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ADDENDUM NO. 1 - OUTLINE AND SUMMARY INFORMATION

Project Name: Hannon Hall Re-Roof PPA No.: 15-0173
Location: MSU Bozeman Date: 11.14.19

To: All Plan Holders of Record

*The Plans and Specification prepared by **BECHTLE ARCHITECTS** dated **10-03-19**, shall be clarified and added as follow. The bidder proposes to perform all the following clarifications or changes. It is understood that the Base Bid shall include any modification of Work or Additional Work that may be required by reason of the following change or clarifications.*

The Bidders are to acknowledge the receipt of this Addendum by inserting its number and date into their Bid Forms. Failure to acknowledge may subject the Bidder to disqualification and rejection of the bid. This Addendum forms part of the Contract Documents as if bound therein and modifies them as follows:

I. PRIOR APPROVALS

At this time there are no prior approvals

II. AMENDMENTS TO THE PROJECT MANUAL

1) **07 5300 ELASTOMERIC MEMBRANE ROOFING**:

a) 2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS;

i) C. VAPOR RETARDER. **CLEARIFICATION "**The product manufacturer shall be compatible with the roofing and insulation manufacturer" Details of where Vapor retarder is applied have been updated.

b) 2.04 DECK SHEATHING AND COVER BOARDS;

i) Shall read "Cover Board" in lieu of Substrate Board

c) 2.05 INSULATION

i) The Poly-Iso insulation shall be 20 PSI in lieu of 25.

d) 3.03 VAPOR RETARDER AND INSULATION – UNDER MEMBRANE;

i) ADD section 'J'. Attachment of Cover Boards:

(1) Embed cover board in full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.

(2) Lay cover board over final layer of insulation with joints staggered minimum 24 inches from joints of preceding layer of insulation.

III. AMENDMENTS TO THE DRAWINGS

1) Sheet A3.1 – DETAILS, added note of Vapor Retarder to all roof details.

IV. GENERAL INFORMATION

NONE.

V. ATTACHMENTS

1) 07 5300_Elastomeric Membrane Roofing_REV-1.pdf
2) HHRR_1606_A3.1_REV-1.pdf

ELASTOMERIC MEMBRANE ROOFING

Revised

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Elastomeric roofing membrane, adhered conventional application. non reinforced 60 mil membrane with invclusion of 1-1/2" hail warranty

B. Insulation, flat and tapered.

C. Deck sheathing.

D. Flashings.

E. Roofing stack boots and walkway pads.

F. Warranties.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.

B. Section 07 0150.19 - Preparation for Re-Roofing.

C. Section 07 7200 - Roof Accessories: Roof-mounted units; prefabricated curbs.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.

B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.

D. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).

E. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2012).

F. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2014.

G. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2013.

H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.

I. FM DS 1-28 - Wind Design; 2007.

J. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim updates.

K. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers; review preparation and installation procedures and coordination and scheduling necessary for related work.

1. Meet with Owner's Representative, Owner's insurer if applicable, testing and inspecting acency representative, roofing Installer, roofing system manufacturer's representative, and istallers 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, includingsurface flatness and fastening requirements.
5. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
6. Review temporary protection requirements for roofing system during and after installation.

1.05 SUBMITTALS

A. See Section 01 3000 - SUBMITTALS, for submittal procedures

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, and adhesives.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, and setting plan for tapered insulation.

D. Samples for Verification: Submit two samples 12-by-12 inches in size illustrating insulation.

E. Installer Certificates: Signed by roofing system manufactrurer certifying that Installer is accepted, authorized, or licensed by manufacturer to install roofing system and has experience with projects of similar size and scope

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

G. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

H. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

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

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience, and approved by manufacturer to install and that is eligible to receive manufacturer's warranty. Installer must also prove 5 warranted projects of similar size and scope. Installer shall provide, as part of Bid Form, a letter from roofing membrane manufacturer attesting that the roofing installer meets the specified qualifications and is certified to provide the Owner with the roofing warranty specified.

C. Contractor's Superintendent shall have 40 hours training in Asbestos regulations.
   1. Other workers shall have 8 hours minimum training in Asbestos regulations.

D. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

1.07 DELIVERY, STORAGE, AND HANDLING

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

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

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with manufacturer's written instructions for handling, storing, and protection during construction.

E. Handle and store roofing materials and place equipment in a manner to avoide permanent deflection of deck.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

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

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

A. See Section 01 7700- Closeout Submittals, for additional warranty requirements.

B. Special Warranty: Contractor shall provide to the Owner a manufacturer's **Twenty (20) year Total Roofing System Warranty** as issued by the roofing system manufacturer for all labor and material including the roofing membrane and corresponding flashing, the insulation cover board, vapor barrier, and roofing fasteners, all related sheet metal work, caulking, adhesives, fastener bars, hard rubber edging, counter flashings, flashings, reglets, expansion joints, perimeter metal fascia, and other material supplied or approved by manufacturer. The warranty shall fully cover the building's Owner for all costs for repair and replacement necessary to properly correct leaks and/or other defects and all resulting damages for a period of **Twenty (20) years** arising from defects in manufacturing and/or errors in material manufacturer and/or installation of the insulation, roofing and flashing systems.
   1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, vapor retarder, walkway products and other cdomponents of new membrane roofing system.
   2. Warranty Period: 20-year from date of substantial Completion, with 1-1/2" hail warranty.

C. Special Project Warranty: Contractor shall provide the Owner a **two (2) year water tightness warranty** for the roof work done as specified and drawn herein. The waranty period shall start after Final Acceptance with any and all defects due to faults in the materials or workmanship to be properly and correctly repaired with all costs for such repairs and corrective work to be paid by the Contractor with no extra cost to the Owner. Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering work of this Section, including components of membrane roofing system provided and required by Membrane Manufacturer and installed by the roofing Applicator for the following warranty period:
   1. Seven days after written notice has been given to the Contractor requesting repairs and/or corrective action by the Owner and/or Architect, the Contractor shall commence making such repairs and corrective work and should the Contractor fail to do the work so ordered, the Owner may have the work done and charge the cost thereof to the Contractor and his surities who agree to pay the cost thereof.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. EPDM Membrane Materials:
   1. Carlisle Roofing Systems, Inc; Sure-Seal EPDM: www.carlisle-syntec.com/#sle.
   2. Firestone Building Products, LLC; FR RubberGard: www.firestonebpco.com.
   3. GenFlex Roofing Systems, LLC; _____: www.genflex.com/#sle.
   4. Versico, a division of Carlisle Construction Materials Inc; VersiGard EPDM: www.versico.com/#sle.
   5. Substitutions: See section 01 0000 GENERAL REQUIREMENTS.

B. Insulation:
   1. GAF: www.gaf.com/#sle.
   2. Owens Corning Corporation; _____: www.owenscorning.com/#sle.
   3. Versico, a division of Carlisle Construction Materials Inc; SecurShield Insulation: www.versico.com/#sle.
   4. Substitutions: Substitutions: See section 01 0000 GENERAL REQUIREMENTS..

2.02 ROOFING - UNBALLASTED APPLICATIONS

A. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over vapor retarder and insulation.

B. Roofing Assembly Requirements:
   1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.
   2. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.
   3. Insulation Thermal Value (R), minimum: 30; provide insulation of thickness required.

C. Acceptable Insulation Types - Constant Thickness Application:
   1. Minimum 2 layers of polyisocyanurate board.

D. Acceptable Insulation Types - Tapered Application: Any type that meets requirements and is approved by membrane manufacturer for application.
   1. Tapered polyisocyanurate board covered with uniform thickness polyisocyanurate or glass fiber board.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); non-reinforced; complying with minimum properties of ASTM D4637.
   1. Thickness: 0.060 inch.
   2. Sheet Width: 76 inch, minimum; factory-fabricate into largest sheets possible.
   3. Color: Black.
   4. Tensile Strength: 1600 psi, measured in accordance with ASTM D412.
   5. Ultimate Elongation: 465 percent, measured in accordance with ASTM D412.
   6. Tear Strength: 150 lbf/inch, measured in accordance with ASTM D624.
   7. Water Vapor Permeability:.03 perm inch, measured in accordance with ASTM E96/E96M.
   8. Brittleness Temperature: -49 deg F., measured in accordance with ASTM D746.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Vapor Retarder: self-adhered, 30 mil (min.), complying with requirements of fire rating classification; compatible with roofing and insulation materials.
   1. Vapor Permeability: 0.017 perm inch, measured in accordance with ASTM E96/E96M.

