

PROJECT MANUAL & SPECIFICATIONS

**ROANOKE CITY PUBLIC SCHOOLS
JOHN P. FISHWICK MIDDLE SCHOOL ROOF REPLACEMENT**

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December 29, 2022

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SECTION 01010 - SUMMARY OF WORK

PART 1) - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Invitation to Bid as issued by Roanoke City Public Schools.

1.2 PROJECT IDENTIFICATION: John P. Fishwick Middle School Roof Replacement

OWNER: Roanoke City Public Schools
40 Douglass Avenue, N.W.
Roanoke, VA 24012

- A. Contract Documents, dated December 29, 2022 were prepared for the Project by:

Interactive Design Group
301 6th Street, SW
Roanoke, VA 24016
Tel: 540/342-7534
Fax: 540/342-7536
Stephen Feather, Project Manager
E-Mail: stephen.feather@idgarchitecture.com

- C. The Owner's Representative is:
Mr. Jeffrey S. Shawver, Chief of Physical Plants
Tel: 540/853-6306
Email: jshawver@rcps.info
- D. The Work consists of the replacement of certain roofs at John P. Fishwick Middle School. Bidders may submit individual bids on individual Base Bid scopes of work and/or submit multiple lump sum bids on multiple Base Bid scopes of work.
- E. Roanoke City Public Schools intends to award a Contracts to the responsible bidder submitting the lowest lump-sum proposals, but expressly reserves the right to reject any or all bids, to waive any informality or irregularity in the bids received, and to award a bid or bids deemed to be in the best interests of Roanoke City Public Schools.

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1.3 BID PACKAGES

A. Base Bid TPO-20:

1. Install a new fully adhered TPO roof system as described in Section 07535 of the specifications and as described elsewhere on the construction documents.
2. Provide a 20-year Warranty as described in Section 07535.

B. Base Bid TPO-30:

1. Install a new fully adhered TPO roof system as described in Section 07535 of the specifications and as described elsewhere on the construction documents.
2. Provide a 30-year Warranty as described in Section 07535.

C. Add Alternate No. 1: SKYLIGHT REGLAZING:

1. The Work includes the removal of existing glazing and installation of new polycarbonate glazing, as described in Section 08450 of the specifications and as described elsewhere on the construction documents.

D. Add Alternate No. 2: SKYLIGHT REMOVAL:

1. The Work includes the removal of existing glazing and installation of new steel roof deck, adhered TPO roof and interior painting, and related work as described elsewhere on the construction documents.

1.4 CONTRACTOR USE OF PREMISES

- A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Utilities: Do not interrupt utility service to the site or buildings without prior approval by Owner.

1.5 OCCUPANCY REQUIREMENTS

- A. The Owner will maintain normal operations at each School throughout the replacement of that school's roof. Contractors shall confine their operations and parking to designated areas of the school site.

- B. Deliveries of Materials: Coordinate deliveries of materials and storage and staging on each site with the Owner prior to commencement of the work. Material deliveries should be limited to periods when busses are not moving on the site.

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1.6 OWNER-FURNISHED PRODUCTS

- A. Pre-purchased and pre-ordered items: None.
- B. Owner purchased, Owner installed items: None.
- C. Owner-purchased, Contractor installed items: None.
- D. Contractor Purchased, Owner Installed items: None.

1.7 MISCELLANEOUS PROVISIONS

- A. Permits: Apply for, obtain and pay for permits required to perform the work. Display permits in appropriate location.
- B. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Schedule and coordinate inspections by various Building Inspectors.
- C. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.
- D. Existing Conditions: Visit site prior to submission of bid to verify existing conditions.
- E. Definitions for terms used in specifications:
 - 1. Provide: Furnish and install, complete with all necessary accessories, ready for intended use. Pay for all related costs.
 - 2. Approved: Acceptance of item submitted for approval. Not a limitation or release for compliance with the Contract Documents or regulatory requirements. Refer to limitations of “Approved” in General and Supplementary Conditions.
 - 3. Match Existing: Match existing as Acceptable to the Owner.
- F. Intent: Drawings and specifications are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the project shall be included.
- G. Writing Style: Specifications are written in the imperative mode. Except where specifically intended otherwise, the subject of all imperative statements is the Contractor. For example, “Provide tile” means “Contractor shall provide tile.”

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- H. Lead-Containing Paint Abatement: The Contractor shall take any and all precautions advisable or required by law to safeguard his employees and the public from the hazards of exposure to lead-containing paint and other hazardous materials. The Owner has not conducted any tests related to possible lead content in the existing paint.

PART 2) - PRODUCTS (Not Applicable)

PART 3) - EXECUTION (Not Applicable)

END OF SECTION 01010

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SECTION 01030 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS

- A. Definition: An Add Alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

- 1. The cost for each Add Alternate is the net increase to the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.

- 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

- C. Execute accepted alternates under the same conditions as other Work of this Contract.

- D. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate.

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PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. ADD ALTERNATE NO. 1 - SKYLIGHT REGLAZING: The Work includes the removal of existing glazing and installation of new polycarbonate glazing, as described in Section 08450 of the specifications and as described elsewhere on the construction documents.
- B. ADD ALTERNATE NO. 2 - SKYLIGHT REMOVAL: The Work includes the removal of existing glazing and installation of new steel roof deck, adhered 80-mil TPO roof and interior painting, and related work as described elsewhere on the construction documents.

END OF SECTION 01030

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SECTION 02070 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Demolition and removal of existing roof materials as shown on the drawings.

1.2 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

B. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Owner, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.4 PROJECT CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Asbestos: Asbestos abatement shall be done in coordination with the demolition work. Areas of known asbestos-containing materials are shown in the Asbestos Survey. If any additional materials suspected of containing asbestos are encountered, do not disturb the materials and immediately notify the Owner.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected when moving rooftop gas lines or electrical conduits.

B. Perform surveys as the Work progresses to detect hazards resulting from demolition activities.

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3.2 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.

1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner if shutdown of service is required during execution of the work.

B. Do not start demolition work until utility disconnecting and sealing have been completed and verified.

3.3 PREPARATION

A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area. Protect existing site improvements, appurtenances, and landscaping to remain.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.5 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:

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1. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 02070

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SECTION 05310 - STEEL DECKING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, Shop Drawings and product certificates.
- B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Prime-Painted Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), G60 zinc coating.

2.2 DECKING

- A. Comply with SDI Publication No. 31.
- B. Cellular Acoustical Roof Deck: Fabricate panels from prime-painted, galvanized steel sheet, without to comply with the following:
 - 1. Manufacturers: One of the following:
 - a. Cordeck.
 - b. DACS, Inc.
 - c. Verco Deck
 - d. Vulcraft.
 - 2. Deck Profile: "N" Cellular roof deck
 - 3. Profile Depth: 3"
 - 4. Design Uncoated-Steel Thickness: 20 gauge.
 - 5. Continuous perforated face, factory primed.
 - 6. Provide factory-installed fiberglass acoustical inserts with stand off clips to elevate the glass fiber off of the deck surface.
- C. Accessories: Manufacturer's recommended roof deck accessory materials. Sheet metal accessories of same material and finish as deck.

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PART 3 - EXECUTION

3.1 DECK INSTALLATION

- A. Place, adjust, align, and bear deck panels on structure. Do not stretch or contract side-lap interlocks.
- B. Place deck panels flat and square and weld or mechanically fasten to structure without warp or deflection.
- C. Cut, reinforce, and fit deck panels and accessories around openings and projections.
- D. Roof Deck Accessories: Install sump pans, sump plates, ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels. Weld to substrate.
- E. Prepare and repair damaged galvanized coatings on both surfaces with galvanized repair paint according to ASTM A 780.
- F. Wire brush, clean, and paint scarred areas, welds, and rust spots on both surfaces of painted deck panels.

END OF SECTION 05310

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SECTION 06105 – MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood blocking, furring, grounds and nailers.

PART 2 - PRODUCTS

2.1 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWWPA C31 with inorganic boron (SBX).

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:

- a. Ammoniacal, or amine, copper quat (ACQ).
- b. Copper bis (dimethyldithiocarbamate) (CDDC).
- c. Copper azole, Type A (CBA-A).
- d. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood curbs, blocking and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2.2 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

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PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber.

D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

E. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

3.2 WOOD BLOCKING INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION 06105

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SECTION 07535 - SINGLE-PLY MEMBRANE ROOFING – **BASE BIDS TPO-20 and TPO-30**

PART 1 - GENERAL

1.1 SUMMARY

A. The project consists of installing Adhered TPO (Thermoplastic Polyolefin) Roofing Systems as outlined below:

1. **Base Bid TPO-20:** Remove areas of existing roof and insulation down to the roof deck or prepare the existing EPDM membrane to remain and receive a new TPO roof over it, as shown on the Demolition Plans. Install new insulation and a 60-Mil TPO Adhered Roofing System as specified and as shown on plans. Provide 20-year watertight warranty.

2. **Base Bid TPO-30:** Remove areas of existing roof and insulation down to the roof deck or prepare the existing EPDM membrane to remain and receive a new TPO roof over it, as shown on the Demolition Plans. Install new insulation and an 80-Mil TPO Adhered Roofing System as specified and as shown on plans. Provide 30-year watertight warranty.

1.2 EXTENT OF WORK

A. Provide all labor, material, tools, equipment, and supervision necessary to complete the installation of the reinforced TPO (Thermoplastic Polyolefin) Adhered Roofing System including flashings and insulation as specified herein and as indicated on the drawings in accordance with the manufacturer's most current specifications and details.

B. The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.

C. The roofing contractor shall confirm all given information and advise the building owner, prior to bid, of any conflicts that will affect their cost proposal.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.

C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials.

D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

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1.4 WORK SEQUENCE

A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

B. Do not disrupt activities in occupied spaces.

1.5 USE OF THE PREMISES

A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:

1. Areas permitted for personnel parking.
2. Access to the site.
3. Areas permitted for storage of materials and debris.
4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.
5. Roofer's intended daily work hours

1.6 EXISTING CONDITIONS

A. If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

1.7 TEMPORARY FACILITIES AND CONTROLS

A. Temporary Utilities:

1. Water and power for construction purposes are available at the site and will be made available to the roofing contractor.
2. Provide all hoses, valves and connections for water from a source designated by the owner when made available.
3. When available, electrical power should be extended as required from the source. Provide all trailers, connections and fused disconnects.

B. Temporary, Sanitary Facilities: Sanitary facilities will not be available at the job site. The roofing contractor shall be responsible for the provision and maintenance of portable toilets or their equal.

C. Building Site:

1. The roofing contractor shall use reasonable care and responsibility to protect the building and site against damages. The contractor shall be responsible for the correction of any damage incurred to lawns, parking areas, fences, buildings, etc. as a result of the performance of the contract.
2. The roofing contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or the functions of the building.

D. Security: Obey the owner's requirements for personnel identification, inspection and other security measures.

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1.8 JOB SITE PROTECTION

A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.

