TECHNICAL SPECIFICATIONS

ESPECIFICACIONES TÉCNICAS

IMPERMEABILIZACION DE TECHOS

Tribunal Supremo de Puerto Rico
Puerta de Tierra, San Juan

Preparado por

COLEMAN-DAVIS PAGAN ARQUITECTOS

SAN JUAN, PUERTO RICO

Consultor

ADVANCED ROOFING TECHNOLOGIES, INC.

SALEM, OHIO

consiste de **37** páginas, inc. índice & hoja de título

30 de septiembre de 2021

INDEX TECHNICAL SPECIFICATIONS

SECTION 01001

STATED ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements governing handling and processing allowances.

1. Selected materials and equipment, and in some cases, their installation are shown and specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. Additional requirements, if necessary, will be issued by Change Order.

B. Types of Allowances required include the following:

1. Lump sum allowances.

C. Procedures for submitting and handling Change Orders are included in Section "Change Order Procedures".

D. The Allowance amount to be paid to the Contractor for each item shall include the cost of the equipment and/or materials delivered and installed.

1. The Contractor's bid price shall include the Contractor's overhead and profit for the work covered by the Allowance. The total amount specified for each type of Allowance shall be available to the Owner on a net basis. The Contractor's overhead shall be deemed to include the Contractor's supervision, coordination, temporary facilities and services as per this specification and all other administrative activities related thereto.

1.03 SELECTION AND PURCHASE

A. At the earliest feasible date after Contract award, advise the Architect of the date when the final selection and purchase of each product or system described by an Allowance must be completed in order to avoid delay in performance of the work.

B. When requested by the Architect, obtain proposals for each Allowance for

use in making final selections; include recommendations that are relevant to performance of the work.

C. Purchase products and systems as selected by the Architect from the designated supplier.

1.04 SUBMITTALS

A. Submit proposals for purchase of products or systems included in Allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each Allowance.

1.05 UNUSED MATERIALS

A. Where it is not economically feasible to return unused material for credit and when requested by the Architect, prepared unused material for the Owner's storage, and deliver to the owner storage as directed. Otherwise, disposal of excess material is the Contractor's responsibility.

PART 2 - EXECUTION

2.01 INSPECTION

A. Inspect products covered by an Allowance promptly upon delivery for damage or defects.

2.02 PREPARATION

A. Coordinate materials and their installation for each Allowance with related materials and installations to ensure that each Allowance item is completely integrated and interfaced with related construction activities.

2.03 SCHEDULE OF ALLOWANCES (written in Spanish for clarity)

A. ALLOWANCE NUM. 1 - TRABAJOS ADICIONALES DE IMPERMEABILIZACION,
RESTAURACION DE SOPORTES/ESTRUCTURA,
MOVIMIENDO/REMOCION DE EQUIPOS,
REEMPLAZO DE EQUIPOS.
TERMINACIONES E INFRAESTRUCTURA
PLUVIAL/MECANICA/ELECTRICA ....$ 50,000.00

Incluye, pero no necesariamente limitado a, los siguientes renglones:

1. Trabajos adicionales de impermeabilización de techos o paredes. Este <Allowance> no incluye los trabajos de impermeabilización de techos o paredes según descritos e indicados en los Dibujos de Construcción, especificaciones técnicas y Addendums.
2 Trabajos adicionales de restauración de soportes o estructura existente.

Este <Allowance> no incluye los trabajos de restauración de soportes o estructura existente según descritos e indicados en los Dibujos de Construcción y Addendums.

3. Trabajos adicionales de movimiento de equipos existentes y remoción de equipos inservibles. Este <Allowance> no incluye los trabajos de movimiento de equipos existentes y remoción de equipos inservibles según descritos e indicados en los Dibujos de Construcción, especificaciones técnicas y Addendums
4. Trabajos adicionales de reemplazo de equipos mecánicos. Este <Allowance> no incluye los trabajos de reemplazo de equipos mecánicos según descritos e indicados en los Dibujos de Construcción y Addendums.
5. Trabajos adicionales de terminaciones de paredes y otras superficies. Este <Allowance> no incluye los trabajos de terminaciones de paredes y otras superficies según descritos e indicados en los Dibujos de Construcción y Addendums.
6. Trabajos adicionales de infraestructura pluvial, mecánica y/o eléctrica. Este <Allowance> no incluye los trabajos de infraestructura pluvial, mecánica y/o eléctrica. según descritos e indicados en los Dibujos de Construcción, especificaciones técnicas y Addendums.

TOTAL ALLOWANCES.....$ 50,000.00

B. The Contractor shall discuss with the Resident Inspector and/or the Architect, the procedures he intends to take to realize this Allowance work. The Contractor shall not proceed without the approval of the Resident Inspector and the Architect.

C. If work has been performed within the parameters of the Allowances, at each monthly Application for Payment (certification) compensation to the Contractor for these shall be calculated for payment based on precise accounting records for this particular work to justify expenditures and receive payment for same. If the work required justifies an increase in the Allowance total, an adjustment in the allowance total shall be negotiated before proceeding with the extra work.

END OF SECTION

SECTION 01 10 00

ROOF SYSTEM SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Impermeabilizacion de Techos Tribunal Supremo de Puerto Rico

B. The Project consists of the reroofing of the Supreme Court of Puerto Rico.

1.02 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 41 00.

B. Demolish and replace the roof assembly and flashing systems in the following areas, complete finishes and membrane system, membrane flashings, counterflashing and coping:
   1. Repair to 100% or replace roof drains (inserts will not be permitted).

C. Coordinate demolition of abandoned rooftop mechanical units, ductwork, and electrical penetrations.

D. HVAC: Keep existing system in operation.

E. Electrical Power and Lighting: Keep existing system in operation.

F. Fire Suppression Sprinklers: Keep existing system in operation.

G. Rooftop ventilation units: Keep existing system in operation.

1.03 WORK BY OWNER

A. Owner will provide additional trades as required to accomplish demolition or upgrading of damaged or deteriorated rooftop units.

B. Owner may be replacing exhaust fans concurrently with the reroofing project.

1.04 OWNER OCCUPANCY

A. Owner intends to continue to occupy the existing building during the entire construction period.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas provided by Owner.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Work by Owner.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Existing building spaces may not be used for storage.

E. Time Restrictions:
   1. Conduct all crane work at times which minimize conflict and facilitate Owners operations.

F. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without prior approval and 5 days' notice to Owner and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

A. Construct Work in phases during the construction period:
   1. As set in Construction Schedule.

B. Coordinate construction schedule and operations with Owner or Design Professional, as mandated.

C. Follow construction Schedule.

D. Coordinate mortar repair and steel stand replacement with other trades to ensure that the new roof assembly is installed over corrected conditions.

1.07 CONTRACT NO. ____ - GENERAL CONSTRUCTION

A. Provide all Work except Work specifically assigned to other contractors in this Section.

PART 2 PRODUCTS -

2.01 MATERIALS PROVIDED BY THE OWNER- NONE

A. The Contractor is responsible for providing all materials required to complete the project.

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 02 41 00
SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 10 00 - Summary: Sequencing and staging requirements.

C. Section 07 01 50.19 - Preparation for Re-Roofing: Removal of existing roofing, roof insulation, flashing, trim, and accessories.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

A. Site Plan: Showing:
   1. Areas for temporary construction and field offices.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, and location and construction of barricades and fences.
   2. Identify demolition firm, if other than the roof contractor, and submit qualifications.
      a. Include debris logistics.
   3. Include a summary of safety procedures.

C. Provide the Owner with accurate shop and as-built drawings at the close of the project prior to final inspection.

PART 2 PRODUCTS

2.01 MATERIALS

A. Basis of Specification Design- Soprema.

PART 3 EXECUTION

3.01 SCOPE

A. Remove all areas of the roof system of building including all membrane material, membrane flashing, counterflashing, coping, coverboard and insulation down to the structural deck.

