



PROJECT MANUAL

VOLUME 3

*Replace HVAC, Structural Repairs
& Replace Roof*

*George Washington Carver State
Office Building*

Jefferson City, Missouri

Designed By: OA-FMDC Project Design Unit
301 West High Street, Room 780
Jefferson City, MO 65101

Date Issued: June 14, 2024

Project No.: O2440-01

STATE *of* MISSOURI

OFFICE *of* ADMINISTRATION
Facilities Management, Design & Construction

**SECTION 000107
PROFESSIONAL SEALS AND CERTIFICATIONS**

PROJECT TITLE: VOLUME 3
REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF
GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

PROJECT LOCATION: 1616 MISSOURI BOULEVARD
JEFFERSON CITY, MISSOURI

PROJECT NUMBER: O2440-01

The following design professionals have signed and sealed the original plans and specifications for this project, which are on file with the Division of Facilities Management, Design and Construction:



Brad M. Schaefer - Architect
MO# A-2009027294

Project Manual Divisions 2,5,6 and 7

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**SECTION 000115
LIST OF DRAWINGS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section provides a comprehensive list of the drawings that comprise the Bid Documents for this project.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 LIST OF DRAWINGS

A. The following list of drawings is a part of the Bid Documents:

	<u>TITLE</u>	<u>SHEET #</u>	<u>DATE</u>	<u>CAD #</u>
1.	Cover Sheet	G001	06/14/2024	G001_O2440-01
2.	Existing Roof Plan	A100	06/14/2024	A100_O2440-01
3.	Roof Plan	A101	06/14/2024	A101_O2440-01
4.	Elevations	A102	06/14/2024	A102_O2440-01
5.	Details	A103	06/14/2024	A103_O2440-01

END OF SECTION 000115

SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Project consists of HVAC replacement, structural repairs, and roof replacement at the George Washington Carver State Office Building.
 - 1. Project Location: George Washington Carver State Office Building, 1616 Missouri Blvd, Jefferson City, MO 65101.
 - 2. Owner: State of Missouri, Office of Administration, Division of Facilities Management, Design and Construction, Harry S Truman State Office Building, Post Office Box 809, 301 West High Street, Jefferson City, Missouri 65102.
- B. Contract Documents, dated 06/14/24 were prepared for the Project by the following designers:
 - 1. Volume 1: Klingner & Associates, P.C, 3622 Endeavor Avenue, Suite 117, Columbia, Missouri 65201.
 - 2. Volume 2: Martin/Martin, Inc., 31 West 31st Street, Kansas City, Missouri 64108.
 - 3. Volume 3: Office of Administration – Division of Facilities Management, Design, and Construction, 301 West High Street, Jefferson City, Missouri.
- C. The Work includes the following:
 - 1. Volume 1: The Work consists of modifications to the existing hydronic cooling and heating system, including the removal and replacement of hydronic pumps, chillers, boilers, basement air handling unit, ductless split systems, and hydronic fan coil units. This Work will be coordinated with the slab reinforcement work of Volume 2.
 - 2. Volume 2: The Work consists of the addition of reinforcing elements at concrete slabs and at slab-to-column interfaces. This Work will be coordinated with the HVAC work of Volume 1 and the roof replacement work of Volume 3.
 - 3. Volume 3: The Work consists of removing the existing roof system down to the roof deck, removing existing gutters and downspouts, disposing of debris, installing new roof system, installing new gutters and downspouts, and installing new cage ladder. This Work will be coordinated with roof structural reinforcement work of Volume 2.
- D. The Work will be constructed under a single prime contract.

1.3 WORK SEQUENCE

- A. The Work will be conducted in one phase. Construction at the site may not begin until August 1, 2025. The project shall be Substantially Complete by July 1, 2026.

SUMMARY OF WORK

O2440-01 – George Washington Carver State Office Building
Replace HVAC, Structural Repairs, & Replace Roof

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1.4 WORK UNDER OTHER CONTRACTS

- A. Separate Contracts: The Owner will award separate contracts for performance of certain construction operations at the site. Those operations will be conducted in coordination with work under this contract. The Separate Contracts include, but are not limited to, the following:
 - 1. Remodel the first, second, and third floor men's and women's restrooms.
 - 2. Replace exterior windows and doors.
 - 3. Replace carpet, ceilings, and paint.
 - 4. Replace the fire alarm system.
 - 5. Replace the parking lot, sidewalks, and exterior lighting.
 - 6. Replace the camera and building access systems.
- B. Cooperate fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

1.5 CONTRACTOR USE OF PREMISES

- A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.
- B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage cause by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.6 OCCUPANCY REQUIREMENTS

- A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. The Designer will prepare a Certificate of Partial Occupancy for each specific portion of the Work to be occupied prior to substantial completion.
 - 2. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions for the building.
 - 3. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions for the building.

