

ADDENDUM 2

ADDENDUM DATE: October 30th, 2020

PROJECT: ONWASA Roof Alteration
228 Georgetown Rd.
Jacksonville, NC 28540

OWNER: Onslow Water and Sewer Authority
228 Georgetown Rd.,
Jacksonville, NC 28540

ARCHITECT: Smith Sinnett Architecture, P.A.
4600 Lake Boone Trail, Suite 205
Raleigh, North Carolina 27607

BIDS DUE: **REVISED: November 5th, 2020 @ 3:00 pm**
ONWASA Administration building in meeting room A and B
228 Georgetown Rd
Jacksonville, NC 28540

Project Addendums and Bidders List are available at www.smithsinnett.com under the 'Documents' icon on the navigation bar.

This Addendum shall be included in the contract for the above referenced project. All General, Supplementary and Special Conditions, etc., as originally specified or as modified below shall apply to these items.

DRAWINGS

- Item 1 Replace the following sheets in their entirety with the attached sheets G0-01, G0-02, A0-01, A1-01, A1-02 and A1-03.
- Item 2 Delete Electrical and Mechanical Sheets E1-01, M0-01 and M1-01. The Mechanical Units are to remain in place and the existing curbs are scheduled to be reused. Refer to the revised Index of Drawings on Sheet G0-01 for the new and complete index of drawings.

SPECIFICATIONS

- Item 3 Section 07 21 00- Thermal insulation:
 - a. Replace this section in its entirety with the attached Section 07 21 00.
- Item 4 Section 07 54 00- Thermoplastic Membrane Roofing:
 - b. Replace this section in its entirety with the attached Section 07 54 00.

PRE-BID NOTES REVISION:

- Item 4 The successful bidder must provide an executed Performance Bond and Payment Bond for 100% of the Contract by a company licensed in North Carolina within 14 days of receipt of the bid opening and Intent to Award Letter. Certificates of Insurance meeting the requirements indicated in the Specifications will also be required. 4 Copies of the Construction Contracts with bonding and insurance attached will need to be delivered to Owner before but by no later than November 18th, 2020 for ONWASA Board approval scheduled on November 19th, 2020.

End of Addendum 2

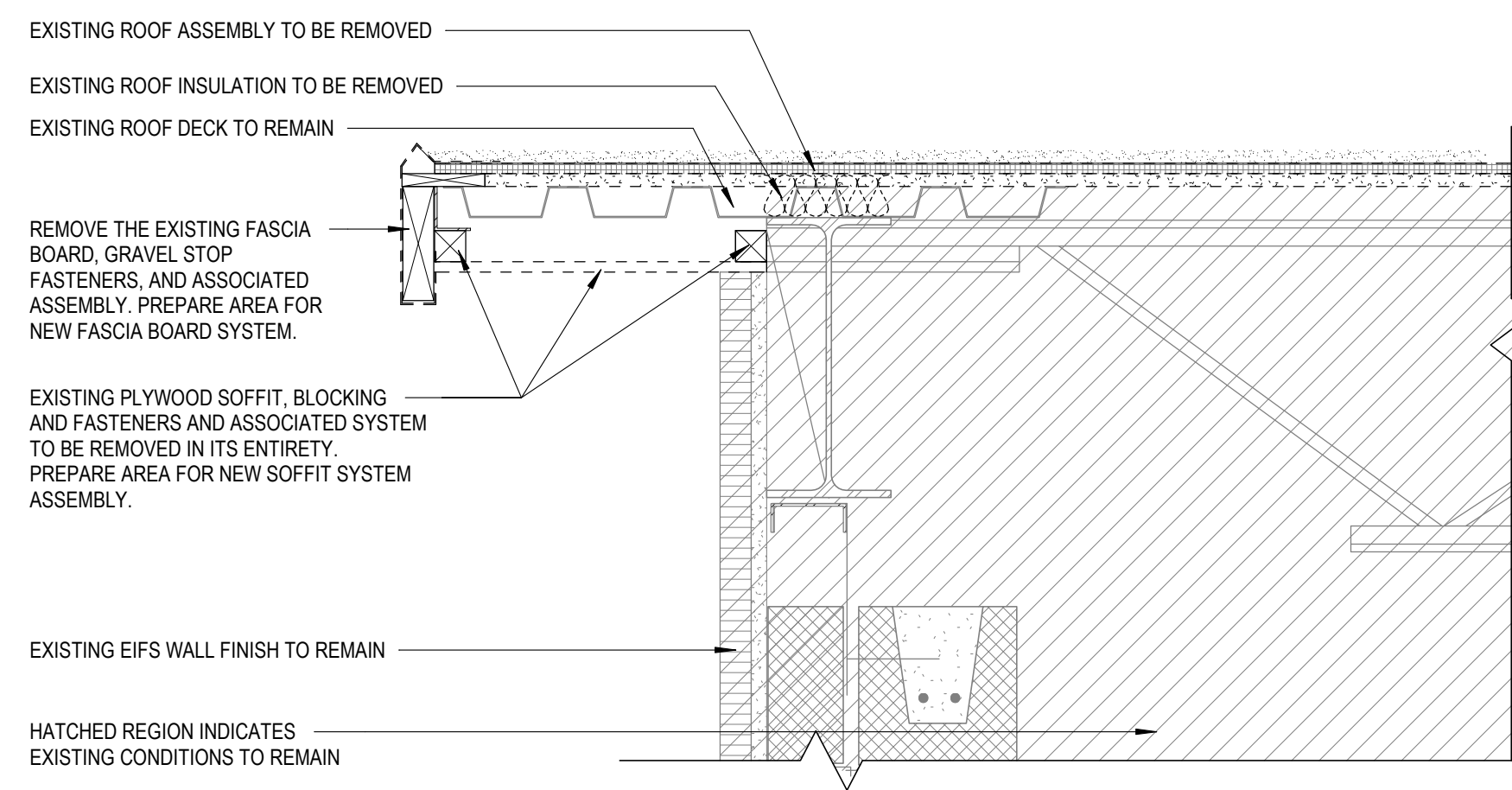
Attached:

