

# **ADDENDUM NO. 002**

DATE: March 25, 2025

PROJECT: MSU Molecular Bioscience Building

PPA# 22-0045 BA # 2326

ARCHITECT: Bechtle Architects

TO: ALL PLANHOLDERS OF RECORD

NUMBER OF PAGES: \_\_\_\_\_\_ (If you do not receive the correct number of pages, please notify us immediately.)

Acknowledge receipt of this Addendum by inserting its number and date in the Proposal Form. Failure to do so may subject Bidder to disqualification. This Addendum forms a part of the Contract Documents. It modifies them as follows: Please see the updates clouded and tagged with Delta B.

# **CLARIFICATIONS:**

- 1. Replace damaged roof sheathing as needed.
- 2. Add 1" Polyiso Rigid insulation above roof sheathing, with a ½" coverboard.

## **DRAWINGS**

- 1. Updates to existing roof structure and insulation. Existing roof structure is sloped structure with ½" plywood.
  - a. Sheet G116 Typical Membrane Roof System has been updated.
  - b. Sheet A150 has been updated to show new rigid insulation crickets, sloping to drain to existing roof drain locations.
  - c. Details on Sheet A525 have been updated to reflect the existing roof structure.

## **SPECIFICATIONS**

1. Update to specification section 07 5300 Elastomeric Membrane Roofing. See attached for the full updated section.

## SUBSTITUTION REQUESTS

1. See attached substitution requests.

#### **ATTACHMENTS**

07 5300-RIB-Elastomeric Membrane Roofing-03-25-2025

Sheets G116, A150, and A525.

MONTANA STATE UNIVERSITY MOLECULAR
BIOSCIENCE BUILDING

PPA No. 22-0045

Bozeman, Montana

#### **ELASTOMERIC MEMBRANE ROOFING**

#### **PART 1 GENERAL**

#### 1.01 SECTION INCLUDES

- A. Elastomeric roofing membrane, adhered conventional application. non reinforced 60 mil membrane with involusion of 1-1/2" hail warranty
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Deck sheathing.
- E. Cover boards.
- F. Roofing cant strips, stack boots, roofing expansion joints, and walkway pads.
- G. Roof pavers systems.
- H. Warranties.

#### 1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood cant strips.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.
- B. ASTM C1177/C1177M Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- C. ASTM C1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.
- D. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- E. ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2020).
- F. ASTM D746 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2020.
- G. ASTM D4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method; 1983 (Reapproved 2018).
- H. ASTM D4637/D4637M Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).
- I. ASTM E96/E96M Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.
- J. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- K. FM (AG) FM Approval Guide; Current Edition.
- L. FM DS 1-28 Wind Design; 2015, with Editorial Revision (2024).
- M. UL (DIR) Online Certifications Directory; Current Edition.

#### 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.
  - 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.

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- 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 surface 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.
- 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 Material color and type.
- 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. Installer's qualification statement.
- J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### 1.06 QUALITY ASSURANCE

A. 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..

#### 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.

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#### 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 7400 Warranties and Bond, 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:
  - 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 SynTec Systems; Sure-Tough EPDM: www.carlisle-syntec.com/#sle.
  - 2. GenFlex Roofing Systems, LLC; \_\_\_\_\_: www.genflex.com/#sle.
  - 3. Versico Roofing Systems; VersiGard EPDM: www.versico.com/#sle.
  - 4. Substitutions: See section 01 2500 SUBSTITUTION PROCEDURES.

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#### 2.02 ROOFING - UNBALLASTED APPLICATIONS

- A. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over mechanically fastened cover board.
- B. Roofing Assembly Requirements:
  - 1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.
  - Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.
  - 3. Insulation Thermal Resistance (R-Value): minimum: 30; Add 1" minimum polyiso rigid insulation above roof deck, and cricket per plans to drain.. Existing insulation is R-30 batt insulation below roof deck.



