Roofing" and as follows: END OF SECTION PART 1- GENERAL A. Section Includes: Roof insulation. 1.7 WARRANTY PART 2 - PRODUCTS 2.1 MANUFACTURERS 4. <u>Johns Manville</u>. Versico Incorporated 2.3 TPO ROOFING 1. Thickness: 60 mils (1.5 mm), nominal. 2. Exposed Face Color: White. 2.4 AUXILIARY ROOFING MATERIALS A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction. B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as TPO sheet. C. Bonding Adhesive: Manufacturer's standard. D. Slip Sheet: Manufacturer's standard, of thickness required for application. E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system F. Miscellaneous Accessories: Provide metal termination bars, metal battens, pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories. A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, Type X, 5/8 inch (16 1. <u>Products</u>: Subject to compliance with requirements, provide one of the following: a. CertainTeed Corporation; GlasRoc Sheathing Type X. b. Georgia-Pacific Corporation; Dens Deck DuraGuard. c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing. d. Temple-Inland, Inc; GreenGlass Exterior Sheathing. e. USG Corporation; Securock Glass Mat Roof Board. B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening substrate board to roof deck. 2.6 ROOF INSULATION A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2 felt or glass-fiber mat facer on 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Carlisle SynTec Incorporated. Firestone Building Products. GAF Materials Corporation B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48unless otherwise indicated. C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated. 2.7 INSULATION ACCESSORIES A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer. substrate or to another insulation layer. 1. <u>Products</u>: Subject to compliance with requirements, provide one of the following: a. CertainTeed Corporation; GlasRoc Sheathing Type X. o. Georgia-Pacific Corporation; Dens Deck DuraGuard. c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing. Temple-Inland, Inc; GreenGlass Exterior Sheathing. e. USG Corporation; Securock Glass Mat Roof Board. 2.8 ASPHALT MATERIALS A. Roofing Asphalt: [ASTM D 312, Type III or Type IV] [ASTM D 6152, SEBS modified]. B. Asphalt Primer: ASTM D 41/D 41M.

SECTION 075216 - STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING 3.04 ROOFING INSTALLATION A. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen 1. Deck Type: As indicated on Drawings. 2. Adhering Method: M (mopped). 3. Number of Glass-Fiber Base-Ply Sheets: Two. 4. Number of SBS-Modified Asphalt Sheets: One. 5. Surfacing Type:)M (mineral-granule-surfaced cap sheet) . B. Where roof slope exceeds 1/2 inch per 12 inches, install roofing membrane sheets parallel with slope. C. Coordinate installation of roofing system so insulation and other components of the roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is D. Loosely lay one course of sheathing paper, lapping edges and ends a minimum of 2 inches and 6 inches, E. Install lapped base-sheet course, extending sheet over and terminating beyond cants. Attach base sheet as 1. Adhere to substrate in a solid mopping of hot roofing asphalt. F. Install glass-fiber base-ply sheets according to roofing system manufacturer's written instructions starting at low point of roofing system. Align glass-fiber base-ply sheets without stretching. Extend sheets over and terminate 1. Embed each glass-fiber base-ply sheet in a continuous void-free mopping of hot roofing asphalt to form a uniform membrane without glass-fiber base-ply sheets touching. G. Install modified bituminous roofing sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants. 1. Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer. H. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids. 1. Repair tears and voids in laps and lapped seams not completely sealed. I. Install roofing sheets so side and end laps shed water. J. Aggregate Surfacing: After installing and testing roofing, base flashing, and stripping, promptly apply flood coat to roof surface with 60 lb/100 sq. ft. of hot roofing asphalt. While flood coat is hot and fluid, cast the following average weight of aggregate in a uniform course: 1. Aggregate Weight: 400 lb/100 sq. ft.. 3.05 FLASHING AND STRIPPING INSTALLATION A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions. B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 4 inches onto field of roofing membrane. C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing. D. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions. E. Roof Drains: Set 30-by-30-inch- metal flashing in bed of asphaltic adhesive on completed roofing membrane. Cover metal flashing with roofing cap-sheet stripping, and extend a minimum of 6 inches beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain 3.06 WALKWAY INSTALLATION A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size, according to walkway pad manufacturer's written instructions. SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING 1. Adhered thermoplastic polyolefin (TPO) roofing system. A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section. 1.3 ACTION SUBMITTALS A. Product Data: For each type of product. B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other 1.4 INFORMATIONAL SUBMITTALS A. Sample Warranties: For manufacturer's special warranties. A. Maintenance Data: For roofing system to include in maintenance manuals. 1.6 QUALITY ASSURANCE A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty. A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within Owner specified warranty period. A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Carlisle SynTec Incorporated 2. Firestone Building Products. 3. GAF Materials Corporation. B. Source Limitations: Obtain components including fasteners for roofing system from manufacturer approved by membrane roofing manufacturer. 2.2 PERFORMANCE REQUIREMENTS A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155. B. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures: 1. Corner Uplift Pressure: 45 lbf/sq. ft. 2. Perimeter Uplift Pressure: 30 lbf/sq. ft. 3. Field-of-Roof Uplift Pressure: 20 lbf/sq. ft. D. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency. A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, flexible TPO

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner. B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements. C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction. **END OF SECTION** SECTION 076200 - SHEET METAL FLASHING AND TRIM PART 1 - GENERAL 1.1 SUMMARY A. Section Includes: 1. Manufactured reglets with counterflashing. 2. Formed roof-drainage sheet metal fabrications. 3. Formed low-slope roof sheet metal fabrications. 4. Formed steep-slope roof sheet metal fabrications. 5. Formed wall sheet metal fabrications.

SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING (CONTINUTED)

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed

C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints

1. Fasten substrate board to resist uplift pressure at corners, perimeter, and field of roof according to roofing system

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the

2. Set each subsequent layer of insulation in insulation adhesive, firmly pressing and maintaining insulation in place.

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll

B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer.

D. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.

E. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings

F. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

C. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially

C. Mechanically Fastened and Adhered Insulation: Install each layer of insulation to substrate using mechanical

fasteners specifically designed and sized for fastening specified board-type roof insulation to substrate type.

1. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.

according to manufacturer's written instructions, to ensure a watertight seam installation.

2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals

PART 3 - EXECUTION

3.1 ROOFING INSTALLATION, GENERAL

before beginning work on adjoining roofing.

void warranty for existing roofing system.

3.2 SUBSTRATE BOARD INSTALLATION

roofing and allow to relax before retaining.

3.5 BASE FLASHING INSTALLATION

manufacturer's written instructions

not apply to seam area of flashing.

3.6 PROTECTING AND CLEANING

a watertight seam installation.

manufacturers' written instructions.

3.3 INSULATION INSTALLATION

end of the workday

Stagger end laps.

staggered between rows. Tightly butt substrate boards together.

dry before installing roofing. Do not apply to splice area of roofing.

B. Install tapered insulation under area of roofing to conform to slopes indicated.

1.2 ACTION SUBMITTALS A. Product Data: For each type of product B. Shop Drawings: For sheet metal flashing and trim. 1. Include plans, elevations, sections, and attachment details. 2. Distinguish between shop- and field-assembled work. 3. Include identification of finish for each item. 4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work. 1.3 INFORMATIONAL SUBMITTALS A. Product certificates. B. Product test reports. C. Sample warranty.

 A. Maintenance data. 1.5 QUALITY ASSURANCE A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance. 1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period. 1. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

1.4 CLOSEOUT SUBMITTALS

2.1 PERFORMANCE REQUIREMENTS A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight. B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated C. SPRI Wind Design Standard: Manufacture and install copings roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure: 1. Design Pressure: As indicated on Drawings.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces. 2.2 SHEET METALS A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping. B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 4 (polished directional satin)

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

C. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M. 1. Surface: Mill phosphatized for field painting. Color: Match Architect's sample.

2.3 UNDERLAYMENT MATERIALS A. As indicated in drawings and required by manufacturer.

2.4 MISCELLANEOUS MATERIALS A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated. B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal. 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide

metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal. b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened. c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel. 3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329. 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet

manufacturer. 2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead. D. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight. E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement. F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints. G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application. B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to 2.5 FABRICATION, GENERAL D. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 5/8 inch (16 mm)] thick. A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible. 1. Obtain field measurements for accurate fit before shop fabrication.

2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems. 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim. 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant

SECTION 076200 - SHEET METAL FLASHING AND TRIM (CONTINUED)

2. Use lapped expansion joints only where indicated on Drawings. C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard. D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal. E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured. F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder. G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

2.6 WALL SHEET METAL FABRICATIONS A. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches (100 mm) beyond wall openings. Form head and sill flashing with 2-inch- (50-mm-) high, end dams. Fabricate from the following materials: 1. Stainless Steel: 0.016 inch (0.40 mm) thick

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION A. As indicated in drawings and required by manufacturer.

3.2 INSTALLATION, GENERAL A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system. 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant. 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal. 3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners. 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks. 5. Torch cutting of sheet metal flashing and trim is not permitted. B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or 1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet. C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection. 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints. 2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance. E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation. F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants." G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets

with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work. 1. Do not solder metallic-coated steel sheet. 2. Do not use torches for soldering. 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and

spatter from exposed surfaces. 4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.3 WALL FLASHING INSTALLATION A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wallopening components such as windows, doors, and louvers. B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches (100 mm) beyond wall openings.