Drawings:

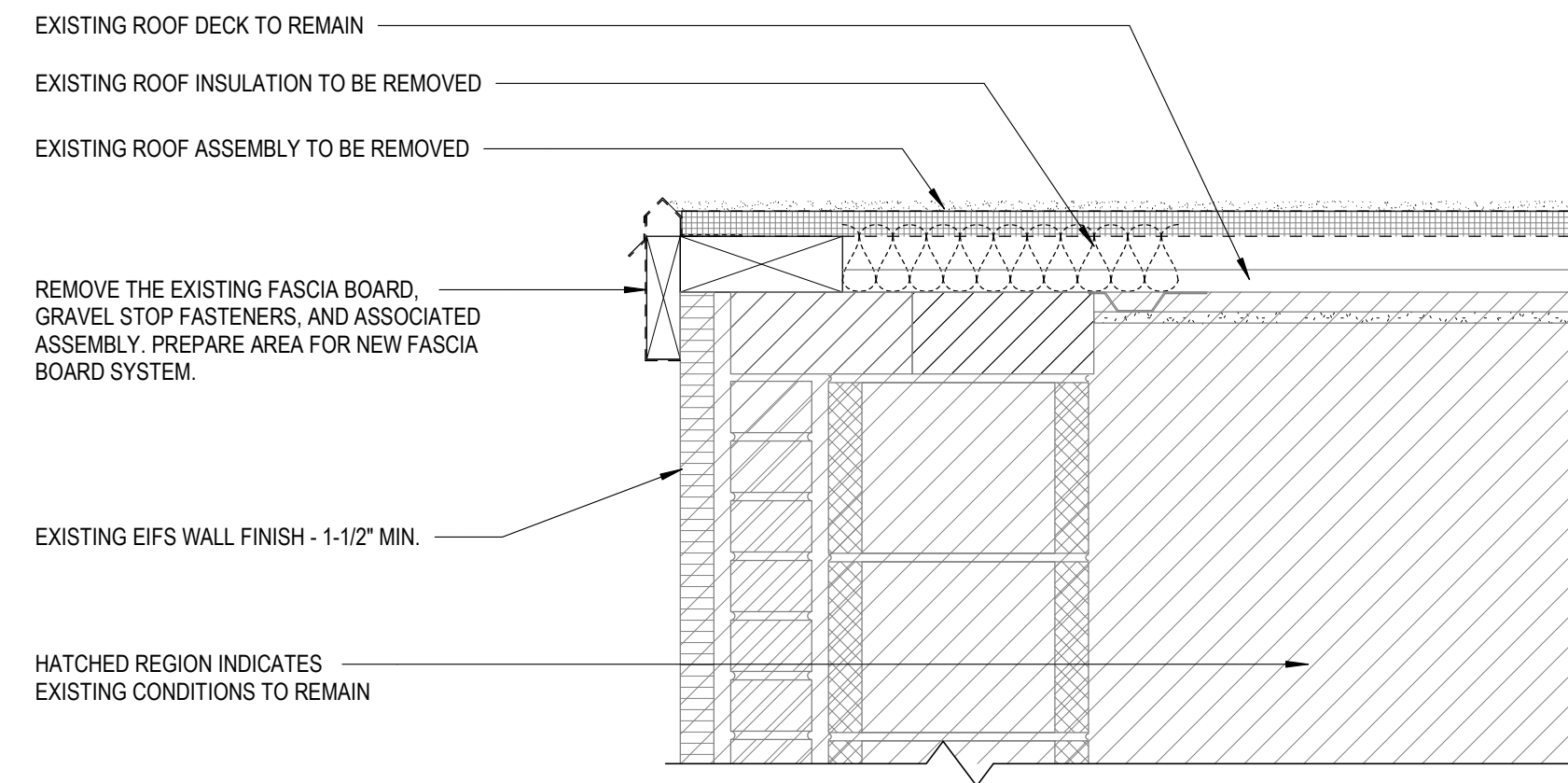
- G0-01 Cover Sheet
- G0-02 Building Code Summary
- A0-01 Roof Demolition Plan
- A1-01 Roof Plan
- A1-02 Roof Details
- A1-03 Roof Details

Specifications:

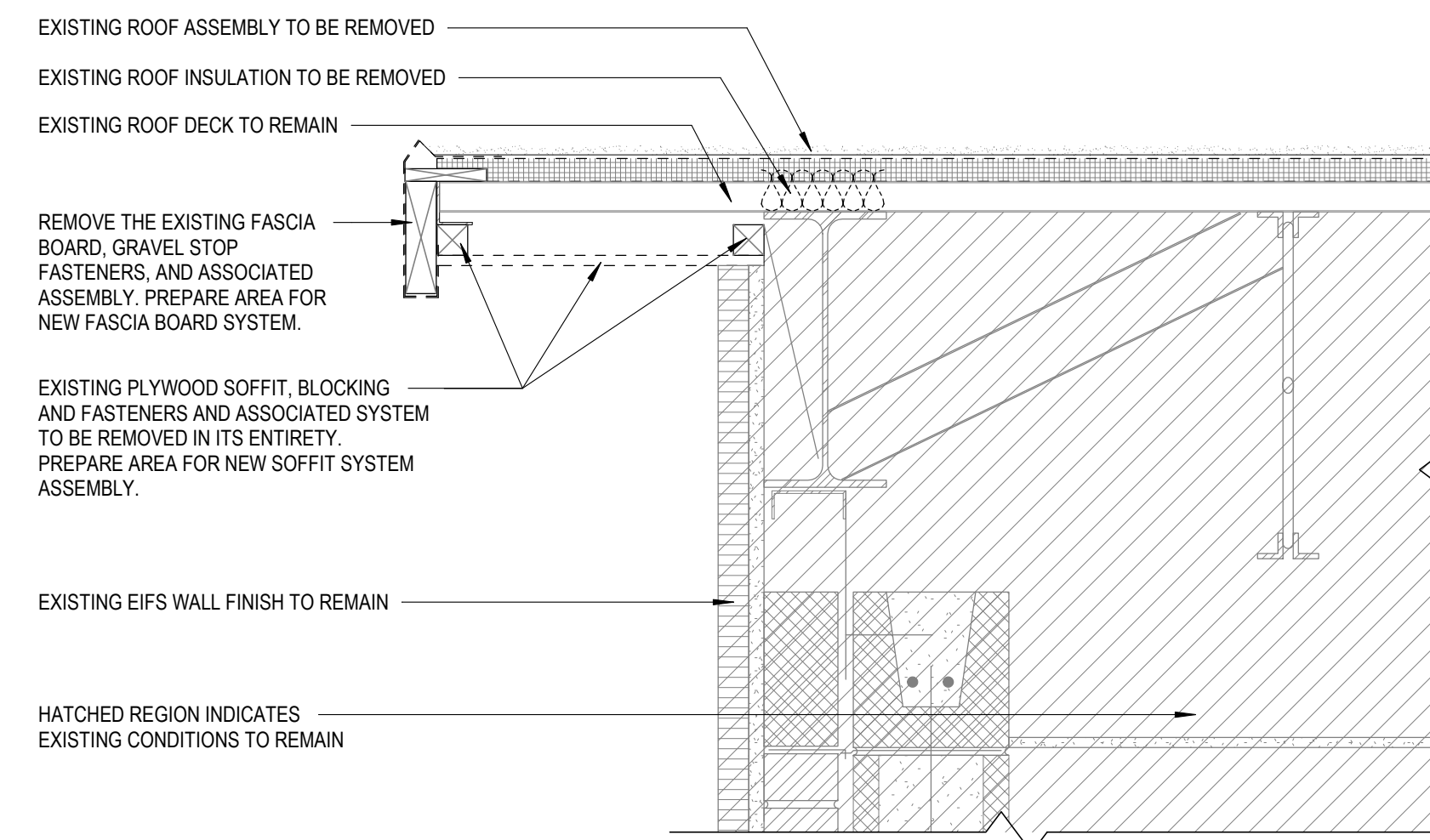
- Section 072100 Thermal Insulation
- Section 075400 Thermoplastic Membrane Roofing



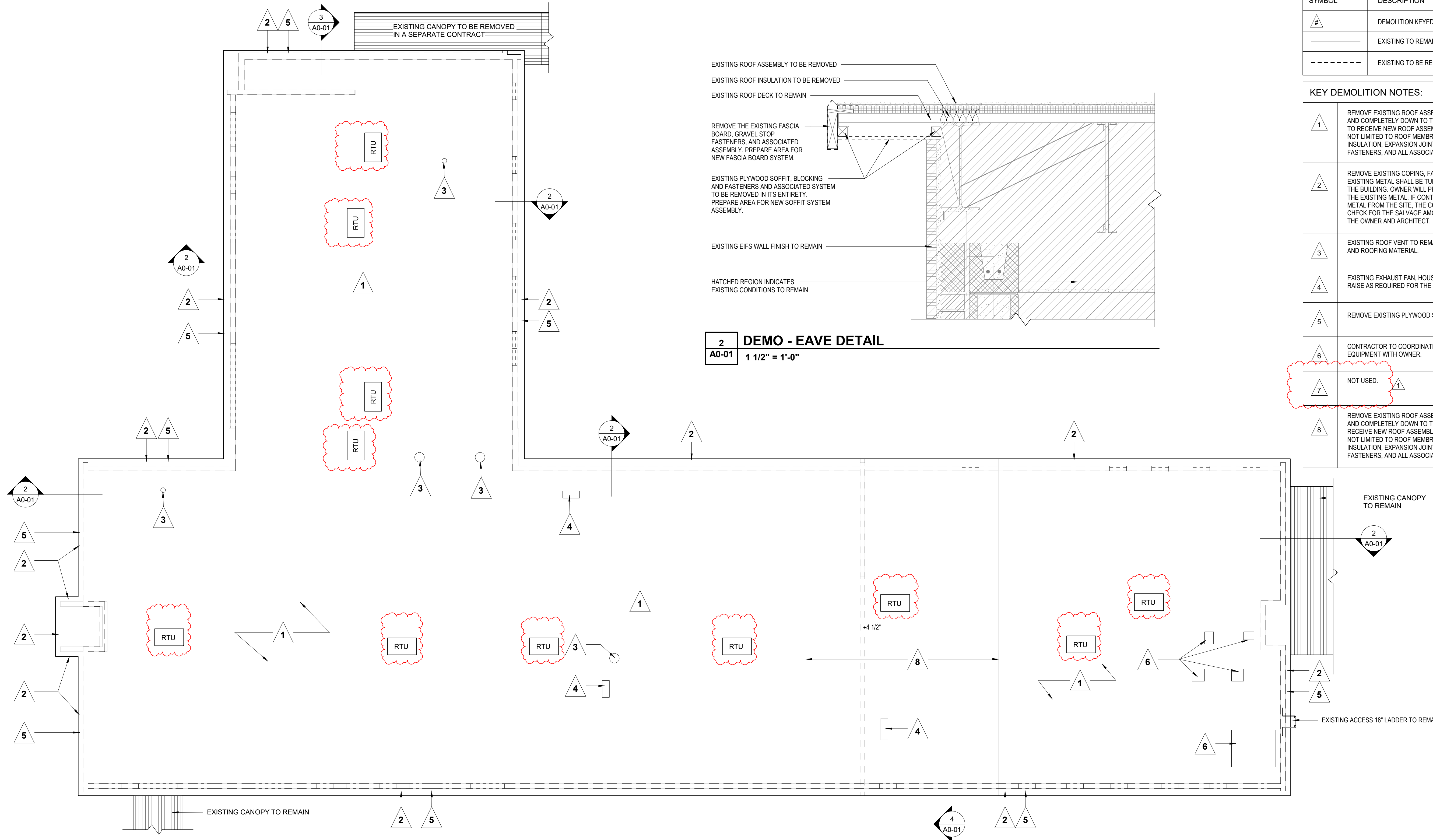
4 DEMO- EAVE DETAIL
A0-01 1 1/2" = 1'-0"