B. Install specified roof system and any additional items as required to complete the roof system
   1. Utilize FM approved materials.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Use physical barriers, if required, to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

6. Do not close or obstruct roadways or sidewalks without permit.
7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring if required.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

D. Minimize production of dust due to demolition operations; do not use water.

E. If hazardous materials are discovered during removal operations, stop work and notify Design Professional and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.03 EXISTING UTILITIES

A. Protect existing utilities to remain from damage.

B. Do not disrupt public utilities.

C. Do not close, shut off, or disrupt existing life safety systems that are in use without 5 days prior written notification to Owner and with Owner approval.

D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

E. Locate and mark utilities to remain; mark using highly visible tags, with identification of utility type; protect from damage due to subsequent construction, using barricades if necessary.

F. Remove exposed piping, valves, meters, equipment, and supports of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
2. Report discrepancies to Design Professional before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction.

D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site daily.

B. Leave site in clean condition, ready for subsequent work.

C. Continuously clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof-mounted curbs.

B. Roofing nailers.

C. Preservative treated wood materials.

D. Fire retardant treated wood materials.

1.02 RELATED REQUIREMENTS

A. Section 07 52 05 - Modified Bituminous Membrane Roofing

B. Section 07 62 00 - Sheet Metal Flashing and Trim

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2017a.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2017.

D. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.

E. PS 1 - Structural Plywood; 2009.

F. PS 20 - American Softwood Lumber Standard; 2015.

1.04 SUBMITTALS

A. Product Data: Provide technical data on wood preservative materials and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.06 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood.
   2. Coated fasteners:
      a. #15 HD by Soprema

b. Coated wood deck screws rated for treated lumber.

2.03 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.04 CLEANING

A. Waste Disposal: Comply with the requirements of Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 07 01 50.19

PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of existing roofing system in preparation for a new roof membrane system.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the affected mechanical and electrical work associated with roof penetrations.

B. Schedule work to coincide with commencement of installation of new roofing system.

1.03 FIELD CONDITIONS

A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building, contents or intended continued occupancy.

B. Maintain continuous temporary protection (tents, water dams and sheet materials), in the work area, prior to and during installation of new roofing system.

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Rain Protection: Sheet EPDM or TPO; provide weights to retain sheeting in position.
   1. Sheet materials must be of adequate size to cover from high point of the roof drain field to the drains.

B. Protection Board: Provide adequate protection for currently installed membrane systems and new roof systems while trafficking, storing materials, transporting materials, setting scaffolding or conducting any other work which places the waterproof integrity of the building at risk.
   1. 3/4" Plywood
   2. Polyisocyanurate insulation buffer
   3. Sacrificial membrane ply

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface is clear and ready for work of this section.

3.02 PREPARATION

A. Sweep roof surface clean of loose matter.

B. Remove loose refuse and dispose of off-site.

3.03 MATERIAL REMOVAL

A. Remove only existing roofing materials that can be replaced with new materials the same day.

B. Remove metal counter flashings.

C. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, remove pitch pans.

D. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, and pitch pans.

E. Remove insulation and fasteners, cant strips, blocking, and flashings.

F. Vacuum deck and clean of debris, do not allow debris to travel below new roof system or become embedded in system adhesives.

G. Repair existing concrete deck surfaces to provide smooth working surface for new roof system.

3.04 PROTECTION

A. Provide tents and/or temporary protective sheeting over uncovered deck surfaces.

B. Turn sheeting up and over parapets and curbing, install water dams where necessary. Retain sheeting in position with weights.

C. Provide for surface drainage from sheeting to existing drainage facilities.

D. Do not permit traffic over unprotected or repaired deck surface.

E. Insure appropriate protection for roof areas which are to have scaffolding installed.

F. Install recovery board or other material over existing membrane as detailed above.

3.05 SCHEDULES

A. All Roof Areas: Remove existing perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, and insulation.

B. Remove roof mounted mechanical equipment as required to perform re-roofing.
   1. Coordinate removal with the Owner.
   2. Units will be returned to service as expeditiously as possible.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation over roof deck.

B. Batt insulation for filling crevices in exterior wall, curbs and roof.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.

B. Section 07 52 05 - Modified Bituminous Membrane Roofing

1.03 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2021.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2021a.

E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.

F. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2019a.

1.04 SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and proper handling and storage.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Polyisocyanurate thermal Insulation:
   1. Soprema - www.soprema.us.

B. Unfaced batt insulation
   1. Owens Corning - www.owenscorning.com
   2. CertainTeed Corporation: www.certainteed.com
   3. Substitutions: Or approved equal

C. Mineral fiber batt insulation
   1. Rockwool (Roxul, Inc); Comfortbat: www.rockwool.com
   2. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com
   3. Substitutions: Or approved equal

2.02 APPLICATIONS

A. Insulation in Metal Framed Wall Cavities: Batt insulation with no vapor retarder.

B. Insulation in Wood Framed Wall Cavities: Batt insulation

C. Insulation at high temperature isolated stacks: Mineral fiber batt insulation

D. Insulation Over Roof Deck: Polyisocyanurate board

2.03 FOAM BOARD INSULATION MATERIALS

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II:
         1) Class 2 - Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 3 - 25 psi (172 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48) at 75 degrees F.
   2. Board Size: 48 inch by 96 inch (mechanically fastened assemblies).
   3. Board Size: 48 inch by 48 inch (adhered and mechanically fastened assemblies).
   4. Board Thickness: 1.5 inch and 2 inch.
   5. Tapered Board: Overall Roof Slope ¼:12; crickets and saddles ½:12; minimum nose thickness 1/2 inch, fabricate from fewest layers possible.
   6. Board Edges: Square.

2.04 BATT INSULATION MATERIALS

A. Where batt insulation type is not indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
   1. Install mineral wool insulation in isolated stacks.

B. Glass Fiber Batt Insulation: Flexible preformed unfaced batt or blanket, complying with ASTM C665; friction fit.
   1. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
   2. Formaldehyde Content: Zero.
   3. Facing: Unfaced.

C. Mineral Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.

2.05 ACCESSORIES

A. Insulation Fasteners for Concrete Decks: Appropriate for purpose intended and approved by Factory Mutual and roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate, with metal plates.
   2. Fasteners: #14 MP manufactured by Soprema.
   3. Plates: 2.4" seam plates manufactured by Soprema.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of irregularities or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

A. Installation of board insulation over low slope roof deck as specified in Section 07 52 00.

B. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Attach insulation and coverboard to deck in accordance with roofing manufacturer's written instructions and this specification.
   4. Do not apply more insulation than can be covered with roofing in same day.
   5. The contractor is responsible for maintaining a continuous slope to drain utilizing a taper plan which includes crickets and saddles as needed.

6. Install crickets at the upslope side of all penetrations which are 24” or larger.
7. Areas of ponding shall be corrected at no additional cost to the Owner.

3.03 BATT INSTALLATION

A. Install insulation drip loop in movement joints in accordance with detail drawings and instructions.

B. Install fiberglass or mineral wool insulation in exterior wall and roof expansion joint and area divider spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Install membrane loop in expansion joints prior to batt insulation.

F. Install mineral wool insulation in isolated stack locations.

3.04 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 52 05
MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modified bituminous roofing membrane, conventional application.

B. Insulation, flat and tapered.

C. Deck sheathing.

D. Base flashings.

E. Roofing cant strips, accessories, and walkway pads.

1.02 RELATED REQUIREMENTS

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

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

C. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets and scuppers.

1.03 REFERENCE STANDARDS

A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.

B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2021.

D. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2016 (Reapproved 2016).

E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007, with Revision (2018).

F. ASTM D6164/D6164M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2016.

G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.

H. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.

I. FM (AG) - FM Approval Guide; Current Edition.

J. NRCA (RM) - The NRCA Roofing Manual; Current Edition.

K. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated flashings and counterflashings installed by other sections.

B. Pre-installation Meeting: Convene before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. Product Data: Provide manufacturer's catalog data for membrane and bitumen materials, base flashing materials, insulation, and surfacing.

B. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout if different than indicated in detail drawings.

