-inch centers using roofing nails.

1. Install a continuous metal cleat (material) and edge as detailed.

a. Prime all dissimilar surfaces prior to membrane or flashing installation.

b. Flange on edge to be 4-inch minimum.

c. Nail flange to wood blocking at 4-inch center - staggered.

2. Mop top ply membrane and flashing as detailed and specified under 3.11 and 3.12 of this section.

SPEC NOTE:
Install metal coping in lieu of edge as per manufacturer's or SMACNA specifications when applicable.

END OF SECTION