

USD 320 Wamego-Phase 2-Bid Package 1- SportsComplex Locker Rooms and District Central Kitchen

Addendum 1

Issue Date: 7-19-17

Architect: BBN Architects Inc.

MEP: Orazem & Scalora Engineering, P.A.

Construction Manager: Coonrod & Associates Construction Co., Inc.

Owner: USD 320 Wamego

The attached documents and / or items below shall hereby become part of the Construction Documents for the referenced project above.

1-1: The revised project manual / specifications cover is attached.

1-2: Specification section 114000, Pg. 23, Item No. A5: GE Model GTS21FSKSS is an acceptable product.

1-3: There will be a pre-bid meeting and site visit on **Friday, July 21st at 9:30 AM.** This will be held at the PLC meeting room at the USD 320 district office, 1008 8th St., Wamego, KS, 66547. This is NOT a mandatory meeting but bidders are highly encouraged to attend.

1-4: The district kitchen and football locker rooms are being bid as ONE PROJECT.

1-5: Add attached specification section *075213- Atactic Polypropylene (APP) Modified Bituminous Membrane Roofing* to the specification / project manual.

1-6: Refer to the revised specifications / project manual table of contents in the attached. The sections labeled as "ALL PHASES" and "PHASE 2, BID PACKAGE 1" are included in this project. All others are for past or future phases of work.

1-7: The project schedule and bid scopes will be issued in future addenda.

PROJECT MANUAL / SPECIFICATIONS

Document Issue Date: July 10th, 2017

USD 320 Wamego- Phase 2, Bid Package 1, Sports Complex Locker Rooms and District Central Kitchen

Location of Project: USD 320 Sports Complex, 4290 Columbian
Rd., Wamego, KS 66547

Owner: USD 320 Wamego, 1008 8th St., Wamego, KS 66547

Architect: BBN Architects Inc., 228 Poyntz Avenue, Manhattan, KS 66502

CMAR: Coonrod & Associates Construction Co., Inc., 3550 S. Hoover Rd., Wichita, KS,
67215

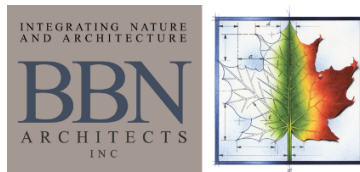


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SECTION 07 52 13 - APP MODIFIED BITUMINOUS MEMBRANE ROOFING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Atactic-polypropylene (APP)-modified bituminous membrane roofing.
2. Manufactured copings, reglets, and counterflashing.
3. Vapor retarder.
4. Roof insulation.
5. Cover board.
6. Walkways.

- B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 71 00 "Roof Specialties" for roof edge specialties and drainage systems.

1.3 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.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Construction Manager, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 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, including:
 1. Layout and thickness of insulation.
 2. Base flashings and membrane terminations.
 3. Flashing details at penetrations.
 4. Tapered insulation, including slopes.
 5. Crickets, saddles, and tapered edge strips, including slopes.
 6. Insulation-fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples for Verification: For the following products:
 1. Cap sheet, of color required.
 2. Flashing sheet, of color required.
 3. Walkway pads or rolls, of color required.
- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Manufacturer Certificates:
 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of compliance with performance requirements.
 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For roof membrane and insulation, tests performed by a qualified testing agency indicating compliance with specified requirements.
- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Field quality-control reports.

- F. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

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

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.
- B. 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.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Protect stored liquid material from direct sunlight.
 - 2. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources.
 - 1. Store in a dry location.
 - 2. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder substrate board, and other components of roofing system.
 2. Warranty Period: 20 years from date of Substantial Completion.
- B. Extension of Warranty Period Proposal: Submit a proposal from Installer to Owner, in the form of an extension of the special warranty for an additional five-years, starting on date initial special warranty is concluded.
- C. Continuing Maintenance Proposal: Submit a continuing maintenance proposal from Installer to Owner, in the form of a standard five-year maintenance agreement, starting on date initial correction period is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide indicated products by Performance Roofing Systems, Inc., or comparable products by the following
1. Johns Manville; a Berkshire Hathaway company.
- B. Roofing Membrane System Products:
1. Roofing Sheet: Performance Roof Systems, Inc., "Derbigum GP."
 2. Cap Sheet: Performance Roof Systems, Inc., "Derbicolor GP."
- C. Source Limitations: Obtain components including re-cover boards and fasteners for new roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D4272.

- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures.
- D. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system, and shall be listed in FM Global "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Hail-Resistance Rating: SH.
- E. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class B; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 ROOFING SHEET MATERIALS

- A. Roofing Membrane Sheet: ASTM D 6223/D 6223M, Grade S, Type I or II, APP-modified asphalt sheet (reinforced with a combination of polyester fabric and glass fibers); smooth surfaced; suitable for application method specified.
- B. Granule-Surfaced Roofing Cap Sheet: ASTM D 6223/D 6223M, Grade G, Type I or II, fire-resistant, APP-modified asphalt sheet (reinforced with a combination of polyester fabric and glass fibers); granule surfaced; suitable for application method specified, and as follows:
 - 1. Granule Material: Mineral ceramic coated.
 - 2. Granule Color: White.

2.4 BASE FLASHING SHEET MATERIALS

- A. Flashing Base: ASTM D 6509/D 6509M, Grade S, Type I or II, APP-modified bitumen sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified; 120 mils (3.0 mm).
- B. Granule-Surfaced Flashing Sheet: ASTM D 6223/D 6223M, Grade G, Type I or II, APP-modified asphalt sheet (reinforced with a combination of polyester fabric and glass fibers); granule surfaced; suitable for application method specified, and as follows:
 - 1. Granule Color: White.

2.5 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with roofing membrane and base flashings.
 1. Basis of Design Product: Performance Roof Systems, Inc., "Permastic."
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- D. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 (2.36-mm) sieve and 98 percent of mass retained on No. 40 (0.425-mm) sieve, color to match roofing.
- E. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.

2.6 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, or ASTM C 1278/C 1278M, fiber-reinforced gypsum board.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Georgia-Pacific Building Products.
 - c. National Gypsum Company.
 - d. USG Corporation.
 2. Thickness: 5/8 inch (16 mm).
 3. Surface Finish: Factory primed.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.7 VAPOR RETARDER

- A. Self-Adhering-Sheet Vapor Retarder: ASTM D 1970/D1970M polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil- (1.0-mm-) total thickness; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor-retarder manufacturer.

2.8 ROOF INSULATION

- A. General: Preformed roof insulation boards, manufactured or approved by roof membrane manufacturer, approved for use in FM Approvals' RoofNav-listed roofing system identical to that used for this Project.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 3, felt or glass-fiber mat facer on both major surfaces.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. CertainTeed Corporation.
 - c. GAF.
 - d. Hunter Panels.
 - e. Johns Manville; a Berkshire Hathaway company.
 - 2. Compressive Strength: 25 psi (172 kPa).
 - 3. Size: 48 by 48 inches (1219 by 1219 mm).
 - 4. Thickness:
 - a. Base Layer: 2 inches (51 mm).
 - b. Upper Layer: 2 inches (51 mm).
- C. Tapered Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match roof insulation.
 - 2. Minimum Thickness: 1/4 inch (6 mm).
 - 3. Saddles and Crickets: 1/2 inch per foot (1:24) unless otherwise indicated on Drawings.

2.9 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.
- B. 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 re-cover boards to substrate, and acceptable to roofing system manufacturer.
- C. Bead Applied Insulation Adhesive: Insulation manufacturer's recommended bead applied low rise two component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Full-spread spray-applied, low-rise, two-component urethane foam adhesive.
 - 2. Basis of Design Product: Performance Roof Systems, Inc., "Derbibond."
- D. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- E. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

- F. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum board or ASTM C 1278/C 1278M, fiber-reinforced gypsum board.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Georgia-Pacific Building Products.
 - c. National Gypsum Company.
 - d. USG Corporation.
 2. Thickness: 1/4 inch (6 mm).
 3. Surface Finish: [Factory primed] [Unprimed].

2.10 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Hickman Company, W. P; "PermaSnap Coping System" or products from one of the following:
 - a. Merchant & Evans Inc.
 - b. Metal-Era, Inc.
 - c. Metal-Fab Manufacturing, LLC.
 2. Metallic-Coated Steel Sheet Coping Caps: Zinc-coated (galvanized) steel, nominal 0.034-inch (0.86-mm) thickness.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
 3. Corners: Factory mitered and continuously welded.
 4. Coping-Cap Attachment Method: Snap-on or face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.

2.11 REGLETS AND COUNTERFLASHINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Fry Reglet Corporation.
 2. Hickman Company, W. P.
 3. Metal-Era, Inc.
 4. Metal-Fab Manufacturing, LLC.

- B. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
1. Stainless Steel: 0.025 inch (0.64 mm) thick.
 2. Corners: Factory mitered and continuously welded.
 3. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
 4. Corners: Factory mitered and continuously welded.
 5. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
- C. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:
1. Stainless Steel: 0.025 inch (0.64 mm) thick.
- D. Accessories:
1. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
- E. Stainless-Steel Finish: No. 2B (bright, cold rolled, unpolished).