C. Manufacturer's Installation Instructions: Indicate special procedures.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Field Reports: Indicate procedures followed.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

H. Warranty: Submit manufacturer’s 20-year NDL warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience. Provide executed Manufacturer's Acknowledgement for installer.

C. All materials are to be FM (Factory Mutual) and FBC approved products.

D. All materials, including metal copings, and counter flashing must be approved by the manufacturer for their 20-year NDL Warranty.

E. The manufacturer’s 20-year NDL warranty must specify inclusion of all flashings, coping, and metal counterflashings.

F. All work is to be performed in compliance with all Federal and Puerto Rico code requirements.

G. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.

H. Manufacturer Acknowledgement: Manufacturer has accepted and reviewed Specifications and Drawings. Provide executed Manufacturer Acknowledgement.

I. Be equipped with a trained crew and with all capital equipment required to perform work of this section.
   1. Maintain all equipment and tools in good working order.
   2. Provide written safety plan and equipment to the work force and specify, in writing, proper clothing.

J. The contractor shall appoint a safety coordinator who shall be a member of the roofing installation crew. The appointment shall be conveyed to the Building Owner in writing including all qualifications for the appointment.

K. Maintain a daily job log to be kept on site, at all times, starting from the date of the pre-roofing conference. The job log shall include:
   1. Copies of all submittals.
   2. Safety coordinator appointment with emergency telephone numbers; fall protection plan and material safety data sheets for all products.
   3. Quality Controller appointment.
   4. Daily crew attendance and time records.
   5. A summary of each day’s work including any photographs or detail revisions.
   6. Accident reports.
   7. Material delivery records.
   8. Visitor registry.

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

M. If there is a conflict between the Specification, Manufacturer’s instructions, or Code; the Contractor shall discuss it with the Design Professional and comply with the most restrictive, highest quality or provide largest amount of work.

N. During roofing work, exposed surfaces of finished walls shall be protected in order to prevent damage or marking. Contractor shall assume full responsibility for any damage or marking of the walls.

O. No open flame adhering of the membrane system utilizing a propane torch will be permitted.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

B. Store products in weather protected environment, clear of ground and moisture.

C. Protect foam insulation from direct exposure to sunlight and condensation.

D. Avoid stockpiling of materials on roofs without first obtaining acceptance of load points from the Building Engineer.

E. Adhesive storage shall be between the range of above 40 degree F (4 degree C) and below 80 degree F (27 degree C). Area of storage shall be established for flammable storage at a location approved by the Owner.

1.08 FIELD CONDITIONS

A. Safety:
   1. The contractor shall be responsible for complying with all project-related safety and environmental requirements.
   2. Heat-welding shall include heating the specified membrane ply using electric hot-air welding equipment only. The contractor shall determine when and where conditions are appropriate to utilize electric hot-air heat-welding equipment. When conditions are determined by the contractor to be unsafe to proceed, equivalent SBS-modified bitumen materials and methods shall be utilized to accommodate requirements and conditions.
   3. Refer to NRCA CERTA recommendations, local codes and building owner’s requirements for hot work operations.
   4. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified liquid-applied, or semi-solid roofing materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
   5. The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements

B. Environmental Conditions
   1. Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
   2. Precipitation and dew point: Monitor weather to ensure the project environment is dry before, and will remain dry, during the application of roofing materials. Ensure all roofing materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.
   3. Cold adhesive application: Primer, where used, shall be fully dry before proceeding. During cold weather, store the specified membrane adhesives, flashing cements and mastics in heated storage areas. Take all necessary measures and monitor application conditions, to ensure the adhesive and cement materials are no less than 70 degrees F (21 degrees C) at the point of contact with the membrane.
   4. Heat-Welding Application: Take all necessary precautions and measures to monitor conditions to ensure all environmental conditions are safe to use hot-air welding

equipment. Combustibles, flammable liquids, and solvent vapors that represent a hazard shall be eliminated. Flammable primers and cleaners shall be fully dry before proceeding with heat-welding operations. Prevent or protect wood, paper, plastics, and other such combustible materials from direct exposure. Refer to NRCA CERTA recommendations

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

D. All hot air welding work must be performed in full compliance with:
   1. FM Regulations
   2. OSHA Regulations
   3. No hot work will be performed prior to complete execution of all applicable permits.
   4. No kettles will be permitted.
   5. Open flames are only permitted to dry concrete decks.
      a. Do not use in proximity to combustibles.
      b. No open flames will be permitted once installation begins.
   6. No permits will be allowed to expire during hot work.
   7. A fire extinguisher must be at each location hot work is being performed.

E. The Contractor is required to maintain a continuous fire watch during any period of time that hot work is being performed and for a period of 4 hours thereafter.
   1. The person performing the fire watch must be equipped with, and trained in the use of a fire extinguisher and an infrared thermometer.
   2. The person performing the fire watch must keep a temperature log at 15 minute intervals during the watch.
   3. One fire watch person is required for every location in which hot work is being performed.
   4. In addition to the fire watch personnel, the Contractor's designated Safety Officer or his trained appointee will remain on site during the fire watch period(s).

1.09 PERFORMANCE REQUIREMENTS

A. Wind uplift:
   1. Performance testing shall be in accordance with ANSI/FM 4474, FM 4450, FM 4470, UL 580 or UL 1897.
      a. Dome testing of installation may be recommended.

B. Fire Classification:
   1. Performance testing shall be in accordance with UL 790, ASTM E108, FM 4450 or FM 4470.
      a. Meets requirements of UL Class A or FM Class A.
   2. Performance testing shall be in accordance with UL 790, ASTM E108, FM 4450 or FM 4470.
      a. Meets requirements of UL 1256 or FM Class 1.

C. Roof slope: Finished roof slope for SBS modified bitumen surfaces shall be ¼ inch per foot (2 percent) minimum for roof drainage

D. Impact Resistance:
   1. Performance testing for impact resistance shall be in accordance with FM 4450, FM 4470, ASTM D3746 or CGSB 37-GP 56M to meet the specified impact resistance requirements.
      a. Meets requirements for FM-SH (Severe Hail), ASTM D3746, or CGSB 37-GP 56M.

E. Cyclic Fatigue:
   1. The roof system shall pass ASTM D5849 Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement). Passing results shall show no signs of cracking, splitting or tearing over the joint.
      a. Roof system shall pass Test Condition 5, tested at -4 degrees F (-20 degrees C) in accordance with ASTM D5849.

1.10 WARRANTY

A. Contractor:
   1. Correct defective Work within a five year period after Date of Substantial Completion.

B. Manufacturer:
   1. 20 year single source NDL Warranty: Cover labor and all components of the waterproofing installation, including the waterproofing membranes, flashings, metal counterflashings, and insulation as supplied by Soprema and installed in accordance with Soprema General Requirements. All components of the waterproofing installation that are to be covered under the terms of the warranty should be expressly itemized in the Warranty or Warranty Rider.
      a. A letter of intent-to-warrant from the membrane manufacturer shall be submitted prior to the Work beginning. This letter shall be on corporate letterhead, dated, signed by an executive officer of the company and notarized, clearly identifying the specific products proposed and method of application, certifying the assembly's compliance with the project specification and warranty provisions.
      b. The waterproofing membranes, flashings and metal counterflashings are warranted against leaks for a period of 20 years.
      c. The insulation is to retain 80% of its original thermal value for a period of 20 years.
      d. Submit manufacturer warranty and ensure forms have been completed in the Owner’s name and registered with manufacturer.
      e. All components of the waterproofing assembly, including flashings and metal counterflashings, must be supplied or approved, and covered, by the membrane manufacturer offering the single-source warranty.
   2. Provide 145 mph Wind Rider

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Single Source Manufacturer: All SBS modified bitumen membrane and flashing sheets shall be manufactured by a single supplier with 20 years or more manufacturing history in the US
   1. Comply with the Manufacturer’s requirements as necessary to provide the specified warranty.