- C. Acceptable Insulation Types Constant Thickness Application:
  - 1. 1" 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-monomer (EPDM); non-reinforced; complying with minimum properties of ASTM D4637/D4637M.
  - 1. Thickness: 60 mil, 0.060 inch, minimum.
  - 2. Sheet Width: 76 inches, maximum; factory fabricate into widest possible sheets.
  - 3. Color: Black.
  - 4. Tensile Strength: 1600 psi, minimum, measured in accordance with ASTM D412.
  - Ultimate Elongation: 465 percent, minimum, measured in accordance with ASTM D412
  - 6. Tear Strength: 150 lbf per inch, measured in accordance with ASTM D624.
  - Water Vapor Permeability: .03 perm inch, measured in accordance with ASTM E96/E96M.
  - 8. Brittleness Temperature: -49 degrees 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.
  - Vapor Permeability: 0.017 perm inch, measured in accordance with ASTM E96/E96M.
- D. Flexible Flashing Material: Same material as membrane.
  - Thickness: 60 mil.
  - 2. Tensile Strength: 1,200 psi.
  - 3. Elasticity: 50 percent with full recovery without set.
  - Color: Black.
- E. Cushion Sheet: loose laid membrane matching roofing material.

### 2.04 DECK SHEATHING

- A. Substrate Board: Glass mat faced, water-resistant gypsum panels, ASTM C1177/C1177M, fire resistant type, 1/2 inch thick. Fully adhered.
  - 1. Products:
    - 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 2400 SUBSTITUTION PROCEDURES.

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#### 2.05 COVER BOARDS

A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.

1. Thickness: 1/2 inch. fire-resistant.

#### 2.06 INSULATION

- Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
  - 1. Classifications:
    - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
      - 1) Class 1 Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
      - Compressive Strength: Classes 1-2-3, Grade 1 16 psi (110 kPa), minimum.
      - 3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3 8.4 (1.48) at 75 degrees F.
  - 2. Board Size: 48 by 96 inches.
  - 3. Board Thickness: match existing thickness inch.
  - 4. Board Edges: Square.
  - 5. Products:
    - a. Dow Chemical Company; \_\_\_\_: www.dow.com/#sle.
    - b. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
    - c. Substitutions: See Substitution Request, Form 99.

#### 2.07 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: Noncombustible type, for adhering gypsum sheathing to metal deck.
- C. Sheathing Adhesive: As recommended by manufacturer for adhering gypsum sheathing to insulation.
- D. Sheathing Joint Tape: Paper type, inches wide, self adhering.
- E. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- F. Insulation Fasteners: Appropriate for purpose intended.
- G. Membrane Adhesive: As recommended by membrane manufacturer.
- H. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- J. Insulation Adhesive: As recommended by insulation manufacturer.
- K. Roofing Nails: Galvanized, hot-dipped type, size and configuration as required to suit application.
- L. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.
- M. Sealants: As recommended by membrane manufacturer.
- N. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
  - 1. Composition: Asphaltic with mineral granule surface.
  - 2. Size: 30 by 30 inches.
  - 3. Surface Color: White.

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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 PREPARATION - WOOD DECK

- A. Verify flatness and tightness of joints in wood decking; fill knot holes with latex filler.
- B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

### 3.03 PREPARATION - METAL DECK (ONLY IF DAMAGED)

- A. Install deck sheathing on metal deck.
  - Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
  - 2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
  - Tape joints.
- B. Fasten sheathing to roof deck with continuous mopping of adhesive on each flute.

# 3.04 INSTALLATION - VAPOR RETARDER AND INSULATION, UNDER MEMBRANE

- A. Install 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.
- Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
- C. Attachment of Insulation:
  - 1. Mechanically fasten first layer for distance of per manufacturer's instructions inches from roof edge.
  - 2. Fully adheare each subsequent layer of insulation to deck in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- D. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- E. Lay subsequent layers of insulation with joints staggered minimum 24 inches from joints of preceding layer.
- F. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- G. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
- H. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- J. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- K. Do not apply more insulation than can be covered with membrane in same day.