B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing buildings. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove as necessary, temporary enclosures to prevent dust or debris in the construction area(s) from entering the buildings.

C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Take precautions to prevent drains from clogging during the roofing application. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.

F. Store moisture susceptible materials above ground and protect with waterproof coverings.

G. Remove all traces of piled bulk material and return the job site to its original condition upon completion of the work.

1.9 SAFETY

A. The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. Safety shall be the responsibility of the roofing contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

1.10 SUBMITTALS

A. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.

B. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system.

C. Shop Drawings: Include plans, sections, and details of the following:

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.

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D. Samples for Verification: Of the following products:

1. 12-by-12-inch square of sheet roofing, including lap seam.
2. 12-by-12-inch square of roof insulation.

E. Maintenance Data: For roofing system.

F. Warranty: Sample copy of standard roofing system manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty.

1.11 PROJECT CONDITIONS

A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

1.12 WARRANTY

A. **Base Bid TPO-20:** Provide manufacturer's 20-year Total System Warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 70 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.

B. **Base Bid TPO-30:** Provide manufacturer's 30-year "Golden Seal" Warranty covering entire roof system "Edge to Edge" including membrane, flashing, insulation, adhesives, sheet metal and other components for both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 70 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.

1. Warranty shall also cover leaks caused by accidental punctures: 16 man-hours per year.

C. Pro-rated System Warranties shall not be acceptable.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: This specification is based on the "Sure-Weld" TPO System by Carlisle Syn-Tec, Inc. Subject to compliance with requirements, manufacturers offering systems that may be incorporated into the Work include, but are not limited to, the following:

1. TPO Sheet:
 - a. Firestone Building Products Company Ultra Ply TPO system
 - b. Tremco TremPly Max system
 - c. Johns Manville Corp JM TPO Systems

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2.2 TPO SHEET

A. Roof System TPO-20 Sheet: Flexible sheet formed from a Thermoplastic Polyolefin membrane complying with ASTM D 4637, Type 1, of the following grade, class, thickness, backing, and exposed face color:

1. UL Class: A.
2. Thickness: 60 mils, nominal.
3. Reinforcing: Nonwoven polyester fabric.
4. Exposed Face Color: Gray.
5. Elongation: 250% minimum, per ASTM D-412.
6. Breaking Strength: 250 lbs. Per ASTM D-751 A.
7. Tear Strength: 55 lbs. minimum, per ASTM D-751 B.

B. Roof System TPO-30 Sheet: Uniform, flexible sheet formed from a Thermoplastic Polyolefin membrane complying with ASTM D 4637, Type 1, of the following grade, class, thickness, backing, and exposed face color:

1. UL Class: A.
2. Thickness: 80 mils, nominal.
3. Reinforcing: Nonwoven polyester fabric.
4. Exposed Face Color: Gray.
5. Elongation: 250% minimum, per ASTM D-412.
6. Breaking Strength: 350 lbs. Per ASTM D-751 A.
7. Tear Strength: 55 lbs. minimum, per ASTM D-751 B.

2.3 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with TPO membrane roofing.

B. Sheet Flashing: 60- or 80-mil-thick reinforced TPO membrane, according to application.

C. Bonding Adhesive: Use manufacturer's foam adhesive for the insulation and membrane where shown on drawings or required by manufacturer. Use the manufacturer's standard low-VOC bonding adhesive elsewhere.

D. Splice Adhesive and Cleaner: Single-component butyl splicing adhesive and solvent-based splice cleaner.

E. Splice Primer and Tape: Manufacturer's standard synthetic rubber polymer primer and 3-inch-wide minimum, butyl splice tape with release film.

F. Lap Sealant: Manufacturer's standard single-component sealant.

G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

H. Metal Termination Bars: Manufacturer's standard aluminum bars, approximately 1 inch wide, roll formed and pre-punched.

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I. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions of FM 4470, designed for fastening sheet to substrate, and acceptable to roofing system manufacturer. See drawings for where these fasteners may be used.

J. Miscellaneous Accessories: Provide seam tape, pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, and other accessories recommended by roofing system manufacturer for intended use.

K. Traffic Pads: Protective surfacing for roof traffic shall be roof manufacturer's standard TPO Walkway Pads installed per manufacturer's requirements.

2.4 INSULATION MATERIALS

A. General: Provide preformed roof insulation boards that comply with requirements, selected from manufacturer's standard sizes and of thicknesses indicated.

1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

B. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed without using CFCs as blowing agents to comply with ASTM C 1289, classified as follows:

1. Polyisocyanurate Board Insulation: aged R-value of 5.7 per inch of thickness. Facer shall be coated glass-fiber mat on both major surfaces, equal to Carlisle InsulBase, 20 psi compressive strength insulation as approved by Roof Manufacturer as a component of its warranted fully adhered TPO roof system. Install with approved adhesive or fasteners.

Thickness as shown on drawings. Provide tapered insulation where shown on drawings.

a. Tapered insulation shall provide ¼" : 12" slope on main roof areas and 1/8" : 12" slope on crickets and minor sloping areas. Provide shop drawings of sloping insulation for Architect's review.

2.3 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.

B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.

C. Verify that wood nailers are in place and secured and match thicknesses of insulation required. Replace any rotten or damaged nailers as required to provide adequate anchorage for the new roof system.

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- D. Do not proceed with installation until unsatisfactory conditions have been corrected.
- E. 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.
- F. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of the roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.2 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Install crickets and areas of tapered insulation on areas of roofing to conform to slopes indicated and to Shop Drawings.
- D. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- E. 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. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- F. Attached Insulation: Install each layer of insulation and secure to deck using adhesive or fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type indicated. Use foam adhesive over any areas of concrete roof deck. Screw fasteners may be used elsewhere where rooms below have lay-in ceilings.
 - 1. Fasten insulation according to the insulation and roofing system manufacturers' written instructions to meet specified wind-uplift requirements.

3.3 ADHERED SHEET INSTALLATION

- A. Install TPO sheet over area to receive roofing according to roofing system manufacturer's written instructions. Unroll sheet and allow to relax for a minimum of 30 minutes.
- B. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Apply foam or bonding adhesive to substrate and underside of sheet at rate required by manufacturer and allow to partially dry. Do not apply bonding adhesive to splice area of sheet.
- D. Adhesively fasten sheet securely at terminations and perimeter of roofing.
- E. Apply roofing sheet with side laps shingled with slope of roof deck where possible.

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F. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing sheet in place with clamping ring.

3.4 SEAM INSTALLATION

A. Hot air weld the TPO membrane seams in accordance with the manufacturer's hot air welding procedures.

B. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

3.5 FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of flashing sheet 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 cured or uncured sheet flashing as recommended by manufacturer.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.6 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect. Notify Architect or Owner 48 hours in advance of the date and time of inspection.

3.7 PROTECTING AND CLEANING

A. Install walkways at all locations as identified on the drawings. Hot air weld walkway pads to the membrane in accordance with the manufacturer's specifications.

B. Protect membrane roofing 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 condition in a written report to Architect.

C. Correct deficiencies in or remove roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair sheet flashings to a condition free of damage and deterioration at the time of Substantial Completion and according to warranty requirements.

END OF SECTION 07535

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SECTION 07620 - SHEET METAL FLASHING AND TRIM

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 SUMMARY

- A. This Section includes shop-fabricated sheet metal flashing and trim in the following categories:
 - 1. Exposed trim, gravel stops and copings.
 - 2. Metal flashing and counterflashing.
 - 3. Scuppers, gutters and downspouts.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
- C. Shop Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details.
- D. Samples of sheet metal flashing, trim, and accessory items, for finish selection.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

PART 2 - PRODUCTS

2.1 METALS

- A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:

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1. Factory-Applied Finish: 70% Kynar/Hylar fluoropolymer coating 1.0 mil total dry thickness.
2. Color as selected by Owner from manufacturer's standard colors.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- B. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- C. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- D. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- E. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- F. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
- G. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.

2.3 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- E. Expansion Provisions: Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof

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and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
- B. Gutters with Girth up to 15 Inches: Fabricate from the following material:
 - 1. Aluminum: 20 gauge, 0.0320 inch thick, with factory-applied 70% fluoropolymer coating.
- C. Downspouts: Fabricate from the following material:
 - 1. Aluminum: 20 gauge, 0.0320 inch thick, with factory-applied 70% fluoropolymer coating.
- D. Scuppers: Fabricate from the following material:
 - 1. Aluminum: 20 gauge, 0.0320 inch thick, with factory-applied 70% fluoropolymer coating.
- E. Copings, Exposed Trim, Gravel Stops, and Fasciae: Fabricate from the following material:
 - 1. Aluminum: 16 gauge, 0.050 inch thick, with factory-applied 70% fluoropolymer coating.
- F. Counterflashing: Fabricate from the following material:
 - 1. Aluminum: 18 gauge, 0.040 inch thick, with factory-applied 70% fluoropolymer coating.
- G. Flashing Receivers: Fabricate from the following material:
 - 1. Aluminum: 18 gauge, 0.040 inch, mill finish.

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- H. Downspout standoff support brackets:
 - 1. Aluminum: 16 gauge, 0.050 inch thick, with factory-applied fluoropolymer coating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- D. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
- E. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- F. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.

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2. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

- G. Counterflashings: Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashing. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of 2 inches and bed with sealant.
- H. Roof-Drainage System: Install drainage items fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA's Manual or the item manufacturer, to drain roof in the most efficient manner. Coordinate roof-drain flashing installation with roof-drainage system installation. Coordinate flashing and sheet metal items for steep-sloped roofs with roofing installation.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 07620

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SECTION 07720 - ROOF HATCHES AND SAFETY RAILINGS

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 SUMMARY

- A. This Section includes the following:
 - 1. Addition of a Non-penetrating Guard Rail system to an existing roof hatch.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified. Submit manufacturer's detailed technical product data, installation instructions and recommendations, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

1.4 QUALITY ASSURANCE

- A. Standards: Comply with the following:
 - 1. SMACNA "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap-flashing to coordinate with type of roofing indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

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1. Roof Hatches Guard Railing:
 - a. Babcock-Davis Hatchways, Inc.
 - b. Bilco Co.
 - c. Milcor, Inc.
 - d. O'Keeffe's, Inc.

2.2 MATERIALS, GENERAL

- A. Wood Nailers: Softwood lumber, pressure treated with water-borne preservatives for above-ground use, complying with AWWA C2; not less than 1-1/2 inch thick.
- B. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by manufacturer. Match finish of exposed fasteners with finish of material being fastened.

2.3 ROOF SAFETY RAILING SYSTEMS

- A. Roof safety railing system shall be equal to Bil-Guard 2.0 Roof Edge Fall Protection System by Bilco or equal. Railing system shall be constructed of Schedule 40 galvanized pipe. Provide railing system designed to be mounted to the roof hatch curb. Verify dimensions of existing curb. Provide counterweights and all other components and accessories for a complete and full installation.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. General: Install safety rails in accordance with manufacturer's recommendations. Coordinate railing installation with installation of new roof to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight. Anchor railing securely to supporting structural substrates, adequate to withstand lateral and thermal stresses, as well as inward and outward loading pressures.
- B. Isolation: Where metal surfaces of units are to be installed in contact with incompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation.
- C. Operation: Test railing for ease of operation. Clean and lubricate joints and hardware. Adjust for proper operation.