B. Product Quality Assurance Program: Manufacturer shall be an ISO 9001 registered company. A ‘Quality Compliance Certificate (QCC) for reporting/confirming the tested values of the SBS-Modified Bitumen Membrane Materials will be supplied upon request.

C. Acceptable Manufacturer:
   1. SOPREMA, located at: 310 Quadral Dr.; Wadsworth, OH 44281; Tel: 800-356-3521; Tel: 330-334-0066; Website: www.soprema.us.

2.02 ROOFING - CONVENTIONAL APPLICATION

A. Roofing System Basis of Design: Soprema
   1. The roof membrane assembly shall consist of a multi-ply, prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, secured to a prepared substrate. Reinforcement mats shall be impregnated (saturated) and coated with a high quality SBS modified bitumen blend. The cross section of the sheet material shall contain no oxidized or non-SBS modified bitumen.
   2. Cap sheet membrane, over base sheet, cover board and insulation.

B. Roofing Assembly Requirements:
   1. Insulation Thermal Resistance (R-Value): 5.7 per inch, minimum; provide insulation of thickness specified.
   2. Surfacing: Highly reflective mineral granules.

2.03 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.

1. Classifications:
    a. Type II:
        1) Class 2 - Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of core foam.
        2) Compressive Strength: Classes 1-2-3, Grade 3 - 25 psi (172 kPa), minimum.
        3) Thermal Resistance, R-value: At 1-1/2 inch thick (UNO); Class 1, Grades 1-2-3 - 8.4 (1.48) at 75 degrees F.
2. Board Size: 48 by 96 inch maximum.
3. Board Thickness: One layer of 1.5 inch, one layer of 2inch.
4. Tapered Board: Slope as indicated in drawings; minimum thickness 1/2 inch; fabricate of fewest layers possible.
5. Product: Sopra-Iso + manufactured by Soprema
6. Board Edges: Square.

2.04 COVERBOARD

A. Asphalt Coated Glass Fiber Coverboard:

1. Product: Sopraboard, 1/4" thick, manufactured by Soprema (www.soprema.us)

2.05 MEMBRANE AND SHEET MATERIALS

A. Base Sheet - Mechanically Fastened:
1. SOPREMA SOPRAFIX BASE 622: SBS-modified bitumen membrane ply with plastic burn-off film in side-laps only, and sanded top and bottom surfaces. Non-woven polyester reinforcement. Mechanically fastened in 4 in (minimum) heat-welded side-laps. Base ply for cold adhesive-applied and self-adhered cap sheet applications. Meets or exceeds ASTM D6164, Type I, Grade S, per ASTM D5147 test methods:
    a. Thickness: 110 mils (2.8 mm)
    b. Width: 39.4 in (1 m)
    c. Length: 32.8 ft (10 m)
    d. Roll weight: 74 lb (33.6 kg)
    e. Net mass per unit area, lb/100 sq ft (g/sq m): 68 lb (3341 g)
    f. Peak load @ 0 degrees F (-18 degrees
    g. Elongation at peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 35%, XMD 40%
    h. Peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
    i. Elongation at peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 55%, XMD 60%
    j. Ultimate Elongation @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 65%, XMD 80%
    k. Tear Strength @ 73.4 degrees F (23 degrees C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
    l. Low temperature flexibility, degrees F (degrees C): MD/XMD: -15 degrees F (-26 degrees C)
    m. Dimensional stability, %: MD/XMD: Less than 0.5%
    n. Compound stability, degrees F (degrees C): MD/XMD: 240 degrees F (116 degrees C)

B. Flashing Base Ply - Cement Applied
1. Soprema Sopralene 180 Sanded: SBS-modified bitumen membrane sanded on both top and bottom surfaces. Non-woven polyester reinforcement. Meets or exceeds ASTM D6164, Type I, Grade S, per ASTM D5147 test methods.
    a. Thickness: 118 mils (3.0 mm)
    b. Width: 39.4 in (1 m)
    c. Length: 32.8 ft (10 m)
    d. Roll weight: 84 lb (38.1 kg)

e. Net mass per unit area, lb/100 sq ft (g/sq m): 78 lb (3808 g)
f. Peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 115 lbf/in (20.1 kN/m), XMD 90 lbf/in (15.8 kN/m)
g. Elongation at peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 35%, XMD 40%
h. Peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
i. Elongation at peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 55%, XMD 60%
j. Ultimate Elongation @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 65%, XMD 80%
k. Tear Strength @ 73.4 degrees F (23 degrees C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
l. Low temperature flexibility, degrees F (degrees C): MD/XMD: -15 degrees F (-26 degrees C)
m. Dimensional stability, %: MD/XMD: Less than 0.5%
n. Compound stability, degrees F (degrees C): MD/XMD: 240 degrees F (116 degrees C)

C. Cap Sheet - Cold Adhesive Applied:
1. Soprema Sopralene 250 FRGR: SBS-modified bitumen membrane Cap Sheet with a sanded bottom surface and mineral granule top surface. Non-woven polyester reinforced. UL Class A for specified roof slope requirements. Meets or exceeds ASTM D6164, Type II, Grade G.
a. Thickness: 157 mils (4.0 mm)
b. Width: 39.4 in (1 m)
c. Length: 32.8 ft (10 m)
d. Roll weight: 111 lb (50.4 kg)
e. Net mass per unit area, lb/100 sq ft (g/sq m): 107 lb (5214 g)
f. Peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 160 lbf/in (28.0 kN/m), XMD 110 lbf/in (19.3 kN/m)
g. Elongation at peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 30%, XMD 35%
h. Peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 135 lbf/in (23.6 kN/m), XMD 100 lbf/in (17.5 kN/m)
i. Elongation at peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 55%, XMD 60%
j. Ultimate Elongation @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 60%, XMD 75%
k. Tear Strength @ 73.4 degrees F (23 degrees C), lbf (N): MD 165 lbf (734 N), XMD 120 lbf (534 N)
l. Low temperature flexibility, degrees F (degrees C): MD/XMD: -15 degrees F (-26 degrees C)
m. Dimensional stability, %: MD/XMD: Less than 0.5%
n. Compound stability, degrees F (degrees C): MD/XMD: 240 degrees F (116 degrees C)
o. Granule Surfacing: Soprema SG Granule: Highly reflective, bright white mineral granule surfacing, listed by the Cool Roof Rating Council (CRRC).

D. Flashing Cap Sheet – Flashing Cement Applied:
1. Soprema Sopralene 180 FRGR: SBS-modified bitumen membrane Cap Sheet with a sanded bottom surface and mineral granule top surface. Non-woven polyester reinforced. UL Class A for specified roof slope requirements. Meets or exceeds ASTM D6164, Type I, Grade G
a. Thickness: 157 mils (4.0 mm)
b. Width: 39.4 in (1 m)

c. Length: 32.8 ft (10 m)
d. Net mass per unit area, lb/100 sq ft (g/sq m): 109 lb (5322 g)
e. Peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 115 lbf/in (20.1 kN/m), XMD 90 lbf/in (15.8 kN/m)
f. Elongation at peak load @ 0 degrees F (-18 degrees C), lbf/in (kN/m): MD 35%, XMD 40%
g. Peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
h. Elongation at peak load @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 55%, XMD 60%
i. Ultimate Elongation @ 73.4 degrees F (23 degrees C), lbf/in (kN/m): MD 65%, XMD 80%
j. Tear Strength @ 73.4 degrees F (23 degrees C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
k. Low temperature flexibility, degrees F (degrees C): MD/XMD: -15 degrees F (-26 degrees C)
l. Dimensional stability, %: MD/XMD: Less than 0.5%
m. Compound stability, degrees F (degrees C): MD/XMD: 240 degrees F (116 degrees C)
n. Granule Surfacing: Soprema SG Granule: Highly reflective, bright white mineral granule surfacing, listed by the Cool Roof Rating Council (CRRC).