1.7 MISCELLANEOUS PROVISIONS

- A. The State of Missouri has an existing contract with Walter Louis Fluid Technologies for water treatment services. The State of Missouri will utilize this existing contract to provide all chemicals needed for startup as well as all future chemicals needed to protect and maintain the equipment. The Contractor shall coordinate with Walter Louis Fluid Technologies to ensure that the water treatment system is compatible with new equipment.

SUMMARY OF WORK

O2440-01 – George Washington Carver State Office Building
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PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

END OF SECTION 011000

SECTION 013300

SUBMITTALS

PART 1 - GENERAL (Refer to Project Manual Volume 1)

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS

- A. Contractor shall submit the following information for materials and equipment to be provided under this contract.

<u>SPEC SECTION</u>	<u>TITLE</u>	<u>CATEGORY</u>
055133	Metal Ladders	Shop Drawings
061053	Misc. Rough Carpentry	Product Data
075423	Thermoplastic Polyolefin	Product Data
075423	Thermoplastic Polyolefin	Shop Drawings
075423	Thermoplastic Polyolefin	Certifications
075423	Thermoplastic Polyolefin	Installation Instructions
075423	Thermoplastic Polyolefin	Warranties
075423	Thermoplastic Polyolefin	Manufacturer's Qualifications
075423	Thermoplastic Polyolefin	Installer's Qualifications
076200	Sheet Metal Flashing and Trim	Shop Drawings
079200	Joint Sealants	Product Data

END OF SECTION 013300

**SECTION 024100
SELECTIVE DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for reroofing purposes.

1.02 DEFINITIONS

- A. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.
- B. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.
- C. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Provide, erect, and maintain temporary barriers and security devices.
 - 2. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 3. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
 - 4. 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 to remain in place and not removed.
- D. Hazardous Materials:
 - 1. If hazardous materials are discovered during removal operations, stop work and notify the Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.
 - 2. Existing roofing materials have been tested and the results are negative for asbestos (See Appendix 1 for test results).

3.02 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
 - 1. Verify construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect 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; prevent water and humidity damage.
- C. Remove existing work as indicated and required to accomplish new work.
 - 1. Remove items indicated on drawings.

Selective Demolition

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- D. Protect existing work to remain.
 - 1. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
 - 2. Repair adjacent construction and finishes damaged during removal work.
 - 3. Patch to match new work.

3.03 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 024100

**SECTION 055133
METAL LADDERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prefabricated cage ladder.

1.02 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008 (Reaffirmed 2018).
- C. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.
- D. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2018, with Editorial Revision.
- E. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- F. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.
- G. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- H. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

PART 2 PRODUCTS

2.01 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- E. Aluminum-Alloy Sand Castings: ASTM B26/B26M.
- F. Aluminum-Alloy Die Castings: ASTM B85/B85M .
- G. Bolts, Nuts, and Washers: Stainless steel.
- H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.02 FABRICATED CAGE LADDER

- A. Cage Ladder: Aluminum; in compliance with ANSI A14.3; with mounting brackets and attachments; mill finish. Provide a ladder with roof-over rail extensions suitable for a low parapet situation.
 - 1. Side Rails: 3/8 by 2 inches (9 by 50 mm) members spaced at 20 inches (500 mm).
 - 2. Rungs: One inch (25 mm) diameter solid round bar spaced 12 inches (300 mm) on center.
 - 3. Space rungs 7 inches (175 mm) from wall surface.
 - 4. Safety Cage: Fabricated to comply with authority having jurisdiction. Spacing of primary hoops, secondary hoops, and vertical bars shall not exceed that required by code.

Metal Ladders

2.03 FINISHES - ALUMINUM

- A. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as selected from manufacturer's standard colors.

2.04 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).
- C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).
- D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).
- E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.

END OF SECTION 055133

**SECTION 061053
MISCELLANEOUS ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof-mounted curbs.
- B. Roofing nailers.
- C. Preservative treated wood materials.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. AWWA U1 - Use Category System: User Specification for Treated Wood; 2023.
- C. PS 1 - Structural Plywood; 2023.
- D. PS 20 - American Softwood Lumber Standard; 2021.