END OF SECTION 07720

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SECTION 07920 – JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:

1. Roofing and sheet metal joints requiring sealant.

1.2 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

1.3 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with roofing materials.

B. Non-Sag Polyurethane Sealant:

1. Products: One of the following or an equal product approved by the roofing manufacturer:
 - a. Pecora Dynatrol 1 one part polyurethane.
 - b. Master Builders NP-1 one part polyurethane.
 - c. Tremco Dymonic one part polyurethane.

2. Typical applications: Exterior joints at sheet metal flashing and trim.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

3.3 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.4 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07920

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SECTION 08450 – SKYLIGHT REPAIR – **ADD ALTERNATE NO. 1**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes removal of the existing glazing panels on the existing aluminum-framed skylight and installation of new translucent polycarbonate panels.
- B. Work included in this section shall be bid under **ADD ALTERNATE NO. 1 – SKYLIGHT REGLAZING**

1.2 PREINSTALLATION MEETINGS

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

1.3 SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum components of panel assemblies.
- B. Shop Drawings: For panel assemblies.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include details of provisions for assembly expansion and contraction and for draining moisture within the assembly to the exterior.
- C. Samples: In manufacturer's standard size.
 - 1. For each type and color of structured-polycarbonate panel.
- D. Sample Warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For panel assemblies to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall be an authorized company who is trained and approved by manufacturer.

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1.6 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace translucent polycarbonate panels that exhibit defects in materials or workmanship within specified warranty period.
 - 1. Defects include, but are not limited to, the following:
 - a. Delamination.
 - b. Color changes exceeding requirements.
 - c. Losses in light transmission beyond 6 percent from original when measured after 10 years according to ASTM D 1003.
 - 2. Warranty Period: 10 years from date of Substantial Completion.
 - 3. Warranty Period for Hail Damage: Five years from date of Substantial Completion for hail stone penetration exceeding requirements.
- B. Installer's Warranty: Installer agrees to repair or replace components of panel assemblies that fail in installation workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, installation defects and water leakage.
 - 2. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- 1. Overhead Panel Assemblies: Limited to 1/60 of clear span for each assembly component of aluminum framing and panel joint according to the IBC, Table 1604.3, footnote h.
- B. Structural-Test Performance: Panel assemblies tested according to ASTM E 330, as follows:
 - 1. When tested at positive and negative wind-load design pressures, assemblies do not show evidence of deflection exceeding specified deflection limits.
 - 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not show evidence of material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
 - 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- C. Windborne-Debris-Impact-Resistance Performance: Panel assemblies that pass missile-impact and cyclic-pressure tests when tested according to ASTM E 1886 and the testing information in ASTM E 1996 for the local Wind Zone.
 - 1. Large-Missile Test: For glazed openings located within 30 feet of grade.
 - 2. Small-Missile Test: For glazed openings located more than 30 feet above grade.

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- D. Hail-Stone Impact Resistance: Panel assemblies that resist penetration by hail stone smaller than 1-3/16 inches in diameter, impacting panel surface at a final velocity up to 44 fps per ASTM E 822.
- E. Panel Clip Performance: Corrosion-resistant clips tested to meet a minimum 90-lb/sq. ft. wind uplift when tested according to ASTM E 330.
- F. Panel End Seals: Continuous factory-applied, self-adhered micro-filter tape over open panel cells and factory heat-seal-crimped open panel cells.
- G. Panel Performance:
 - 1. Smoke-Developed Index: 450 or less according to ASTM E 84, or 75 or less according to ASTM D 2843.
 - 2. Flame Spread: 25 or less when tested according to ASTM E 84.
 - 3. Combustibility Classification: Class CC1 based on testing according to ASTM D 635.
 - 4. Interior Finish Classification: Class A based on testing according to ASTM E 84.
 - 5. Visible Light Transmittance (VT) Loss: 6 percent maximum over 10 years, measured according to ASTM D 1003.
 - 6. Thermal Aging: When exposed to 300 deg F for 25 minutes, interior and exterior panels tested according to ASTM D 2244.
 - a. Color Retention: 0.75 (Hunter) units ΔE maximum fade.
 - b. Color Darkening: 0.3 (Hunter) units ΔL maximum.
 - c. Cracking or Cracking: None when exposed to 300 deg F for 25 minutes.
 - d. Delamination: None when exposed to 300 deg F and 0 deg F for 25 minutes.
 - 7. Impact Resistance: No failure at an impact of 500 lbf when tested according to ASTM E 695.
 - 8. Concentrated Loading: No damage while applying a load of 600 lbf over 1 sq. ft. when tested according to 29 CFR 1910.23(e)(8); and no damage while applying a load of 400 lbf over 3 inches in diameter according to ASTM E 661.
- H. Water Penetration under Static Pressure: Provide panel assemblies that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- I. Thermal Movements: Allow for thermal movements from ambient- and surface-temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- J. Energy Performance: Provide panel assemblies with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below[and certified and labeled according to NFRC].
 - 1. Thermal Transmittance (U-Factor): Fixed panel and mill finish aluminum framing whole assemblies shall have U-factor of not more than 0.28 Btu/sq. ft. x h x deg F vertical

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application and 0.31 Btu/sq. ft. x h x deg F sloped application as determined according to NFRC 100.

2. Visible Light Transmittance (VT): **0.31** or greater according to NFRC 202; or 0.50 or greater according to ASTM E 972, ASTM E 1084.
3. Air Infiltration: Maximum air leakage through fixed glazing and skylight framing assemblies of 0.20 cfm/sq. ft. of fixed wall area as determined according to ASTM E 283 at a minimum static-air-pressure differential of 1.57 lbf/sq. ft.

2.2 TRANSLUCENT POLYCARBONATE-PANEL ASSEMBLIES

- A. Translucent Polycarbonate-Panel Assemblies: Translucent assemblies that are supported by aluminum framing and glazed with translucent polycarbonate panels.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide CPI Daylighting, Inc.; QuadWall or a comparable product by one of the following:
 - a. Skylights over Texas.
 - b. Super Sky Products Inc.

TRANSLUCENT POLYCARBONATE ROOF PANELS AND SKYLIGHTS

- B. Translucent, Multiwall Cellular Polycarbonate Panel Thermally-Broken Assembly: Consisting of two independent, multiwall cellular cross-section, polycarbonate glazing panels, providing air-insulated spaces and coextruded UV protection, integrated into a panel assembly with concealed metal or polycarbonate connectors consisting of a one-piece "H" batten concept. Panelized assembly shall be incorporated into a complete aluminum framing system. Design panels for exterior panel replacement, independent of interior single panel and without exposing the interior, or compromising weather-tightness, or interfering with the normal working functions of the building.
- C. Panel Thickness: Overall minimum 2.75 inches.
- D. UV Resistance: Coextruded on weather-exposed surfaces during glazing panel manufacture.
- E. Panel Assembly Color: As selected by Architect from manufacturer's full range.
- F. Roof-Covering Classification: [Class A] [Class B] [Class C] according to ASTM E 108 or UL 790.
- G. Panel Performance:
 1. Color Retention: 3.0 (Hunter) units ΔE , maximum fade as measured according to ASTM D 2244 when tested on minimum of two white color samples after panels have weathered outdoors in Arizona with panels exposed to a minimum 36.78 Langleys.
 2. Haze Factor: Greater than 90 percent when tested according to ASTM D 1003.

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2.3 ALUMINUM FRAMING SYSTEMS

- A. Components: Reuse existing aluminum structural frame, modifying it as required to accept the new glazing.
- B. Brackets and Reinforcements: Add, repair or replace as required to provide a fully functional skylight system.
- C. Fasteners and Accessories: Provide manufacturer's standard, corrosion-resistant, nonstaining, and nonbleeding fasteners and accessories; compatible with adjacent materials as required to provide a fully functional skylight system.
- D. Concealed and Exposed Flashing and Closures: Add, repair or replace as required to provide a fully functional skylight system.
- E. Gaskets: Manufacturer's standard gasket system with low-friction surface treatment designed specifically for retaining translucent polycarbonate panels.
- F. Frame-System Sealants: As recommended in writing by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and condition for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written instructions.
 - 1. Do not install damaged components.
 - 2. Rigidly secure nonmovement joints.
 - 3. Seal joints watertight unless otherwise indicated.
- B. Install glazing components plumb and true in alignment with established lines and elevations.
- C. Skylight Assemblies: Install glazing panels with continuous aluminum sill closures with weatherproof expansion joints and locked and sealed corners. Install glazing components to drain water passing through joints and moisture migrating within assembly to exterior.
- D. Erection Tolerances: Install panel assemblies to comply with the following maximum tolerances:
 - 1. Alignment: Limit offset from true alignment to 1/32 inch where surfaces abut in-line, edge-to-edge, at corners.

JOHN P. FISHWICK MIDDLE SCHOOL ROOF REPLACEMENT

2. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet, but no greater than 1/2 inch over total length.

3.3 FIELD QUALITY CONTROL

- A. Water-Spray Test: After completion of new roof installation glazing panel assemblies shall be tested according to AAMA 501.2 and shall not show evidence of water penetration.
- B. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

END OF SECTION 0845

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SECTION 09910 - PAINTING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Summary: Paint all existing gas piping and metal ladders in areas of new roofs. As part of Add Alternate No. 2, paint the interior face of new steel roof / ceiling deck.
- B. Submittals: Product Data and color Samples.
- C. Obtain primers for each coating system from the same manufacturer as the finish coats.

PART 2 - PRODUCTS

2.1 PAINT

- A. The contractor shall supply Benjamin Moore products: Ultra Spec HP Acrylic semi-gloss enamel and Corotech acrylic metal primer for all exterior painting and finishing work. No substitutions.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

3.2 PREPARATION

- A. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
- B. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.

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2. Ferrous Metals: Remove rust and flaking or loose paint with a wire brush or sand paper.
 3. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove loose or flaking paint with a wire brush or sand paper.
- C. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- D. Tinting: Tint primer coats to match the color of the finish coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. Sand lightly between each succeeding enamel or varnish coat.
 5. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- B. Application Procedures: Apply paints and coatings by brush, roller, or other applicators according to manufacturer's written instructions.
- C. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- D. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

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- E. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- F. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 EXTERIOR PAINT APPLICATION SCHEDULE

- A. Zinc-Coated Metal: (Gas piping) As follows:
 - 1. Semigloss, Acrylic Enamel: Two coats over galvanized metal primer.

3.5 INTERIOR PAINT APPLICATION SCHEDULE

- A. Zinc-Coated Metal: (Roof/Ceiling Deck) As follows:
 - 1. Eggshell, Acrylic Enamel: Two coats over factory primer.