D. Flexible Flashing Material: Same material as membrane; complying with the following:
   1. Thickness: 60 mil.
   2. Tensile Strength: 1,200 psi.
   3. Elasticity: 50 percent with full recovery without set.
   4. Color: Black.

E. Cushion Sheet: loose laid membrane matching roofing material.

2.04 DECK SHEATHING AND COVER BOARDS

A. Cover Board: Glass mat faced, water-resistant gypsum panels, ASTM C1177/C1177M, fire resistant type, 1/2 inch thick. Fully adhered.
   1. Manufacturers:
      a. Subject to compliance with requirements, provide "Dens-Deck" by Georgia-Pacific Corporation or approved equal..
      b. USG; www.usg.com
      c. GAF; www.gaf.com
      d. Substitutions: See section 01 0000 GENERAL REQUIREMENTS..

2.05 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II:
         1) Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of core foam.

2) Compressive Strength: Classes 1-2-3, Grade 3 - 20 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 by 96 inch.
3. Board Thickness: 2.0 inch.
4. Board Edges: Square.
5. Manufacturers:
   a. Dow Chemical Company: www.dow.com/#sle.
   b. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
   c. Substitutions:: See Substitution Request, Form 99.

2.06 ACCESSORIES

A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane, and site formed boots around existing penetrations; same material as membrane.

B. Sheathing Adhesive: As recommended by manufacturer for adhering gypsum sheathing to insulation.

C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.

D. Membrane Adhesive: As recommended by membrane manufacturer.

E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

G. Insulation Adhesive: As recommended by insulation manufacturer.

H. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.

I. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

J. Sealants: As recommended by membrane manufacturer.

K. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
   1. Composition: Roofing membrane manufacturer's standard.
   2. Size: _30__by__30_ inch.
   3. Surface Color: White or yellow.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and nailing strips and reglets are in place.

3.02 CONCRETE DECK PREPARATION

A. Fill surface honeycomb and variations with latex filler.

B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 VAPOR RETARDER AND INSULATION - UNDER MEMBRANE

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.

1. Extend vapor retarder under cant strips and blocking to deck edge.
2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

C. Attachment of Insulation:
1. Embed first layer of insulation in full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
2. Fully adheare each subsequent layer of insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.

D. Lay subsequent layers of insulation with joints staggered minimum 24 inch from joints of preceding layer.

E. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

F. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

G. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

H. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.

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

J. Attachment of Cover Boards:

1. Embed cover board in full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.

2. Lay cover board over final layer of insulation with joints staggered minimum 24 inches from joints of preceding layer of insulation.

3.04 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Fully Adhered Application: Apply adhesive to substrate at rate of 1 gal/square. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

D. Overlap edges and ends and seal seams by contact adhesive, minimum 6 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

E. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.
3. Secure flashing to nailing strips at 4 inches on center.
4. Insert flashing into reglets and secure.

F. Around roof penetrations, seal flanges and flashings with flexible flashing.

G. Coordinate installation of roof drains and sumps and related flashings.

H. Coordinate installation of associated counterflashings installed under other sections.

3.05 FINISHING UNBALLASTED SURFACES

A. Install walkway pads. Space pad joints to permit drainage. See drawings.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - QUALITY REQUIREMENTS, for quality control.

