

SECTION 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

A. Engineer (Roof Improvements):

1. Jennifer Doyle, PE (TX), Engineered Exteriors, PLLC.
2. TBPE License No. 105967
3. Responsible for Divisions 01-49 Sections except where indicated as prepared by other design professionals of record.



END OF SECTION

SECTION 011000 – SUMMARY

PART 2 - GENERAL

2.1 RELATED DOCUMENTS

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

2.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Access to site.
 - 4. Coordination with occupants.
 - 5. Work restrictions.
 - 6. Miscellaneous provisions.

2.3 WORK COVERED BY CONTRACT DOCUMENTS

The Work of Project is defined by the Contract Documents and consists of the following:

- A. BASE BID:
 - 1. Remove existing membrane and flashings to deck. Refer to Roof System Log in Drawings for existing materials. Repair existing 5/8" gypsum sheathing board at A-12 and A-12 Corridor roofs as needed, on a unit price basis.
 - 2. Install New Roof System as specified at Roof Area A-10 and A-14:
 - a. Install mechanically fastened base sheet to existing lightweight fill deck.
 - b. Install tapered polyisocyanurate insulation and 1/2" coverboard set in adhesive.
 - 3. Install New Roof System as specified at Roof Area A-12 and A-12 (Corridor):
 - a. Install R-25 polyisocyanurate insulation, first layer mechanically fastened to steel deck with subsequent layers and 1/2" coverboard set in adhesive.
 - b. Install new two ply modified bitumen roof system as specified, with all associated flashings and sheet metal.
 - 4. MEP Modifications:
 - a. Increase height of existing curbs indicated in Drawings to provide 12" minimum base flashing height.

- b. Relocate existing penetrations at locations identified on the Drawings to provide minimum specified clearances indicated in General Notes.
 - c. Raise existing piping and conduit lines to provide 8" clearance above new roof and 12" clearance at roof penetration curbs; provide drip loops at new penetration curbs for all lines except condensate drains.
 - d. Provide new pipe supports at all existing gas, refrigerant, and conduit lines at new roof areas.
 - e. Prep, prime and repaint all gas pipe lines at new roofs.
 - 5. Walls above new roofs at A-10 and A-12 Corridor: Install new silicone elastomeric wall coating system as specified, over existing masonry, stucco, and exposed steel framing.
- B. ALTERNATE BIDS:**
- 1. Install Roof Coating System at Roof Areas A-1, A-09, A-11, A-13, A-16:
 - a. Replace wet substrate at locations identified in the Drawings.
 - b. Clean existing roof surface and install reinforcing set in coating at seams and detail areas, as required by coating manufacturer.
 - c. Install coating system per manufacturer requirements.
 - 2. Install New Skylights at A-11:
 - a. Remove existing damaged skylights.
 - b. Install new skylights as specified.

2.4 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- C. Contractor shall supply temporary storage required for storage of equipment and materials for duration of Project. Utilize only areas designated by Owner for storage.
 - 1. Limits: Confine construction operations to staging and parking areas approved by Owner, and areas immediately around the roof areas included in the scope of work.
 - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

- D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

2.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than **72** hours in advance of activities that will affect Owner's operations.

2.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours, Summer Session: Limit work on the existing building to occur between 5:00 a.m. to 8:00 p.m., Monday through Friday, Saturday and Sunday.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner. Notify Engineer and Owner not less than two calendar days in advance of proposed disruptive operations.
- D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- E. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

2.7 PRE-JOB DAMAGE SURVEY OF FACILITY

- A. Perform a thorough survey of property and all affected areas of the buildings with Owner prior to starting the work in order to document existing damage and operational status of existing equipment. Non-functional or damaged items identified on this list will not be the responsibility of Contractor unless further damaged by Contractor during execution of Project.

- B. Consider any damage to buildings or property not identified in the pre-job damage survey as having resulted from execution of this Contract and correct at no additional expense to Owner.

1.8 PERMITS

- A. Contractor shall provide and coordinate the timely submittal of the Construction Documents to the Authorities having Jurisdiction to obtain a permit for the Scope of Work.
- B. Engineer will assist with technical responses to Plan Review Comments as necessary.
- C. Pre-Job Submittals:
 - 1. Copy of Permit Application
 - 2. Copy of Permit Approval

1.9 GUARANTEE AND WARRANTY

- A. Provide Two-Year Contractor's Warranty for materials and installation. Refer to Section Section 017700 "Closeout Procedures" for Contractor's Roofing Warranty to be provided to the Owner.
- B. Manufacturer's Guarantee:
 - 1. Base Bid: Provide Roof Manufacturer's 20-Year No Dollar Limit (NDL) System Warranty
 - 2. The Guarantee shall be transferable.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012200 - UNIT PRICES

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 for unit prices.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by Bidders, stated on the Proposal Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by Change Order, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included at the end of this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF ROOFING UNIT PRICES

Item	Description (EST. QUANTITY BASIS FOR PRICING)	Unit Rate / UNIT
1	Treated wood lumber: 1"x4" (100 LF)	\$_____ / LF
2	Treated wood lumber: 2"x4" (100 LF)	\$_____ / LF
3	Treated wood lumber: 2"x6" (100 LF)	\$_____ / LF
4	Treated wood lumber: 2"x8" (50 LF)	\$_____ / LF
5	Treated wood lumber: 2"x10" (50 LF)	\$_____ / LF
6	Treated wood lumber: 2"x12" (50 LF)	\$_____ / LF
7	CDX plywood, 4'x8'x 1/2" sheet (100 SF)	\$_____ / EA
8	Pre-finished 24-gauge galvanized sheet, 12" stretch-out (10 LF)	\$_____ / LF
9	24-gauge stainless (304) steel sheet, 12" stretch-out (10 LF)	\$_____ / LF
10	Lightweight Insulating Fill Deck Repair – Up to two (2") inches (5 SF)	\$_____ / SF
11	1" polyisocyanurate insulation board, per SF	\$_____ / SF
12	2" polyisocyanurate insulation board, per SF	\$_____ / SF
13	1/2" coverboard, as specified, per SF	\$_____ / SF
14	5/8" Type X Gypsum Board, per SF	\$_____ / SF
15	Misc. Roofing Work: Lead Man and Helper	\$_____ / HR
16	Misc. Roofing Material Mark-up	_____/%

END OF SECTION

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

- e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within two days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 5 days of receipt of request, or two days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than seven days prior to time required for preparation and review of related submittals.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Engineer will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.
 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform

and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of receiving the Notice of Award, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-

mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Engineer will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Engineer.

6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716 or contractor-generated form with substantially the same content as indicated above, acceptable to Engineer. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow three (3) working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt of additional information.
 3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within three (3) days of receipt of the RFI response.

1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
- B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days before commencement of the Work.
 1. Review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for testing and inspecting.
 - i. Procedures for processing Applications for Payment.
 - j. Distribution of the Contract Documents.
 - k. Submittal procedures.
 - l. Preparation of record documents.
 - m. Use of the premises and existing building.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
 4. Minutes: Engineer will record and distribute meeting minutes.
- C. Progress Meetings: Contractor will conduct progress meetings at weekly intervals.
 1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or

involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda:

- a. Contractor shall prepare the meeting agenda and distribute to all invited attendees. Agenda shall include an updated Contractor's schedule with the following information:
 - 1) Status of previous scheduled activities
 - 2) Delays
 - 3) Anticipated activities scheduled for the next two (2) weeks.
- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.

4. Minutes:

- a. Contractor shall record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.
- b. Minutes shall include the following information in addition to the recorded discussions:
 - 1) Project Name and Number
 - 2) List of Attendees
 - 3) Project Start Date
 - 4) Project Substantial Completion Date
 - 5) Time Extension Request days to be submitted to Owner

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
 - 2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in PDF or paper copy format.
- B. Startup construction schedule.
- C. Construction Schedule Updating Reports: Submit with Progress Meeting Agenda.
- D. Daily Construction Reports: Submit at weekly intervals.

1.4 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 - 2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Fabrication.
 - e. Deliveries.
 - f. Installation.
 - g. Tests and inspections.

2.2 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report using the attached form, with a minimum of six (6) photographs incorporated into the report with date stamp included in each photograph.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one at each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 WEATHER DELAYS

- A. "Normal rainfall" compiled by the State climatologist, based on U.S. Weather Bureau Records for Austin, Texas, is considered a part of the Calendar Day Contract, and is not a justification for an extension of time. Listed below are the number of days in each month for which no compensatory days for rainfall events ("Rain Days") in such months may be claimed:
 - 1. January 8 days
 - 2. February 8 days
 - 3. March 7 days
 - 4. April 7 days
 - 5. May 9 days
 - 6. June 6 days
 - 7. July 5 days
 - 8. August 5 days
 - 9. September 7 days
 - 10. October 7 days
 - 11. November 7 days
 - 12. December 7 days

END OF SECTION

CONTRACTOR'S DAILY REPORT

PROJECT INFORMATION	
Project Name:	Observation Date:
Project Location:	Owner:
Roofing Contractor:	Superintendent:
SYSTEM DESCRIPTION	
System Description:	
Deck Type:	Base Sheet:
Insulation:	Coverboard:
Base Ply:	Top Ply:
CONDITIONS - PERSONNEL	
CDs Onsite (Y/N):	Weather Conditions:
Roofing Crew:	Roofing Foreman:
Subcontractor(s):	Sub. Superintendent:
Subcontractor Crew:	Sub. Foreman:
VISITORS TO SITE: NAME, FIRM, PURPOSE OF VISIT	
Meetings (Y/N) and Description:	
SCOPE COMPLETED	
Work Area:	Squares:
Membrane Flashing (LF):	Metal Flashings, Gutters, Downspouts (LF):
Other (Indicate units):	Other (Indicate Units):
Comments:	
Delays, Stoppages?	
Accidents, Emergencies?	
MEP Systems Disconnected/Reconnected?	
NOTES	
DIFFERING CONDITIONS ENCOUNTERED	

PHOTOS

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements: Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals on form provided at the end of this Section or on electronic form provided by Engineer. Submittal Schedule will be updated and included with all submittals.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Engineer's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Engineer for Contractor's use in preparing submittals.
 - 1. Engineer will, upon request, furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record

drawings. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 4 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 4 days for review of each resubmittal.
- D. Format:
 - 1. Submittal Log: Update to reflect current submittals attached and include with each submittal.
 - 2. Cover Page: Place a permanent label or title block on each submittal item for identification.
 - a. Indicate name of firm or entity that prepared each submittal on label or title block.
 - b. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.

- c. Include the following information for processing and recording action taken:
 - 1) Project name.
 - 2) Date.
 - 3) Name of Engineer.
 - 4) Name of Contractor.
 - 5) Name of subcontractor.
 - 6) Name of supplier.
 - 7) Name of manufacturer.
 - 8) Submittal number or other unique identifier, including revision identifier. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - 9) Number and title of appropriate Specification Section.
 - 10) Drawing number and detail references, as appropriate.
 - 11) Location(s) where product is to be installed, as appropriate.
 - 12) Other necessary identification.
- 3. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- E. Options: Identify options requiring selection by Engineer.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Submit electronic submittals via email as PDF electronic files or as a minimum of three (3) paper copies. Engineer will return annotated documents in the same format received. Annotate and retain one copy of returned submittals in the Project record document file.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before or concurrent with Samples.
 - 6. Submit Product Data in the following format:
 - a. PDF electronic file, OR
 - b. Three (3) paper copies of Product Data. Engineer will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

- a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
2. Submit Shop Drawings in the following format:
 - a. PDF electronic file; OR
 - b. Three (3) opaque copies of each submittal. Engineer will retain one copy and issue one copy to Owner; remainder will be returned.
- D. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- E. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- F. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.
- H. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- J. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- M. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

- N. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- O. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- P. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- Q. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- R. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

3.2 ENGINEER'S ACTION

- A. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

- E. Submittals not required by the Contract Documents may be returned by the Engineer without action.

END OF SECTION

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 - 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
 - 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 - 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 - 12. AGA - American Gas Association; www.aga.org.
 - 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 - 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 - 16. AIA - American Institute of Architects (The); www.aia.org.
 - 17. AISC - American Institute of Steel Construction; www.aisc.org.
 - 18. AISI - American Iron and Steel Institute; www.steel.org.
 - 19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
 - 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 - 21. ANSI - American National Standards Institute; www.ansi.org.
 - 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 - 23. APA - APA - The Engineered Wood Association; www.apawood.org.
 - 24. APA - Architectural Precast Association; www.archprecast.org.

25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa.ca.
65. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.

66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).
73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarooft.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. IAS - International Approval Services; (See CSA).
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.
107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.

108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
113. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
114. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
115. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
116. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
117. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
118. ISO - International Organization for Standardization; www.iso.org.
119. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
120. ITU - International Telecommunication Union; www.itu.int/home.
121. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
122. LMA - Laminating Materials Association; (See CPA).
123. LPI - Lightning Protection Institute; www.lightning.org.
124. MBMA - Metal Building Manufacturers Association; www.mbma.com.
125. MCA - Metal Construction Association; www.metalconstruction.org.
126. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
127. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
128. MHIA - Material Handling Industry of America; www.mhia.org.
129. MIA - Marble Institute of America; www.marble-institute.com.
130. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
131. MPI - Master Painters Institute; www.paintinfo.com.
132. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
133. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
134. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
135. NADCA - National Air Duct Cleaners Association; www.nadca.com.
136. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
137. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
138. NBI - New Buildings Institute; www.newbuildings.org.
139. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
140. NCMA - National Concrete Masonry Association; www.ncma.org.
141. NEBB - National Environmental Balancing Bureau; www.nebb.org.
142. NECA - National Electrical Contractors Association; www.necanet.org.
143. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
144. NEMA - National Electrical Manufacturers Association; www.nema.org.
145. NETA - InterNational Electrical Testing Association; www.netaworld.org.
146. NFHS - National Federation of State High School Associations; www.nfhs.org.
147. NFPA - National Fire Protection Association; www.nfpa.org.
148. NFPA - NFPA International; (See NFPA).
149. NFRC - National Fenestration Rating Council; www.nfrc.org.