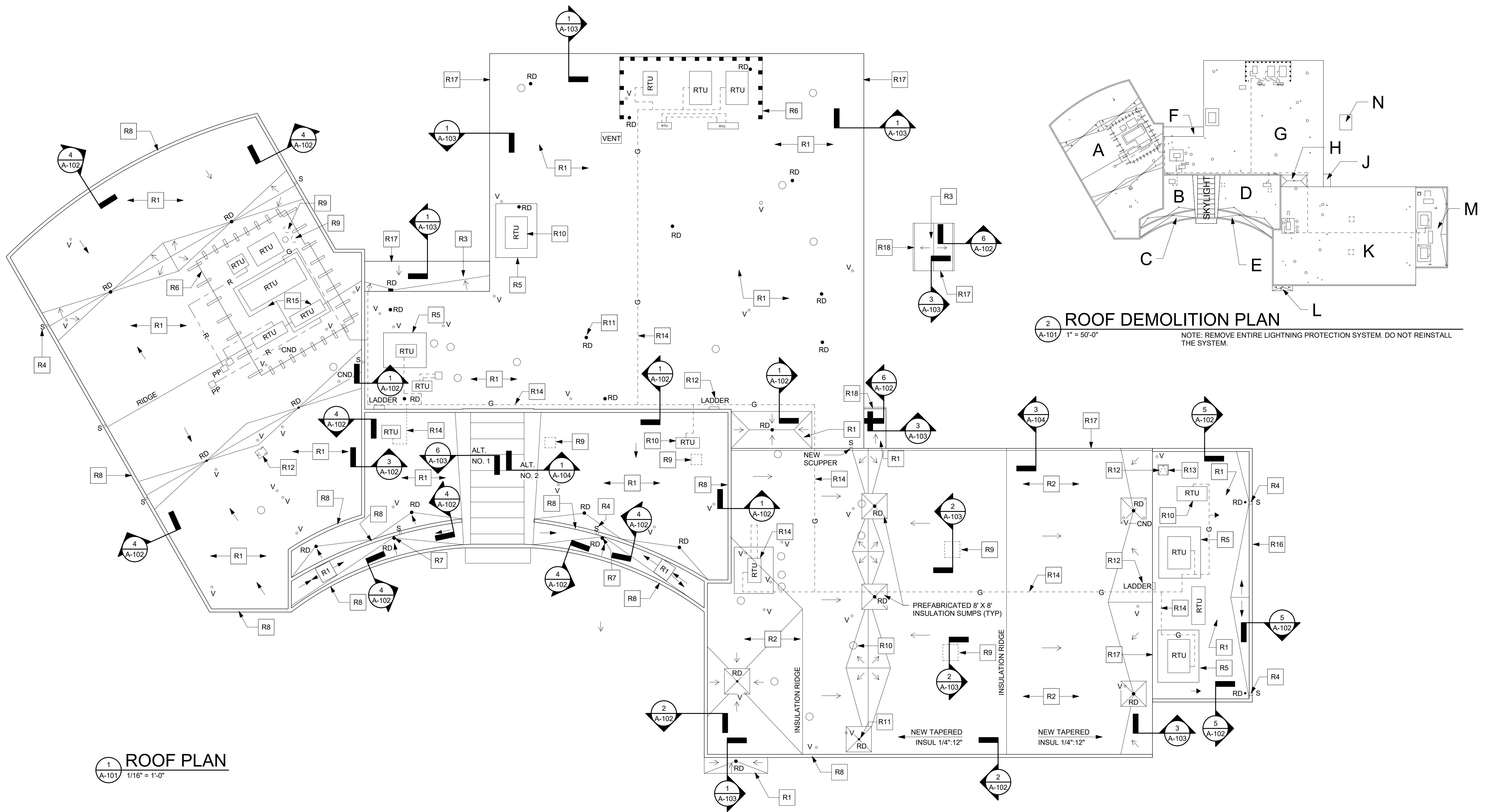
3.6 COLOR SCHEDULE

- A. Use the following colors:
 - 1. Gas piping: OSHA safety yellow
 - 2. Railings and hatches: Black
 - 3. Ceilings: White as selected.

END OF SECTION 09910



INTERACTIVE DESIGN GROUP
301 6TH STREET SW
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1 ROOF PLAN
A-101 1/16" = 1'-0"

2 ROOF DEMOLITION PLAN
A-101 1" = 50'-0"
NOTE: REMOVE ENTIRE LIGHTNING PROTECTION SYSTEM. DO NOT REINSTALL THE SYSTEM.

NO.	REVISIONS	DATE

ROANOKE CITY PUBLIC SCHOOLS

JOHN P. FISHWICK MIDDLE SCHOOL ROOF REPLACEMENT

1004 MONTROSE AVE SE,
ROANOKE, VA 24013

DATE	DECEMBER 29, 2022
DRAWN	HGS
CHECKED	RAR
JOB	22-033

ROOF PLAN

SHEET
A-101

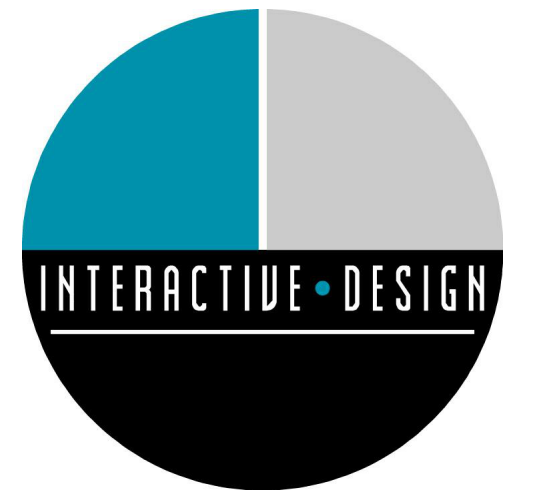
- GENERAL CONSTRUCTION NOTES**
- ALL CONSTRUCTION MATERIAL, WORKMANSHIP, AND DESIGN SHALL CONFORM TO THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE, 2015 EDITION, AND OTHER LOCAL CODES PREVAILING AT TIME OF CONSTRUCTION.
 - THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THESE DOCUMENTS. THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED OF ANY OMISSIONS.
 - ALL REFERENCES TO THE STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION, OR TO CODES OF LOCAL OR STATE AUTHORITIES SHALL MEAN THE LATEST STANDARD, CODE, SPECIFICATION, OR TENTATIVE SPECIFICATIONS ADOPTED AND PUBLISHED AT THE DATE OF TAKING BIDS, UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, AND PROCEDURES OF CONSTRUCTION.
 - THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND NOTIFY THE ARCHITECT, IN WRITING, OF ANY WORK DESCRIBED IN THE CONTRACT DOCUMENTS WHICH CANNOT BE PERFORMED DUE TO EXISTING CONDITIONS.
 - NOTIFY ARCHITECT OF ANY DISCREPANCIES AND EXISTING CONDITIONS NOT COMPLYING WITH DOCUMENTS.
 - EXISTING EXIT DOORS, ACCESS TO EXITS AND FIRE PROTECTION SHALL BE MAINTAINED DURING DEMOLITION. ALL FIRE PROTECTION, ACCESS, AND EXITS SHALL BE OPERATIONAL AFTER COMPLETION OF DEMOLITION WORK.

- ROOF REPAIR NOTES**
- PREPARE EXISTING ADHERED EPDM ROOF AS REQUIRED FOR INSTALLATION OF NEW ADHERED TPO ROOF. INSTALL ONE LAYER OF NEW 1-1/2" FLAT ROOF INSULATION AND ADHERED TPO ROOF OVER EXISTING PREPARED EPDM ROOF AND TAPERED INSULATION TO REMAIN.
 - INSTALL ONE LAYER OF NEW 1-1/2" FLAT ROOF INSULATION, NEW TAPERED INSULATION, AND ADHERED TPO ROOF OVER EXISTING FLAT TECTUM ROOF DECK. INSTALL TAPERED INSULATION AS SHOWN ON PLAN.
 - INSTALL ONE LAYER OF NEW 1-1/2" ROOF INSULATION, TAPERED INSULATION, AND ADHERED TPO ROOF OVER EXISTING FLAT STEEL ROOF DECK.
 - EXISTING SCUPPER OPENINGS TO REMAIN. MODIFY SHEET METAL AND FLASHING AS REQUIRED TO ACCOMMODATE NEW TPO ROOF.
 - EXISTING CURB-MOUNTED EQUIPMENT SCREEN TO REMAIN.
 - EXISTING ROOF-MOUNTED EQUIPMENT SCREEN TO REMAIN. REMOVE EXISTING EPDM FLASHING AS REQUIRED AND INSTALL NEW TPO FLASHING.
 - INSTALL NEW SHEET METAL DOWNSPOUT TO BOTTOM OF EXPOSED ROOF DRAIN. RUN THE DOWNSPOUT DOWN THE REAR OF THE NEAREST BRICK COLUMN AND SPILL ON GRADE.
 - REMOVE THE EPDM MEMBRANE FROM EXISTING CURB OR PARAPET AS REQUIRED AND INSTALL NEW TPO MEMBRANE.
 - REMOVE EXISTING CAPPED OFF ROOF VENT. CLOSE OPENING IN ROOF WITH STEEL DECK. INSTALL INSULATION AS REQUIRED TO MATCH THICKNESS OF ADJACENT INSULATION. INSTALL NEW TPO ROOF MEMBRANE.
 - REMOVE EXISTING EPDM FLASHING AT CURBS OF ROOFTOP UNITS, EXHAUST FANS, INTAKE VENTS, ETC. AND INSTALL NEW TPO FLASHING - TYPICAL AT ALL CURBS.