1.03 SUBMITTALS

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

1.04 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: 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 DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No.2 or Standard Grade.
 - 2. Boards: Standard or No.3.

2.03 CONSTRUCTION PANELS

- A. Other Applications:
 - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.

2.04 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 locations, unfinished steel elsewhere.
 - 2. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.05 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. 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.
- B. Preservative Treatment:
 - 1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.10 lb/cu ft retention (to 1.6 kg/cu m retention).
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing or flashing.
 - c. Treat lumber in contact with masonry or concrete.
 - 2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention (to 4.0 kg/cu m retention).
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing or flashing.
 - c. Treat plywood in contact with masonry or concrete.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.

3.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated.

3.03 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck roofing assembly installation.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches (610 mm) on center on edges and into studs in field of board.

END OF SECTION 061053

**SECTION 075423
THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Adhered system with thermoplastic polyolefin (TPO) roofing membrane.
- B. Insulation, flat and tapered.

1.02 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.
- C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing; 2021.
- D. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2024).
- E. NRCA (RM) - The NRCA Roofing Manual; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene at the Project site before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.04 SUBMITTALS

- A. Product Data: Provide manufacturer's written information listed below.
 - 1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements.
- B. Shop Drawings: Indicate joint or termination detail conditions and setting plan for tapered insulation.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- E. Warranty:
 - 1. Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.
 - 3. Submit installer's warranty on the form provided in Appendix 2.
- F. Manufacturer's Qualification Statement.
- G. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section:
 - 1. With minimum five (5) years experience.
 - 2. Approved by membrane manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

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

- B. Protect products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.
- D. Provide Safety Data Sheets (SDS) at the project site at all times during transportation, storage, and installation of materials.
- E. Comply with requirements from Owner to prevent overloading or disturbance of the structure when loading materials onto the roof.

1.07 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather. Refer to manufacturer's written instructions.
- B. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- D. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.
- E. Do not allow grease, oil, fats, or other contaminants to come into direct contact with membrane.

1.08 WARRANTY

- A. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 - 1. Warranty Term: 20 years.
 - 2. For repair and replacement include costs of both material and labor in warranty.
 - 3. Include all components of the roofing system, such as roofing, base flashing, roof insulation, fasteners, cover boards, roofing accessories, and all other components of the roofing system.
 - 4. Include accidental punctures according to the manufacturer's standard warranty terms.
 - 5. Include hail damage according to the manufacturer's standard warranty terms.
- B. Installer's Warranty: Provide roofing installer's warranty, on the form included in Appendix 2, signed by the installer, covering the work of this section.
 - 1. Warranty Term: Two (2) years from the date of Substantial Completion.
 - 2. Include all components of the roofing system, such as roofing, base flashing, roof insulation, fasteners, cover boards, roofing accessories, and all other components of the roofing system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carlisle SynTec Systems
- B. GAF
- C. Versico
- D. Holcim Elevate (Firestone)
- E. Johns Manville

2.02 ROOFING APPLICATIONS

- A. TPO Membrane Roofing: One ply membrane, fully adhered, over insulation.
- B. Roofing Assembly Performance Requirements and Design Criteria:
 - 1. Wind Uplift:
 - a. Designed to withstand wind uplift forces calculated with ASCE 7.
 - b. Design Wind Speed: In accordance with local building code and authorities having jurisdiction (AHJ).
 - 2. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.

3. Drainage: No standing water within 48 hours after precipitation.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Single Source Responsibility: Provide and install products from single source.
- B. Membrane:
 1. Material: Thermoplastic Polyolefin (TPO) complying with ASTM D6878/D6878M.
 2. Reinforcing: Internal fabric.
 3. Thickness: 60 mil (0.060 inch) (1.5 mm), minimum.
 4. Sheet Width: Factory fabricated into largest sheets possible.
 5. Color: White.
- C. Seaming Materials: As recommended by membrane manufacturer.
- D. Flexible Flashing Material: Same material as membrane.
- E. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

2.04 COVER BOARD

- A. Cover Board: Polyisocyanurate (ISO) thermal board, complying with ASTM C1289; Type II - Faced with coated-glass facer on both major surfaces of core foam, Class 4 with thickness of 1/2 inch (12.7 mm), and Grade 1 with 109 psi (751 kPa), maximum, compressive strength.