150. NHLA - National Hardwood Lumber Association; www.nhla.com.
151. NLGA - National Lumber Grades Authority; www.nlga.org.
152. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
153. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
154. NRCA - National Roofing Contractors Association; www.nrca.net.
155. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
156. NSF - NSF International; www.nsf.org.
157. NSPE - National Society of Professional Engineers; www.nspe.org.
158. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
159. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
160. NWFA - National Wood Flooring Association; www.nwfa.org.
161. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
162. PDI - Plumbing & Drainage Institute; www.pdionline.org.
163. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); <http://www.plasa.org>.
164. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
165. RFCI - Resilient Floor Covering Institute; www.rfci.com.
166. RIS - Redwood Inspection Service; www.redwoodinspection.com.
167. SAE - SAE International; www.sae.org.
168. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
169. SDI - Steel Deck Institute; www.sdi.org.
170. SDI - Steel Door Institute; www.steeldoor.org.
171. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
172. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
173. SIA - Security Industry Association; www.siaonline.org.
174. SJI - Steel Joist Institute; www.steeljoist.org.
175. SMA - Screen Manufacturers Association; www.smainfo.org.
176. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
177. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
178. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
179. SPIB - Southern Pine Inspection Bureau; www.spib.org.
180. SPRI - Single Ply Roofing Industry; www.spri.org.
181. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
182. SSINA - Specialty Steel Industry of North America; www.ssina.com.
183. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
184. STI - Steel Tank Institute; www.steeltank.com.
185. SWI - Steel Window Institute; www.steelwindows.com.
186. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
187. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
188. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
189. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
190. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
191. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
192. TMS - The Masonry Society; www.masonrysociety.org.
193. TPI - Truss Plate Institute; www.tpinst.org.

194. TPI - Turfgrass Producers International; www.turfgrasssod.org.
195. TRI - Tile Roofing Institute; www.tilerroofing.org.
196. UL - Underwriters Laboratories Inc.; <http://www.ul.com>.
197. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
198. USAV - USA Volleyball; www.usavolleyball.org.
199. USGBC - U.S. Green Building Council; www.usgbc.org.
200. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
201. WA - Wallcoverings Association; www.wallcoverings.org.
202. WASTEC - Waste Equipment Technology Association; www.wastec.org.
203. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
204. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
205. WDMA - Window & Door Manufacturers Association; www.wdma.com.
206. WI - Woodwork Institute; www.wicnet.org.
207. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
208. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.

17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
 18. USP - U.S. Pharmacopeial Convention; www.usp.org.
 19. USPS - United States Postal Service; www.usps.com.
- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
 2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
 3. DSCC - Defense Supply Center Columbus; (See FS).
 4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
 5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
 6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
 7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 UTILITIES

- A. Provide power and water as necessary to complete the Work. Utilities will be provided and paid for by Owner.

1.2 TEMPORARY ELECTRICITY

- A. Connect to existing power service at locations approved by Owner's representative. Power consumption shall not disrupt Owner's need for continuous service.
- B. Provide temporary electric feeder from existing building electrical service at location as directed by Owner.
- C. Exercise measures to conserve energy.
- D. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each roof area. Provide flexible power cords as required. All such devices shall be GFCI.
- E. Provide main service disconnect and over-current protection at convenient location.
- F. Permanent convenience receptacles may not be utilized during construction.

1.3 TEMPORARY WATER SERVICE

- A. Contractor is responsible for connecting to existing water source for construction operations, at location as directed by Owner.
- B. Exercise measures to conserve water.

1.4 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain enclosed portable self-contained units or temporary water closets and urinals, secluded from public view, in location approved by Owner. Keep units locked at all times. Provide access to Contractor's employees only.
- B. Existing facilities shall not be used.
- C. Maintain daily in clean and sanitary condition.

1.5 TEMPORARY FIRE PROTECTION

- A. Maintain a minimum of two, 30-pound fire extinguishers at each area where work is in progress at all times.

1.6 BARRIERS

- A. Provide barriers around trees and plants that are within thirty feet of the building. Protect lawns and landscape. Replace trees, plants, lawns and landscaped areas that are damaged by Contractor.
- B. Protect vehicular traffic and pedestrians from damage or injury, as applicable, which may arise out of the Work.
- C. Protect buildings, equipment, sidewalks, etc. Contractor is responsible for cleaning or repairing any surfaces which are marked or otherwise damaged as a result of the Work to the satisfaction of Owner to the extent that it is returned to its original condition.
- D. Provide ground and parking lot protection under heavy equipment (i.e., lifts), to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- E. Provide secure fence around storage area and roof access location.

1.7 STORMWATER CONTROL

- A. Contractor shall ensure that stormwater drains properly from the roof during construction. The building shall be kept watertight throughout the construction process.
- B. Protect site storage areas from ponding or running water. Provide water barriers as required to protect products from drainage.

1.8 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits or openings.
- D. Prohibit traffic or storage upon new roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from roofing material manufacturer.

1.9 PARKING

- A. Arrange for temporary parking areas to accommodate construction personnel as approved by Owner. Parking will be allowed in staging areas only and no parking will be allowed for employees' personal vehicles.

1.10 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly fashion on a daily basis.
- B. Remove debris and rubbish from closed or remote spaces prior to enclosing the space.
- C. Remove waste materials, debris, and rubbish from site daily and dispose off-site.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary equipment, facilities and materials, prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 015113 - TEMPORARY ELECTRICITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. For those Projects or Repair/Maintenance Work requiring incidental Electrical Work: Included installation of temporary power, disconnects, reconnects and other incidental electrical work necessary to perform the Work of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

- A. All materials and equipment required shall be:
 - 1. Approved by Underwriters Laboratories and so labeled.
 - 2. For wire and cable, marked as required by Article 310-1- National Electrical Code.
 - 3. Installed by mechanics skilled in their trades, working under the direct supervision of competent experience foremen or superintendents.
 - 4. Installed in compliance with all applicable Occupational Safety and Health Administration and City of Austin electrical codes.
- B. Prior to conducting any electrical work, perform a complete survey of all roof top electrical lines and service with the Owner's representative to verify the functional condition of the electrical service. Document the survey in writing, signed by the Owner's representative and the Contractor. Provide a copy to the Roof Consultant.

2.2 TIMELY PLACEMENT OF MATERIALS AND EQUIPMENT

- A. Install items specified in Paragraph 2.1 of this Section at the proper time during progress of construction. Coordinate work operations with other trades as necessary.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide temporary electrical power as required to perform the Work of the Contract Documents.
- B. Remove all temporary electrical items at completion of Project and correct any damage to property.

- C. At the end of the Project, any non-functional electrical service (not noted on the survey list) will be the responsibility of the Contractor to restore to functional working order.

END OF SECTION

SECTION 015123 - TEMPORARY HEATING, COOLING, AND VENTILATING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. For those Projects or Repair/Maintenance Work requiring incidental Mechanical Work; includes installation of temporary mechanical work, disconnects, reconnects, and other incidental mechanical and plumbing work, not specified herein but necessary for the successful execution of the Work as set forth in the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIAL AND WORKMANSHIP

- A. All materials and equipment required shall be:
 - 1. Installed by mechanics skilled in their trades, working under the direct supervision of competent experienced foremen or superintendents.
 - 2. Installed in compliance with all applicable Occupational Safety and Health Administration Rules and Regulations.
 - 3. Installed in compliance with all applicable City of Austin, Ventilating, Air Conditioning, and Plumbing Codes.
- B. Prior to conducting any mechanical work, perform a complete survey of all roof top mechanical equipment with the Owner's representative to verify the functional condition of the equipment. Document the survey in writing, signed by the Owner's representative and the Contractor. Provide a copy to the Roof Consultant.

2.2 TIMELY PLACEMENT OF MATERIALS AND EQUIPMENT

- A. Install items specified in Paragraph 2.1 of this Section at the proper time during progress of construction. Coordinate work operations with other trades as necessary.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install temporary mechanical work necessary to comply with the work of other Sections.
- B. Remove temporary mechanical work necessary to comply with other Sections at completion of Project and correct any damage to property.

- C. At the end of the Project, any non-functional mechanical equipment (not noted on the survey list) will be the responsibility of the Contractor to restore to functional working order.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for products selected under an allowance.
 - 2. Section 012300 "Alternates" for products selected under an alternate.
 - 3. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 4. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved by Architect through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.4 ACTION SUBMITTALS

- A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Architect's Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.
3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional identification requirements.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 6. Protect stored products from damage and liquids from freezing.
 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: ..."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: ..."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: ..."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.
 - a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: ..."
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: ..."
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: ..."
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the

specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 2. Evidence that proposed product provides specified warranty.
 3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 4. Samples, if requested.
- B. Submittal Requirements: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.

1.3 CLOSEOUT SUBMITTALS BY CONTRACTOR

- A. Final Reports and Certifications:
 - 1. AISD Certificate of Substantial Completion: 3 original paper copies, with all original signatures by Contractor
 - 2. AISD Certificate of Project Compliance: 1 original and 2 paper copies
- B. Project Specific Documents (1 original and 2 paper copies unless otherwise noted):
 - 1. Product Warranties
 - 2. Operations and Maintenance Manuals
 - 3. As-Built Documents (1 copy of Drawings and Specifications)
 - 4. Key Return Form from Service Center
 - 5. HAZMAT Disposal Manifests
 - 6. Final AISD Sub-contractor Disclosure Statement
 - 7. Final AISD Certifications by Contractor and Sub-contractors
 - 8. AISD Consent of Surety to Final Payment
 - 9. AISD Certificate of Satisfaction of Bills
 - 10. Final Payment Application
 - 11. Permit Closeout Documentation

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Specifications.

3. Addenda.
 4. Change orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress. The Contractor will allow Roof Consultant to review record documents for current change documentation at each pay request.
- D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
 2. Product substitutions or alternatives utilized.
 3. Changes made by Addenda and Modifications.
- E. Record documents and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 2. Field changes of dimension and detail.
 3. Details not on original Contract Drawings.

1.5 WARRANTIES AND GUARANTEES

- A. Provide two original, notarized copies of all warranties and guarantees. Refer to the end of this Section for Contractor's Warranty form required. Substitutions for this form will not be accepted.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 2. Complete final cleaning requirements, including touchup painting.
 3. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of

Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1.7 FINAL COMPLETION PROCEDURES

- A. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Final Completion for entire Project :
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

- g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- B. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
- 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION

CONTRACTOR'S ROOFING WARRANTY

WHEREAS _____

of (Address) _____

herein called the "Contractor", has performed roofing and associated work on the following project.

Owner: _____

Address: _____

Number and Type of Building: _____

Address: _____

Area of Work: _____ Date of Acceptance _____

Warranty Period: TWO YEARS Date of Expiration _____

AND WHEREAS the Contractor has contracted with Owner to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period.

NOW THEREFORE the Contractor 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 watertight condition.

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

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by: (a) lightning, windstorm, hailstorm, and other unusual phenomena of the elements; (b) fire; (c) failure of roofing system substrate including cracking, settlement, excessive deflection, deterioration, and decomposition; (d) faulty construction of vents, equipment supports, and other penetrations of the work; (e) repeated vapor condensation on bottom of roofing; and (f) activity on roofing by other persons including construction contractors and maintenance personnel, whether authorized or unauthorized by Owner. When work has been damaged by any of the foregoing causes, Warranty shall be null and void until such damage has been repaired by the Contractor, and until cost and expense thereof has been paid by the Owner or by another responsible party so designated.
2. The Contractor is responsible for work covered by this Warranty, but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

3. The Contractor shall be responsible for repairing any defect attributable to Contractor's method or manner of installation of the roof membrane during the two-year period at Contractor's sole cost and expense.
 - a. During the twenty-third (23rd) month following the Contractor's date of substantial completion, the Contractor shall have thirty days to coordinate and perform a roof inspection with the Roof Consultant, roof material manufacturer's representative and the Owner's representative.
 - b. Contractor shall coordinate a roof inspection with the Roof Consultant, roof material manufacturer's representative and the Owner's representative during the ninety-day period preceding the expiration date of the Two-Year Contractor's Warranty.
 - c. Failure to perform inspections specified in 3.a. and 3.b. and repair defects (if any) will be cause to consider the Contractor in default. The Owner will then submit written notice of default to the Contractor's bonding company.
4. During Warranty Period, if the Owner allows alterations of work by anyone other than the Contractor, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, the Warranty shall become null and void upon date of said alterations, but only to extent said alterations affect work covered by this Warranty. If the Owner engages the Contractor to perform said alterations, warranty shall not become null and void, unless the Contractor, prior to proceeding with said work, shall have notified the Owner in writing that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void upon date of said change, but only to extent said changes affect work covered by this Warranty.
6. The Owner shall promptly notify the Contractor of observed, known, or suspected leaks, defect or deterioration, and shall afford reasonable opportunity for the Contractor to inspect the work, and to examine evidence of such leaks, defects or deterioration.
7. This Warranty is recognized to be the only Warranty of the Contractor on said work, and shall not operate to restrict or cut off the Owner from other remedies and resources lawfully available to him in cases of roofing failure. Specifically, this Warranty shall not operate to relieve the Contractor of responsibility for performance of original work.

IN WITNESS THEREOF, this instrument has been duly executed this _____ DAY of _____, 2018.

Signature

Firm Name

Typed Name and Title

Address

Telephone Number

City/State/Zip

SECTION 030150 - REPAIR AND REHABILITATION OF CAST DECKS

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish labor, materials, equipment, and services necessary for the complete and proper repair of existing lightweight concrete fill and tectum deck substrates.