3 DEMO - EAVE DETAIL
A0-01 1 1/2" = 1'-0"



2 DEMO - EAVE DETAIL
A0-01 1 1/2" = 1'-0"



1 ROOF DEMO
A0-01 3/32" = 1'-0"

PHASING NOTES:

1. THE OFFICE WILL REMAIN OPEN DURING NORMAL OFFICE HOURS. CONTRACTOR SHALL PROVIDE A PHASING SCHEDULE AND COORDINATE TIMES THAT CERTAIN PORTIONS OF THE ROOF WILL BE REPLACED WITH THE OWNER.
2. REMOVE NO MORE ROOF THAN CAN BE REPLACED AND SEALED OFF IN ONE (1) DAY. THE CONTRACTOR SHALL REPAIR, AT HIS OWN EXPENSE, ANY INTERIOR FINISHES, EQUIPMENT, OR OTHER ITEMS THAT BECOME WET OR DAMAGED BY ANY MEANS DURING THE ROOF REPLACEMENT.

GENERAL DEMOLITION NOTES:

1. ROOF PENETRATIONS ON THIS PLAN SHOW GENERAL LAYOUT OF MAJOR EXISTING ROOF TOP EQUIPMENT. WATER PROOF ALL PENETRATIONS PER ROOF SYSTEM MANUFACTURER'S WRITTEN REQUIREMENTS, SUITABLE FOR THE EQUIPMENT SUPPORTED OR FLASHED. PROVIDE MINIMUM 8" FLASHING HEIGHT ABOVE FINISH ROOF AT ALL ROOF PENETRATIONS.
2. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION, FABRICATION AND INSTALLATION OF COMPONENTS.
3. ALL ROOF PENETRATIONS AND FLASHING SHALL CONFORM TO "NCRA" NATIONAL ROOFING AND WATERPROOFING MANUAL, "SMACNA" SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC., AND ALL MANUFACTURER'S SPECIFICATIONS. WHEN ANY OF THESE ORGANIZATIONS ARE IN CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY. EQUIPMENT SIZES INDICATED ARE APPROXIMATE - REFER TO SHOP DRAWINGS FOR EXACT SIZES.
4. ALL FASTENERS TO ROOF DECK SHALL COMPLY WITH ROOF SYSTEM AND DECK MANUFACTURER'S REQUIREMENTS AND ALL APPLICABLE LOADING DESIGN REQUIREMENTS.
5. DASHED LINE INDICATES WALL BELOW.
6. CONTRACTOR SHALL PROVIDE FULLY ENGINEERED AND WARRANTED ROOFING SYSTEM WITH DESIGN BASED ON MRF RECOMMENDATIONS.

DEMOLITION LEGEND:

SYMBOL	DESCRIPTION
△#	DEMOLITION KEYED NOTE
---	EXISTING TO REMAIN
----	EXISTING TO BE REMOVED DURING DEMOLITION

KEY DEMOLITION NOTES:

1. REMOVE EXISTING ROOF ASSEMBLY ASSOCIATED PARTS IN THEIR ENTIRETY, AND COMPLETELY DOWN TO THE EXISTING CONCRETE ROOF DECK. PREP AREA TO RECEIVE NEW ROOF ASSEMBLY. COMPONENTS TO BE REMOVED, INCLUDE BUT NOT LIMITED TO ROOF MEMBRANE, BLOCKING, GRAVEL STOP, FLASHING, INSULATION, EXPANSION JOINTS, ROOF TERMINATIONS, ROOF GRAVEL STOPS, FASTENERS, AND ALL ASSOCIATED PARTS.
2. REMOVE EXISTING COPING, FASCIA, GRAVEL STOP AND ASSOCIATED PARTS. ALL EXISTING METAL SHALL BE TURNED OVER TO THE OWNER ONCE REMOVED FROM THE BUILDING. OWNER WILL PROVIDE A LOCATION FOR CONTRACTOR TO PLACE THE EXISTING METAL. IF CONTRACTOR REMOVES THE EXISTING DEMOLISHED METAL FROM THE SITE, THE CONTRACTOR WILL REIMBURSE THE OWNER BY CHECK FOR THE SALVAGE AMOUNT OF THOSE MATERIALS AS DETERMINED BY THE OWNER AND ARCHITECT.
3. EXISTING ROOF VENT TO REMAIN. RAISE AS REQUIRED FOR THE NEW INSULATION AND ROOFING MATERIAL.
4. EXISTING EXHAUST FAN, HOUSING, CURB AND ASSOCIATED PARTS TO REMAIN. RAISE AS REQUIRED FOR THE NEW INSULATION AND ROOFING MATERIAL.
5. REMOVE EXISTING PLYWOOD SOFFIT.
6. CONTRACTOR TO COORDINATE TEMPORARY RELOCATION OF LOOSE ROOFTOP EQUIPMENT WITH OWNER.
7. NOT USED.
8. REMOVE EXISTING ROOF ASSEMBLY ASSOCIATED PARTS IN THEIR ENTIRETY, AND COMPLETELY DOWN TO THE EXISTING METAL ROOF DECK. PREP AREA TO RECEIVE NEW ROOF ASSEMBLY. COMPONENTS TO BE REMOVED, INCLUDE BUT NOT LIMITED TO ROOF MEMBRANE, BLOCKING, GRAVEL STOP, FLASHING, INSULATION, EXPANSION JOINTS, ROOF TERMINATIONS, ROOF GRAVEL STOPS, FASTENERS, AND ALL ASSOCIATED PARTS.



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Smith Sinnett Architecture, P.A. 2020

ONWASA - ROOF ALTERATION
CONSTRUCTION DOCUMENTS
228 GEORGETOWN RD., JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
10/28/2020	ADDENDUM 2	

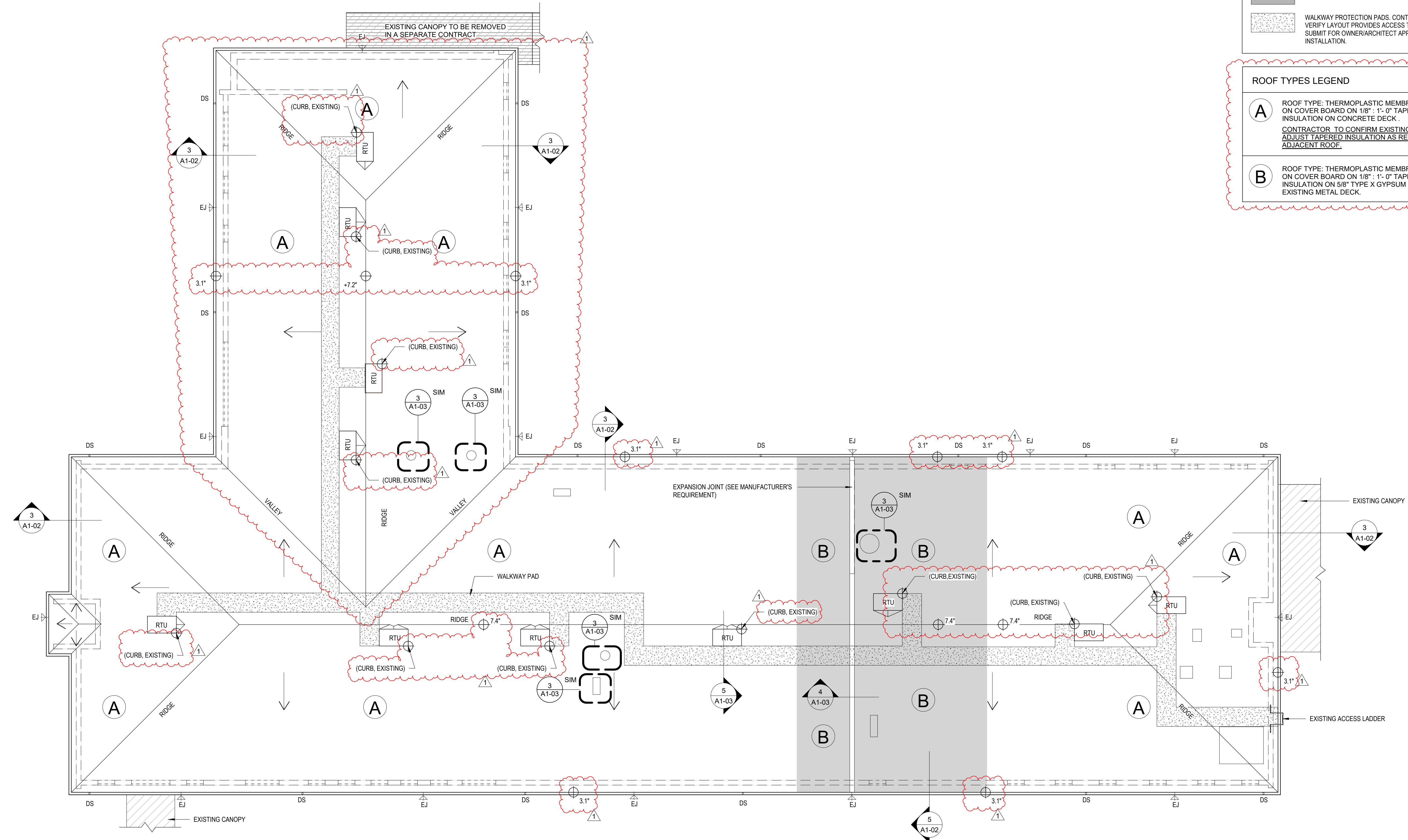
DRAWN BY: MA
CHECKED BY: LP, SM
ROOF DEMOLITION PLAN

2020041 30 October 2020

A0-01

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10/28/2020 1:51:27 PM

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PHASING NOTES:

1. THE OFFICE WILL REMAIN OPEN DURING NORMAL OFFICE HOURS. CONTRACTOR SHALL PROVIDE A PHASING SCHEDULE AND COORDINATE TIMES THAT CERTAIN PORTIONS OF THE ROOF WILL BE REPLACED WITH THE OWNER.
2. REMOVE NO MORE ROOF THAN CAN BE REPLACED AND SEALED OFF IN ONE (1) DAY. THE CONTRACTOR SHALL REPAIR, AT HIS OWN EXPENSE, ANY INTERIOR FINISHES, EQUIPMENT, OR OTHER ITEMS THAT BECOME WET OR DAMAGED BY ANY MEANS DURING THE ROOF REPLACEMENT.

ROOF PLAN NOTES:

1. REFER TO ARCHITECTURAL AND MECHANICAL FOR FRAMING OF OPENINGS IN ROOF ASSEMBLY.
2. ALL ROOF PENETRATIONS, SHEET METAL TRIM AND FLASHING SHALL CONFORM TO 'NCR' NATIONAL ROOFING AND WATERPROOFING MANUAL, 'SMACNA' SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. AND ALL MANUFACTURERS SPECIFICATIONS. WHEN ANY OF THESE ORGANIZATIONS ARE IN CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
3. ROOF PENETRATIONS DEPICTED ON THIS PLAN SHOW GENERAL LAYOUT OF MAJOR ROOF TOP EQUIPMENT. FOR COMPLETE EXTENT OF ROOF PENETRATIONS, THE GENERAL CONTRACTOR SHALL REFER TO ARCHITECTURAL, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS AND INCLUDING THE BID OF ALL CURBS, FLASHING AND OTHER ITEMS NEEDED TO PROVIDE A COMPLETE WATERTIGHT AND FULLY WARRANTED ROOF SYSTEM.
4. PROVIDE SPLASH BLOCK AT EACH DOWNSPOUT SPECIFIED. REFER TO DETAIL 3 / A1-02.
5. PROVIDE A DRAINAGE CRICKET AT EACH AIR HANDLING UNIT.
6. ALL EXTERIOR STEEL TO BE HOT-DIPPED GALVANIZED.

ROOF PLAN LEGEND

- DS DOWNSPOUT AND GUTTER LOCATION
- EXISTING VTR LOCATION
- EXISTING ROOF VENTS LOCATION
- INDICATES DIRECTION OF ROOF SLOPE
- EJ GUTTER EXPANSION JOINT
- ROOF INSULATION ELEVATION ABOVE SUBSTRATE (GYPSUM BOARD OR DECKING) AT ROOF PERIMETER
- NO WORK THIS AREA
- APPROXIMATE LOCATION OF EXISTING METAL DECK
- WALKWAY PROTECTION PADS. CONTRACTOR TO FIELD VERIFY LAYOUT PROVIDES ACCESS TO ALL UNITS AND SUBMIT FOR OWNER/ARCHITECT APPROVAL(S) PRIOR TO INSTALLATION.

ROOF TYPES LEGEND

- A** ROOF TYPE: THERMOPLASTIC MEMBRANE ROOFING ON COVER BOARD ON 1/8" - 1" - 0" TAPERED INSULATION ON CONCRETE DECK. CONTRACTOR TO CONFIRM EXISTING SLOPE AND ADJUST TAPERED INSULATION AS REQUIRED TO MATCH ADJACENT ROOF.
- B** ROOF TYPE: THERMOPLASTIC MEMBRANE ROOFING ON COVER BOARD ON 1/8" - 1" - 0" TAPERED INSULATION ON 5/8" TYPE X GYPSUM BOARD ON EXISTING METAL DECK.

1
A1-01
ROOF PLAN
 3/32" = 1'-0"



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 Smith Sinnett Architecture, P.A. 2020
 THIS DRAWING IS FORMATTED TO BE PRINTED ON A 24" X 36" SHEET

ONWASA - ROOF ALTERATION
CONSTRUCTION DOCUMENTS
 228 GEORGETOWN RD., JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
1	10/28/2020	ADDENDUM 2

DRAWN BY: MA
 CHECKED BY: LP, SM
ROOF PLAN

2020041 30 October 2020

A1-01

2. Install adhesive and insulation in strict compliance with manufacturer's instructions to meet wind speed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
 2. Do not proceed with installation of spray applied polyurethane foam insulation until placement of masonry ties, clips, connectors and continuous air/vapor barrier Work has been completed and reviewed by the Architect or Consultant.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
 1. Clean, prepare and treat substrate according to manufacturer's written instructions. Provide clean, dust-free and dry substrate for spray polyurethane foam building insulation application. Ensure installed air/vapor barrier membrane, transition and flashing membranes are fully adhered to all applicable surfaces and capable of receiving spray polyurethane foam.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3.4 INSTALLATION OF INSULATION IN WALLS FOR SOUND ATTENUATION

- A. Install unfaced glass-fiber blanket insulation over suspended ceilings at partitions in a width that extends insulation 48 inches on either side of partition.