2.05 INSULATION

- A. Polyisocyanurate (ISO) Board Insulation: Complies with ASTM C1289, Type II, Class 1 - Faced with glass-reinforced felt on both surfaces of core foam.
 1. Tapered Board: Slope as indicated; minimum thickness 3/4 inch (19 mm); fabricate of fewest layers possible.
 2. Grade and Compressive Strength: Grade 2, 20 psi (Grade 2, 138 kPa), minimum.

2.06 ACCESSORIES

- A. Prefabricated Flashing Accessories:
 1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
 2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
 3. Sealant Pockets: Same material as membrane, with manufacturer's standard accessories, in manufacturer's standard configuration.
 4. Pressure Sensitive Cover Strips: 6 inches (152 mm) wide, 45 mil, 0.045 inch (1.1 mm) thick, non-reinforced TPO membrane laminated to 35 mil, 0.035 inch (0.9 mm) thick cured synthetic rubber with pressure sensitive adhesive.
 5. Miscellaneous Flashing: Non-reinforced TPO membrane; 80 mil, 0.080 inch (2.0 mm) thick, in manufacturer's standard lengths and widths.
- B. Membrane Adhesive: As recommended by membrane manufacturer.
- C. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- D. Sealants: As recommended by membrane manufacturer.
- E. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.
- F. Edgings and Terminations: Manufacturer's standard edge and termination accessories.

2.07 TPO RETROFIT ROOF DRAINS

- A. TPO retrofit roof drains designed for use in single-ply TPO roof systems to replace existing roof drains in re-roofing applications. Provide units with a TPO coated flange for direct hot air welding to TPO membrane.
 1. Standard: ANSI/SPRI RD-1
 2. Material: Aluminum
 3. Size: Provide size required to accommodate existing roof drains.
 4. Accessories: Provide all accessories necessary for a complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- C. Verify deck surfaces are dry and free of snow or ice.
- D. Verify that roof openings, curbs, and penetrations through roof are solidly set, and nailing strips and reglets are in place.

3.02 PREPARATION, GENERAL

- A. Clean substrate thoroughly prior to roof application.
- B. Do not begin work until other work that requires foot or equipment traffic on roof is complete.

3.03 INSTALLATION - GENERAL

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.04 INSULATION APPLICATION

- A. Attachment of Insulation: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions.
- B. Lay subsequent layers of insulation with joints staggered minimum 6 inch (152 mm) from joints of preceding layer.
- C. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch (6.3 mm). Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- D. Do not apply more insulation than can be completely waterproofed in the same day.

3.05 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 at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches (75 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Seam Welding:
 - 1. Seam Welding: Overlap edges and ends and seal seams by heat welding, minimum 2 inches (51 mm).
 - 2. Cover seams with manufacturer's recommended joint covers.
 - 3. Probe seams once welds have thoroughly cooled, in approximately 30 minutes.
 - 4. Repair deficient seams within the same day.
 - 5. Seal cut edges of reinforced membrane after seam probe is complete.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 4 inches (100 mm) onto vertical surfaces.
 - 2. Fully adhere flexible flashing over membrane and up to nailing strips.

- F. Coordinate installation of roof drains and related flashings. Locate all field splices away from low areas and roof drains. Lap upslope sheet over downslope sheet.
- G. Daily Seal: Install daily seal per manufacturers instructions at the end of each work day. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

3.06 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Minimize traffic on finished roof membrane.
- C. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 075423

**SECTION 076200
SHEET METAL FLASHING AND TRIM**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and trim.
- B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.05 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 SHEET MATERIALS

- A. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18 gauge, 0.040 inch (1.02 mm) thick; plain finish shop pre-coated with fluoropolymer coating.
 - 1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's standard colors.

2.02 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18-inch (450 mm) long legs; seam for rigidity, seal with sealant.
- F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing. Return and brake edges.

2.03 GUTTERS AND DOWNSPOUTS

- A. Gutters: SMACNA (ASMM) Rectangular profile.
- B. Downspouts: Rectangular profile.

- C. Gutters and Downspouts: Size indicated.
- D. Accessories: Profiled to suit gutters and downspouts.
 - 1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
- E. Downspout Boots: Plastic.
- F. Seal metal joints.

2.04 FLASHING

- A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.
- B. Primer Type: Zinc chromate.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Reglets: Surface-mounted type, prefinished aluminum.

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 sealant.
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch (0.38 mm).