1.2 RELATED SECTIONS

- A. Section 070150 – Preparation for Reroofing
- B. Section 072200 – Roof and Deck Insulation
- C. Section 075250 – Modified Bituminous Membrane Roofing

1.3 SUBMITTALS

- A. Submit manufacturer's product data and instructions for all products specified.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in the supplier's original unopened packages, fully identified as to manufacturer, brand or other identifying data.
- B. Store bagged patching products in a dry location until ready for application.
- C. Familiarize every member of the application crew with the manufacturer's material safety data sheets and safety regulations as required by governing codes and regulations.

1.5 PROJECT/SITE CONDITIONS

- A. Do not install the patching compound during periods of precipitation, when air temperatures are below 32 degrees F (0°C), or when air temperatures are expected to fall below 32 degrees F (0°C) any time within 24 hours following application of the product.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use matching materials in accordance with manufacturer's recommendations.
- B. Lightweight fill decks, repairs up to 2" thick: Siplast Zono-patch or approved equivalent.
- C. Lightweight fill decks, repairs greater than 2" thick:
 - 1. Decking:

- a. Tectum Panels: 2" thickness Tectum I Roof Tile, match existing board size. Fill spaces between tile and bulb tees and/or steel joists with Tectum grout.
 - b. Formboard: 1" thickness, material to match existing.
 - c. Sheet Metal (for use at abandoned holes less than 6" diameter):
 - 1) Top Plate: 16 gauge galvanized steel plate, 12" x12"
 - 2) Bottom (exposed) plate: 24 gauge prefinished galvanized steel plate
 - 3) Fasteners: 3/16" diameter galvanized steel A325 bolts with 1" diameter washers
2. Fill: Siplast NVS Pre-Mix or approved equivalent.

PART 3 - EXECUTION

3.1 REPAIRS LESS THAN 2" THICK

A. Examination:

1. Inspect deck and determine which areas are deteriorated or non-functional, including locations of base sheet fasteners removed during tear-off operations. Bring these areas to the attention of Owner, Engineer, or Roof Consultant and obtain approval prior to proceeding with repair of these areas.
2. Remove debris from the area and remove deteriorated roof deck material down to a sound substrate.
3. Moisten the existing lightweight surface with water. The extent of moistening will depend on the nature of the surface to be repaired. Highly porous, dusty surfaces will require more preparation.

B. Preparation:

1. Mix patching compound with water in accordance with manufacturer's instructions.
2. In a suitable container or mortar mixer, add water in a quantity suitable to achieve the desired batch size. Add dry powder to the water and mix until the wet slurry is of a smooth, lump-free, creamy consistency. If a container is used, a "jiffy" mixer attached to a drill motor is recommended.

C. Application:

1. Following mixing and utilizing product that has the proper stiffness for the specific application, pump or pour into place. Finish the surface of the patching compound to a smooth surface.
2. Trowel finish any edges to provide a smooth transition to the surface of the existing substrate.
3. Installation of the mechanically fastened base sheet may begin as soon as the patching compound has set.

3.2 REPAIRS 2" THICK OR GREATER

A. Abandoned Roof Drains:

1. Install top and bottom plates over abandoned hole, with rigid insulation between plates to fill in hole.
 2. Provide (8) bolts per 12"x12" plate, in corners and midspan.
 3. Tighten bolts until plates fit snug against deck surfaces.
- B. Damaged Deck: Install new deck panels over damaged deck area. Use only full new matching sheets, spanning between existing steel bulb tee or joist supports.
1. Install Tectum Grout between panels and supports, in accordance with manufacturer's instructions.
 2. Mix NVS Premix with water in accordance with manufacturer's instructions.
 3. Following mixing and utilizing product that has the proper stiffness for the specific application, pump or pour into place. Finish the surface of the patching compound to a smooth surface.
 4. Trowel finish any edges to provide a smooth transition to the surface of the existing substrate.
 5. Installation of the mechanically fastened base sheet may begin as soon as the new repair area materials have set.

END OF SECTION

SECTION 061053 – MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Roofing related lumber such as nailers and curbs, or plywood, as indicated in the Drawings.

1.2 QUALITY ASSURANCE

- A. Rough Carpentry Lumber: Visible grade stamp of agency certified by SFPA.
- B. Provide Underwriters' Laboratories (UL) approved identification for fire resistant treated materials.

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable building code, latest edition, for fire retardant requirements of wood.
- B. Conform to FM Loss Data Bulletin I-49 for securement requirements.

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 1.
- B. Indicate materials, fastening methods, accessories, and locations.
- C. Submit manufacturer's certifications under provisions of Division 1 that wood treatment is in accordance with applicable requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber and Wood Cants: No. 2 Grade Yellow Pine, Standard Douglas Fir., Wolmanized with Micronized Copper Quaternary (MCQ) compound, kiln dried to 19% after treatment (KDAT).
- B. Curbs and curb extensions: No. 2 grade yellow pine, standard Douglas Fir. Wolmanized with Micronized Copper Quaternary (MCQ) compound, kiln dried to 19% after treatment (KDAT).
- C. Plywood: Exterior Grade CDX or better, APA grade marked. Thickness as noted or depicted in the Drawings.
- D. All composite wood materials shall be provided with no added formaldehyde.

2.2 SCHEDULE OF FASTENERS

- A. General: Fasteners compatible to all materials to which they come in contact so that dielectric corrosion does not occur.
- B. Wood Nailer Fasteners:
 - 1. Wood Substrate: Stainless steel common nails or flat head screws, gauge and length to suit application and as necessary to penetrate underlying wood support members a minimum of 1-1/4 inch. Each fastener to have a minimum pull out resistance of 100 pounds.
 - a. Bent plate for attaching vertical lumber: 18 gauge galvanized steel (G90) bent plate, fastened with stainless steel pancake head screws.
 - 2. Metal Substrate: No. 12 stainless steel (Series 400) screw, length as recommended by manufacturer for full pull-out resistance.
 - 3. Concrete or masonry surfaces: Stainless steel (Series 400) concrete/masonry screw, length as recommended by manufacturer for full pull-out resistance.
 - 4. Structural Steel: Hilti X-U Universal Knurled Shank Powder Actuated Fasteners, 0.157" diameter, length as required to provide a minimum 3/4" embedment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.
- C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Before installation, prime paint wood surfaces of items or assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

- A. Set and secure materials and components in place, plumb, and level.
- B. Install components with approved fasteners suited to materials.
- C. Curbs:

1. Install new wood where indicated to provide total height of a minimum of 12 inches above the finished roof surface, allowing for height of insulation system, crickets, and coverboard, as applicable.
2. Fasten securely to substrate.
3. Treat surfaces exposed by cutting as recommended by preservative manufacturer.
4. Fasten wood curb to nailer prior to installation with appropriate wood nailer fastener on 12-inch centers.

D. Wood Nailer Installation:

1. Attach nailers to wood and light gauge steel substrates with two rows of appropriate fasteners on 12-inch centers, or as shown in Drawings.
2. Attach nailers to concrete, masonry or structural steel substrates with two rows of appropriate fasteners on 24-inch centers, or as shown in Drawings.
3. Offset fasteners from underlying wood nailer fasteners.
4. At draining roof edges, provide nailer thickness as required to maintain positive slope to edge. Nailer thickness shall be adjusted to accommodate any irregularities in the substrate.
 - a. Failure to coordinate nailer thickness with thickness of new roof system will result in removal and reinstallation of new roofing and sheet metal components to correct conditions at Contractor's expense, regardless of warranty coverage of non-compliant conditions.

E. Plywood Installation:

1. Attach plywood to wood and light gauge steel substrates with two rows of appropriate fasteners on 12-inch centers, each way, or as shown in Drawings.
2. Attach nailers to concrete, masonry or structural steel substrates with two rows of appropriate fasteners on 24-inch centers, each way, or as shown in Drawings.

END OF SECTION

SECTION 070150 - PREPARATION FOR REROOFING

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. Section Includes:
 - 1. Demolish designated insulation, roofing, sheet metal, and roofing accessories.
 - 2. Remove materials from site, except roof penetration equipment and materials reserved by Owner, and items to be reinstalled. Owner will remove reserved items from site.
 - 3. Contractor shall dispose of all materials in a licensed land-fill and provide the Owner with signed documentation of all materials disposed.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for use of the premises and phasing requirements.
 - 2. Section 015000 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.
 - 3. Section 030150, Repair and Rehabilitation of Cast Decks
 - 4. Section 061053, Miscellaneous Rough Carpentry (Roofing)

1.3 SUBMITTALS

- A. Submit demolition and removal procedures and schedule under provisions of Division 1.
- B. Product Information: Submit product data sheets for all materials.
- C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- D. Landfill Records: Indicate receipt and acceptance of demolished roofing materials, by a landfill facility licensed to accept them.

1.4 FIELD CONDITIONS

- A. Existing Roofing System: Refer to system description in the Drawings.
- B. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
 - 1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down

- HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.
- C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- E. Conditions existing at time of inspection for bidding are maintained by Owner as far as practical.
1. Construction Drawings and Project Manual for existing roofing system are provided for Contractor's convenience and information, but are not a warranty of existing conditions. They are intended to supplement rather than serve in lieu of Contractor's own investigations. Contractor is responsible for conclusions derived from existing documents.
- F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
1. Do not proceed with removal of existing roofing on days where the chance of precipitation is equal to or exceeds thirty percent (30%). Document inclement weather days in Time Extension Request submitted with Pay Applications.
 2. Remove only as much roofing in one day as can be made watertight in the same day.
- G. Hazardous Materials: Obtain and review the AISD record of asbestos containing materials prior to performing any demolition of existing roof related materials. Refer any requirements for the abatement of asbestos containing material to the AISD Project Manager who will notify the AISD Service Center to perform the abatement.
1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner. Hazardous materials will be removed by Owner under a separate contract.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during reroofing, by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.
1. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

- A. Expanded Polystyrene (EPS) Insulation: ASTM C 578
- B. Plywood: DOC PS1, Grade CD Exposure 1.
- C. OSB: DOC PS2, Exposure 1.

2.2 AUXILIARY REROOFING MATERIALS

- A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- B. During removal operations, have sufficient and suitable materials on-site to facilitate deck repairs per Section 030150 and rapid installation of temporary protection in the event of unexpected rain.

3.2 ROOF TEAR-OFF

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Full Roof Tear-Off: Where indicated, remove existing roofing and other roofing system components down to the deck.
 - 1. Remove existing roof membrane and insulation.
 - 2. Remove wood blocking, curbs, and nailers.
 - 3. Remove all sheet metal flashings and sealants attached to roofing materials removed.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of roofing system. Repair existing deck as specified in Section 030150, Rehabilitation of Cast Decks.
- B. Verify that substrate is visibly dry and free of moisture.
- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Engineer. Do not proceed with installation until directed by Engineer.

- D. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Engineer. Do not proceed with installation until directed by Engineer.
- E. Provide additional deck securement as indicated on Drawings.

3.4 BASE FLASHING REMOVAL

- A. Remove existing base flashings. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.
- C. Inspect parapet sheathing, wood blocking, curbs, and nailers for deterioration and damage. If parapet sheathing, wood blocking, curbs, or nailers have deteriorated, immediately notify Engineer.
- D. When directed by Engineer, replace parapet framing, wood blocking, curbs, and nailers to comply with Section 061053 "Miscellaneous Rough Carpentry."

3.5 FASTENER PULL-OUT TESTING

- A. Engineer will provide results of fastener pull-out tests performed during design according to SPRI FX-1 for Contractor review. Coordinate proposed fastening pattern with test results to ensure compliance of new roof system with all applicable Code requirements regarding wind uplift resistance.

3.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION

SECTION 072200 - ROOF AND DECK INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Roof and Deck Insulation

1.2 RELATED WORK

- A. Section 018113 – Sustainable Construction Requirements
- B. Section 061000 - Rough Carpentry
- C. Section 070150 – Preparation for Reroofing
- D. Section 075250 - Modified Bituminous Sheet Roofing
- E. Section 076200 - Sheet Metal Flashing and Trim

1.3 SYSTEM DESCRIPTION

- A. Install board insulation as required to achieve a complete and proper substrate for the roof membrane system.
- B. Assembly Description by Roof Area:
 - 1. Roof Areas A-12, A-12 Corridor:
 - a. 4.5" polyisocyanurate insulation in two layers
 - 1) NOTE: existing slope is 1/2" per foot, so crickets must be 1" per foot to result in 1/2" per foot slope away from penetrations
 - b. 1/2" coverboard
 - 2. Roof Areas A-10, A-14:
 - a. 1/8" per foot tapered polyisocyanurate insulation in layers with 1/2" per foot tapered edge strip (1'-0" width), start thickness as noted in the Drawings
 - b. 1/2" coverboard
- C. Insulation installed within the weatherproofed building interior shall contain No Added Urea Formaldehyde.
- D. All sealants, adhesives, coatings and sealant primers shall comply with SCAQMD rules 113 and 1168 as consistent with performance and warranty requirements.