D. Flashing Cap Sheet – Liquid Applied:
1. Soprema Alsan RS 230 Flash: Catalyzed polymethyl methacrylate (PMMA) polymethacrylate (PMA) liquid resin with polyester reinforcing fleece fabric fully embedded into the resin to form fully reinforced waterproofing membrane flashings. All liquid-applied flashing shall be manufactured by the single-sourced membrane supplier.
a. VOC Content: No VOC Content.
b. Soprema Alsan 230 RS Flash: Polymethyl methacrylate (PMMA) liquid resin.
c. Soprema Alsan RS Catalyst Powder: Reactive agent added to the liquid resin to induce polymerization.
d. Soprema Alsan RS Fleece: Polyester reinforcement fabric.
e. Color: Flash color and finish to match Field.

2.06 ACCESSORIES

A. Primers:
1. Soprema Elastocol 500 Primer: Asphalt cut-back primer. Primer for the preparation of membrane substrates for asphalt, heat-welded, hot asphalt and Colply Adhesive, solvent-based, cold adhesive-applied and cement applications.
a. NOTE: Priming is not required for Soprema Colply EF Adhesive and Soprema Colply EF Flashing applications.
b. Meets or exceeds ASTM D41
c. VOC content: 350 g/L or less.

B. Membrane Adhesives: SBS-modified bitumen membrane adhesive for use with sanded base ply and granule-surfaced Cap Sheet membranes.
1. Soprema Colply Modified Adhesive:
a. VOC Content: 250 g/L or less.
b. Meets or exceeds ASTM D3019.
2. Soprema Colply EF Flashing Cement: Premium, non-toxic, low-odor, solvent-free, polymeric membrane flashing cement for use with sanded base ply and all sanded Cap Sheet flashing applications.
a. VOC Content: 32 g/L or less VOC Content.
3. Soprema Sopramastic: SBS Mastic. Fiber-reinforced, roofing cement, packaged in 10.4 oz caulk tubes. General purpose roofing cement for low-slope roofing used for sealing

membrane T-joints and membrane edges along terminations, transitions and at roof penetrations.
   a. VOC Content: 190 g/L or less.
   b. Meets or exceeds ASTM D4586, Type I, Class II.

C. General Purpose Sealant:
   1. Soprema Sopramastic SP1: General purpose, paintable, gun-grade, elastomeric, polyether moisture curing sealant for sealing SBS membrane terminations, Kynar 500 PVDF, horizontal and vertical construction joints.
      a. VOC Content: 20 g/L or less
      b. Meets or exceeds ASTM C920, Type S, Grade NS, Class 50.
      c. Standard color
   2. Soprema Sopramastic ALU: Modified bitumen mastic, aluminum hued for application to membrane edge and perimeter metal.
      a. VOC Content: 20 g/L or less
      b. Standard Color.

D. System fasteners and plates:
   1. Soprema #14 MP Fastener: For use on concrete substrates.
      a. Insulation and coverboard pre-fastening.
      b. Base sheet fastening.
   2. Soprema 2.4” barbed seam plate: For use on all substrates.
      a. Insulation and coverboard pre-fastening.
      b. Base sheet fastening.

E. Liquid-applied reinforced flashing system: Base Ply Membrane: Single-component, polyurethane-bitumen resin with polyester reinforcing fleece fabric fully embedded into the resin to form roof system flashings.
   1. Soprema Alsan Flashing: Liquid resin, Meets or exceeds ASTM C836.
   2. Soprema Alsan Polyfleece: Non-woven polyester reinforcement.
   3. Surfacing: Mineral granules broadcast into an additional layer of wet Soprema Alsan Flashing to match adjacent SBS-modified bitumen cap sheet.

F. Mineral Granules: Soprema Granules - No. 11, mineral coated colored granules, color to match cap sheet, supplied by membrane cap sheet manufacturer.
   1. Soprema SG Granules.

G. Walkway Protection: Soprema Soprawalk - Polyester reinforced SBS modified bitumen walkway protection with a granule surface and sanded underside.
   1. Thickness: 200 mils (5.0 mm.)
   2. Width: 39.4 in (1 m)
   3. Roll Length: 26 ft (7.9 m)
   4. Granule Surfacing Color: Grey

H. Cant Strips: Perlite board, compatible with roofing materials; cants formed to 45 degree angle.
   1. Soprema Soprarock

I. 2 1/2 pound lead or 16 ounce dead soft copper as required locally for membrane reinforcement at drains.

J. Termination bar - Manufactured from formed aluminum.
   1. Product: True Fast TB-50
   2. Substitutions: or approved equal.

K. Scuppers - See:
   1. 07 62 00 - Sheetmetal Flashing and Trim
   2. Detail drawings

L. Coping and counterflashing devices:.063 Aluminum, maximum possible lengths per location, with attachment flanges.
   1. 07 62 00 - Sheetmetal Flashing and Trim

2. See Detail drawings
3. Manufacturer engineered for uplift and included by statement in manufacturer's NDL Warranty.
4. Soprametal

PART 3 EXECUTION

3.01 EXAMINATION

A. Prepare work area for sudden rain events.
   1. Set and secure tent.
   2. Install water dams as required to divert storm water runoff around work area.
   3. Prepare tent sides for use as required.
   4. Have additional waterproofing materials including PVC or EPDM material in adequate amounts to protect roof opening.
   5. Provide an adequate number of operating pumps and hoses to pump water to adjacent drain fields when required.

B. The contractor shall examine all roofing substrates including, but not limited to: insulation materials, roof decks, walls, curbs, rooftop equipment, fixtures, and wood blocking.

C. Verify deck is supported and secure.

D. The contractor shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to receive specified roofing materials.

E. During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified roofing system.

F. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
   1. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate contractor's acceptance of conditions

G. Verify deck surfaces are dry.

H. Verify that roof openings, curbs, and penetrations through roof are solidly set.

I. Ensure that equipment stands, and wall mortar are in good repair.

J. Remove all roll packaging tape prior to installation.

3.02 CONCRETE DECK PREPARATION

A. Fill surface honeycomb and variations with latex filler.

B. Ensure that all parapet walls have been repaired to original prior to reroofing.

C. Scarify irregular locations to flat.

D. Torch dry deck if required and if deemed safe.
   1. This is the only time which open flame use is permitted.

E. Pipe penetrations must be securely anchored and properly prepared with appropriate cleaning and abrasion of the metal or PVC as required for a suitable surface to be flashed.

F. The applicator is responsible for ensuring the suitability of the substrate surface to accept the roof system. Initiation of the work of this section indicates that the substrate is acceptable to the contractor for the system installed.

3.03 INSULATION INSTALLATION - CONVENTIONAL APPLICATION

A. Contractor is responsible for maintaining a positive slope to drain.

B. Lay out 2" Sopra-Iso, staggering joints between rows of insulation.

C. Lay subsequent 1 ½", and additional layers of insulation with joints staggered minimum 12 inch from joints of preceding layer in both directions.

D. Install all tapered insulation in accordance with an organized taper plan, adding slope and additional crickets as needed to maintain a positive slope to drain. Provide crickets at all curbs which exceed 24". The contractor is ultimately responsible for maintaining a positive slope to drain.

E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
   1. Fill joints and openings which exceed 1/8” in all layers.

F. Do not apply more insulation than can be covered with membrane in same day.

G. Install Sopraboard in similar fashion to insulation.
   1. Stagger joints 12" in both directions; provide support at ends. Cut coverboard cleanly and accurately at roof breaks and protrusions to provide a smooth surface.

H. Attachment of insulation and coverboard: Mechanically pre-fasten insulation and coverboard to deck utilizing 6 fasteners through insulation plates per 4’ x 4’ board.
   1. Use fastening pattern illustrated in detail drawings.
   2. Other fastening patterns should be avoided.