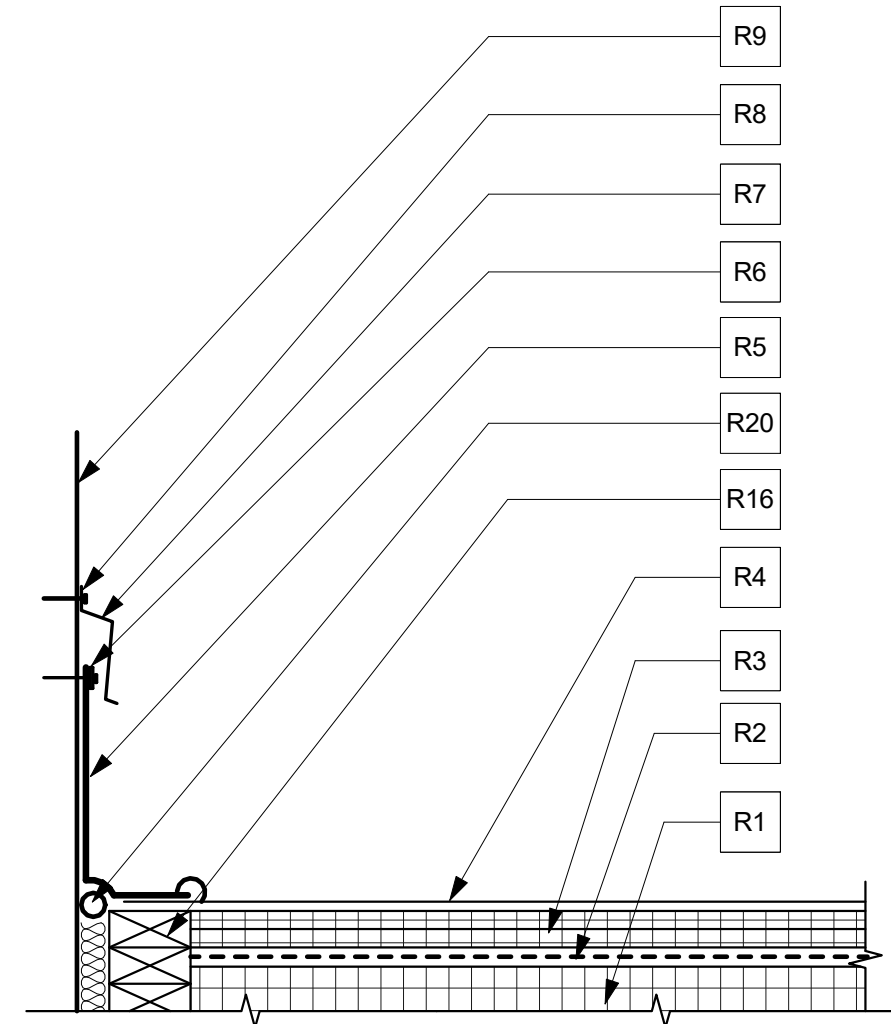
- ROOF DEMOLITION KEY**
- REMOVE EPDM FLASHING AT ALL EXISTING ROOF DRAINS. CREATE NEW SUMPS AS REQUIRED AT EACH DRAIN AND INSTALL NEW TPO MEMBRANE - TYPICAL AT ALL DRAINS.
 - INSTALL WALK PADS PER ROOF MANUFACTURER'S GUIDELINES AT ROOF SCUTTLES AND TOPS & BOTTOMS OF LADDERS. (TYP)
 - INSTALL NEW PROTECTIVE RAILING AT EXISTING ROOF SCUTTLE.
 - EXISTING GAS PIPING TO REMAIN. ADJUST OR REPLACE PIPE SUPPORTS AS REQUIRED TO ACCOMMODATE CHANGES IN INSULATION THICKNESS.
 - EXISTING RAISED CURB AREA TO REMAIN. REMOVE THE EPDM MEMBRANE FROM THE CURB AS REQUIRED AND INSTALL NEW TPO MEMBRANE.
 - REMOVE EXISTING METAL COPING. ADD PRESSURE-TREATED WOOD BLOCKING AS REQUIRED AND INSTALL NEW PREFINISHED METAL COPING.
 - REMOVE EXISTING METAL GRAVEL STOP. ADD PRESSURE-TREATED WOOD BLOCKING AS REQUIRED AND INSTALL NEW PREFINISHED METAL GRAVEL STOP.
 - INSTALL NEW GUTTER AND DOWNSPOUT.

- ROOF PLAN LEGEND**
- RTU - EXISTING ROOFTOP MECHANICAL UNIT
 - EXISTING ROOF HATCH
 - RD - EXISTING ROOF DRAIN
 - CND - EXISTING CONDUIT THROUGH ROOF
 - V - EXISTING VENT THROUGH ROOF
 - R - EXISTING REFRIGERANT LINE
 - G - EXISTING GAS LINE
 - O - ROOF VENT
- GRAPHIC SCALE: 1/8" = 1' - 0"
-

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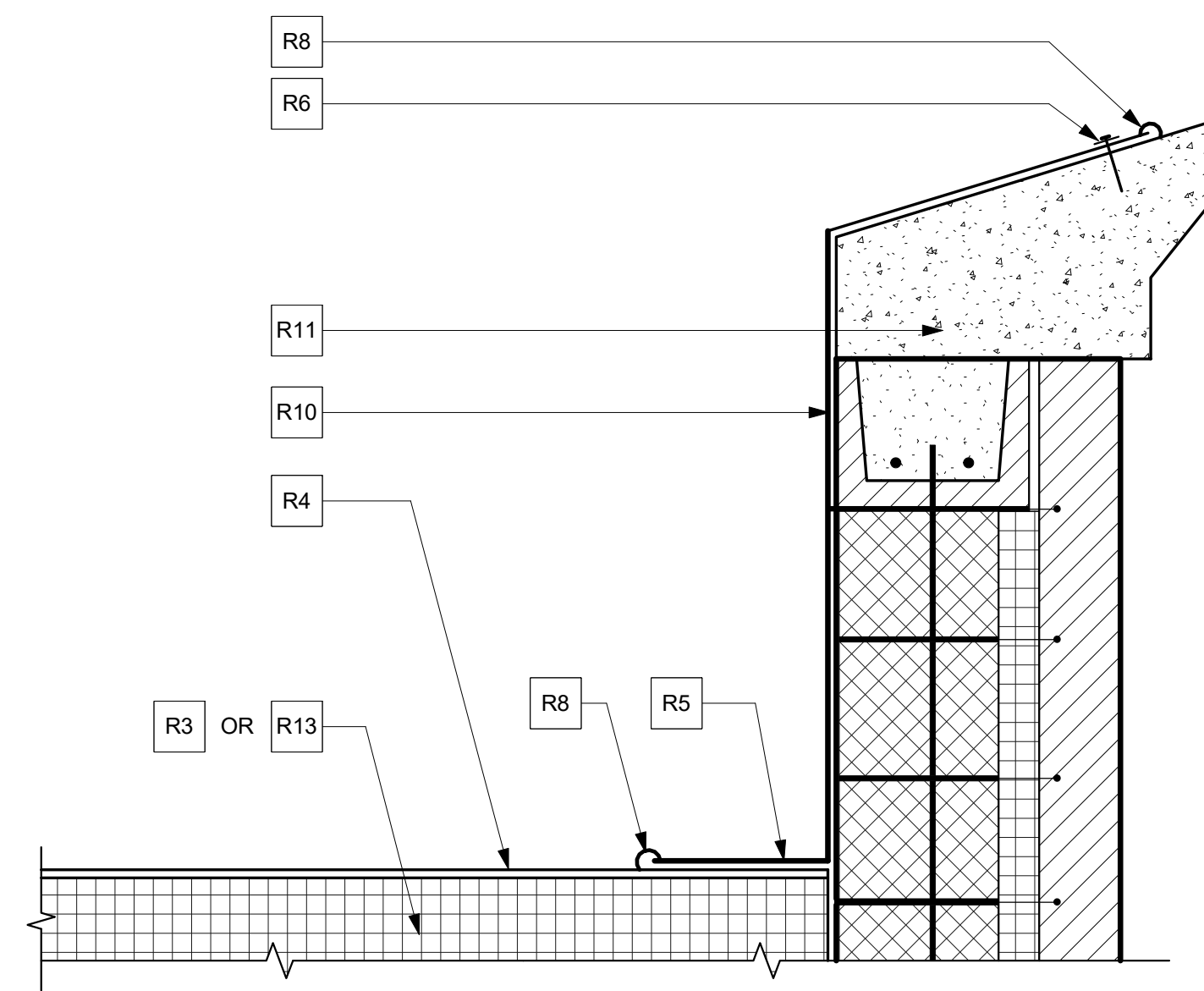


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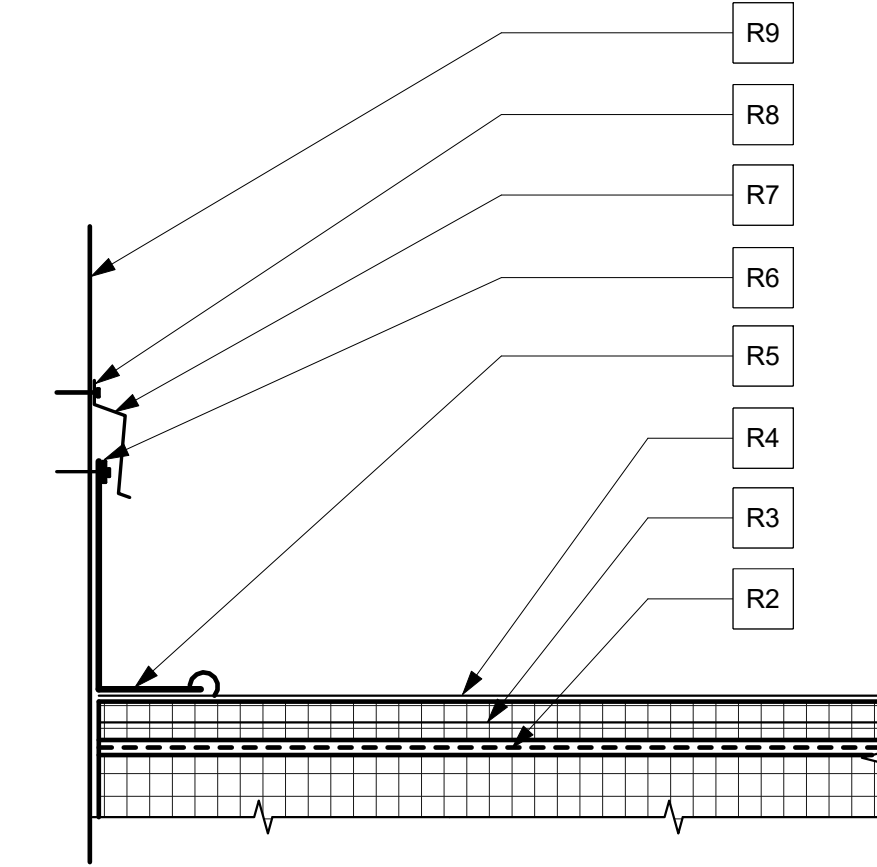
1 ROOF EXPANSION JOINT DETAIL

A-102 1 1/2" = 1'-0"