1.4 SUBMITTALS

- A. Submit manufacturer's installation instructions, samples and product data, in accordance with the provisions of Section 013300, Submittals.
- B. Submit two full size samples of each insulation board type and thickness.
- C. Submit tapered insulation plan:
 - 1. Indicate all crickets, sumps, and field taper boards with thicknesses calculated for full depth at low and high points.
 - 2. Indicate dimensions of crickets and sumps on plan.
 - a. Crickets:
 - 1) Minimum width of all crickets shall be 1/3 of cricket length.
 - 2) Minimum slope of valleys along crickets: 1/8-inch per foot.
 - 3) Regardless of information indicated in the approved shop drawings, dimensions of crickets indicated in the Drawings where greater than those in the shop drawings shall be provided.
 - 4) Install tapered insulation crickets to achieve a minimum 1/4" per foot ABOVE LEVEL along the up-slope side of all curbed penetrations wider than 12" perpendicular to the roof slope and between roof drainage elements. Note that for roof deck slopes greater than 1/4" per foot, insulation must be installed to bring cricket area to level prior to installing 1/4" per foot tapered insulation.
 - b. Sumps:
 - 1) Primary Scupper Sumps: Provide 2-feet by 4-feet tapered insulation sumps at all primary roof scuppers where shown on plans, slope sumps 1/2" per foot.
 - 2) Primary Drain Sumps: Provide 4-feet by 4-feet tapered insulation sumps at all primary roof drains where shown on plans, slope sumps 1/2" per foot.
 - 3) DO NOT SUMP OVERFLOW DRAINAGE COMPONENTS.
 - 3. Indicate all slopes of tapered insulation boards to be used on project.
- D. Submit fastening pattern plan:
 - 1. Plan shall based on manufacturer test data for new construction, or on fastener pullout tests performed on existing decks to be reroofed that have been performed in accordance with Section 070150.
 - 2. Indicate all field, perimeter, and corner zone widths on plan with number and layout of fasteners in each zone.
 - 3. Proposed fastening patterns and distribution of zones shall comply with wind loads calculated in accordance with ASCE 7, as referenced by applicable Codes, or FM Data Sheet 1-28, latest edition.
- E. Submit manufacturer's certificate, in accordance with the provisions of Section 013300, Submittals, that products meet or exceed specified requirements.
- F. Submit certification from roof membrane manufacturer that board insulation materials are acceptable for use with roof membrane materials.

- G. Submit product data from manufacturer showing insulation contains no added urea-formaldehyde.
- H. Submit product data and MSDS for all sealants, adhesives, coatings and sealants primers indicating the VOC content in g/l.

1.5 REGULATORY REQUIREMENTS

Conform to applicable local building codes for roof assembly requirements.

1.6 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, approval or listing agency markings, and directions for storing and mixing with other components.
 - 1. Inspect for damage.
 - 2. Store products in weather protected environment, clear of ground and moisture.
 - 3. Deliver materials in quantities to allow continuity of application throughout the Project.
 - 4. Coordinate shipment receipt as necessary to cause Owner least amount of interference in Owner's operations. Owner will not take responsibility for product deliveries.
- 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.
 - 1. Store materials subject to water damage in fully enclosed, watertight storage trailers.
 - 2. Do not store insulation materials on the roof overnight.
 - 3. Store materials on the roof surfaces only on the morning they will be installed. Do not store more materials on roof overnight unless approved by A/E.
 - 4. Maximum Allowable Loading on Roof: 20 pounds per square foot.
- D. Handle materials in a manner precluding damage and contamination by moisture or other harmful/foreign matter.
- E. Promptly mark, remove from the site, and discard any materials contaminated by moisture.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate work under provisions of Section 013113, Project Coordination.

- B. Coordinate the work of installing roof membrane and flashing as the work of this Section proceeds.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Base Sheet Fastening Ply: Fiberglass Base Sheet - Fastening ply, asphalt impregnated glass fiber base sheet, ASTM D2626.
- B. Flat Stock Polyisocyanurate Insulation, ASTM C1289, closed cell foam core bonded to fiberglass facers.
 - 1. 1st Layer: maximum 2.5" thick, mechanically fastened to nailable decks, adhered to non-nailable decks or base sheet, 4'x8' board dimension.
 - 2. 2nd and Subsequent Layers: maximum 2.5" thick, adhered to underlying layer(s) of insulation, 4'x4' board dimension.
- C. Tapered Polyisocyanurate Insulation, ASTM C1289, closed cell foam core bonded to fiberglass facers, slope as indicated in the Drawings and System Description in this Section, maximum board thickness of 2.5".
- D. Cover Board: 4'x8' board dimension.
 - 1. Vertical Substrates: 1/4" Securock, DensDeck Prime, or pre-proposal approved equivalent.
 - 2. Horizontal Substrates: 1/2" Securock, DensDeck Prime, or pre-proposal approved equivalent.
- E. Fiber Cant: Fiber cant shall have a 5-3/8-inch face, with the same characteristics as insulation board above. Fiber cant shall comply with ASTM C728.
- F. Batt Insulation For Expansion Joint: Glass fiber unfaced batt insulation.
- G. Spray Foam Insulation: Abesco FP200, fire rated spray foam insulation.
- H. Insulation shall contain no added urea-formaldehyde.

2.2 FASTENERS

- A. General: Provide fasteners approved by insulation manufacturer, meeting wind uplift requirements as specified.
- B. Metal Decks: No. 14 Heavy Duty hex-head fastener with coating which exceeds F.M. Specification No. 4470; with Galvalume metal plates, minimum 3-inch by 3-inch, as recommended by insulation board manufacturer.
- C. Structural Concrete Decks: FM approved concrete screw, OMG CD-10 Heavy Duty Roofing Screw, or approved equivalent.
- D. Lightweight Insulating Fill (Cementitious or Gypsum):

1. A Factory Mutual approved sheet metal base ply fastener to secure fastening ply to lightweight insulation fill, equal to OMG Oly-lok 1.4" length, approved equivalent.
 2. A Factory Mutual approved, deep/coarse thread metal fasteners such as Olympic Lite - Deck fastener and 3" dia. Metal plate or approved equivalent.
- E. Wood Decks: Factory Mutual approved ring shank or annular thread fasteners with minimum one inch diameter head, sufficient length to penetrate substrate approximately one inch. Base ply fastener to secure glass fiber fastening ply and slipsheet to the wood deck.
- F. Cementitious Wood Fiber Decks: FM approved fastener, ES Products Twin-Loc Nail or approved equivalent.
- G. Adhesives: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
1. Modified asphaltic, asbestos-free, cold-applied adhesive.
 2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
 3. Full-spread spray-applied, low-rise, two-component urethane adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Existing insulation and roofing materials shall be removed in accordance with Section 070150.
- B. Contractor shall repair deck as necessary to achieve a suitable substrate for installation of new insulation board in accordance with Sections 030150 and 070150.
- C. Verify that:
1. Roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set and comply with specified minimum flashing height requirements;
 2. Wood nailing strips at perimeter edges and parapet walls are in place and are fastened in accordance with applicable codes.
 3. Under deck conditions are clear for fastener installation.
- D. Installation of roofing means acceptance of conditions of substrate.

3.2 INSTALLATION

- A. General: Mechanically fasten or adhere insulation board to deck in the pattern recommended by the manufacturer to achieve a wind uplift resistances in the field, perimeter, and corner zones, calculated in accordance with ASCE 7 (edition as adopted by applicable Code) with applicable factors of safety applied.
- B. Attachment Schedule:

1. Metal Decks with Membrane Roofing:
 - a. Fasten first layer of insulation board in staggered pattern as specified with approved fasteners and patterns.
 - b. Adhere subsequent layers in staggered pattern in adhesive as specified and in accordance with approved ribbon patterns.
2. Lightweight Fill Decks with Membrane Roofing:
 - a. Install base sheet mechanically fastened to lightweight fill with approved fasteners and patterns.
 - b. Adhere first layer of insulation board and subsequent layers in staggered pattern in adhesive as specified and in accordance with approved ribbon patterns.
- C. Mechanically Fastened Installation:
 1. Mechanically fasten boards with approved fasteners and plates.
 2. Ensure that fasteners penetrate top flange of deck $\frac{3}{4}$ -inch, do not penetrate bottom flange of deck. Reinstall fasteners that do not engage top flute of deck.
 3. Provide fasteners in location per the approved fastening pattern and layout provided by the manufacturer. Provide 6" edge distance between fasteners and edge of boards.
- D. Adhered Installation:
 1. General:
 - a. Apply insulation board in adhesive in weather conditions recommended by insulation manufacturer.
 - b. Apply adhesive in a manner to provide proper mixture and setup as recommended by manufacturer.
 2. Install adhesive in "picture frame" pattern in addition to ribbons required to achieve Code required resistance to wind uplift in field, perimeter, and corner zones. "Picture frame" pattern shall consist of a single bead of adhesive applied within 4" of board perimeter.
 3. Firmly press each insulation board into adhesive by "walking-in" each board immediately after placement. Provide a minimum of five (5) weighted five (5) gallon buckets per board at corners and center of each board.
 4. Stagger end joints in adjacent boards 12" minimum horizontally and vertically, and between layers.
 5. Do not allow the adhesive application to precede the board placement by more than three board lengths.
 6. Butt edges for snug contact. Fill all gaps greater than 1/4-inch width.

END OF SECTION

SECTION 075250 - MODIFIED BITUMINOUS SHEET ROOFING

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. Section Includes:
 - 1. Qualifications, Standards and Materials for new roof assembly
 - 2. Modified bitumen sheet roofing.
 - 3. Membrane flashings.
 - 4. Traffic pads
- B. Related Requirements:
 - 1. Section 061053 – Miscellaneous Rough Carpentry
 - 2. Section 070150 – Preparation for Reroofing
 - 3. Section 072200 - Roof and Deck Insulation
 - 4. Section 076200 - Sheet Metal Flashing and Trim

1.3 SYSTEM DESCRIPTION

- A. Reflective, modified bituminous sheet membrane roofing system; smooth surface modified base ply and granule surface modified top ply, approved and listed by Underwriter's Laboratories (UL) as a Class A fire rated system.
- B. Membrane and insulation assembly to qualify for Membrane Manufacturer's 20-year No Dollar Limit (NDL) warranty.
- C. All sealants, adhesives, coatings and sealant primers shall comply with current VOC limits of SCAQMD rules 1113 and 1168 as consistent with performance and warranty requirements.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference:
 - 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 affects 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.

1.5 SUBMITTALS

- A. Product Data: for all materials specified.
- B. Shop Drawings: For roofing system.
 1. Plans: if submitting detail shop drawings, provide a roof plan indicating the locations of these details.
 2. Details:
 - a. Provide certification to comply with the contract document drawings and specifications without deviation under provisions of Section 013300, Submittals.
 - b. For any proposed deviations, provide shop drawings indicating clearly proposed changes. Provide manufacturer's standard details (subject to contract document requirements), including:
 - 1) Base flashings, penetrations, and membrane terminations.
 - 2) Fastening patterns for field, perimeter, and corners.

- C. Submit samples under provisions of Section 013300, Submittals.

- D. Manufacturer Certificate:

Provide project specific system letter, signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article. Include evidence of compliance, including:

1. Compliance with performance requirements.
2. Roofing system components are listed for the project.
3. Components are physically and chemically compatible for installation as designed.

4. All proposed materials, including those by other manufacturer, are acceptable to membrane manufacturer for use in system.
 5. Proposed system meets all criteria for issuance of required manufacturer's warranty
 6. Identify fastening patterns to be used in field, perimeter, and corner.
 7. Specifically identify and define any deviations.
- E. Submit Product Data and MSDS for all sealants, adhesives and sealant primers.

1.6 QUALITY ASSURANCE

A. Manufacturer:

1. Company specializing in manufacturing the products specified in this Section with a minimum of five years documented experience.
2. Obtain primary products, including roof membrane, base flashings, membrane adhesives and adhesives products from a single manufacturer. Provide secondary products recommended by the manufacturer of primary products for use with roofing system provided.
3. The roofing systems manufacturer shall provide non-sales related field auditors for the purpose of performing quality assurance inspections, both in-progress and final inspections. Provide copies of the manufacturer's field auditor inspection report to the contractor, roof consultant, and building owner.

B. Contractor:

1. Be currently approved and certified to install low slope roof systems that qualify for the primary roofing material manufacturer's 20-Year No Dollar Limit (NDL) Guarantee; and use only skilled roofers completely familiar with the products and the manufacturer's current recommended methods of installation.
2. Contractor shall maintain a permanent office for conduct of business and shall operate its own full-service sheet metal shop.
3. Submit a letter from the roofing material manufacturer proposed for the project, stating that your company is an approved and certified applicator, and that your company is approved to install that manufacturer's Twenty (20) Year No Dollar Limit (NDL) Guarantee.
4. Successful completion of minimum three (3) similar projects during that time. Contractor to provide project reference contact names, phone numbers, and emails as part of submittal process.

5. All torching operations must be performed by CERTA (Certified Roofing Torch Applicator) trained applicators with up to date certifications.
6. Evidence of Contractor's qualification to do business in the State of Texas where the project is located or covenant to obtain such qualification prior to award of the contract.
7. Workers:
 - a. Project Manager and Superintendent: Minimum five years roofing experience and employed by Contractor for a minimum one year prior to Bid Date.
 - b. Designate a responsible Project Manager or Superintendent to inspect all installed Work, particularly tie-ins and temporary flashings, at end of each working day and as otherwise required to ensure water-tightness.
 - 1) Verify Inspection by signature on approved Daily Inspection Form signifying installation is in accordance with specified requirements.
- C. Work of this Section shall conform to the National Roofing Contractor's Association (NRCA) Manual of Roof Maintenance and Roof repair, the NRCA Roofing and Waterproofing Manual, and the primary roofing materials manufacturer's instructions.

1.7 PRE-INSTALLATION CONFERENCE

- A. A pre-installation conference shall be held prior to commencing work of this section. Representatives of the owner, roof consultant, roofing contractor, sub-contractors, and manufacturer must be present.
- B. Review installation procedures, materials to be used, submittals, schedules, and all related work required under this section. Finalize construction schedule and confirm availability of materials, equipment, contractor's personnel, and facilities needed to complete work as planned.
- C. Review forecasted weather conditions and procedures for coping with unfavorable conditions, and maintaining the water tightness of the roof system.
- D. Tour representative areas of roofing substrates, inspect and discuss condition of substrate, roof drains, penetrations, curbs, and any work performed by other trades.
- E. Review structural loading limitations of deck and inspect deck for acceptability as roof substrate.
- F. Review inspection and quality control procedures to be used.
- G. Record discussions of conference, including decisions and agreements reached. Furnish copy of record to each party attending. If disagreements exist at the

conclusion of the conference, determine how disagreements will be resolved, and set a date for reconvening conference.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials in accordance with manufacturer's printed instructions. Deliver materials in manufacturer's original wrappers, dry, and undamaged with seals and labels intact.
- B. All materials shall be stored in a secure manner to avoid damage, danger to occupants, or theft.
 - 1. If inside storage is not available at the job site, protect materials by covering with breathable tarpaulins. Polyethylene covers are not acceptable field storage coverings.
 - 2. Store rolled goods on end on raised platforms, and protected from the weather until installed in the roofing system.
- C. Damaged materials (moisture, ultraviolet, fire, or other) shall be removed and replaced at Contractor's expense.
- D. Adhesives, flashing cements, and pail goods must be stored inside lockable trailers and in original containers with lids tightly in place.