3.04 MEMBRANE INSTALLATION

A. General
   1. Apply modified bituminous membrane roofing system in accordance with manufacturer's instructions, and NRCA (RM) applicable requirements.
   2. An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials and exercise care in ensuring that the finished application is acceptable to the Owner.
   3. Using a chalk line, backline area to insure straight and true installation of all membrane layers and membrane flashing.
   4. For Colply Modified Adhesive lightly prime all metal flanges, including flashing jacks, edge metal, metal drain flashings, concrete, masonry and wood surfaces with a uniform coating of the specified asphalt primer.
      a. Do not prime areas to receive Colply EF Flashing Adhesive.
   5. At end of day's operation, install waterproof cut-off as detailed below. Remove cut-off entirely before resuming roofing.
   6. Coordinate installation of roof drains, pipe boxes, sumps, scuppers, cant strips and related flashings.
   7. Insure that all wood blocking is in good condition, matching finished coverboard height, and is fastened to withstand a minimum of 175 pounds of force per foot in any direction.
   8. Electric hot air welding (Leister) should be conducted on base sheet seams.
      a. Utilize a Leister robot with a 4” minimum nozzle to weld field and perimeter seams.
      b. Transitions may be welded utilizing a 220-volt Leister hand held unit.

B. Base Sheet Installation
   1. Follow product data sheets and published detail requirements for additional installation instructions.
   2. Ensure environmental conditions are satisfactory, and will remain satisfactory, during the application
   3. Unroll the sheet onto the roof surface and allow time to relax before fastening as necessary to prevent wrinkling once fastened.
   4. Starting at the low point of the roof, lay out the membrane to ensure the plies are installed perpendicular to the roof slope, shingled to prevent back-water laps.
   5. For steel decks install the base sheet perpendicular to the direction of the ribs.
   6. Remove all wrinkles from the sheet.
   7. Ensure all roofing and flashing substrates are prepared and acceptable to receive the mechanically fastened membrane.

8. Ensure the specified side-lap and end-lap widths are maintained. End-laps should be staggered 3 ft. apart.
9. Unroll the first roll onto the roof substrate, re-roll the adjacent roll.
10. Starting at one end of the sheet, install the mechanical fasteners along the center of the side-lap. Ensure spacing between fasteners in the laps is 6" O.C.
    a. Concrete deck - Pre-drill and drive #14 MP fasteners through 2.4" barbed plates.
    b. Steel deck – Fasten only into the top flange of the deck.
11. Zone Fastening:
    a. Zones 1' and 1 – Install the specified fasteners and plates @ 6" O.C. in the membrane side lap.
    b. Zone 2 - Install an additional row of the specified fasteners and plates the centered between the seam rows of the membrane, spaced @ 6" O.C. in.
    c. Zone 3 – Install 2 additional rows of fasteners evenly spaced between the seam rows, spaced 6" O.C.
    d. See related detail.
    e. Strip in the additional rows of fasteners with minimum 8" wide strips.
12. Do not over-drive fasteners. Install fasteners as necessary to firmly set the fastener and seam plate tight against the sheet. Prevent wrinkles from forming in the sheet as the fasteners are installed.
13. At the end of the sheet where it terminates at roof edges, walls and curbs, fasten the end-laps to the deck 6 inches on-centers or less. Around roof penetrations install fasteners @ 6" O.C.
14. When the side-lap is fastened, un-roll the adjacent roll over the fasteners. Maintain the required side-lap width.
15. For hot-air welded side-laps, prime plates, insert the hot-air welder robot shoe within the lap, and adjust the hot-air welder as required to produce a continuous weld across the full lap width.
16. While heat-welding the membrane side-laps, ensure approximately 1/8-to-1/4-inch bleed-out is achieved at laps.
17. Adjust the application of heat to the underside of the membrane and to substrate as required for varying substrates and environmental conditions.
18. At end-laps, cut a 45-degree dog-ear away from the selvage edge, or otherwise ensure the membrane is fully heat-welded watertight at all end- laps and T-joints.
19. Each day, physically inspect all side and end-laps, and ensure the membrane is sealed watertight. Where necessary, use a hot-air welder and a clean trowel to ensure all laps are fully sealed.
20. Offset cap sheet side and end-laps away from the base sheet laps so that cap sheet laps are not located within 18 in of adjacent ply laps.
21. At intersections with vertical surfaces:
    a. Set the cant strip in Colply EF Flashing adhesive.
    b. Extend base sheet membrane over cant strip in bed of Colply EF Flashing Adhesive and terminate at wall.
22. Coordinate installation of roof drains, sumps and related flashings.
23. Inspect the mechanically fastened base sheet each day to ensure the plies are water tight. Repair all un-adhered voids, wrinkles, open laps and all other deficiencies before installing the cap sheet over completed fastened base ply sheet.

C. Membrane Adhesive Installation
1. The ambient temperature shall be above 50°F (10°C), and the adhesive temperature shall be a minimum of 70°F (21°C) at the point of membrane application.
2. Colply Adhesive may be applied using a 3/16 – 3/8-inch notched squeegee, brush or spray equipment.
3. Apply adhesive to clean, dry and prepared compatible substrates as required to ensure full adhesion.
4. Follow the adhesive product data sheet requirements for application rates.

5. Apply a uniform application of membrane adhesive at the application rate of 1-1/2 to 2 gallons per square between membrane plies. The application rate is 2 to 3 gallons per square or more over absorptive substrates and over granule surfaces. Refer to manufacturer's product data sheet and adjust application rate based upon surface conditions.
6. Install the SBS membrane ply before the adhesive begins to skin over. Once adhesive skins over, the membrane ply will not adhere.

D. Cap Ply Installation
1. Install flashing base ply prior to installing cap sheet.
2. Follow material product data sheets and published general requirements for installation instructions.
3. Ensure environmental conditions are satisfactory, and will remain satisfactory, during the application of the membrane adhesive and membrane plies
4. Ensure that the field base-sheet and flashing base ply are properly applied and do not show any defects prior to installing the field cap ply.
5. Starting at the low point of the roof, lay out the membrane to ensure the plies are installed perpendicular to the roof slope, shingled to prevent back-water laps.
6. Cut rolls to working lengths and widths to conform to roof conditions and lay out to always work to a selvage edge.
7. Back line the base sheet, unroll the field cap membrane to its full length, centering the roll in the drain line for steel and concrete decks, offsetting the base sheet side laps and end laps by 18 inches, and allow it to relax for a minimum of fifteen (15) minutes, longer in lower temperatures.
8. Once relaxed, re-roll the cap ply from each end (one end at a time to ensure proper alignment) creating two sub-rolls.
9. Install the specified membrane adhesive ahead of the membrane application. Do not allow the adhesive to skin-over before the membrane is applied into the adhesive. The membrane will not adhere where adhesive has skinned over.
10. Apply smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.
11. End laps of successive rows shall not be located within 36" of each other.
12. End laps of successive layers shall not be located within 18" of each other.
13. Provide 6" minimum end laps.
14. Once set in place, ensure specified side-laps and end-laps are maintained.
15. At end-laps, cut a 45 degree dog-ear away from the selvage edge for all T-joints.
16. Leave all membrane side laps and 3 inches of the end-laps dry in order to hot-air weld all laps watertight. Embed granules in bleed-out.
    a. Where granules fail to properly bed in bleed-out, apply a bead of Alsan Flashing and re-embed granules.
17. Embed granules, where present, when heat welding sheets.
18. Use a follow tool, weighted roller or broom the leading edge of the membrane to the substrate, working forward and outward as necessary to remove wrinkles. Avoid walking over the membrane during application.
19. At intersections with vertical surfaces extend cap membrane over cant strips and stop at vertical.
20. Inspect the installation each day to ensure the plies are fully adhered. Repair all voids, wrinkles, open laps and all other deficiencies.

3.05 MEMBRANE FLASHING

A. Base Membrane Flashing
1. Refer to manufacturer's membrane application instructions, flashing detail drawings, and follow product data sheets and other published requirements for installation instructions. Refer to manufacturer's membrane flashing detail drawings.
2. Ensure that all parapet walls are overlaid with a properly fastened wood nailer if required.
3. Primer is not required when Soprema Colply EF Flashing Cement is used.