3.03 INSTALLATION

- A. Comply with drawing details.
- B. Insert flashings into reglets to form tight fit; secure in place with plastic wedges; seal flashings into reglets with sealant.
- C. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Secure gutters and downspouts in place with exposed bracket fasteners.
- F. Slope gutters 1/4 inch per 10 feet (2.1 mm per m), minimum.
- G. Connect downspouts to downspout boots, and seal connection watertight.

END OF SECTION 076200

SECTION 079200 JOINT SEALANTS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
- B. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Backing material recommended by sealant manufacturer.
 - 4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 5. Substrates the product should not be used on.

PART 2 PRODUCTS

2.01 NONSAG JOINT SEALANTS

- A. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's full range.
 - 4. Cure Type: Single component, neutral moisture curing.
 - 5. Service Temperature Range: Minus 65 to 180 degrees F (Minus 54 to 82 degrees C).

2.02 ACCESSORIES

- A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Install bond breaker backing tape where backer rod cannot be used.

- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION 079200

Appendix 1
Asbestos Test Results

**MISSOURI DEPARTMENT OF TRANSPORTATION
 CONSTRUCTION AND MATERIALS
 1617 Missouri Blvd, Jefferson City, MO 65101**

Tested For: Cody Block Project #: O2425-01 Parcel: GWC Roof
301 W. High St., Rm 730 Route: N/A County: N/A
Jefferson City, MO 65102
 Sampled 04/04/2024 Received 04/23/2024 Completed 05/10/2024 Reported 05/13/2024


TEST REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

Sample ID:	O2425-01 L1-01-01*	O2425-01 L1-01-02*	O2425-01 L1-02-01*	O2425-01 L1-02-02*
Material Type	Modified Bitumen Cap Sheet	Poly Iso Insul.	Modified Bitumen Cap Sheet	Poly Iso Insul.
Appearance (Color/Texture)	Gray/Fibrous Mat	Gray/Fibrous Powder	Gray/Fibrous Mat	Gray/Fibrous Powder
Homogeneous?	X Yes No	X Yes No	X Yes No	X Yes No
If No, Sub-sample #	N/A	N/A	N/A	N/A
Layers Present?	Yes X No	Yes X No	Yes X No	Yes X No
If Yes, Layer #	N/A	N/A	N/A	N/A
ASBESTOS DETECTED?	Yes X No	Yes X No	Yes X No	Yes X No
If Yes, Type and Percent				
Chrysotile				
Amosite				
Crocidolite				
Fibrous Anthophyllite				
Fibrous Actinolite				
Fibrous Tremolite				
TOTAL % ASBESTOS	0	0	0	0
OTHER FIBERS DETECTED?	X Yes No	X Yes No	X Yes No	X Yes No
If Yes, Type and Percent				
Glass	20-30	20-30	20-30	20-30
Cellulose				
Synthetic				
Other (specify, if known)				
TOTAL % OTHER FIBERS	20-30	20-30	20-30	20-30
NONFIBROUS MATRIX?	X Yes No	X Yes No	X Yes No	X Yes No
If Yes, Type and Percent				
Binder	70-80	60-70	20-30	20-30
Calcite				
Gypsum				
Granular Materials				
Other (specify, if known)				
TOTAL % NONFIBROUS	70-80	70-80	70-80	70-80

REMARKS: *(deviations/departures from test method and/or sampling procedure)*

*Sample was ashed.

Quantification is based on a visual determination of the relative volume of bulk sample components unless otherwise noted. The results are valid only for the item tested. This report may not be used to claim product endorsement by NVLAP or any agency of the US Government. Sampling Procedure used: MoDOT PLM QAM Section 8.1 Test Method used: EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA-600/M4-82-020 Dec. 1982). No part of this report may be reproduced except in full with the written permission of MoDOT Chemical Laboratory.







Environmental Chemist

NVLAP LAB CODE 200544-0

Chemical Laboratory Director

**MISSOURI DEPARTMENT OF TRANSPORTATION
 CONSTRUCTION AND MATERIALS
 1617 Missouri Blvd, Jefferson City, MO 65101**

Tested For: Cody Block Project #: O2425-01 Parcel: GWC Roof
301 W. High St., Rm 730 Route: N/A County: N/A
Jefferson City, MO 65102
 Sampled 04/04/2024 Received 04/23/2024 Completed 05/10/2024 Reported 05/13/2024