1.9 FIELD 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. Do not apply roofing membrane during inclement weather.
 - 2. Do not apply roofing membrane to damp or frozen substrates.
 - 3. Observe wind chill and other cold weather conditions for proper application.
 - 4. The Contractor shall have the final decision as to whether to chance roofing operations in the event wet conditions threaten,
 - 5. The Contractor shall suspend Work, if in his/her opinion, wind speed will impede the proper installation of the roofing Work, or cause a danger to its personnel, or the Owner's property.
- B. Project shall be left in a watertight condition at the end of each workday. Failure to provide temporary seals at the end of each workday will result in an IMMEDIATE stop to work in progress until all unsealed conditions are addressed.

1.10 WARRANTY

- A. Provide two-year Contractor's warranty in accordance with the form at the end of this Section and Section 017700, Contract Closeout.

- B. The Contractor shall be responsible for repairing any defect attributable to Contractor's method or manner of installation of the roof membrane during the two-year period at Contractor's sole cost and expense.
1. During the eleventh month following the Contractor's date of substantial completion, the Contractor shall have thirty (30) days to coordinate and perform a roof inspection with the roof material manufacturer's representative and the Owner's representative.
 2. Contractor shall coordinate and perform a roof inspection with the roof material manufacturer's representative and the Owner's representative during the ninety (90) day period preceding the expiration date of the two-year Contractor's warranty.
 3. Failure to perform inspections specified above and repair defects (if any) will be cause to consider the Contractor in default. The Owner will then submit written notice of default to the Contractor's bonding company.
- C. Provide manufacturer's twenty-year (no-dollar limit) Guarantee for roofing materials and installation at no cost to Owner. Commence all warranties on the Date of Substantial Completion for the overall project.
- D. Correct deficiencies required by manufacturer or Owner's representative to issue specified Guarantee at no cost to Owner.
- E. Provide two (2) roof warranty signs at the completion of the project. Signs shall be placed on roof at locations determined by the Owner.
1. Warranty Signs: 24" x 24" x .080 aluminum with a baked enamel background and black lettering, in a non-penetrating manner, to read as follows:

WARNING:
ROOF AREA: (Roof designation)
THIS ROOF IS UNDER WARRANTY UNTIL
(Date)
(MANUFACTURER)
(Manufacturer's Phone No.)

DO NOT MAKE ALTERATIONS OR REPAIRS
TO THIS ROOF WITHOUT APPROVAL FROM AISD

CONTACT
AISD DEPARTMENT OF CONSTRUCTION MANAGEMENT
512-414-1715
FOR APPROVAL AND/OR TO REPORT DAMAGE REQUIRING REPAIRS

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS AND PRODUCTS

- A. Performance Roof Systems
 - 1. Base Ply: Derbigum GP, Derbigum XPS
 - 2. Top Ply: Derbicolor GP-FR, Derbicolor P-FR, Derbicolor P-FR-CR, Derbicolor XPS-FR
- B. Siplast
 - 1. Base Ply: Paradiene 20 or Paradiene 20 TG
 - 2. Top Ply: Paradiene 30 FR or Paradiene 30 FR TG
- C. Soprema
 - 1. Base Ply: Elastophene or Sopralene Flam HS
 - 2. Top Ply: Elastophene or Sopralene Flam FR GR
- D. Firestone Building Products
 - 1. Base Ply: SBS Poly Torch Base, SBS Glass Torch Base, SBS Premium Poly Base
 - 2. Top Ply: SBS Glass FR, SBS Glass FR Torch, SBS Premium FR, SBS Premium FR Torch
- E. Johns-Manville
 - 1. Base Ply: Bicor S, Tricor S, Dynafast 250 HW, DynaPly T1, Dynaweld Base, Dynaweld 180 S
 - 2. Top Ply: Bicor M FR, Dynalastic Cap 250 FR, Dynaweld Cap 180 FR, Dynaweld Cap 250 FR, Dynakap FR T1, Dynakap FR T1 HW, Dynaglas 30 FR
- F. CertainTeed
 - 1. Base Ply: Flintlastic Ultra Poly SMS, Flintlastic Base 20 T
 - 2. Top Ply: Flintlastic FR CAP 30, Flintlastic FR CAP 30T, Flintlastic Premium FR-P, Flintlastic GTA-FR, Flintlastic FR Dual Cap
- G. Pre-bid approved equivalent.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Roof System Design: Provide a roofing system that meets or exceeds the more stringent of the following designations:
 - 1. Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressures calculated according to ASCE 7, edition as adopted by the current City of Austin Building Code.
 - 2. Wind Uplift Resistance Values: A minimum of two (2.0) times the wind uplift pressures. Contractor shall submit the calculated wind uplift resistance values for the selected roof membrane, as well as the actual calculations performed by the roof membrane manufacturer.
- D. Approval Standards: Meet testing standards of FM 4450 and FM 4470.
- E. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 SHEET MATERIALS

- A. Membrane Materials:
 - 1. Base Ply - Glass fiber or polyester reinforcing mat coated with SBS or APP modified asphalt on both sides, smooth surface. Installed weight shall be a minimum 60 pounds per 100 square feet, meeting ASTM D 5147. Provide torch grade ply for torch-applied roof systems.
 - 2. Top Ply - A polymer (SBS or APP) modified asphalt, granule surfaced sheet, with a glass fiber or polyester reinforcing mat - fire rated. Installed weight shall be a minimum 90 pounds per 100 square feet, minimum thickness shall be 3.5 millimeters, meeting ASTM D 5147. Provide torch grade ply for torch-applied roof systems.
 - 3. Glass Fabric - Asphalt coated woven glass fiber membrane, ASTM D1668.

- B. Flashing: Reinforced polymer (SBS or APP) modified asphalt sheet as approved by membrane manufacturer.

2.4 BITUMINOUS MATERIALS

- A. Asphalt Primer: ASTM D 41, as approved by membrane manufacturer.
- B. Asphalt Roof Cement: ASTM D 4586, non-asbestos, as approved by membrane manufacturer.
- C. Modified Adhesive: modified asphalt adhesive as approved by membrane manufacturer.

2.5 CANTS, TAPERED INSULATION, EDGE STRIPS

- A. Fiber cants and tapered edge strips: As specified in Section 072200.
- B. Wood Cants: Specified in Section 061000, Rough Carpentry.
- C. Rigid Insulation: As specified in Section 072200.

2.6 FASTENERS

- A. General:
 - 1. Exposed fasteners shall be hex head stainless steel self-tapping screws with stainless steel-jacketed neoprene washers.
 - 2. Fasteners shall be compatible with all materials with which they come in contact so that dielectric corrosion does not occur.
- B. Insulation Fasteners: Fasteners as specified in Section 072200.
- C. Base Flashing Nails:
 - 1. Ring shank nails or screws with 1" diameter metal caps, minimum size 8d.
 - 2. Provide stainless steel nails where fastening into treated wood, and minimum G90 hot dipped galvanized nails where fastening into untreated wood.

2.7 ACCESSORIES

- A. Protection Pad: Cut section of membrane top ply material or product approved by membrane manufacturer.
- B. Sealant: One component gun-grade sealant, ASTM C-920-87, Federal Specification TT-S-00230-C. Sealant shall comply with current VOC limits of SCAQMD rule 1168 as consistent with performance and warranty requirements.

- C. Mineral Granules: Ceramic granules as recommended by primary roofing membrane manufacturer, color to match surface color of top ply.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces and site conditions are ready to receive work.
- B. Beginning of installation means installer accepts existing surfaces.
- C. Verify under deck conditions are clear for fastener installation.

3.2 MEMBRANE APPLICATION - GENERAL

- A. Membrane system installation to be performed in accordance with the manufacturer's published recommendations unless modified by these specifications. The manufacturer's current published catalog will be considered a part of this specification.
- B. At the end of each day's work, install watertight night seals to protect the new roof system from moisture and to prevent water leaks into the building. Remove night seals prior to starting the next day's work.
- C. Plan the flow of work, equipment, materials, and personnel to eliminate traffic across the completed new roof system. Provide plywood walkways for the movement of personnel, equipment, and materials to avoid damage to the existing roof system that is yet to be removed.
- D. The roofing contractor is responsible for the disconnection and reconnection of any HVAC and electrical required to complete the roofing project. Coordinate the disconnect and reconnect of equipment with the building owner so the operation of the building is not interrupted.

3.3 MEMBRANE APPLICATION: TORCHED SYSTEMS

- A. Apply roof system in strict accordance with manufacturer's published recommendations. Do not use membrane roll hooks in a manner that damages roof ply during torching operations.
- B. Base Ply Membrane Application: Over the specified insulation system, embed the base ply, starting at the low point, laying sheets at a right angle to the slope of the deck, heat welding to the specified substrate, lapping sides and ends a minimum of 3 inches. Ensure sufficient "bleed out" along laps to provide full adhesion without damaging membrane.
 - 1. Perform light rolling or brooming promptly to eliminate air pockets, wrinkles, creases, and fishmouths, and to insure proper adhesion.

2. Extend base ply up cant strips, extending two inches (2") minimum above cant. Lap end joints at least 3 inches.
3. Install base ply continuously in one direction from the field of the roof to the top of the cant.
4. At end laps, cut the under ply side lap 45 degrees as recommended by the membrane Manufacturer.
5. Prevent foot or vehicle traffic from crossing newly laid base ply sheets until bitumen cools to below softening point.
6. Install water cutoffs at the end of the day's operation. Remove prior to resuming additional work. Seal perimeters into watertight condition.

C. Application of modified bitumen cap sheet:

1. Offset side laps and end laps from those of the base ply.
2. Embed cap sheet, starting at the low point, laying plies at a right angle, heat welding to the top face of the interply sheets, lapping sides minimum of 3 inches and end laps a minimum of 6 inches. Ensure sufficient "bleed out" along laps to provide full adhesion without damaging membrane.
3. Stagger laps between plies. Heat granule surface at top surface end laps to aid adhesion.
4. At end laps, cut the under ply side lap 45 degrees as recommended by the membrane Manufacturer.
5. Perform light rolling or brooming promptly to eliminate air pockets, wrinkles, creases, and fishmouths, and to insure proper adhesion.
6. Extend top ply up cant strips, extending two inches (2") minimum above cant. Lap end joints at least 3 inches.
7. Install top ply continuously in one direction from the field of the roof to the top of the cant.
8. Broadcast mineral granules over all bitumen overruns to ensure a monolithic surface color.
9. Install water cutoffs at the end of the day's operation. Remove prior to resuming additional work. Seal perimeters into watertight condition.

3.4 BASE FLASHING APPLICATION

- A. Base flashing installation is to be performed in accordance with the manufacturer's recommendations unless modified by these specifications.
- B. Flashing application. After field sheet of the top ply has been applied to the top of the cant, install the sheet flashing in uniform mopping of hot asphalt to the vertical substrate, cant and roof level. Lap each adjacent sheet three inches and extend the cant onto the roof surface. Mechanically fasten sheet flashing eight inches on-center to vertical surface. At torch-welded flashings, install the sheet flashing in accordance with the primary membrane manufacturer's published recommendations and details.
- C. Metal Edge Application: Prime metal edge completely and allow to dry prior to installation. After base ply field sheet has been applied, install metal edge according to Section 076200, Sheet Metal Flashing and Trim. Strip flange with

nine-inch wide strips of first ply. Apply top ply and terminate at the rise in the metal edge.

- D. Pipe Sleeves: After field sheet of base ply has been applied, install pipe sleeves according to Section 076200, Sheet Metal Flashing and Trim. Strip in flanges with nine-inch wide strips of base ply. Install field sheet of top ply terminating at the flange/throat juncture.
- E. Sealant: All top ply edges exposed at gravel stops, waste stacks, vent stacks, etc., shall be caulked with a smooth continuous bead of neoprene-based sealant.

3.5 PENETRATION/CURB FLASHING

- A. Curb and Corner Flashings: All corners, inside and out, require a boot to provide positive weather protection at the lap joint. Boot size must be a minimum of 1-1/2 inches radius beyond all intersecting surfaces, and have a minimum of 1/4 inch follow of modified bitumen beyond all edges. Install boots at the inside and outside corners (underneath) prior to installing the membrane.
- B. Roof Drains:
 - 1. The roof drain sump shall be clean and free of all rust and dirt.
 - 2. Install the base ply and cut so that the base ply stops short of the clamping ring. Install a 36 inch square piece of smooth modified bitumen base sheet, set in adhesive, over the drain opening, and cut a hole to the inside edge of the drain base.
 - 3. The drain bowl flange is to be thoroughly cleaned, wire brushed (if necessary), and primed to receive the new membrane.
 - 4. Apply adhesive to the clamping ring area.
 - 5. Install a 30-inch square, 4-lb. lead flashing over the membrane into a bed of flashing cement.
 - 6. Install the top layer of field membrane extending to the inside edge of the drain bowl.
 - 7. The field membrane, drain lead, and stripping membrane are to extend under the properly secured and tightened compression clamping ring assembly. Cut holes in the membrane to align with the clamping bolts, install the clamping ring and tighten the bolts to provide uniform compression of the flashing membrane at the drain.

3.6 PIPE PENETRATION FLASHING

Pipe and conduit penetrations shall be flashed with raised wood curbs and sheet metal hoods, modified to provide the minimum height required to accommodate the minimum base flashing height indicated in the Drawings.