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#### 3.05 INSTALLATION - MEMBRANE

- 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 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
  - 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.

#### 3.06 INSTALLATION - MEMBRANE FINISH COATING/COVER

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

## 3.07 FIELD QUALITY CONTROL

- A. See Section 01 4000 Quality Requirements for additional requirements.
- B. See Section 01 1000 Summary for quality control.
- C. Require site attendance of roofing and insulation manufacturer's representative during installation of this work.

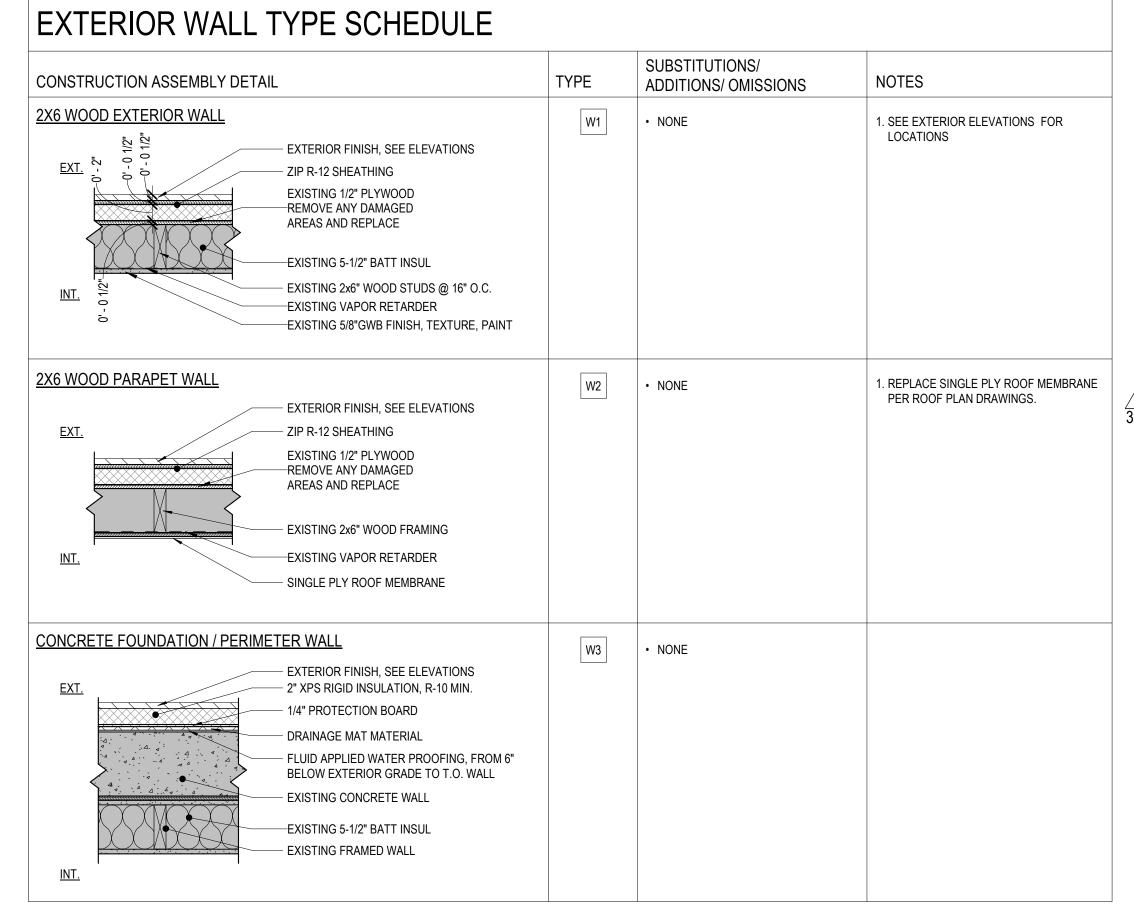
#### 3.08 CLEANING

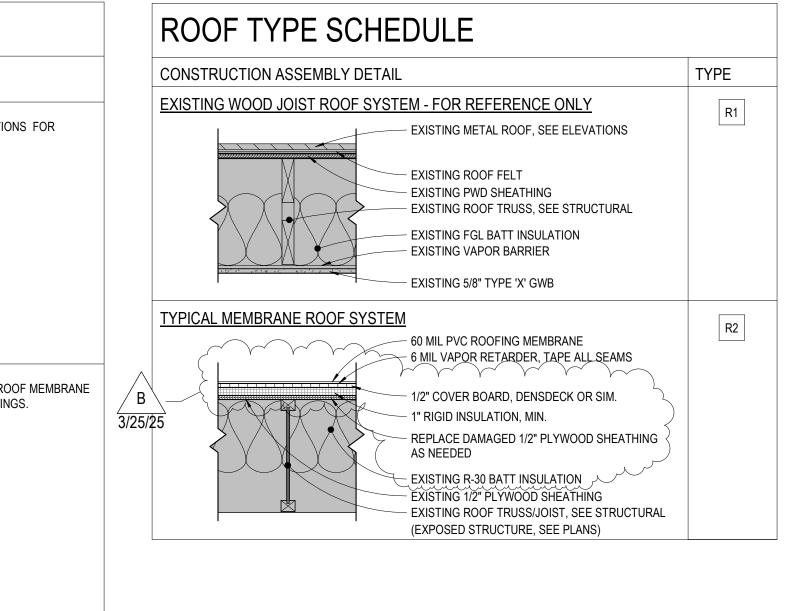
- A. See Section 01 7700 Project Closeout for additional requirements.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

#### 3.09 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 07 5300**





MSU-CAMPUS PLANNING,
DESIGN, AND CONSTRUCTION
MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA
PHONE: 406,994.5413
FAX: 406,994.5665

CONSTRUCTION DOCUMENTS

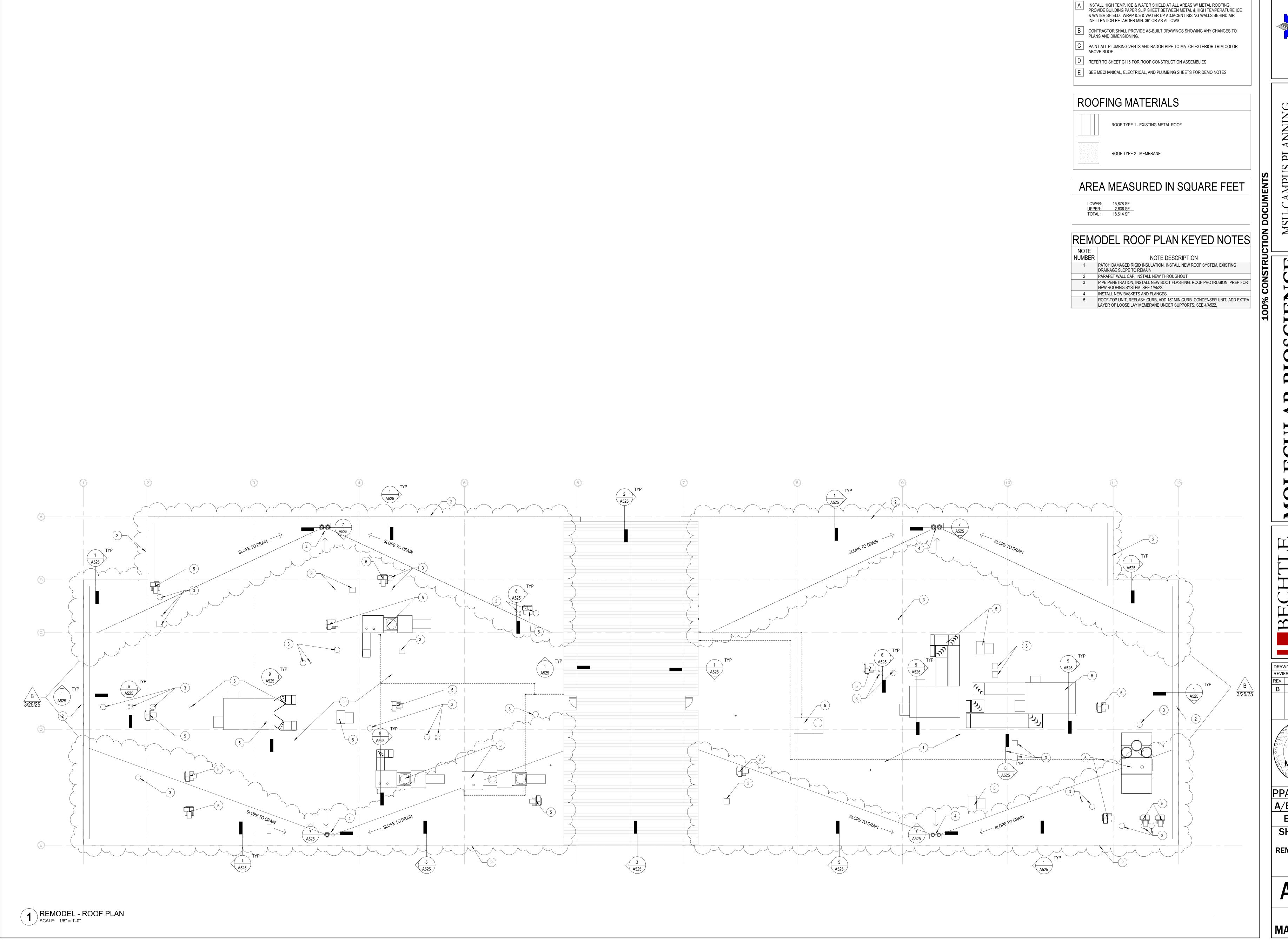
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PPA#22-0045 A/E#00-00-00 BA# 2326