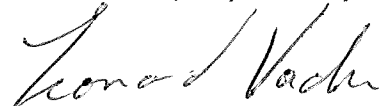


TEST REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

Sample ID:	O2425-01 L1-03-01*	O2425-01 L1-03-02*		
Material Type	Modified Bitumen Cap Sheet	Poly Iso Insul.		
Appearance (Color/Texture)	Gray/Fibrous Mat	Gray/Fibrous Powder	Gray/Powder	Gray/Fibrous Mat
Homogeneous?	X Yes No	X Yes No	Yes No	Yes No
If No, Sub-sample #	N/A	N/A	N/A	N/A
Layers Present?	Yes X No	Yes X No	Yes No	Yes No
If Yes, Layer #	N/A	N/A	N/A	N/A
ASBESTOS DETECTED?	Yes X No	Yes X No	Yes No	Yes No
If Yes, Type and Percent				
Chrysotile				
Amosite				
Crocidolite				
Fibrous Anthophyllite				
Fibrous Actinolite				
Fibrous Tremolite				
TOTAL % ASBESTOS	0	0		
OTHER FIBERS DETECTED?	X Yes No	X Yes No	Yes No	Yes No
If Yes, Type and Percent				
Glass	20-30	20-30		
Cellulose				
Synthetic				
Other (specify, if known)				
TOTAL % OTHER FIBERS	20-30	20-30		
NONFIBROUS MATRIX?	X Yes No	X Yes No	Yes No	Yes No
If Yes, Type and Percent				
Binder	50-60	60-70		
Calcite				
Gypsum				
Granular Materials				
Other (specify, if known)				
TOTAL % NONFIBROUS	70-80	70-80		

REMARKS: *(deviations/departures from test method and/or sampling procedure)*

*Sample was ashed.

Quantification is based on a visual determination of the relative volume of bulk sample components unless otherwise noted. The results are valid only for the item tested. This report may not be used to claim product endorsement by NVLAP or any agency of the US Government. Sampling Procedure used: MoDOT PLM QAM Section 8.1 Test Method used: EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA-600/M4-82-020 Dec. 1982). No part of this report may be reproduced except in full with the written permission of MoDOT Chemical Laboratory.

Environmental Chemist NVLAP LAB CODE 200544-0 Chemical Laboratory Director
 C:\L\ASBESTOS\OAOA O2425-01 GEORGE WASHINGTON CARVER ROOFOA O2425-01 GEORGE WASHINGTON CARVER
 ROOF.DOCX

**MISSOURI DEPARTMENT OF TRANSPORTATION
 SUSPECT ASBESTOS CONTAINING MATERIAL (ACM) SAMPLE CHAIN OF CUSTODY (CoC) RECORD**

Inspector's Name and Contact Info: Cody Block, MoDNR Inspector Lic # 7011072022MOI22360 OA Facilities Management, Design & Construction (OA FMDCC) 301 W High St, Harry S Truman Bldg - Rm 780 Jefferson City, MO 65102 Email: cody.block@oa.mo.gov ; Phone: 573-751-5578	Requested Turnaround Time: _____ Number of Samples: _____ Number of Containers: _____ Sample Handling: Hand Delivered Other: _____
--	--

Picture #	Date	Insp's Initials	Sample ID Number	Sample Description	Sample Location	Analysis Requested
	4/6/24	CLB	L1 01 01	MODIFIED BITUMEN CAP SHEET	MAIN ROOF	PLM + Point count if ≤1% trace ACM
			L1 01 02	POLY ISO INSUL.	MAIN ROOF	
			L1 02 01	MOD. BIT CAP SHEET	NORTH ROOF	
			L1 02 02	POLY ISO INSUL.	NORTH ROOF	
			L1 03 01	MOD. BIT CAP SHEET	LOWER ROOF	
			L1 03 02	POLY ISO INSUL.	LOWER ROOF	

ITEMS TRANSFERRED	RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME	REASON FOR TRANSFER
Samples	<i>Cody Block</i>	4/23/24	2:25	<i>Leonard Vadu</i>	4/23/24	2:25	Analysis

**APPENDIX 2
ROOFING INSTALLER'S WARRANTY**

ROOFING INSTALLER'S WARRANTY

- A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
1. Owner: _____.
 2. Address: _____.
 3. Building Name/Type: _____.
 4. Address: _____.
 5. Area of Work: _____.
 6. Acceptance Date: _____.
 7. Warranty Period: _____.
 8. Expiration Date: _____.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding **72 mph**;
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
 5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects

work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed:

On this _____ day of _____, _____.

1. Authorized Signature: _____
2. Name: _____
3. Title: _____

END OF APPENDIX 2