4. Unroll the flashing base ply and flashing Cap Sheet onto the roof surface to their complete length. Once relaxed, cut the membrane to the required working lengths to accommodate the flashing height, cants and the required 4”over-lap onto the horizontal roof surface.
5. Cut the flashing membrane from the end of the roll in order to always install flashings to the side-lap line.
6. Lay out the flashing base ply to offset all side-laps a minimum of 12 inches so that side-laps are never aligned on top of the ply beneath. Shingle the flashing ply laps to prevent back-water laps
7. Ensure correct membrane and flashing sequencing to achieve redundant, multi-ply, watertight flashings.
8. After the base ply has been installed, install the base flashing membrane vertically, orienting the roll up-and-down, not side-to-side.
9. Apply flashing cement to the substrate and to the underside of the flashing ply using a ¼ inch notched trowel. Apply 2.0 – 2.5 gallons per square to each surface. Application rates vary based on substrate conditions.
10. Fully adhere the specified base flashing sheet in a bed of the specified flashing cement, utilizing minimum 3-inch side laps and extend a minimum of 4 inches onto the base ply surface and a minimum 8 inches up the parapet wall, staggering the flashing seams 18” from the base ply seams. Wrap flashing over wood nailer at parapets and curbs and temporarily fasten on the opposite vertical with cap nails.
11. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets.
12. Hot air weld all side laps and flashing base. Check and seal all loose laps and edges.
13. Cut the base ply at corners to form 3-inch side-laps. Install gussets to seal corner transitions.
14. Install new scuppers at all locations where present
    a. 07 62 00 Sheetmetal Flashing and Trim
    b. Detail drawings
15. Install flashing base ply(s) at all roof terminations, transitions and penetrations not terminated with a chemical flashing system.

B. Cap Membrane Flashing
1. After the final roofing ply has been installed, install the cap membrane flashing vertically orienting the roll up-and-down, not side-to-side, always lapping the selvage edge. Stagger the laps of the finish-flashing layer from lap seams in the cap sheet and base flashing seams.
    a. Apply flexible cap flashing 8" onto the field of the roof and 4" minimum above the cant strip onto the wall (8" minimum total above roof).
2. Wrap cap flashing over parapet wall and mechanically fasten membrane with a termination bar.
3. Refer to manufacturer’s membrane application instructions, flashing detail drawings, and follow product data sheets and other published requirements for installation instructions. Refer to manufacturer’s membrane flashing detail drawings.
4. Unroll the flashing cap sheet onto the roof surface to its complete length. Once relaxed, cut the membrane to the required working lengths to accommodate the flashing height, cants and the required 8 inch over-lap onto the horizontal roof surface.
5. Cut the flashing membrane from the end of the roll in order to always install flashings to the selvage edge line.
6. Lay out the flashing base ply and flashing Cap Sheet to offset all side-laps a minimum of 12 inches so that side-laps are never aligned on top of the ply beneath. Shingle the flashing ply laps to prevent back-water laps.
7. Apply flashing cement to the substrate and to the underside of the flashing ply using a ¼ inch notched trowel. Apply 2.0 – 2.5 gallons per square to each surface. Application rates vary based on substrate conditions.
8. During the membrane and flashing installation, ensure all plies are completely adhered into place, with no bridging, voids or openings.

9. Press-in the flashing plies during installation to ensure they are in full contact with the substrate below.
10. Bury the cap sheet granules for the last 3” below the cap flashing and hot air weld side laps and the final 3” where the granules were previously buried. Embed granules in bleed-out.
11. Install the specified termination bar and fasten @ 6 inches O.C. utilizing drive pins.
12. The top of the modified bitumen flashing shall receive a three-course application of Alsan Flashing and Polyfleece over the term bar at above roof walls and other qualifying locations.
13. When flashing membrane exceeds manufacturer's maximum height, install additional cap flashing from 3” below the termination bar, over the top of the parapet wall and secure on the outside edge. (See drawing)
14. Install three-course liquid flashing system at all inside and outside membrane flashing corners utilizing Alsan Flashing and Polyfleece.
15. Install final Alsan Flashing coat and embed granules.
16. Install coping cap and other flashing details in accordance with this Specification, Detail Drawings, and the Manufacturer's engineering.

3.06 TEMPORARY CUT-OFF

A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100% watertight seal. The stagger of the insulation joints shall be made level by installing partial panels of insulation. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of off-site. None of these materials shall be used in the new work.
   1. Because of the risk of moisture infiltration below the currently installed system, a double water-stop shall be installed each day. One from the deck to the new membrane and one from the old membrane to the new membrane.

B. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the site and maintain a watertight condition.

C. If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at no additional cost to the Owner.

D. All temporary materials will be removed each day and shall not become part of the new system.

3.07 PIPE PENETRATIONS

A. No Pitch pans will be permitted.

B. See Detail Drawings.

C. Pipe penetrations must be securely anchored or tightly grouted and properly prepared with appropriate cleaning and abrasion of the metal as required for a suitable surface to be flashed.

D. All plies of the completed waterproofing membrane are to be butted tightly to the penetration.

E. Liquid-applied, single-component, bitumen urethane flashing system application:
   1. Refer to manufacturer’s details drawings, product data sheets and published general requirements for application rates and specific installation instructions.
   2. Pre-cut Alsan Polyfleece polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.
   3. Mask off installation area and apply a 20 mils thick base coat of Alsan Flashing liquid-applied flashing resin onto the substrate using a brush or roller, working the material into

the surface for complete coverage and full adhesion. Extended the base coat 8 inches onto the deck and up the vertical shaft of the penetration.

4. Without wrinkles or folds, immediately apply the Polyfleece reinforcing into the wet base coat of resin. Embed an Alsan Polyfleece reinforcement strip applied a minimum of 4inches vertically up the shaft of the penetration with finger cuts every 1" along the bottom 2" edge that is extended and embedded onto the horizontal deck. Using a brush or roller, work the polyfleece into the wet resin while applying the second coat of Alsan Flashing resin to completely encapsulate the fleece. Apply the second coat of Alsan Flashing, 16 mils thick over the reinforcement, vertically up the shaft of the penetration and extended horizontally onto the deck. Extend the liquid resin 1 inch beyond the fleece.
5. Without wrinkles or folds, embed an Alsan Polyfleece reinforcement target at the field of the roof that extends up the vertical shaft of the penetration 1/2 inch and out onto the field 8 inches. Apply the second coat of Alsan Flashing, 16 mils thick over the reinforcement, vertically up the shaft of the penetration and extended horizontally onto the deck. Extend the liquid resin 1 inch beyond the fleece.
6. Apply a finish coat of Alsan Flashing resin 16 mils thick within 2-3 hours. When applying the finish coat more than 24 hours, the surface may need to be cleaned using acetone or MEK to ensure satisfactory adhesion.
7. Broadcast mineral granules into the wet finish coat as required to match the adjacent cap sheet.

F. Rain caps will not be required for penetrations 4" and under which have a properly and neatly installed Alsan flashing system.

G. Wrinkles will not be permitted.

3.08 LIQUID-APPLIED PMMA MEMBRANE AND FLASHING SYSTEM

A. PMMA flashing system is to be utilized:

1. In locations where the vertical leg of a pipe flashing is less than 6".
2. In drain sumps.
3. In drain troughs which guide stormwater to drains.
4. At transitions to raised roof edges, or other negative membrane bends.

B. Refer to manufacturer's details drawings, product data sheets and published general requirements for application rates and specific installation instructions.

C. Pre-cut Alsan RS Fleece polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.

D. Catalyze Alsan RS.

E. Apply the base coat of catalyzed Alsan RS resin onto the substrate using a brush or roller, working the material into the surface for complete coverage and full adhesion.

F. Immediately apply the Alsan RS Fleece reinforcing into the wet base coat of resin. Using a brush or roller, work the reinforcing fabric into the wet resin while applying the second coat of catalyzed Alsan RS resin to completely encapsulate the fleece.

G. Refer to reinforced, polymethyl-methacrylate (PMMA) application instructions, details drawings, product data sheets and published general requirements for installation instructions.