SHEET TITLE PARTITIONS & ASSEMBLIES / **FINISH SCHEDULES** 

DATE MAR 3, 2025

EXTERIOR MATERIAL SCHEDULE				
SYMBOL	MATERIAL	MANUFACTURER	TYPE, COLOR	COMMENTS
EF-1	EFIS		,	EXISTING TO DEMC
EF-2	BUILT UP ROOF COPING, EFIS			EXISTING TO DEMO
MWP-2	STANDING SEAM METAL CLADDING	GREAT NORTHERN METALS CO	VERTICAL, 24 G, 7.2 BOX RIB, COLOR: GUN METAL	NEW
MWP-3	FLAT METAL WALL PANEL	METAL SALES	22 G, FL40-FLAT MTL PANEL W/ CONCEALED FASTENER, COLOR: METALLIC SILVER	NEW
MWP-4	FLAT METAL WALL PANEL	METAL SALES	22 G, FL40-FLAT MTL PANEL W/ CONCEALED FASTENER, COLOR: MATTE BLACK	NEW
MWP-5	CORRUGATED METAL CLADDING	GREAT NORTHERN METALS	VERTICAL, 24 G, 7/8" CORRUGATED MTL PANEL W/ EXPOSED FASTENER, FINISH: VINTAGE	NEW
RM-3	MECHANICALY SEAMED STANDING SEAM METAL ROOFING, 16" PAN WIDTH			EXISTING TO REMA