3.7 PLUMBING VENT SLEEVE

- A. Set pipe sleeve flange in uniform application of plastic roof cement.
- B. Crimp lead sleeve inside of pipe a minimum of one inch.

- C. Strip-in flange as outlined in membrane roofing sections.

3.8 FIELD QUALITY CONTROL

- A. A/E will periodically observe the Work for Owner to determine if the Contractor's work is in conformance with the Contract Documents. Provide access to Owner and A/E throughout all phases of the Work.
- B. Correct defects and irregularities.

3.9 CLEANING

- A. Remove bituminous and coating markings from finished surfaces.
- B. In areas where finished surfaces are soiled by bitumen or any other source of soiling caused by work of these Specifications, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or disfigured caused by work of these Specifications.

3.10 PROTECTION

- A. Expedite installation to ensure that work started in any particular areas on any day will result in a fully completed and protected roof system on that day. Water cutoff flashing, sealing, and lap jointing must be completed on a daily basis.
- B. Provide necessary protective measures for inclement weather and to ensure the normal function of the building during the repair operations. Coordinate parking spaces adjacent to the Work area to ensure that vehicles and people are protected.
- C. Protect all roof penetrations (vents, drains, pipes, etc.) from entry of foreign matter such as debris during re-roofing operations.
- D. Do not store materials on newly completed roof areas without protection. Provide protection at all roof access points used during roof installation.
 - 1. Acceptable protection for light to medium weight materials or foot traffic shall include a minimum 1" thickness insulation board with a minimum 1/2" plywood board.
 - 2. All temporary protection shall be strapped together and/or weighted to resist wind uplift while in use.

3.11 MANUFACTURER'S FIELD SERVICES

- A. The Contractor shall coordinate with the primary roofing material manufacturer's representative to provide the following:
 - 1. Attendance at the pre-roofing conference.

2. A minimum of three (3) site visits for roof replacement projects, one at commencement of construction, during construction, and at substantial completion.
3. The Contractor shall obtain written reports of the visits and shall submit to the Owner and A/E, in accordance with Section 013300, Submittals.

END OF SECTION

SECTION 075600 - ELASTOMERIC ROOF COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Installation of elastomeric coating system (Alternate Bid).

1.2 RELATED SECTIONS

- A. Section 075250, "Modified Bituminous Sheet Roofing"

1.3 SUBMITTALS

- A. Product data
- B. Installation instructions
- C. Details

1.4 PRODUCT STORAGE AND HANDLING

- A. Storage of Materials: Store in accordance with manufacturer's recommendations.
- B. Handling and Protection of Materials: Meet requirements of manufacturer's recommendations for handling and protection of materials during installation. Handle products so that they are not contaminated by foreign materials.
- C. Damaged Materials: Contaminated or damaged materials shall not be used in the installation and shall be immediately removed from site upon discovery.
- D. Exercise caution when working with solvent based materials within the limitations described by the manufacturer.

PART 2 - PRODUCTS

2.1 COATING SYSTEM

- A. Elastomeric epoxy or silicone based roof coating system, equivalent to one of the following Basis of Design products:
 - 1. Gaco Western GacoElastomeric Silicone Roof Coating system
 - 2. Novatuff RC-100 Flexible Epoxy Roof Coating system
- B. Coating Minimum Properties:
 - 1. Thickness: two coating layers minimum, each layer 12 dry mils minimum, total coating thickness 24 dry mils minimum.
 - 2. Comply with ONE of the following:

- a. Three-year aged solar reflectance of 0.55 minimum AND three-year aged thermal emittance of 0.75.
- b. Initial solar reflectance of 0.70 and initial thermal emittance of 0.75
- c. Three-year aged solar reflectance index (SRI) of 64.
- d. Initial solar reflectance (SRI) of 82.

2.2 ACCESSORY MATERIALS

- A. Reinforcing Fabric: Manufacturer's 100% polyester Fabric used as reinforcement for flashing details.
- B. Flashing Grade Sealant: Manufacturer's synthetic sealant used in conjunction with the Reinforcing Fabric.
- C. Flashing Tape: Manufacturer approved reinforced adhesive tape.
- D. Thinner: Manufacturer approved thinner for re-activating or clean-up of system surfaces.
- E. Primer: Manufacturer approved inter-coat adhesion primer for reactivating system base coat surfaces.

PART 3 - EXECUTION

3.1 PREPARATION FOR COATING

A. Cleaning

- 1. Remove all loose gravel, dirt, dust, debris, etc., by power washing. The entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of base coat to the substrate surface.
- 2. Coating must be installed on cleaned surfaces within 72 hours after cleaning operations are complete.
- 3. Flashings must be detailed and allowed to cure for 24 hours prior to applying the coating.
- 4. Prevent mechanical units from distributing solvent fumes into the building.

B. Environmental Conditions

- 1. Coating application and detail work shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 degrees F, or when relative humidity exceeds 85%. To provide adequate curing time, coating and detail work shall terminate a minimum of four (4) hours before sundown.
- 2. All asphaltic surfaces to be coated shall have already been primed, if necessary, with cutback asphalt or asphalt primer and shall have been allowed adequate curing time before detail work commences.

- C. Flashings: All flashings shall be detailed using Manufacturer's Primer (as needed), Reinforcing Fabric, Flashing Grade Sealant and Base Coat, to achieve the

minimum specified dry film thickness for penetration details and flashings, in accordance with Manufacturer's requirements.

1. All galvanized, phosphated, and non-painted metallic surfaces to be coated—including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like—shall have already been primed with Manufacturer's corrosion inhibiting primer, or equal, and shall have been allowed adequate curing time before detail work commences.
2. Reinforcing Fabric should be unrolled and cut to a maximum length of ten feet prior to setting in place.
3. Apply Base Coat to all areas at rate recommended by manufacturer to achieve 12 dry mils thickness.
4. Embed Reinforcing Fabric into the coating at locations where required by the manufacturer, at a minimum at all transitions in plane and around penetrations. Provide minimum 4" laps. Brush for proper adhesion and removal of all voids.
5. Apply a second coat at the rate recommended by manufacturer to achieve 12 dry mils thickness, over the Reinforcing Fabric and a minimum of 2" beyond edges in each direction.

D. Roof Penetrations

1. The base of all circular roof penetrations, i.e. stacks, vents, etc., and curb penetrations must be sealed using Base Coat embedded into Fabric Apply Base Coat at 2 gal/100 sq. ft (32 wet mils), embed Fabric (cut to size), brush for proper adhesion and removal of all voids. Apply a second coat of Base Coat at 2 gal/100 sq. ft (32 wet mils) over the Fabric and a minimum of 2" beyond edges.

3.2 ROOF COATING SYSTEM

A. General: For optimum results, the protective coating must not be applied to wet or damp surfaces, and postponed if rain is imminent. Failure to comply can result in blistering. In addition, finish coat must be applied to the base coat within 72 hours of the base coat application.

B. Coverage Requirements

1. Apply Base Coat at the application rate required to achieve the specified dry mil thickness to the roof surface including previously coated flashings, blisters, splits, seams.
2. Allow Base Coat to cure (min. 24 hours). Then apply Finish Coat at the application rate required to achieve the specified dry mil thickness to the roof surface including previously coated flashings, blisters, splits, seams. Because of the irregular surface that can be encountered, these amounts are minimum requirements and may be increased due to surface conditions.
3. Do not permit traffic on completed roof surface for a minimum of 24 hours, unless absolutely necessary, and only after complete cure.

- C. Standard Application – Field of Roof: Base Coat may be applied by brush, roller, squeegee, or heavy-duty airless spray. When applying over a previously coated substrate, a test patch shall be applied to determine compatibility.
 - 1. Spray Equipment Requirements
 - a. Application of elastomeric coatings with spray equipment may require some masking and possible erection of wind screens to prevent over spray and drift damage. Protect surfaces of unrelated areas from coatings and overspray possibility.
 - b. Use manufacturer's recommended pump, spayer, hose, guns, and tips for the spray application of their coating.
 - c. Skill and experience of the spray applicator is important to the success of the coating application. Periodic checking of the film build is required to ensure specified results.
 - d. Contractor shall backroll the base coat as recommended by Manufacturer (the first pass of the base coat if applied in multiple passes) as it is being applied in order to maximize adhesion to the substrate and to eliminate voids.
 - 2. Do not permit traffic on completed roof surfaces, 24 hours, unless absolutely necessary, and only after complete cure.

3.3 CLEAN UP

- A. As work progresses, it is essential to keep equipment in clean, working condition. If spray equipment is used, flush lines with manufacturer's recommended cleaning materials. General clean-up with same.
- B. Do not allow the coating material to remain in the spray equipment overnight.
- C. At the conclusion of the project, all equipment should be cleaned and returned to its designated location. Disposal of empty, partially full or full drums should be removed from the site, stored or disposed of in a legal manner.

END OF SECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART I - GENERAL

1.1 WORK INCLUDED

- A. Install flashing and sheet metal as indicated on Drawings and in these specifications as required for a complete and proper installation. The following items are included:
 - 1. Installation of temporary membrane waterproofing over new plywood installed after abatement of existing asbestos siding materials.
 - 2. Edge metal and fascia metal.
 - 3. Gutters and downspouts, cast iron downspout boots.
 - 4. Sheet metal counterflashing.
 - 5. Termination bars.
 - 6. Coping Caps.
 - 7. Expansion joint covers and area divider covers.

1.2 RELATED WORK

- A. Section 061053 – Miscellaneous Rough Carpentry
- B. Section 072200 – Roof and Deck Insulation
- C. Section 075250 – Modified Bituminous Sheet Roofing
- D. Section 077200 – Roof Accessories

1.3 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 013300.
- B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- C. Submit samples under provisions of Section 013300.
- D. Sealant product data and color chart(s).

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA and NRCA standard details and requirement.

1.5 QUALIFICATIONS

- A. Company specializing in sheet metal flashing work with a minimum of 10-years documented experience.

1.6 STORAGE AND HANDLING

- A. Stack pre-formed materials to prevent twisting, bending, or abrasion, and to provide ventilation.
- B. Prevent contact with materials during storage that may cause discoloration, staining, or damage. Materials damaged by improper storage techniques, including “white rust” will be rejected and replaced at Contractor’s expense.

1.7 WARRANTY

- A. Sheet Metal work and accessories to be included in Two-Year Contractor’s Warranty.
- B. Provide pre-finished metal manufacturer’s twenty-year coating guarantee.
- C. Provide pre-finished metal manufacturer’s twenty-year galvanized steel guarantee.

PART 2 - PRODUCTS

2.1 SHEET METALS

- A. Sheet metal flashing: 24-gauge galvanized steel and Series 300 stainless steel. Refer to Section 075419 for membrane coated 24 gauge galvanized steel.
- B. Pre-finished metal: 24-gauge galvanized steel, Kynar 500.

2.2 SHEET METAL COMPONENTS

- A. Receivers and Counterflashing:
 - 1. Curbs: 24-gauge galvanized steel.
 - 2. Walls: 24-gauge prefinished galvanized steel.
- B. Expansion Joint Covers, Area Divider Covers, Gutters, and Downspouts: Pre-finished 24-gauge galvanized steel.
- C. Edge flashing: membrane coated 24-gauge galvanized steel, refer to Section 075419.
- D. Gutter Straps, Brackets, and Downspout Straps: Minimum 1/8-inch by 1-inch galvanized steel. Wrap downspout straps and gutter brackets in prefinished 24-gauge galvanized steel to match gutters/downspouts.
- E. Cast Iron Downspout Boots: Barry Pattern and Foundry, model and size to coordinate with downspout size specified, or approved equivalent, 3’-0” height. Coordinate model to accommodate discharge to below grade piping if present, otherwise provide discharge at grade. Provide boots at all downspouts unless discharge is at a roof level. Refer to Section 077200 for painting of boots and connection plates.
 - 1. Fasteners for Downspout Boots at Steel Columns: Hilti X-U Powder Actuated Fastener, length as required to provide $\frac{3}{4}$ ” minimum embedment.

2. Fasteners for Downspout Boots at Masonry Walls: 3/16" stainless steel Hilti HAS threaded rod with HY20 adhesive, or approved equivalent.
- F. Cleats: 22-gauge galvanized steel.
- G. Hoods for Pipe Penetration Curbs and Square to Round Flashings: Minimum 24 gauge stainless steel.
- H. Splash Pan: 24-gauge galvanized steel splash pan, where downspout discharges on adjacent roof level, adhered to protection pad. Provide at every downspout discharging to roof surfaces.
- I. Splash Block: precast concrete splash block, 2'-0" length x 1'-0" width, minimum. Provide at all locations where downspout discharges at non-paved surfaces at ground level.

2.3 ACCESSORIES

- A. Solder: ANSI/ASTM B 32 50/50 type.
- B. Blind Pop-Rivets: Stainless steel, with stainless steel mandrels.
- C. Membrane Flashing:
 1. Self Adhered, High Temperature Rated, Rubberized Asphalt: Carlisle CCW WIP 300 HT or approved equivalent.
 2. EPDM: Carlisle-Syntec 60 mil EPDM, black, with factory applied tape or approved equivalent.

2.4 SEALANT

- A. Provide verified VOC content for all sealants and primers per AISD Sustainability Scorecard for ALL 3Ma, Low Emitting Materials, Adhesives, Sealants, Paints, Coatings.
 1. Type I: Application exposures to sunlight, ASTM C-920-87, Federal Specification TT-S-00230-C one component gun-grade polyurethane sealant suitable for continuous immersion and resistant to asphalt products.
 2. Type II: Applications not exposed to sunlight, butyl rubber based.
 3. Hot vent sealant: A one component neutral moisture curing silicone sealant.