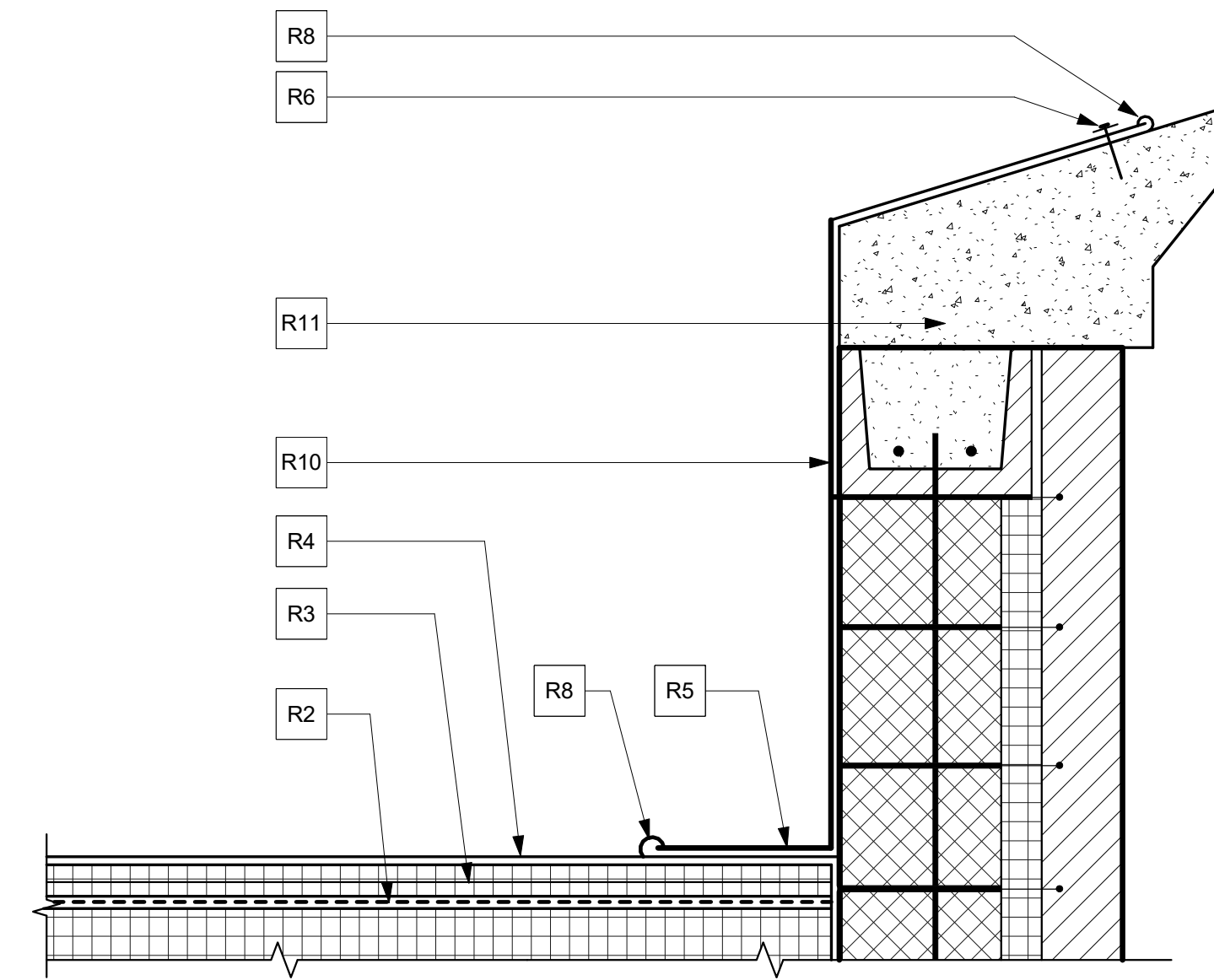
2 ROOF EDGE DETAIL

A-102 1 1/2" = 1'-0"



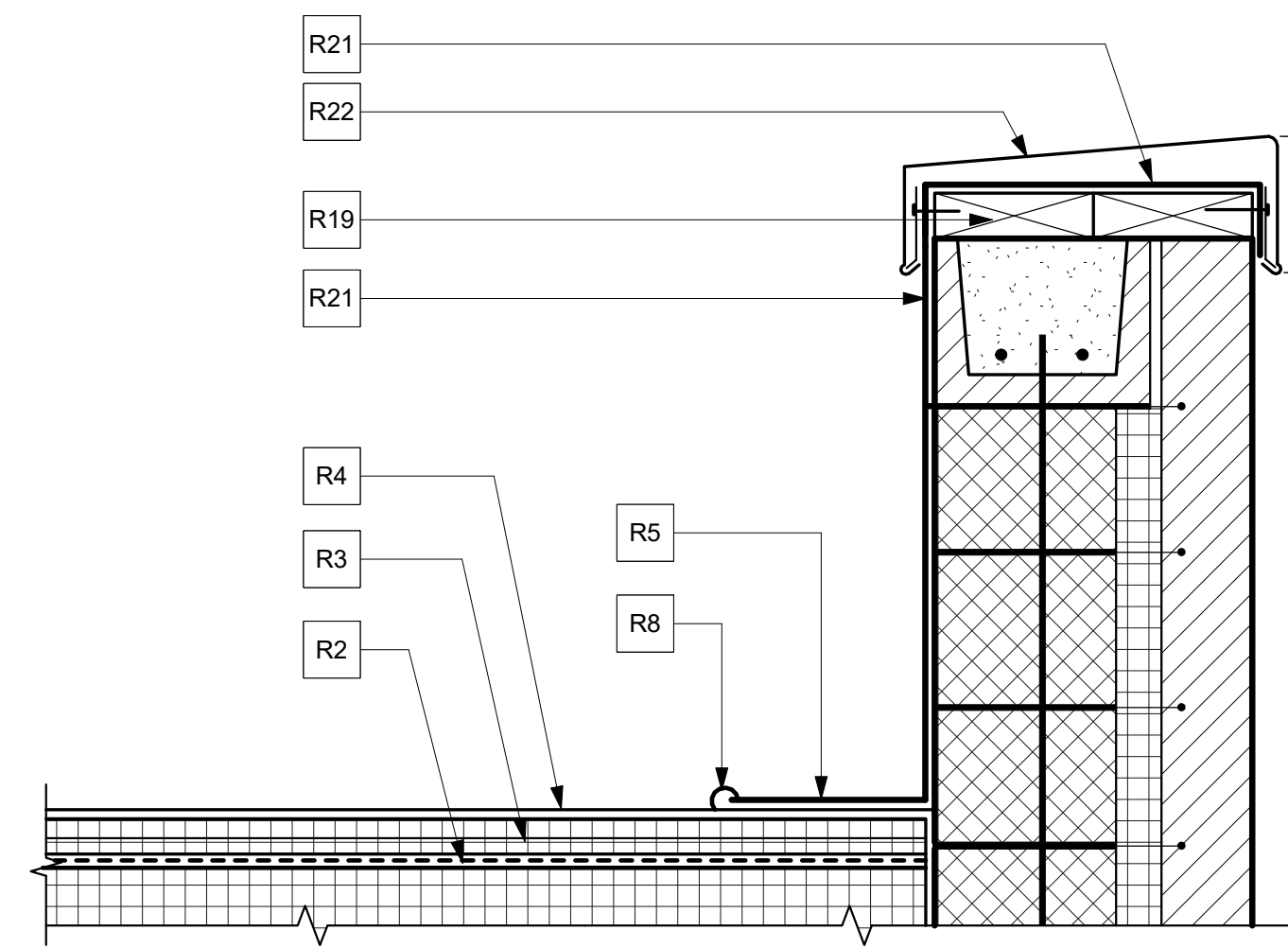
3 ROOF LEVEL CHANGE DETAIL

A-102 1 1/2" = 1'-0"



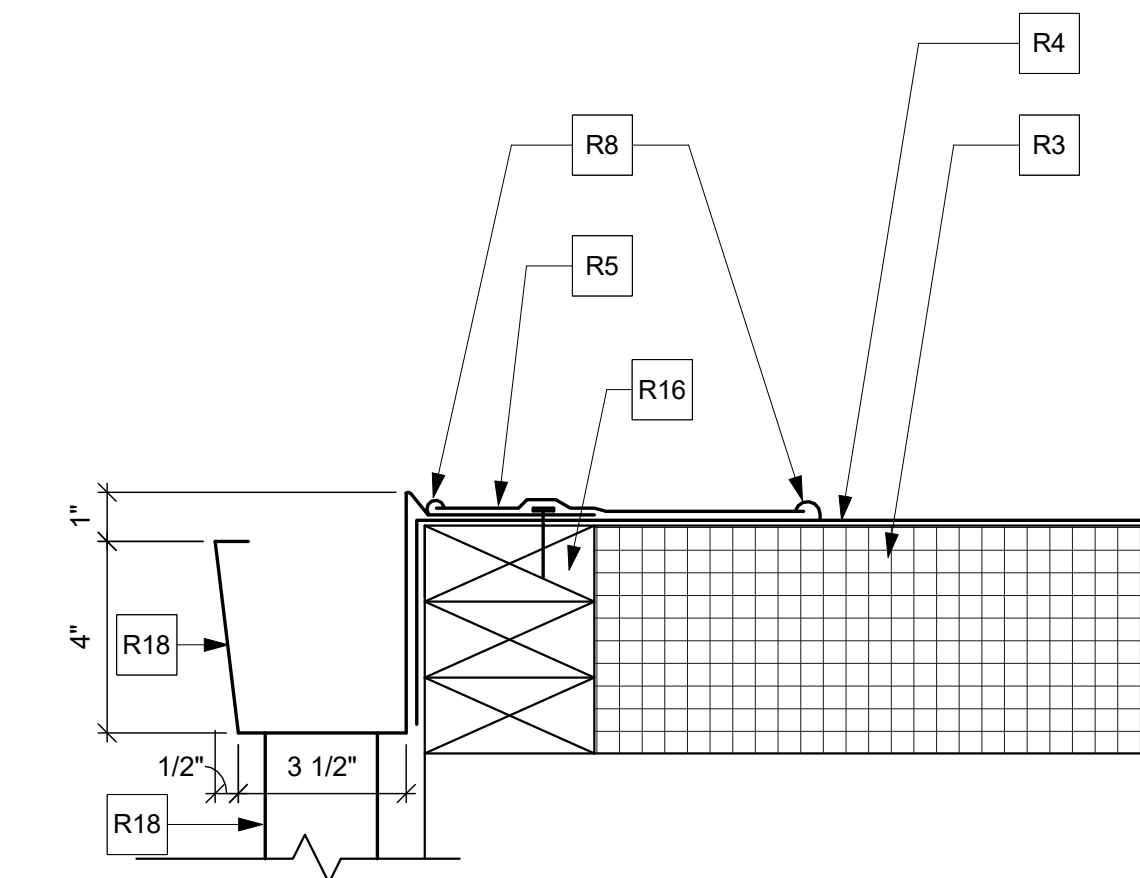
4 ROOF EDGE DETAIL

A-102 1 1/2" = 1'-0"



5 ROOF EDGE DETAIL

A-102 1 1/2" = 1'-0"



6 DETAIL AT ROOF EDGE

A-102 3" = 1'-0"

