SECTION 07530 – FLEXIBLE SHEET ROOFING

PART I - GENERAL

1.01 DESCRIPTION

A. Furnish and install a fully adhered system using .060" thick non-reinforced EPDM including but not limited to; preparation of the roof deck, installation of roofing insulation, flashings, sheet metal, expansion joints, counter-flashings and other related items.

B. The requirements of Section 07500 apply to this section.

1.02 QUALITY ASSURANCE

A. Insurance Certification: Provide completed systems that are listed for UL (Underwriters Laboratories) Class A external fire exposure and FM Global Class I construction.

1.03 SUBMITTALS

A. Comply with the requirements of Part I Section 07500 and as follows:

B. Shop Drawings: Show roof configuration, sheet layout, and recommended details (specific to actual store conditions) and special conditions. Detail locations shall include but not limited to; perimeter, HVAC equipment curbs, internal and external corners, penetrations, copings, terminations and junctions with other materials.

PART II – PRODUCTS

2.01 ROOF INSULATION

A. Roof insulation shall be double layers of 1.5" thick "ISO 95+ Isocyanurate" roof insulation as manufactured by Firestone, or "Sure-Seal Polyisocyanurate HP" as manufactured by Carlisle Syn Tec Systems.

B. Provide rigid polyisocyanurate, minimum density of 2 lb./cu. ft. complying with ASTM C-1289 and ASTM C13-3, Type II, Class I, Grade 2 and ASTM 1622, polyisocyanurate with fiberglass perforated facer sheet, 20 psi compressive strength complying with ASTM 1621, dimensional stability complying with ASTM D-2126-87. Minimum R Value of 9 per layer of 1.5" roof insulation.

C. Tapered insulation for saddles and crickets; sloped ½" per ft. minimum, consisting of either tapered perlite panels or tapered polyisocyanurate panels.

1. Approved tapered insulation; shall be listed and approved for use by the membrane manufacturer for the system to be installed.

2.02 ROOFING MEMBRANE

A. Elastomeric sheet membrane shall be a 0.060 inch black non-reinforced terpolymer of ethylene, propylene, and diene compounded elastomer meeting ASTM D 4637 and ASNI/RMA IPR-1. The physical properties shall be as follows:

PROPERTIES	TEST METHODS	SPECIFICATIONS
Color		Black
Thickness Nominal		.060 inch
Tolerance on NominalThinkness, %	ASTM D 412	+/- 10

Tensile Strength Min., psi (Mpa)	ASTM D 412	1305 (9)
Elongation, Ultimate Min., %	ASTM D 412	350
Tear Resistance, Min., lbf/in (kN/m)	ASTM D 624 (Die C)	175 (30.5)
Factory Seam Strength Min.	Modified ASTM D 816	Membrane Rupture
Resistance to Heat Aging Properties after 4 weeks @ 240 degree F	ASTM D 573	
Tensile Strength Min., psi (Mpa)	ASTM D 412	1200 (8.3)
Elongation, Ultimate Min., %	ASTM D 412	225
Tear Resistance min. lbf/in (kN/m)	ASTM D 624	150 (26.3)
Linear Dimensional Change, Max., %	ASTM D 1024	+/- 2
Ozone resistance Condition after exposure to 100 pphm Ozone in air for 168 h @ 104 degrees F. Specimen is at 50% strain	ASTM D 1149	No Cracks
Brittleness Temp. Max., Degree F (degree C)	ASTM D 746	75 (-59)
Resistance to Water Absorption* After 7d immersion @ 158 degree F., Change in mass max., %	ASTM D 471	4
Water Vapor Permeability Max., perm-mils	ASTM E 96 (Proc B or BW)	2.0
Resistance To Outdoor (Ultraviolet Weathering Properties after 500,000 Langleys EMMAQUA: 50% strain, Calendar finished sheeting		
Tensile strength min., psi (Mpa)	ASTM D 412	1200 (8.3)
Elongation min. %	ASTM D 412	225
Sheet Composition	ASTM D 297	
Weight percent of polymer that is EPDM, min. %		100
Weight percent of sheet that is EPDM polymer min., %		30

B. Provide one of the following products:

Carlisle “Sure-Seal” Membrane (Standard)*
Firestone “Rubberguard” (LSFR)*

*Use membrane required to comply with UL Class A fire rating over appropriate deck and insulation specified.