3.09 DRAINS

A. Storm Drainage

1. All drains are to be sumped.
2. Drain bowls are to be reworked to 100% or replaced, clean all threads and install all new stainless steel hardware.
3. Drain inserts are not permitted on this project. any inserts should be removed and the drain bowl brought to 100% or replaced.
4. Prime drain bowl flange.

5. Apply a minimum twelve (12) inch wide bed of Sopramastic onto the drain bowl flange and onto sheathing. Embed Base sheet.
6. In a full bed of Sopramastic, install a pre-primed lead or copper, flashing (minimum 30”x 30”) properly fitted, and extended one (1) inch past the clamping ring into the drain bowl. fully peen lead sheet onto the drain bowl do not allow peened area to crack.
7. Install a reinforcing membrane ply of Sopralene 180 Sanded (minimum 39”x 39”) capping the drain flashing, also cutting this ply one (1) inch past the clamping ring into the drain bowl below the clamping ring ledge. The reinforcing ply must extend past the edge of the copper/lead drain flashing a minimum of three (3) inches on all sides.
8. Install the waterproofing cap ply membrane extended one (1) inch past the clamping ring into the drain bowl. There must be a drain clamping ring at the waterproofed deck level and it is to be properly secured during membrane installation. The field base ply, drain flashing, reinforcing ply, and waterproofing membrane cap ply are secured under the clamping ring. The lead or copper flashing is to be turned down inside the drain bowl. Refer to membrane manufacturer details for specific installation instructions.
9. The drain is to be unplugged and the clamping ring is to be installed at the end of the work day each time a drain is worked, remove ring prior to subsequent work. Do not leave the drain plugged or without a ring overnight.
10. Replace all scuppers with new stainless steel units to match existing size. (See Section 07 62 00-Sheet Metal Flashing and Trim)

B. Emergency Storm Drainage
1. Install emergency scuppers: Size and locations to match existing. (See Section 07 62 00-Sheet Metal Flashing and Trim)
2. Install collector heads and downs, if needed, to discharge onto splash blocks below.

3.10 ROOFTOP EQUIPMENT

A. If any currently installed penetrations and/or curbs are to be removed. The removal of abandoned roof top equipment should be coordinated with the Owner’s representative. Coordination should include the following considerations:
1. Required engineering shall be provided by the contractor and submitted to the Design Professional for information.
2. Work not complying with Code, the intent of these Specifications, or failing AHJ, FM or manufacturer inspection will be corrected at no additional cost to the Owner.
3. All heavy equipment stands shall be attached to the building structure.
4. No floating pates or other forms of light duty unfixed stands shall be placed on the membrane system without utilization of a walk pad bearing sheet.

B. Mechanically fasten all roof curbs to the deck @ 6 inches O.C.

C. All pipe gang penetrations coming through the roof system must receive a stainless steel pipe box, mechanically fastened to the roof deck @ 6 inches O.C. (See Detail)

3.11 WALKWAYS

A. Install the specified walkway pads to form routes from roof access locations to equipment requiring regular maintenance.
1. Follow Owner’s recommendations for routes.
2. Route pads to the unit’s regular access panel locations and around the perimeter of all rooftop equipment and at all door and stair landings.

B. Cut walkway from end of rolls. No piece shall be less than 24 in and no more than 60 in.

C. Embed granules where present on cap sheet.

D. Provide a 4 in space between sheets for drainage.

E. Locate walkway membranes a minimum of 2 in from side-laps, end-laps and flashing membranes.

F. Fully adhere walkway protection by heat heat welding or adhering the field with cold adhesive and heat welding a 3 in perimeter.

3.12 FIELD QUALITY CONTROL

A. Require site attendance of roofing material manufacturer on a regular basis during installation of the Work.

3.13 CLEANING

A. Remove bituminous markings from finished surfaces.

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

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

3.14 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using 4' x 8' x 3/4" plywood sheets laid out over inverted membrane sheets.

3.15 PROJECT CLOSE-OUT

A. Prior to demobilization from the site, the work shall be reviewed by the Manufacturer's Representative, Owner's Representative and the Contractor. All defects noted and non-compliances with the Specifications or the recommendations of the manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Contractor to the satisfaction of the Owner's Representative and the manufacturer prior to demobilization.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and scuppers.

B. Sealants for joints within sheet metal fabrications.

C. Precast concrete splash pads.

1.02 RELATED REQUIREMENTS

A. Section 07 52 05 - Modified Bituminous Membrane Roofing

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

B. CDA A4050 - Copper in Architecture - Handbook; current edition.

C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene before starting work of this section.

1.05 SUBMITTALS

A. Coping Shop Drawings and Details: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
   1. As supplied by manufacturer.

1.06 QUALITY ASSURANCE

A. Contractor will review and approve all details to be fabricated by the Manufacturer prior to fabrication.

B. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and manufacturer's engineered installation instructions, except as otherwise indicated.

C. Maintain one copy of each document on site.

D. Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim Manufacturers:
   1. Soprametal manufactured and engineered by Metal-Era.

2.02 MATERIALS

A. Scuppers, metal edge, pipe boxes and other embedded items:
   1. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 24 gage minimum, .025 inch thick; smooth No. 4 - Brushed finish.
   2. All seams to be fully factory welded watertight.

B. Coping, roof to wall expansion joints and counterflashing:
   1. Manufacturer's engineered system from .063 aluminum.
   2. All seams to be fully welded or solid soldered.

2.03 SCUPPER FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. See Drawings

C. Hem exposed edges on underside 1/2 inch; seam corners.

D. Form material with fullly welded seams

E. Manufacture scuppers to matching dimensions.

2.04 COUNTERFLASHING, EXPANSION METAL AND COPING

A. Manufacturer's engineered system from .063 aluminum.

B. Owner to select color from manufacturer's standard pallet.

C. Shop manufactured transitions and terminations with welded seams.

D. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.

E. Manufacturer generated engineering, dimensioning and take-offs required.

F. Set counterflashing in butyl tape and fill sealant trays with specified sealant.

G. See Detail drawings

H. Manufacturer: Soprema

2.05 COLLECTOR HEAD AND DOWNSPOUT FABRICATION

A. Owner to select Leader head and downspout color from manufacturer's standard pallet.

B. Shop manufactured transitions and terminations with welded seams.

C. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.

D. Manufacturer generated engineering, dimensioning and take-offs required.

E. Set Collector heads in butyl tape and fill sealant trays with specified sealant as required.

F. See Detail drawings

G. Manufacturer: Soprema
   1. Substitutions: not permitted

H. Leader heads: From manufacturer's recommendation.

I. Downspouts: Manufacturer's recommended profile.

J. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: Type recommended by fabricator to meet wind load.
   2. Deck Mounted Leader Supports: Type recommended by fabricator to meet wind load.
   3. Downspout Supports: Type recommended by fabricator.
   4. Include downspout nozzle at wall outlet.

K. Seal metal joints.

2.06 ACCESSORIES

A. Counterflashing, Expansion Metal and Coping Fasteners: As specified by the manufacturer.

B. Concealed Sealants: Non-curing butyl sealant.

C. Exposed Sealants: Sealant trays, edge metal and drip edge
   1. Sopramasic SP-1 by Soprema

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with specified sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

B. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

C. Weld metal joints on stainless steel for full metal surface contact, and wash metal clean with neutralizing solution and rinse with water.

D. Secure gutters and downspouts in place with concealed fasteners.

E. Set splash pads under downspouts.

3.04 SCUPPER INSTALLATION

A. Install scuppers in accordance with this Specification and the Detail Drawings.

B. Scuppers that are to receive an external leader head, leaders, supports and attachment as designed by Soprema to meet wind uplift requirements.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.06 SCHEDULE

A. Scuppers - Including:
   1. Leader heads
   2. Conductors

B. Coping, Cap, Parapet, Sill and Ledge Flashings:

C. Sheet Metal Roof Expansion Joint Covers, and Roof-to-Wall Joint Covers:

D. Counterflashings at Roofing Terminations (over roofing base flashings):

E. Counterflashings at Curb-Mounted Roof Items:

F. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports:

END OF SECTION