2.5 SCHEDULE OF FASTENERS

- A. Exposed fasteners: Shall be stainless steel with stainless steel bonded neoprene or EPDM washers.
- B. Fasteners shall be compatible to all materials to which they come in contact.
- C. Cleat, Counter-flashing, and Surface Fastened Components.

1. Wood Substrate: No. 10 stainless steel wood screws with stainless steel bonded neoprene washers of length necessary to penetrate wood substrate one inch.
2. Metal Substrate: Minimum No. 10 stainless steel sheet metal screws or as necessary to suit application with stainless steel bonded neoprene washers.
3. Concrete or Masonry Substrate:
 - a. Flashings: 3/16" diameter, stainless steel Tapcon Concrete/Masonry Anchors or approved equivalent, length sufficient to provide 1" min. embedment into substrate.

2.6 FABRICATION

- A. Form sections to match existing profiles, true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate continuous cleats and starter strips of same material as sheet, interlockable with sheet.
- C. Form pieces in longest practical lengths.
- D. Hem exposed edges of metal 1/2-inch; miter and seam corners.
- E. Two-piece fascia extension or "V" profile is required whenever fascia vertical height exceeds 8 inches.
- F. Fasten and seal metal joints.
- G. Fabricate vertical faces with bottom edge formed outward 1/2-inch and hemmed to form drip.
- H. Form edge metal/fascia as existing profiles as specified herein and as shown on Drawings.
- I. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- J. Enlarge holes for fastening counter flashing as necessary to allow for thermal expansion and contraction. Cover exposed holes with appropriate washers.
- K. All fabrication and installation of sheet metal shall be in accordance with the latest published SMACNA and NRCA guidelines and recognized roofing and sheet metal industry standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify membrane termination and base flashings are in place, sealed, and secure.

- B. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Apply protective membrane backing on surfaces in contact with dissimilar materials, including between existing steel decks and treated wood.
- C. Tie-ins or contact with dissimilar metals: Install separation layer of elastomeric membrane between metal surfaces.

3.3 INSTALLATION - GENERAL

- A. Provide flashings of materials indicated on Drawings at all junctures of the roof with perimeters, curbs, mechanical, electrical equipment, etc., that a completely watertight installation is achieved.
- B. Fabricate and install sheet metal work with lines, arises and angles sharp and true, and plane surfaces free from warps and buckles. Bead or return all exposed edges.
- C. Soldering: Tin metal for full area of contact on soldered seams and joints. Do soldering slowly with well heated coppers, thoroughly heating seams and completely filling them with solder.
- D. Prime all sheet metal to receive roofing in accordance with manufacturer's requirements.
- E. Apply bed of water cutoff mastic directly below sheet metal that is set over roofing membrane or in other areas as required by the Drawings, and the manufacturer's specifications.
- F. Submit details not covered in Drawings for approval by Owner or A/E.
- G. Install starter and edge strips, and cleats before starting installation.
- H. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by A/E.
- I. Lock and seal all joints.
- J. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- K. Fasten sheet metal with approved fasteners at a minimum of 12-inches on centers unless otherwise specified in these Specifications or the Drawings.

3.4 TWO-PIECE COUNTERFLASHING INSTALLATION

- A. Secure counterflashing receiver over base flashing to substrate:

1. Surface Mount:
 - a. Fabricate receiver with sealant ledge.
 - b. Fasten receiver to wall substrate with appropriate gasketed fastener at 12-inches on centers.
 - c. Install silicone sealant along top of receiver.
 2. Reglet at Masonry Joint:
 - a. Sawcut 1" minimum depth reglet at masonry joint. Secure receiver with compression bend inside joint.
 - b. Install lead wedges at 12" o.c. inside receiver bend.
 - c. Install silicone sealant inside receiver bend at joint.
- B. Secure counterflashing to receiver with stainless steel screws with bonded neoprene washers spaced 12-inches on centers.
- C. Pop-rivet and solder all seams of galvanized or stainless steel two-piece counterflashings, pop rivet and seal seams of prefinished galvanized steel.

3.5 EDGE FASCIA INSTALLATION

- A. Provide edge fascia flashings at dimensions indicated in the Drawings.
- B. Secure fascia at horizontal leg with appropriate fasteners in two rows, staggered, on three-inch (3") centers.

3.6 CLEAT INSTALLATION

- A. Install continuous cleats for edge/coping flashing with appropriate fasteners on six-inch centers.

3.7 GUTTERS AND DOWNSPOUTS

- A. Join components with formed seams sealed watertight.
- B. Flash and seal gutters to downspouts and accessories. Apply sealant between gutter base and downspout flanges prior to securing with stainless steel pop rivets. Do not apply excess/additional sealant on top of downspout flange.
- C. Set splash blocks under downspouts at all locations discharging at non-paved surfaces.
- D. Set splash pans adhered to protection pads at all locations discharging to roof surfaces.
- E. Seal metal joints watertight for full metal surface contact. Rivet and apply Type II sealant between joints of metal.
- F. Test gutters and downspouts for leaks after full cure of sealants. Repair all leaks at metal joints by cleaning, priming, and reapplication of sealant.

3.8 CLEANING

- A. Remove markings from all exposed sheet metal.

END OF SECTION

SECTION 077200 – ROOF ACCESSORIES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnishing and installing roof hatch, hatch safety rails, paint system and pipe supports.

1.2 REFERENCES

- A. AA – Aluminum Association.
- B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- C. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.3 SUBMITTALS

- A. Product Data: Submit for all products proposed for use, describing physical characteristics and method of installation.
- B. Shop Drawings:
 - 1. Dimensioned Shop Drawings: Before beginning fabrication of equipment submit scaled shop drawings showing layout, profiles and product components, including anchorage, accessories and finish, along with general arrangement of the equipment and their working positions.
 - 2. Contract Closeout: Provide applicable manufacturer's warranties prior to the contract closeout.

1.4 QUALITY ASSURANCE

- A. Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.
- B. Installer Qualifications: Engage an experienced installer who has completed specified system installations similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- C. Manufacturer Qualifications: Company specializing in the engineering and manufacturing of specified roof accessory products, with not less than ten years of experience.
- D. Paint System Limitations:
 - 1. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).

2. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).
3. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
4. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver all components in Manufacturer's pre-bundled protective wrapping, clearly labeled for type and location in building.
- B. Storage and Protection: Store components above ground, protected from exposure to the elements and from physical damage caused by other construction activities. Rusted, bent, warped or otherwise damaged units will not be accepted.
 1. Store paint materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C).
 2. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 3. Keep storage area neat and orderly. Remove oily rags and waste daily.
 4. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

PART 2 - PRODUCTS

2.1 ROOF HATCHES, SAFETY RAILS

- A. Roof Hatch:
 1. Bilco Type SS-50TB Special Size Thermally Broken Roof Hatch, aluminum finish, size to match existing, or pre-bid approved equivalent.
- B. Roof Hatch Safety Rail: mounted to roof hatch curb, fabricated from powder coated galvanized steel, by same manufacturer as roof hatch, with operable gate for roof access.

2.2 SUPPORTS:

- A. Manufacturer:
 1. Acceptable Manufacturer: PHP Systems/Design i.e. Portable Pipe Hangers; 5534 Harvey Wilson Drive, Houston, Texas 77020. ASD. Tel: (800) 797-6585. Fax: (713) 672-1170. www.phpsd.com. Email: info@phpsd.com.
 2. Pre-bid approved equivalent.

B. APPLICATIONS

1. Support pipes, conduit, cable trays, and ducting, a minimum of 8 inches (203 mm) above roof surface.
2. Support Spacing: 10 feet MAXIMUM.
3. For Electrical and Gas Lines 2-1/2 inches (64 mm) in diameter or less, up to 10 inches (254 mm) above roof; Portable Pipe Hanger Model number SS8.
4. For Electrical and Gas Lines 3-1/2 inches (89 mm) in diameter or less, up to 16 inches (406 mm) above roof; Portable Pipe Hanger Model number PP10.
5. For Gas Lines 4 to 6 inches (100-150 mm) in diameter, up to 12 inches (305 mm) above roof; Portable Pipe Hanger Model number RB18.
6. For single Electrical and Gas Lines 3 to 8 inches (80-200 mm) in diameter; Portable Pipe Hanger Model number PS 1-2.
7. For Multiple Lines: Portable Pipe Hanger Model number PSE custom.
8. Accessories for PSE Custom and Other Applications when required.
 - a. Un-insulated Piping: Roller support or clevis hanger.
 - b. Insulated Piping: Band hanger supported from horizontal channel or clevis hanger with Insulation Protection Shield.
 - c. Conduit: Band hanger supported from horizontal channel.
 - d. Bracing required when using base with swivel; when pipe exceeds 24 inches (610 mm) above roof, or when thermal expansion of pipe is great.
9. Equipment supports shall consist of Portable Pipe Hanger Model number RTU-20.
 - a. Support Spacing: Install supports at locations indicated on the Drawings.

C. Portable Support System: Engineered, portable system specifically designed for installation without the need for roof penetrations, or flashings, and without causing damage to the roofing membrane.

1. Design system using high density, high impact polypropylene bases with carbon black, anti-oxidants for UV protection, and G-90 galvanized steel framing of 1-5/8 inch (41 mm) B22TH or 1-7/8 inch (48 mm) BTS22TH for support.
2. Custom design system to fit piping, conduits, equipment to be installed and actual conditions of service and loading.
3. Piping Supports: Provide suitable hangers and supports.
4. Equipment Supports: Factory fabricated to support exact duct sizes and equipment to be installed.

D. Bases: Injection molded high density, high impact polypropylene with UV-inhibitors and anti-oxidants, conforming to the following:

1. Moisture Content: Negligible.
2. Shrinkage/Swelling Due to Moisture: Negligible.
3. Density: 55.8 lb/cu ft (894 kg/cu m).
4. Insect Resistance: No known insect damage potential.
5. Chemical Resistance (oil, brake fluid, gasoline, diesel, antifreeze, battery acid, and sulfuric acid) No visual or physical change apparent.
6. Flammability: No ignition after 10 minutes, 25 kW/m, when tested in accordance with ASTM D 1929.

7. Sized as required by loading conditions and as indicated on the drawings.
 8. Shop fabricated with inserts for square tubing or threaded rods as required.
 9. Color: Integral black color as molded.
 10. Bases for Mechanical Attachment: Sealant chamber around penetration point, with injection port for sealing after fastening; beveled lip for sealant bead around entire diameter.
 11. Do not use bases containing carbonated plastics, press molded recycled rubber and plastics, steel, stainless steel, or any injection molded threaded receivers.
- E. Pipe Supports and Hangers: Conform to MSS SP-58 and MSS SP-69 and as follows:
1. Fabricated of G-90 galvanized steel where framing is carbon steel; fabricated of stainless steel where framing is stainless steel; finished same as framing.
 2. Sizes 2-1/2 inch (63 mm) and smaller: Single roller supports for piping subject to expansion and contraction; 3-sided channels and pipe clamps.
 3. Sizes 3 inch (76 mm) and larger: Rollers, clevis hangers, or band hangers, to allow for expansion and contraction without movement of the bases or framing.
- F. Stainless Steel Framing:
1. Channel Types: 1-5/8 inch (41.3 mm) or 1-7/8 inch (47.6 mm), as required for loading conditions.
 2. Thickness: 12 gage (2.7 mm).
 3. Form: Roll-formed 3-sided or tubular channel.
 4. Finish: Mill finish.
 5. Do not use tubing or tube steel.
- G. Accessories: Clamps, bolts, nuts, washers, and other devices as required for a complete system.
1. Stainless Steel: Mill finish.

2.3 PAINT SYSTEM

- A. Acceptable Manufacturers:
1. Devoe
 2. Sherwin-Williams
 3. Pittsburgh Paints
 4. Approved equivalent.
- B. PAINT MATERIALS
1. Material Compatibility: Provide surface preparation fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
3. Provide paint/coating types identified below or an alternate manufacturers equivalent product:
 - a. Paint/Coating: Sherwin-Williams Sher-Cryl HPA or approved equivalent.
 - b. Primer: Kem Kromik Universal Metal Primer or approved equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION – ROOF HATCH, RAIL SYSTEMS

- A. The roof hatch shall be installed per the manufacturer's instructions and the Drawings.
 1. Verify that roof hatch installation will not disrupt other trades. Verify that the substrate is dry, clean, and free of foreign matter. Report and correct defects prior to any installation.
 2. Install wood blocking secured to the roof deck at roof hatch location. Wood blocking height shall match thickness of insulation at roof hatch. Install roof hatch on top of blocking.
 3. The installer shall furnish base flashings, counter flashings, and associated mechanical fasteners, as required by the Drawings and related specification Sections.
- B. The hatch rail system shall be field assembled and installed per the manufacturer's instructions.
 1. Verify that hatch rail system installation will not disrupt other trades. Report and correct defects prior to any installation.
 2. The installer shall check as-built conditions and verify the manufacturer's hatch rail system details for accuracy to fit the application prior to fabrication. The installer shall comply with the rail system and roof hatch manufacturer's installation instructions.
 3. The manufacturer shall furnish fasteners necessary for installing hatch rail system on hatch.
 4. Adjust gate for smooth operation, free of binding.

3.2 INSTALLATION – SUPPORTS

- A. Install in accordance with manufacturer's instructions.
- B. Clean surfaces of roof in areas to receive portable support bases.
- C. Remove dirt, dust, oils, and other foreign materials.
- D. Use care in handling portable support system components during installation, to avoid damage to roofing, flashing, equipment, or related materials.
- E. Pipe, Cable, and Equipment Support Systems

1. Locate bases and support framing as indicated on drawings and as specified herein. Provide complete and adequate support of all piping, ducting, and conduit; whether or not all required devices are shown.
 2. The use of wood for supporting piping is not permitted.
 3. Provide support spacing so deflection of piping does not exceed 1/240 of span.
 4. Install framing at spacing indicated, but in no case at greater than 10 feet (3 m) on center.
 - a. Accurately locate and align bases.
 - b. Consult manufacturer of existing or new roofing system as to the type of protection pads required between the roof and base.
 - c. Adhere bases to protection pads.
 5. Set framing posts into bases and assemble framing structure as indicated.
- F. Equipment Supports
1. Locate bases and support framing as indicated on drawings and as specified herein. Provide complete and adequate support of all structures.
 2. Accurately locate and align bases.
 - a. Consult manufacturer of existing or new roofing system as to the type of isolation pads required between the roof and base.
 - b. Adhere bases to roof membrane manufacturer approved protection pads in accordance with roof membrane manufacturer's installation requirements.
 3. Set legs of substructures into bases as indicated.
- G. When requested by the Architect, provide a factory-trained representative of the manufacturer to visit the site while the work is in progress to assure that the installation conforms to the manufacturers design and installation requirements.