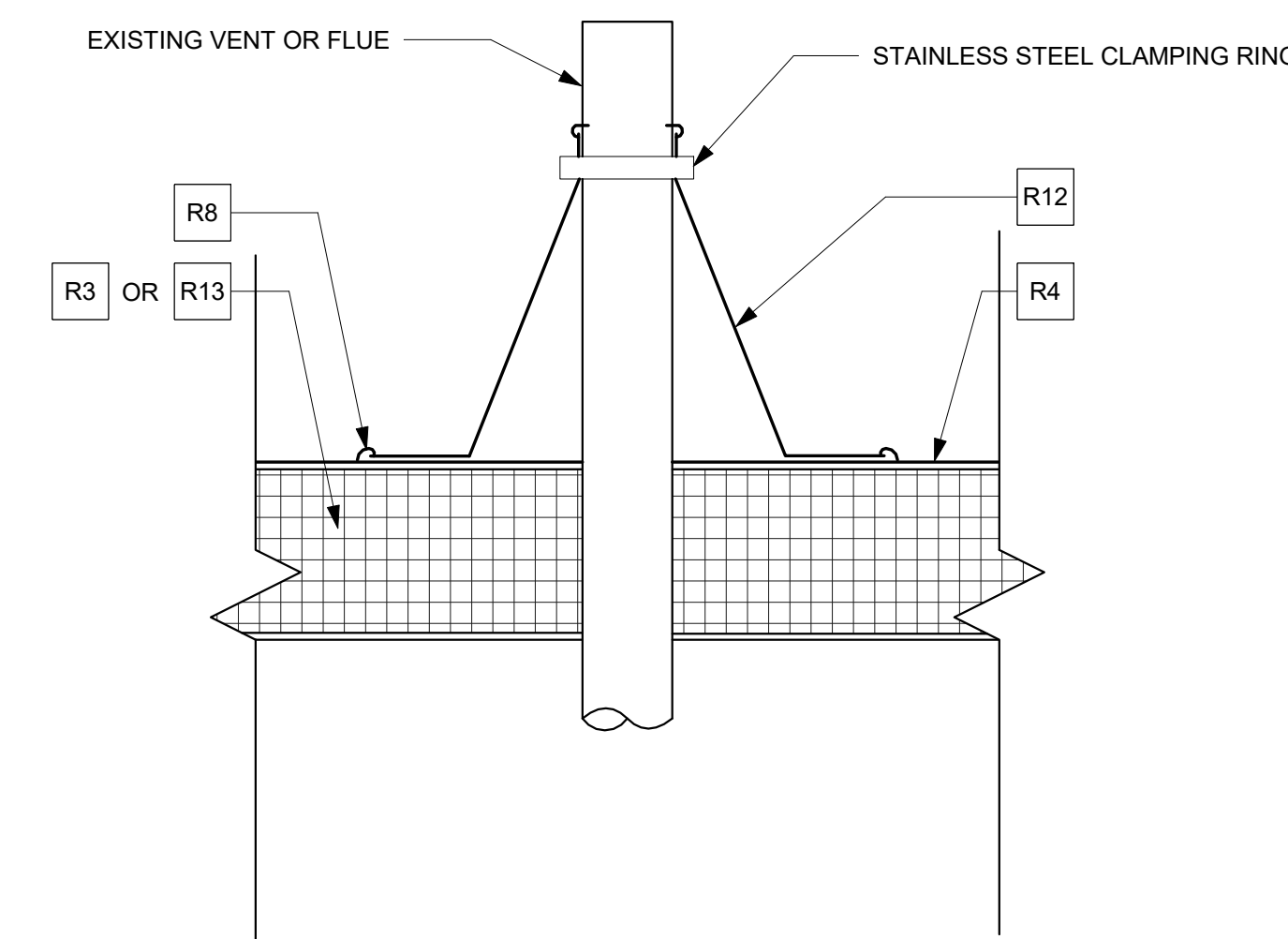
NOTES LEGEND

A - MISCELLANEOUS	G - DOORS / GLAZINGS	P - PLUMBING
C - CIVIL	K - FURNITURE / FINISHES	R - ROOF
E - ELECTRICAL	L - LIFE SAFETY	S - STRUCTURAL
F - FLOORS / CEILINGS	M - MECHANICAL	W - WALLS

ROOF DETAIL NOTES

- R1. EXISTING RIGID INSULATION TO REMAIN.
- R2. PREPARE EXISTING EPDM MEMBRANE (TO REMAIN) AS REQUIRED.
- R3. NEW FLAT ROOF INSULATION.
- R4. NEW ADHERED TPO ROOF MEMBRANE.
- R5. NEW ADHERED TPO MEMBRANE FLASHING.
- R6. TERMINATION BAR AND SEALANT.
- R7. REUSE EXISTING METAL COUNTER FLASHING SECURE TO MASONRY.
- R8. CONTINUOUS SEALANT.
- R9. EXISTING MASONRY WALL.
- R10. EXTEND TPO FLASHING UP PARAPET WALL AND OVER PRECAST CONCRETE COPING.
- R11. EXISTING PRECAST COPING TO REMAIN.

- R12. NEW PREFABRICATED TPO FLASHING BOOT WITH SEALANT AT EDGES.
- R13. NEW TAPERED INSULATION - 1 1/2" MINIMUM THICKNESS.
- R14. NEW PREFINISHED SHEET METAL GUTTER AND DOWNSPOUTS.
- R15. AFTER REMOVING EXISTING METAL ROOF, INSTALL NEW RECOVERY BOARD OVER EXISTING PLYWOOD ROOF DECK.
- R16. NEW PRESSURE TREATED WOOD BLOCKING AS REQUIRED.
- R17. NEW PREFINISHED SHEET METAL GRAVEL SHOP.
- R18. NEW GUTTER AND DOWNSPOUTS TO MATCH EXISTING.
- R19. REPLACE EXISTING PT WOOD NAILERS AS REQUIRED.
- R20. COMPRESSIBLE FILLER MATERIAL.
- R21. EXTEND TPO FLASHING UP PARAPET WALL AND OVER WOOD NAILERS.
- R22. NEW METAL COPING TO REPLACE EXISTING COPING.



7 DETAIL AT PLUMBING VENTS AND FLUES

A-102 3" = 1'-0"

NO.	REVISIONS	DATE

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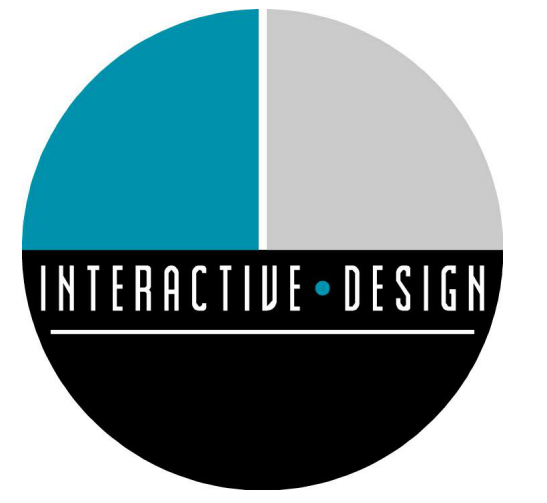
JOHN P. FISHWICK
 MIDDLE
 SCHOOL ROOF
 REPLACEMENT

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 ROANOKE, VA 24013

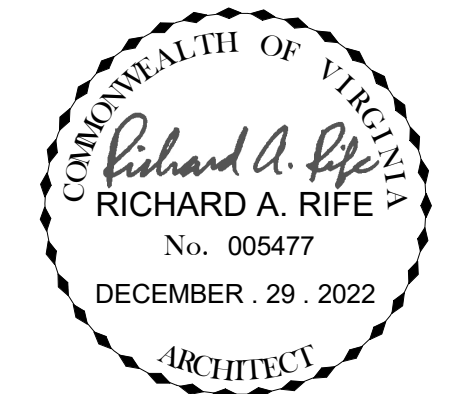
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ROOF DETAILS

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A-102



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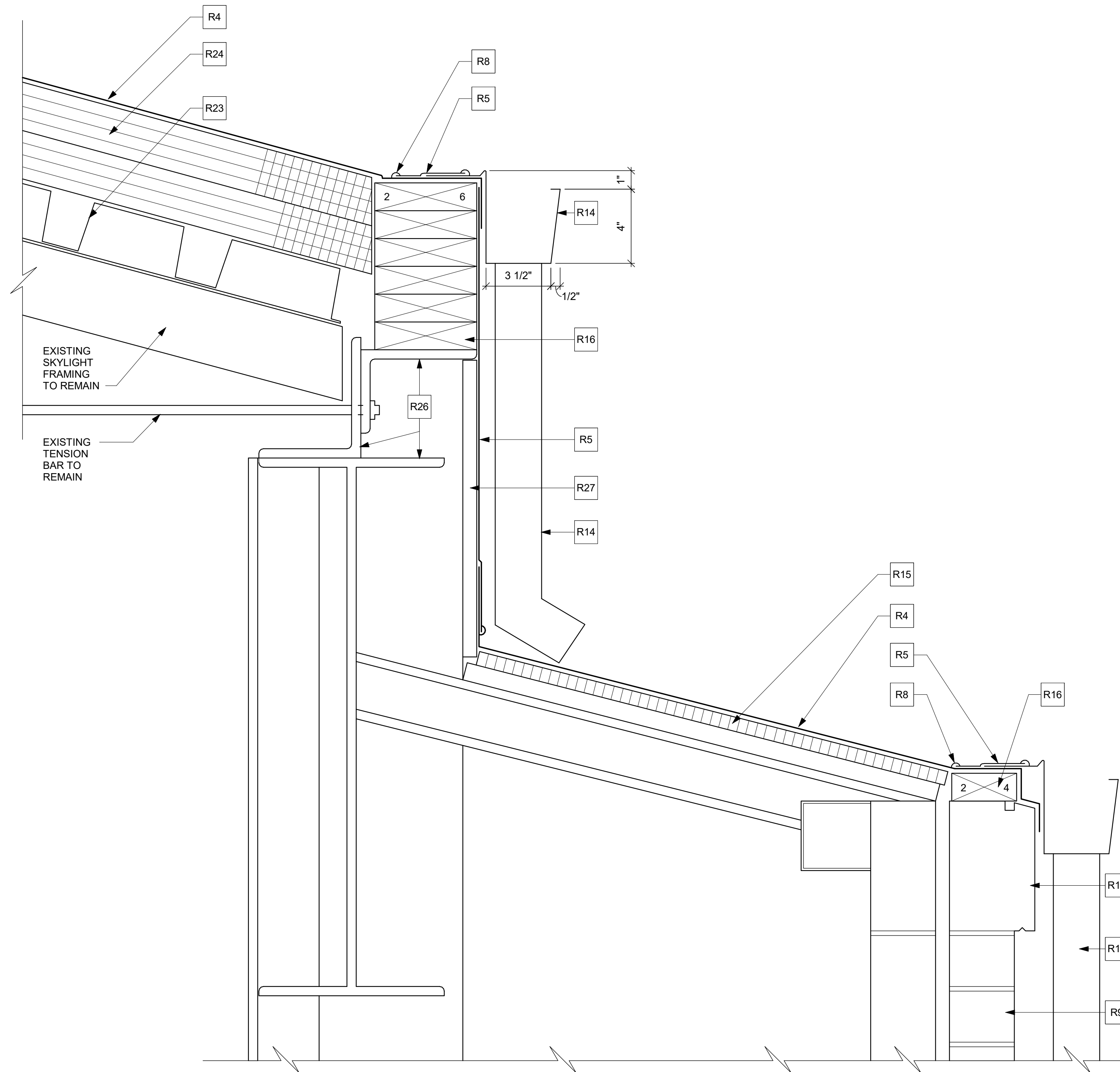
JOHN P. FISHWICK MIDDLE SCHOOL ROOF REPLACEMENT