2.03 MISCELLANEOUS MATERIALS

A. Fasteners shall be screws and non-puncturing plates as required by the membrane and insulation manufacturers, and as listed in Factory Mutual Approval Guide.

B. Flashing: System manufacturers cured EPDM flashing is compliance with roofing manufacturer’s details.

C. Coping, gravel stops, gutters, downspouts, scuppers, etc. as per section 07600.

D. Sealant: As provided by membrane manufacturer.

E. Termination bars: 0.040 mill finished aluminum with 3 ½” vertical drop and ½” top caulk receiver.

F. Sump pans: recessed 20 Ga. metal.

G. Stack vents: Flash with molded pipe flashings approved by membrane manufacturer.

H. Drains shall be flashed with EPDM membrane sheet as recommended by the roof membrane manufacturer.

I. Wood Nailers: Pressure treated with salt preservations or Wolmanized treatment.

J. Splash Blocks shall consist of pre-manufactured concrete splash blocks placed over walkway pads under all condensation lines and downspouts.

K. Seam Tape: As provided by the membrane manufacturer. Seam tape exposure shall not exceed ¼” at field side laps.

L. Bonding adhesive, Nite-seal, pourable sealer, splice cleaner, cut-off mastic, etc. as required by the membrane manufactuer.

M. Traffic Pads: Carlisle or Firestone walk pads as supplied by the membrane manufacturer.

N. Molded Walkway Pads: A black, rubber walkway pad with factory rounded corners available in 30” by 30” pads.

O. Walkway Pads: A black, shredded, compressed rubber walkway pad available in 30 inch wide by 30 foot long rolls.

P. Protective sheets: If membrane is vulnerable to contact with fluid associated with HVAC equipment, provide membrane manufacturers recommended protection sheets beneath and extending 2 ft. minimum around all HVAC equipment.

PART III - EXECUTION

3.01 INSTALLATION – General

A. The requirements of Part III, Section 07500 apply to this section.

3.02 INSTALLATION – Insulation

A. For fully adhered EPDM roofing membrane assemblies, install base layer with long dimension perpendicular to metal deck flutes. Install top layer with long dimension parallel to metal deck flutes on fully adhered EPDM membrane system. Mechanically fasten both layers simultaneously with 16 fasteners per board consistent with I-60 wind up-lift ratings. If higher wind up lift requirements is required based upon the region and building location, comply with the fastener rates and patterns outlined in the most current FM Global publication.

B. Stagger insulation joints within each layer of insulation in both roof systems. Joints in top layer shall be staggered a minimum of 6" from the joints in base layer.

3.03 INSTALLATION – Membrane

A. Membrane should be applied from highest point to lowest point to prevent water infiltration.

B. Membrane splices shall be 3" wide minimum. Field splices at roof drains shall be located outside the drain sump. Seam tape at field side laps shall not exceed ¾" width. Seam tape exposure in excess of ¾" shall be covered with EPDM cover strips.

C. The EPDM membrane shall extend over the perimeter wood nailer (or gravel stop / water dam fascia continuous cleat) to the outside face of the building. Secure copings (or gravel stops) in compliance with roof manufacturer details. Secure copings on outside with a continuous metal cleat and on inside vertical surfaces with neoprene washered screws at a rate of 24" o/c. or five fasteners per ten foot run of coping.

D. The flashing membrane on all parapet walls shall be fully adhered to the inside of the cleaned wall surface and extend up and over the top of the wall and shall be mechanically terminated on the outside face of the wood nailer that is installed beneath the coping.

E. In accordance with roof manufactures details, the system shall be secured at the perimeter of each roof level, roof section, curb flashing, roof hatch, interior wall, penetration, etc, and any inside angle where slopes exceed 2 inches in 1 horizontal foot.

F. Compression type wood nailers are not acceptable for membrane securement.

G. Apply and secure walkway protection pads in strict compliance with roof manufactures instructions where indicated in the Walgreen criteria drawings. Do not restrict drainage of the roof with any walk pad. Cut or move any walk pad that restricts drainage.

H. Any penetration thru the perimeter parapet wall shall be flashed thru a pre-molded pipe flashing as supplied by the membrane manufacturer or field flashed with EPDM membrane per the requirements of the membrane manufacturer.

END OF SECTION