3.4 CLEANING AND PROTECTION A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering. B. Clean and neutralize flux materials. Clean off excess solder.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL 1.1 SUMMARY

A. Section Includes: 1. Adhered ethylene-propylene-diene-monomer (EPDM) roofing system.

2. Roof insulation. 1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work

1.4 INFORMATIONAL SUBMITTALS A. Sample Warranties: For manufacturer's special warranties.

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacture to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within Owner specified warranty period. **PART 2 - PRODUCTS**

2.1 MANUFACTURERS

2.2 PERFORMANCE REQUIREMENTS

1. Corner Uplift Pressure: 45 lbf/sq. ft.

A. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

B. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:

2. Perimeter Uplift Pressure: 30 lbf/sq. ft. 3. Field-of-Roof Uplift Pressure: 20 lbf/sq. ft. D. Solar Reflectance Index: Not less than 29 when calculated according to ASTM E 1980, based on testing

identical products by a qualified testing agency.

E. Fire-Resistance Ratings: Comply with existing fire-resistance-rated assembly designs. Identify products with appropriate markings of applicable testing agency. 2.3 EPDM ROOFING

A. EPDM: ASTM D 4637, Type I, nonreinforced, uniform, flexible EPDM sheet. 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: a. Carlisle SynTec Incorporated. b. Firestone Building Products.

c. GAF Materials Corporation. d. Johns Manville. e Versico Incorpora

2. Thickness: 60 mils (1.5 mm), nominal. 3. Exposed Face Color: Black. 2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.

B. Sheet Flashing: 60-mil- (1.5-mm-) thick EPDM, partially cured or cured, according to application. C. Protection Sheet: Epichlorohydrin or neoprene nonreinforced flexible sheet, 55- to 60-mil- (1.4- to 1.5-mm-) thick,

Owner

Project Address La Quinta Inn No. 2049 340 Park Ave

C. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

D. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeters.

E. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing terminations. 1. Apply a continuous bead of in-seam sealant before closing splice if required by roofing system manufacturer.

F. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing terminations.

G. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal membrane roofing in place with clamping ring.3.5 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing. C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations. E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.6 PROTECTING AND CLEANING A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and

extent in a written report, with copies to Architect and Owner. B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of

Substantial Completion and according to warranty requirements. C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

D. Bonding Adhesive: Manufacturer's standard.

a. CertainTeed Corporation; GlasRoc Sheathing Type X.

d. Temple-Inland, Inc; GreenGlass Exterior Sheathing.

e. USG Corporation; Securock Glass Mat Roof Board.

butyl splice tape with release film.

2.5 SUBSTRATE BOARDS

2.6 ROOF INSULATION

a. Carlisle SynTec Incorporated.

b. Firestone Building Products.

c. GAF Materials Corporation.

unless otherwise indicated.

e. Johns Manville.

d. Insulfoam LLC; a Carlisle company.

drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

2.8 ASPHALT MATERIALS

PART 3 - EXECUTION

B. Asphalt Primer: ASTM D 41/D 41M.

3.1 ROOFING INSTALLATION, GENERAL

before beginning work on adjoining roofing.

3.2 SUBSTRATE BOARD INSTALLATION

a minimum of 6 inches (150 mm) in each direction.

3.4 ADHERED MEMBRANE ROOFING INSTALLATION

Unroll membrane roofing and allow to relax before installing.

3.3 INSULATION INSTALLATION

staggered between rows. Tightly butt substrate boards together.

B. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.

substrate or to another insulation layer.

a. CertainTeed Corporation; GlasRoc Sheathing Type X.

b. Georgia-Pacific Corporation; Dens Deck DuraGuard.

d. Temple-Inland, Inc; GreenGlass Exterior Sheathing

e. USG Corporation; Securock Glass Mat Roof Board

E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- (75-mm-) wide minimum,

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in

G. Miscellaneous Accessories: Provide lap sealant, water cutoff mastic, metal termination bars, metal battens, pourable

sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet

flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and

A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, Type X, 5/8 inch (16 mm)

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions

A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major

B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48)

A. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to

B. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 5/8 inch (16 mm) thick.

UV degradation, type and weight as recommended by roofing system manufacturer for application.

1. Products: Subject to compliance with requirements, provide one of the following:

A. Roofing Asphalt: [ASTM D 312, Type III or Type IV] [ASTM D 6152, SEBS modified].

A. Install roofing system according to roofing system manufacturer's written instructions.

c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to

C. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed

sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals

C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the

C. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches

(68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer

1. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation

1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m), and allow primer to dry.

2. Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F (14 deg C)

E. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows.

A. Adhere roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions.

B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer.

Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.

for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.

3. Set each layer of insulation in insulation adhesive, firmly pressing and maintaining insulation in place.

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Products: Subject to compliance with requirements, provide one of the following:

b. Georgia-Pacific Corporation; Dens Deck Dens Deck DuraGuard Dens Deck Prime.

c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.

in FM Global 4470, designed for fastening substrate panel to roof deck.

FM Global 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.

ALL DIMENSIONS SHOWN TO BE FIELD VERIFIED U.N.O.

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Construction 600 W. Fulton Street Chicago, IL 60661-1259 T 312.454.9100

www.epsteinglobal.com PROJECT NUMBER PROJECT MANAGER: ARCH/ENG: 3/32" = 1'-0" DRAWN BY:

OUTLINE **SPECIFICATIONS**

JASON P. CHANDLER

No. 3962

CHECKED BY:

SCALE:

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