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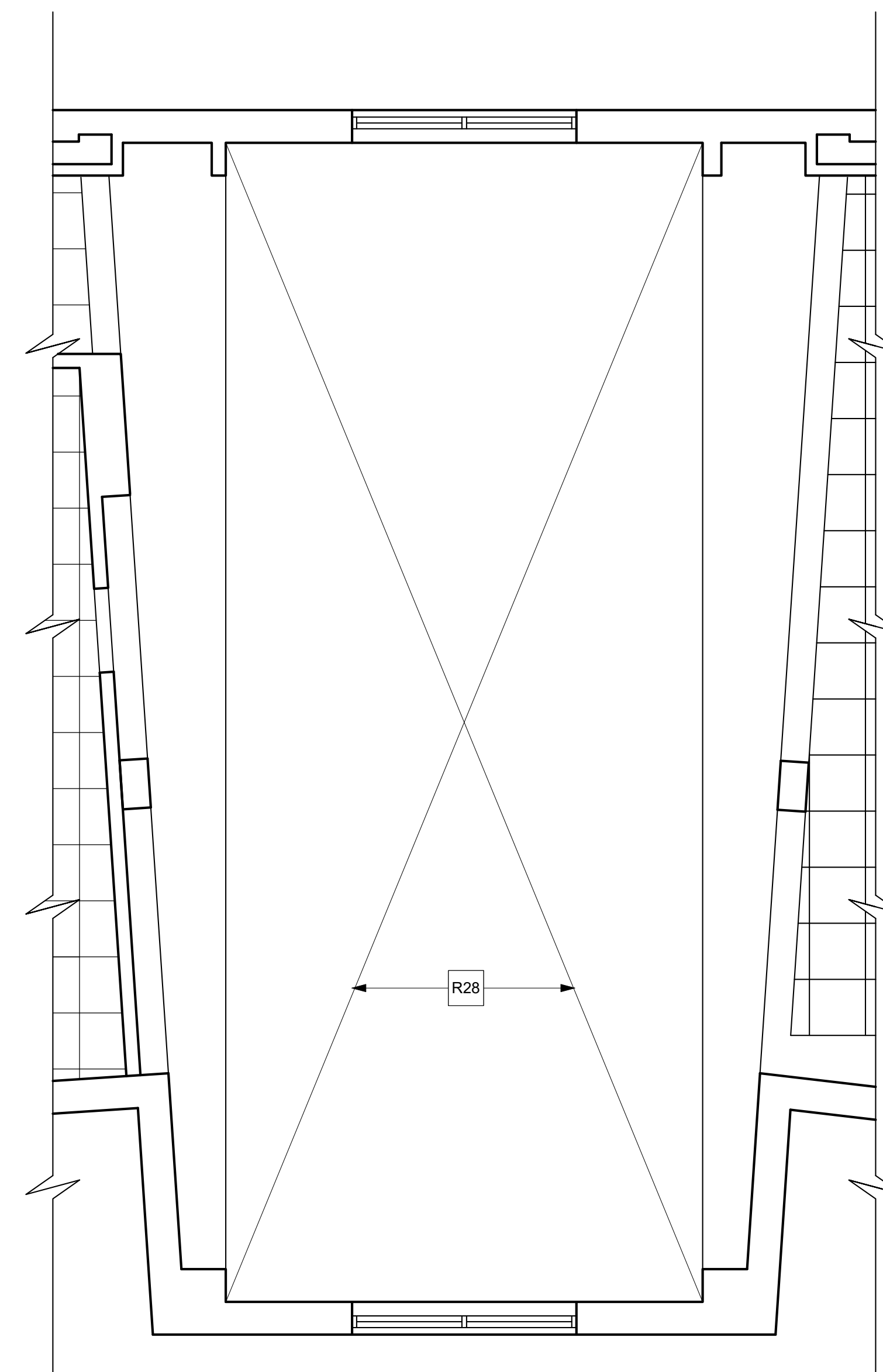
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ROOF DETAILS

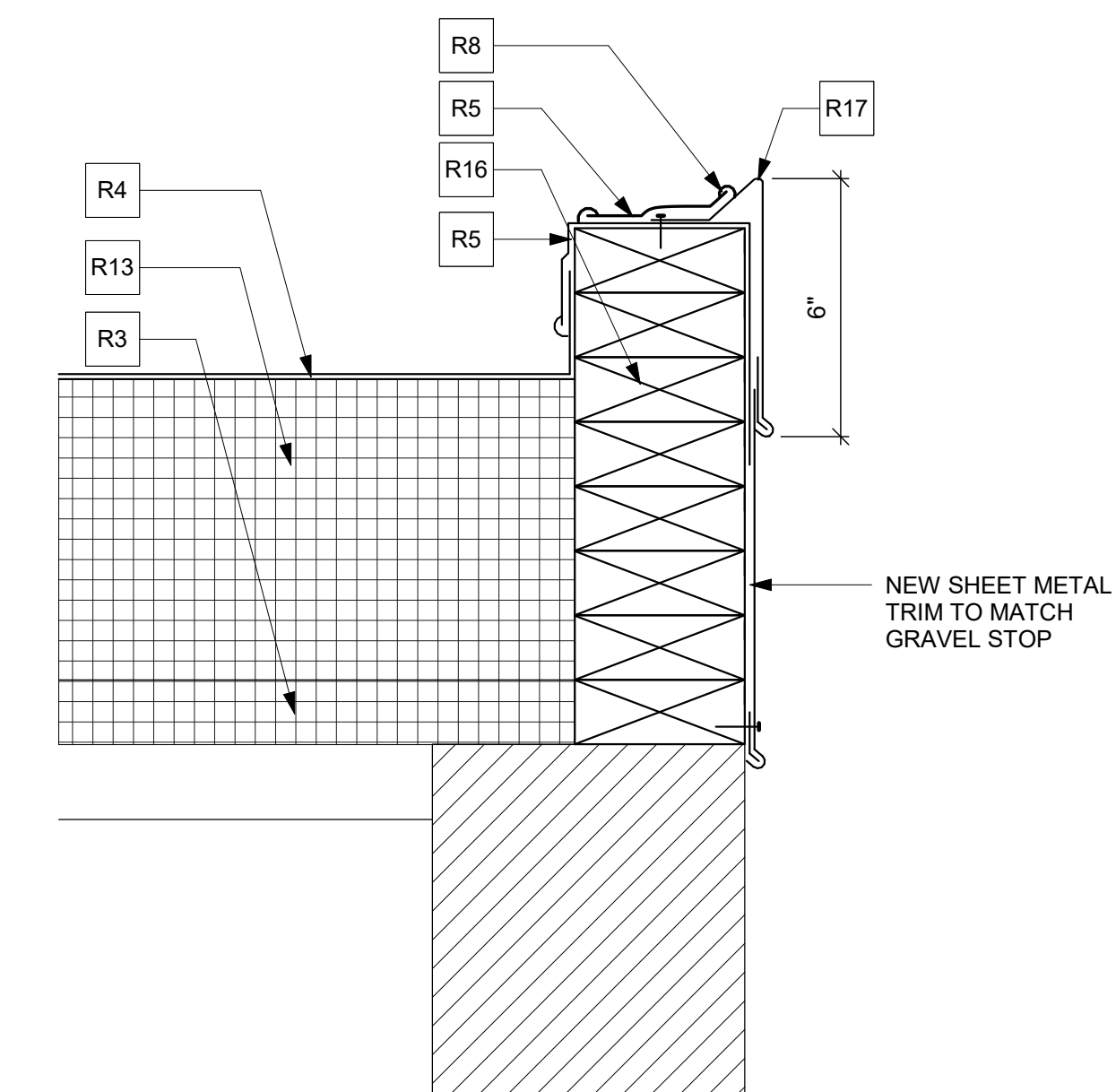
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A-104



1 SECTION - ADD ALTERNATE NO. 2
 3" = 1'-0"



2 PARTIAL LIBRARY REFLECTED CEILING PLAN
 ADD ALTERNATE NO. 2
 1/4" = 1'-0"



3 ROOF EDGE DETAIL
 3" = 1'-0"

NOTES LEGEND		
A - MISCELLANEOUS	G - DOORS / GLAZINGS	P - PLUMBING
C - CIVIL	K - FURNITURE / FINISHES	R - ROOF
E - ELECTRICAL	L - LIFE SAFETY	S - STRUCTURAL
F - FLOORS / CEILINGS	M - MECHANICAL	W - WALLS

ROOF DETAIL NOTES	
R1. EXISTING RIGID INSULATION TO REMAIN.	R12. NEW PREFABRICATED TPO FLASHING BOOT WITH SEALANT AT EDGES.
R2. PREPARE EXISTING EPDM MEMBRANE (TO REMAIN) AS REQUIRED.	R13. NEW TAPERED INSULATION - 1 1/2" MINIMUM THICKNESS.
R3. NEW FLAT ROOF INSULATION.	R14. NEW PREFINISHED SHEET METAL GUTTER AND DOWNSPOUTS.
R4. NEW ADHERED TPO ROOF MEMBRANE.	R15. AFTER REMOVING EXISTING METAL ROOF, INSTALL NEW RECOVERY BOARD OVER EXISTING PLYWOOD ROOF DECK.
R5. NEW ADHERED TPO MEMBRANE FLASHING.	R16. NEW PRESSURE TREATED WOOD BLOCKING AS REQUIRED.
R6. TERMINATION BAR AND SEALANT.	R17. NEW PREFINISHED SHEET METAL GRAVEL SHOP.
R7. REUSE EXISTING METAL COUNTER FLASHING SECURE TO MASONRY.	R18. NEW GUTTER AND DOWNSPOUTS TO MATCH EXISTING.
R8. CONTINUOUS SEALANT.	R19. REPLACE EXISTING PT WOOD NAILERS AS REQUIRED.
R9. EXISTING MASONRY WALL.	R20. COMPRESSIBLE FILLER MATERIAL.
R10. EXTEND TPO FLASHING UP PARAPET WALL AND OVER PRECAST CONCRETE COPING.	R21. EXTEND TPO FLASHING UP PARAPET WALL AND OVER WOOD NAILERS.
R11. EXISTING PRECAST COPING TO REMAIN.	R22. NEW METAL COPING TO REPLACE EXISTING COPING.
	R23. REMOVE SKYLIGHT GLAZING AND INSTALL NEW 3" CELLULAR STEEL ACOUSTICAL DECK ON EXISTING SKYLIGHT FRAMING.
	R24. INSTALL 2 LAYERS OF 2 1/2" POLYISO INSULATION.
	R25. NEW POLYCARBONATE GLAZING TO REPLACE EXISTING GLAZING.
	R26. EXISTING STEEL SKYLIGHT CURB.
	R27. EXISTING PLYWOOD.
	R28. PAINT NEW STEEL ROOF DECK TWO COATS THIS AREA.

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