2.12 WALKWAYS

- A. Walkway Pads: Reinforced asphaltic composition pads with slip-resisting mineral-granule surface, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 3/8 inch (10 mm) thick, minimum.
1. Pad Size: Pad Size: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:
1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 2. Verify that cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
 - 1. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION, GENERAL

- A. Comply with roofing system manufacturer's written instructions.
- B. Substrate-Joint Penetrations: Prevent adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.4 ROOFING INSTALLATION, GENERAL

- 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 Roofing" and as follows:
 - 1. Deck Type: I (insulated).
 - a. Substrate Board: Low rise adhesive.
 - b. APP-Modified Asphalt Sheet: Cold applied adhesive.
 - c. APP-Modified Asphalt Cap Sheet with Granular Surfacing: Cold applied adhesive.
- B. Start installation of roofing in presence of manufacturer's technical personnel.
- C. Where roof slope exceeds 1/2 inch per 12 inches (1:24), install roofing sheets parallel with slope.
 - 1. Backnail roofing sheets to substrate according to roofing system manufacturer's written instructions.
- D. 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 forecast.
 - 1. Provide tie-offs at end of day's work to cover exposed roofing sheets and insulation with a course of coated felt set in roofing cement, with joints and edges sealed.
 - 2. Complete terminations and base flashings, and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.

3.5 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches (600 mm) in adjacent rows.
 - 1. At steel roof decks, install substrate board at right angle to flutes of deck.
 - a. Locate end joints over crests of steel roof deck.
 - 2. Tightly butt substrate boards together.
 - 3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 4. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.

3.6 VAPOR RETARDER INSTALLATION

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.
 - 1. Extend vertically up parapet walls and projections to a minimum height equal to height of the insulation and cover board.
 - 2. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.7 INSULATION INSTALLATION

- A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing system with vertical surfaces or angle changes greater than 45 deg F (14 deg C).
- D. Installation Over Metal Decking:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches (600 mm) in adjacent rows.
 - a. Locate end joints over crests of decking.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.

- d. At internal roof drains, slope insulation to create a square drain sump, with each side equal to the diameter of the drain bowl plus 24 inches (600 mm).
 - 1) Trim insulation, so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - g. Mechanically attach base layer of insulation and substrate board using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
 - 1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
 - 2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
2. Install upper layers of insulation, with joints of each layer offset not less than 12 inches (300 mm) from previous layer of insulation.
- a. Staggered end joints within each layer not less than 24 inches (600 mm) in adjacent rows.
 - b. Install with long joints continuous and with end joints staggered not less than 12 inches (300 mm) in adjacent rows.
 - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - e. At internal roof drains, slope insulation to create a square drain sump, with each side equal to the diameter of the drain bowl plus 24 inches (600 mm).
 - f. Trim insulation, so that water flow is unrestricted.
 - g. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - h. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - i. Adhere each layer of insulation to substrate using adhesive in accordance with FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.8 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines, with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.
 - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.

2. At internal roof drains, conform to slope of drain sump.
 - a. Trim cover board, so that water flow is unrestricted.
3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.9 APP-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing sheets over and terminate beyond cants, installing as follows:
 1. Adhere to substrate in cold-applied adhesive.
 2. Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer.
- B. 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.
 2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- C. Install roofing sheets so side and end laps shed water.

3.10 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions and as follows:
 1. Prime substrates with asphalt primer if required by roofing system manufacturer.
 2. Backer-Sheet Application: Adhere backer sheet to substrate in cold-applied adhesive.
 3. Flashing-Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive at rate required by roofing system manufacturer.
- B. Extend base flashing up walls or parapets a minimum of 8 inches (200 mm) above roofing membrane and 4 inches (100 mm) onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 1. Seal top termination of base flashing.
- D. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.

3.11 COPING INSTALLATION

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
 - 1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements.
 - 2. Interlock face-leg drip edge into continuous cleat anchored to substrate at manufacturer's required spacing that meets performance requirements. Anchor back leg of coping with screw fasteners and elastomeric washers at manufacturer's required spacing that meets performance requirements.

3.12 REGLET AND COUNTERFLASHING INSTALLATION

- A. General: Coordinate installation of reglets and counterflashings with installation of base flashings.
- B. Embedded Reglets: See Section 04 20 00 "Unit Masonry" for installation of reglets as masonry work is installed.
- C. Post Embedded Reglets: Saw cut slot in existing concrete masonry to receive reglets. Slot dimensions shall be 3/8 inch by 1-1/4 inch (9 mm by 32 mm) or as otherwise indicated on the Drawings.
- D. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.13 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.

3.14 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 - 1. Notify Architect and Owner 48 hours in advance of date and time of inspection.
- B. Roofing system will be considered defective if it does not pass inspections.
 - 1. Additional inspecting, at Contractor's expense, will be performed to determine if replaced, repaired, or additional work complies with specified requirements.

3.15 PROTECTING AND CLEANING

- 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.

END OF SECTION 07 52 13

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