B. Require site attendance of roofing material manufacturers monthly during installation of the Work.

3.07 CLEANING

A. See Section 01 7320 - Construction Waste Management and Disposal, for additional requirements.

B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

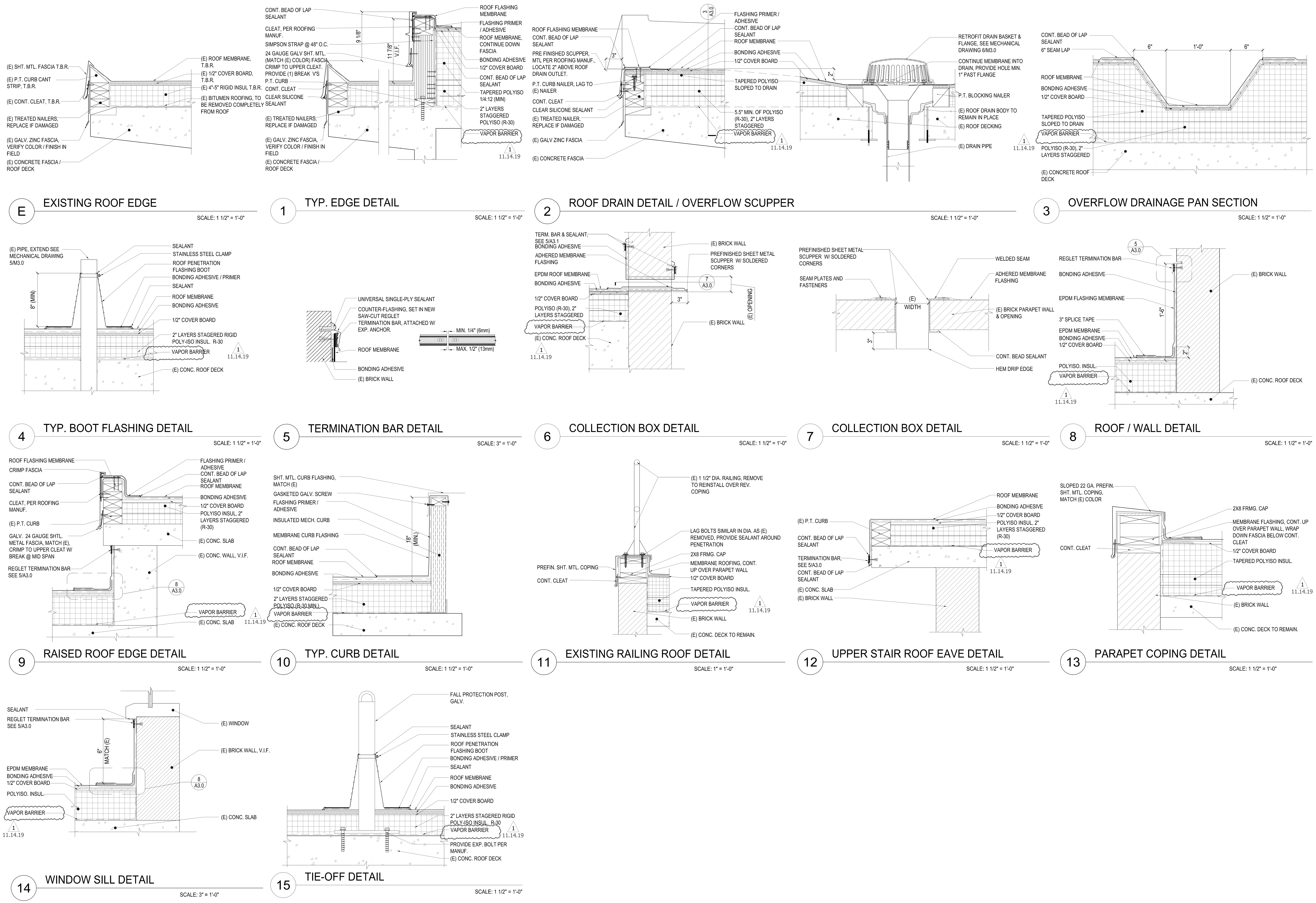
C. Repair or replace defaced or damaged finishes caused by work of this section.

3.08 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION



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DRAWN BY:
REVIEWED BY:

REV.	DESCRIPTION	DATE
1	ADDENDUM #1	11.14.19

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A/E#00-00-00
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EXTERIOR DETAILS

A3.0

10-3-19