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BOZEMAN MONTANA

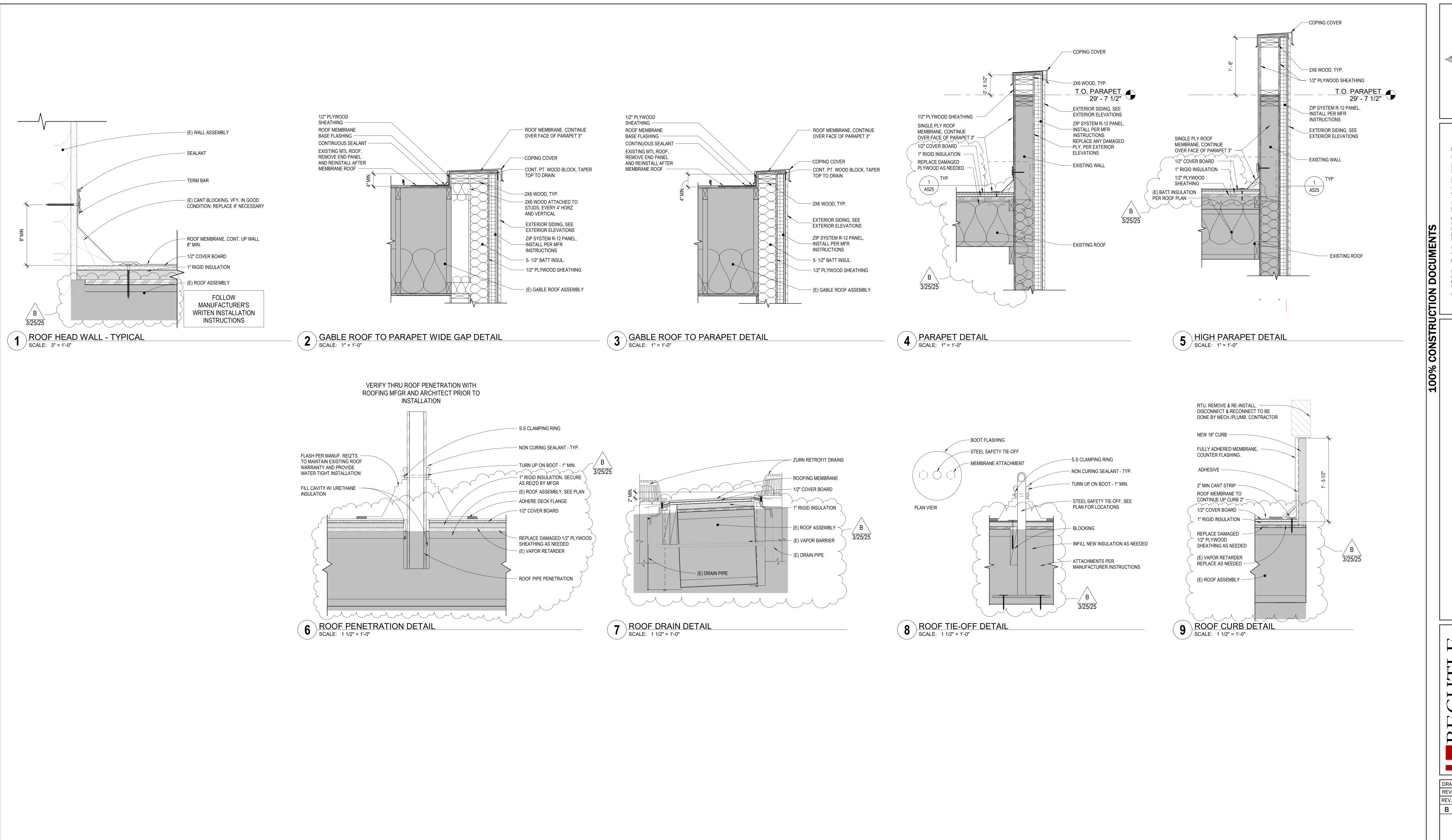
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SHEET TITLE ROOF / REMODEL PLANS

A150

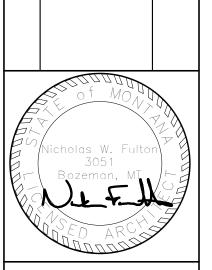
DATE MAR 3, 2025



CAMPUS PLANNING, , AND CONSTRUCTION

MSU-C/ DESIGN, A

DRAWN BY: **JS/NB** REVIEWED BY: NF REV. DESCRIPTION DATE Revision 2



PPA#22-0045 A/E#00-00-00 BA# 2326

SHEET TITLE ROOF DETAILS

DATE MAR 3, 2025