3.5 INSULATION SCHEDULE

Location	Description	Product/ Minimum Thickness	R-Value	Remarks
Top of Wall cavity insulation	Unfaced Batt Insulation	6" Fiberglass Batts	R-19	Provide at all cavity openings in the top of the exterior walls after installation of the new roofing system. Refer to drawings for notes and locations in section details.
Existing Concrete Roof Deck: Refer to drawings for locations.	TPO Roof Membrane over Polyisocyanurate Board Insulation on Existing Concrete Decking	Provide Minimum thickness of insulation to achieve the slope of the roof as designated on the roof plan with specified elevations	R-6 per inch minimum (2.6" minimum base layer)	Provide fully adhered TPO roofing membrane over insulation and fully adhered with low rise foam adhesive to the existing concrete decking. Provide adhesive in compliance with Manufacturer's instructions to meet wind loads
Existing Metal Roof Deck: Refer to drawings for locations.	TPO Roof Membrane over Polyisocyanurate Board Insulation over 5/8" Type X Gypsum Board on Existing Metal Roof Deck.	Provide Minimum thickness of insulation to achieve the slope of the roof as designated on the roof plan with specified elevations	R-6 per inch minimum. (2.6" minimum base layer)	Provide fully adhered TPO roofing membrane over insulation and fully adhered with low rise foam adhesive to new 5/8" type x gypsum board which shall be mechanical fastened (per the specified wind speeds) to existing metal decking. Provide fasteners and adhesive in compliance with Manufacturer's instructions to meet wind loads

END OF SECTION 07 21 00

SECTION 07 54 00 - THERMOPLASTIC MEMBRANE ROOFING ADDENDUM#2

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Adhered membrane roofing system.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry for wood blocking.
 - 2. Division 05 Section "Steel Decking" for roof deck.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, counter flashings, gutters and downspouts.
 - 4. Division 07 Section "Thermal Insulation" for insulation thickness and type.
 - 5. Division 07 Section "Joint Sealants."
- C. Products offered for installation on this project shall have no limitations in their installation or warranty over the roof deck system. Requirements for installations over this deck system which are not indicated in the project drawings or are different from what is shown shall be the responsibility of the roofing installer and shall be included as part of the work of this section.

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Design Uplift Pressure: Comply with the requirements of Section 1609 NCSBC 2006. In addition, meet the uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor. The most stringent requirements shall apply.
- C. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.
- D. Plywood: A structural board consisting of an odd number of thin layers of wood glued together under pressure, with the grain of one layer at right angles to the grain of the adjoining layer in 5, 7, 9 ply layers as required to achieve the required thickness.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

- C. Roofing System Design: Provide a membrane roofing system that is designed by an engineer licensed in North Carolina to resist uplift pressure calculated according to ASCE 7.
- D. Roof shall meet all requirements per Code for 139 mph wind zone.
- E. Low sloped roof systems shall be designed and installed for wind loads in accordance with Chpt. 16 of the North Carolina Building Code – latest version and tested for resistance in accordance with ANSI/SPRI ES-1.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes.
 - 3. Insulation fastening patterns.
- C. Samples for Verification: For the following products:
 - 1. **12-by-12-inch** square of sheet roofing, of color specified, including T-shaped side and end lap seam.
 - 2. **12-by-12-inch** square of roof insulation.
 - 3. **12-inch** length of metal termination bars.
 - 4. Six insulation fasteners of each type, length, and finish.
 - 5. Six roof cover fasteners of each type, length, and finish.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
- F. Qualification Data: For Installer and manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Research/Evaluation Reports: For components of membrane roofing system.
- I. Maintenance Data: For roofing system to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section.
- K. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain components for membrane roofing system roofing membrane manufacturer. All components including but not limited to fascia, gravel stops, copings shall be supplied and warranted as a total roof assembly.
- E. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.

2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- F. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following:
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.
- G. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

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

- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

- A. Special Manufacturer's Project Warranty: Non-prorated Warranty, without monetary limitation, in which manufacturer agrees to repair or replace any and all components of membrane roofing system and edge material that fail in materials or workmanship within specified warranty period. Failure includes roof leaks and 120mph blow off. Roof shall be warranted for 120mph wind. All components including but not limited to fascia, gravel stops, copings shall be supplied and warranted as a total roof assembly.
 - 1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, substrate board, vapor retarder, roof pavers, parapets, walkway products, and other components of membrane roofing system.
 - 2. Warranty Period: 20 years from date of Substantial Completion.
- B. Special Contractor/Installers Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer and the Prime Contractor, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, parapets and walkway products, for the following warranty period:
 - 1. Warranty Period: **Two** years from date of Substantial Completion. All repairs shall be made within 48 hours of notification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified .

2.2 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE

- A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: Uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced, and as follows:
 - 1. Manufacturers:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products Company.
 - c. GAF Materials Corporation.
 - d. Johns Manville International, Inc.
 - e. Versico Inc.
 - f. GlenFlex Roofing System
 - g. Mule Hide Products

2. Thickness: **60 mils**, nominal.
3. Exposed Face Color: White.
4. Physical Properties:
 - a. Solar Reflectance Index (SRI): 78 minimum or higher
 - b. Breaking Strength: **250 lbf**; ASTM D 751, grab method.
 - c. Elongation at Break: 15 percent; ASTM D 751, grab method.
 - d. Tearing Strength: **55 lbf** minimum; ASTM D 751, Procedure B.
 - e. Brittleness Point: Minus **-40 deg F**.
 - f. Ozone Resistance: No cracks after sample, wrapped around a **3-inch**- diameter mandrel, is exposed for 166 hours to a temperature of **104 deg F** and an ozone level of **100 pphm**; ASTM D 1149.
 - g. Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at **240 deg F**; ASTM D 573.
 - h. Water Absorption: Less than 3 percent maximum mass change after 166 hours' immersion at **158 deg F**; ASTM D 471.
 - i. Linear Dimension Change: Plus or minus 1 percent max; ASTM D 1204.
5. Provide Secure Edge 2000 or 3000 by Carlisle or equal.
6. Installation: Fully Adhered

2.3 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing. All components including but not limited to fascia, gravel stops, copings shall be supplied and warranted as a total roof assembly.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.
- C. Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, **55 mils** thick, minimum, of same color as sheet membrane.
- D. Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings.
- E. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.
- F. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately **1 by 1/8 inch** thick; with anchors.
- G. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.

2.4 COVER BOARD

- A. Fiberglass-Mat Faced Gypsum Roof Board:
 - a. Thickness: 5/8 inch.
 - b. Width: 4 feet.
 - c. Length: 8 feet.
 - d. Weight: 2.55 lb/sq. ft.
 - e. Surfacing: Fiberglass mat with non-asphaltic coating.
 - f. Flexural Strength, Parallel (ASTM C473): 100 lbf, minimum.
 - g. Flute Span (ASTM E661): 8 inches.
 - h. Permeance (ASTM E96): Not more than 32 perms.
 - i. R-Value (ASTM C518): Not less than 0.67.
 - j. Water Absorption (ASTM C1177): Less than 10 percent of weight.

- k. Compressive Strength (Applicable Sections of ASTM C472): 500 - 900 pounds per square inch.
- l. Surface Water Absorption (ASTM C473): Not more than 2 grams.
- 2. Acceptable Products:
 - a. DensDeck Prime, Georgia-Pacific Gypsum or equal
- B. Fasteners:
 - 1. At Existing Metal Decking: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening substrate panel to roof deck. Fasteners shall be designed to meet all uplift loading conditions. At a minimum, provide (24) fasteners per 4'x8' dimension for the entire roof section and (32) fasteners per 4'x8' dimension 4'-0" from the perimeter of the roof.
 - 2. At Existing Concrete Decking: Install with Low rise foam adhesive
Products: Basis of Design: Carlisle Syntec, Inc-Fast Dual Tank Adhesive
 - a. Approved equals by Firestone or John's Manville.
 - 3. Install adhesive and insulation in strict compliance with manufacturer's instructions to meet wind load requirements.

2.5 ACCESSORIES

- A. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric mat, water permeable and resistant to ultraviolet degradation, type and weight as recommended by roofing system manufacturer for application. Location as shown on the drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that surface plane flatness and fastening of steel roof deck comply with requirements in Division 05 Section "Steel Decking."
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Install acoustical roof deck rib insulation strips, specified in Division 05 Section "Steel Decking," according to acoustical roof deck manufacturer's written instructions.

3.3 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system component's so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is **1-1/2 inches 2 inches** or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of **6 inches** in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding **1/4 inch** with insulation.
 - 1. Cut and fit insulation within **1/4 inch** of nailers, projections, and penetrations.
- G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten to resist uplift pressure at corners, perimeter, and field of roof. Fasteners shall be installed at a spacing not greater than one fastener per 4 square feet area of roof in the field of the roof and not greater than one fastener per 2 square feet area of roof in the perimeter of the roof.
- H. Coordinate with Part 1 "Performance Requirements" Article. Fastener numbers will increase at corners and perimeter over number required for field of roof.

3.4 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax 30 minutes before installing.
 - 1. Install sheet according to ASTM D 5036.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply solvent-based bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. Adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- G. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - 3. Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.
- H. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- I. Install roofing membrane and auxiliary materials to tie in to existing roofing.

3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.

- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.
- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.8 ROOFING INSTALLER'S WARRANTY

- A. Provide the following Roof Installers Warranty
- B. Warranty:

WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

Owner: <Insert name of Owner.>
Address: <Insert address.>
Building Name/Type: <Insert information.>
Address: <Insert address.>
Area of Work: <Insert information.>
Acceptance Date: <Insert date.>
Warranty Period: <Insert time.>
Expiration Date: <Insert date.>

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,

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.

This Warranty is made subject to the following terms and conditions:

Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

- lightning;
- peak gust wind speed exceeding 139 mph;
- fire;

Roofing Installer is responsible for damage to work covered by this Warranty.

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.

This Warranty is not recognized to be the only warranty of Roofing Installer on said work (Other warranties are listed in the specifications) 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.

Any litigation shall take place in Onslow County, NC.

This warranty shall not exclude wind damage from hurricanes, damage from hurricanes specifically caused by windborne debris is excluded. Warranty shall include parapets and all roof edge conditions.

IN WITNESS THEREOF, this instrument has been duly executed this <Insert day> day of <Insert month>, <Insert year>.

Authorized Signature: <Insert signature.>
Name: <Insert name.>
Title: <Insert title.>