3.3 INSTALLATION – PAINT SYSTEM (DOWNSPOUT BOOTS AND GAS LINES)

- A. Scope: clean, prime, and paint all exterior and interior surfaces of specified cast iron downspout boots prior to installation.
- B. Cleaning
1. General: Cover and protect from painting all surfaces not scheduled to be painted. Temporarily remove items that are not to be painted and cannot be adequately protected during the painting operations. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
 2. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings including all loose and flaking paint. Removal of grease or oil shall be performed by solvent wipe using appropriate solvents or detergents.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Scrape all areas to remove all loose, blistering, and flaking paint, rust stains, and corrosion using a hand scraper or approved vacuum shrouded power tools.
 - a. All areas with scaling or pack rust shall be cleaned to solid metal with hand or power tools such that no rust scale remains. Cleaning for all steel components shall meet the SSPC-3, "Power Tool Cleaning" standards for preparation.
 - b. Paint chips and dust shall be collected continuously during the paint scraping, as close as practicable to the point of cleaning. All paint chips and dust shall be collected from the general work area on an hourly basis during cleaning operations.
 - c. Once the components meet the SSPC-3 standards, apply the salt sequestering agent to all structural steel in accordance to the manufacturer's recommendations. Remove the agent by pressure washing or as directed by the manufacturer.
 - d. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.
 - e. Notify Engineer of completion of preparatory work so that Engineer may observe conditions as well as examine soundness of existing structural steel system
 2. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. 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.
 2. Use thinners only when required by the paint manufacturer. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Application: 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 or as selected during submittal review.
 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. Minimum Coating Thickness:
 - a. Wet mil thickness: 6.0 mils minimum to 10 mils maximum.
 - b. Dry mil thickness: 2.5 mils minimum to 4.0 mils maximum.
 - c. Coverage: 154 square feet per gallon minimum to 247 square feet per gallon maximum.
 5. 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.

3.4 CLEANING AND PROTECTION

- A. Remove all packaging, unused fasteners, adhesive and other installation materials from the project site.
- B. Remove adhesive from exposed surfaces of supports and bases, and leave the work area in clean condition.
- C. Provide protection as required, leaving the work area in undamaged condition at the time of completion of work.

END OF SECTION

SECTION 086200 - UNIT SKYLIGHTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the following: Curb-mounted plastic glazed skylights.
- B. Refer to roofing system sections for roofing accessories to be built into the roofing system to accommodate work of this section.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide unit skylights capable of withstanding loads indicated without failure. Failure includes the following:
 - B. Thermal stresses transferred to the building structure.
 - C. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing.
 - D. Noise or vibration created by thermal and structural movement and wind.
 - E. Weakening of fasteners, attachments, and other components.
- F. Structural Loads: Provide unit skylights that have been tested by and independent test laboratory to meet a minimum 40 PSF positive load and a 20 PSF negative load based on maximum 48" rib spacing.

1.3 SUBMITTALS

- A. Product Data Sheet: For each type of skylight specified, include details of construction and installation, relative to applicable curb configuration.
- B. Samples for Selection: Manufacturer's color charts showing a full range of colors available for each type of skylight glazing and Aluminum Finish.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide glazing fabricated from sheets identical to those tested for the following fire-test-response characteristics, per ASTM test method indicated below, by UL or other testing and inspecting agencies acceptable to authorities

having jurisdiction. Identify plastic sheets with appropriate markings of applicable testing and inspecting organization.

- B. Self-Ignition Temperature: 750 deg F (399 deg C) or greater when tested per ASTM D 1929 on plastic sheets in the thickness intended for use.
- C. Smoke density of 13.5% or less when tested per ASTM D 2843 on plastic sheets in the thickness intended for use.
- D. Relative- Burning Characteristics: As follows, when tested per ASTM D 635:
- E. 100% Cast Acrylic: Burning rate of 1.18 inches (30 mm) per minute or less when tested with a nominal thickness of 0.118 inches (2.3 mm).
- F. 100% Cast Acrylic: Burning rate of 0.71 inches (18 mm) per minute or less when tested with a nominal thickness of 0.236 inches (6 mm).

1.5 WARRANTY

- A. General: Warranties specified in this section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Skylight Warranty: Provide written warranty signed by manufacturer, agreeing to repair or replace work that exhibits defects in materials or workmanship and guaranteeing weather-tight and leak-free performance. "Defects" is defined as uncontrolled leakage of water and abnormal aging or deterioration.
- C. Warranty Period: 2 years from date of Substantial Completion.
- D. Plastic Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work that has or develops defects in the plastic. "Defects" is defined as abnormal aging or deterioration.
- E. Warranty Period for Acrylic: 2 years from date of Substantial Completion against yellowing.
- F. Finish Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work with finish defects. "Defects" is defined as peeling, chipping, chalking, fading, abnormal aging or deterioration, and failure to perform as required. Contact manufacturer for list of available finishes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by Wasco Products, Inc., Sanford, ME (800-388-0293), or approved equivalent.

2.2 MATERIALS

- A. Curb Frame: Extruded aluminum alloy 6063-T5 (min.) ASTM B 221 with minimum effective thickness of .090 inches. Provide integral condensation gutter system with corners fully welded for waterproof quality. Curb frame to have glass fiber reinforced polymer thermal break.
 - 1. Poured and de-bridged polyurethane thermal breaks are not acceptable
- B. Retainer Frame: Extruded aluminum alloy 6063-T5 (min). ASTM B with minimum effective thickness of 0.60 inches.
- C. Pressure Caps: Extruded aluminum alloy 6063-T5 (min). ASTM B 221 with minimum effective thickness of 0.100 inches.
- D. Plastic Sheets: Monolithic, formable, transparent (colorless) or translucent (white) sheets, weather and impact resistant.
 - 1. Acrylic: 100% cast acrylic sheet ASTM D 4802, thermo-formable, and cold formable 100% cast acrylic (methacrylate), Category C-2 or CC-2 Type UVA (formulated with ultraviolet absorber), with Finish 1 (smooth or polished), unless otherwise indicated.
 - a. Extruded acrylic sheet is not acceptable.
- E. Thermal Break: Fabricate skylight units with glass fiber reinforced polymer thermal break separating interior metal framing from materials exposed to outside temperature.
 - 1. Poured and de-bridged polyurethane thermal breaks are not acceptable.
- F. Shape and Size: As indicated by model number.
- G. Glazing: 100% cast acrylic: (Clear, #2447 white). Outer dome thermoformed and or cold formed with 20% rise for TBV and TBVV.
- H. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other non-corrosive metal as recommended by Wasco Products, Inc.
- I. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4 mm) dry film thickness per coating.

2.3 PLASTIC SKYLIGHT UNITS

- A. General: Factory-assembled or knocked down, curb-mounted unit consisting of 100% cast acrylic glazing, gasketing, inner frame designed to mount on separate curb, and self-contained flashing.
 - 1. Products: Provide Model meeting the requirements of this section and matching configuration and dimensions of existing skylights.
- B. Curb: Reuse existing curb.

- C. Condensation Control: Fabricate skylight units with integral internal gutters and weeps to collect and dispose of condensation beyond the outside of support curb.
- D. Shape and Size: to match existing.
- E. Glazing: Outer dome thermoformed and or cold formed 100% cast acrylic. (Clear). Extruded acrylic not acceptable.
- F. Glazing: Inner dome thermoformed and or cold formed 100% acrylic. (# 2447 white). Extruded acrylic not acceptable.

2.4 FABRICATION

- A. Framing Components:
 - 1. Factory fit and assemble components.
 - 2. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
 - 3. Fabricate components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
 - 4. Fabricate components to accommodate expansion, contraction, and field adjustment, and to provide for minimum clearance and shimming at skylight perimeter.
 - 5. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
 - 6. Fit and secure joints by heliarc welding.

PART 3- EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting skylight performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Metal Protection: As follows:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
3. Where aluminum will contact pressure-treated wood, separate dissimilar materials by methods recommended by manufacturer.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing skylight components.
- B. Following manufacturer's installations instructions and job specific drawings to ensure proper installation.
- C. Coordinate with installation of roof deck and other substrates to receive skylight units.
- D. Coordinate with installation of vapor barriers, roof insulation, roofing, and flashing as required to assure that each element of the work performs properly and that combined elements are waterproof and weather tight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal and plastic surfaces according to manufacturer's instructions. Touch up damaged metal coatings.
- B. Clean plastic skylight units, inside and out, not more than 5 days prior to date of substantial completion.

END OF SECTION

SECTION 09 96 53 – HIGH PERFORMANCE ELASTOMERIC COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes substrate preparation and application of a high performance elastomeric coating.

1.2 ACTION SUBMITTALS

- A. Product Data: For specified products, including:
 - 1. Preparation instructions and recommendations.
 - 2. Recommended primers and accessories.
- B. Samples for initial selection.
- C. Samples for Verification: For each elastomeric coating indicated, for each color and texture required. Submit on step-coated sample cards with each coat labeled.
- D. Product Schedule: For each product, color, and finish indicated. Provide cross reference to application areas, utilizing designations indicated on Drawings and in specifications.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified applicator.
- B. Preconstruction compatibility and adhesion test reports.
- C. Manufacturer's instructions for installation and field quality control testing.
- D. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each coating specified to be validated by SWRI's Coating Validation Program.
- E. Field quality control adhesion test reports.
- F. Warranty: Sample of special warranty.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials packaged for storage in unopened containers labeled with product name, color and texture information, and local source contact information.
 - 1. Provide one (1) gallon of each type of product.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Employer of experienced applicators equipped and trained for application of elastomeric coatings required for this Project with record of successful completion of projects of similar scope.
- B. Single Source Responsibility: Provide elastomeric coatings and related silicone joint sealants by a single manufacturer through a single source.

1.6 PROJECT CONDITIONS

- A. Do not install elastomeric coatings during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
- B. Do not install elastomeric coatings when temperature is above 100 deg. F (38 deg. C) or below 40 deg. F (5 deg. C).

1.7 WARRANTY

- A. Special Warranty, General: Manufacturer's standard project-specific form in which manufacturer agrees to repair or replace elastomeric coating that demonstrates deterioration or failure within warranty period specified due to material failure under normal use. Failure include water penetration through coating.
 - 1. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design Product: Provide elastomeric coatings manufactured by Dow Corning Corporation., Midland MI, or comparable products of other manufacturer approved by Engineer in accordance with Instructions to Bidders and Division 01 General Requirements.

2.2 EXTERIOR FLAT WATERBORNE, PIGMENTED SILICONE ELASTOMERIC COATINGS

- A. Silicone Elastomeric Coating: Single-component, fluid-applied, water-based, pigmented silicone elastomer.
 - 1. Basis of Design Product: DOW CORNING® AllGuard Silicone Elastomeric Coating.
 - 2. Color: As selected by Architect from manufacturer's full line.
 - 3. Surface Profile: Smooth surface.
 - 4. Volatile Organic Compound (VOC) Content: 4 g/L maximum.

5. Moisture-Vapor Transmission, ASTM D 1653: 43 perms, minimum.
6. Hardness, ASTM D 2240: 38 durometer Shore A.
7. Tensile Strength, ASTM D 412: 145 lbf/sq. in. (1.0 MPa), minimum.
8. Elongation, ASTM D 412: 600 percent, minimum.
9. Room Temperature Flexibility, ASTM D 522: 1/8 inch mandrel test; pass.
10. Low Temperature Flexibility, ASTM D 711: 1/4 inch mandrel test; pass.
11. Fungus Resistance, ASTM D 3274: No growth.
12. Mold Resistance, ASTM D 3273: No growth.
13. Solids Content, ASTM D 2369: Not less than 55 percent by weight.

2.3 ACCESSORY MATERIALS

- A. General: VOC content of primers and fillers, 107 g/L or less.
- B. Crack Fillers: Elastomeric coating manufacturer's recommended, factory-formulated crack fillers or sealants compatible with substrate and other materials.
- C. Primer: Elastomeric coating manufacturer's recommended, factory-formulated, alkali-resistant primer compatible with substrate and other materials indicated.
- D. Concrete Unit Masonry Block Filler: factory-formulated, high-performance latex block filler compatible with substrate and other materials indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to determine if work is ready to receive elastomeric coatings. Verify that surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, excess alkalinity, and other conditions affecting performance of work.
 1. Verify that new concrete and mortar to receive coating application has cured adequately in accordance with substrate and coating manufacturer's instructions.
- B. Preinstallation Testing: Prior to application of elastomeric coatings, perform the following tests to verify condition of substrate in accordance with manufacturer's instructions:
 1. Adhesion: Perform substrate field adhesion tests on each substrate to determine if primer is required to satisfactorily adhere elastomeric coatings to substrates.
 2. Alkalinity: Verify substrate is within alkalinity range acceptable to manufacturer.
 3. Moisture Level: Verify substrate moisture content is acceptable to manufacturer.
- C. Proceed with coating work once conditions meet elastomeric coating manufacturer's recommendations.

3.2 PREPARATION

- A. General: Comply with elastomeric coating manufacturer's written instructions for preparation of substrates.
- B. Hardware Removal: Remove hardware, accessories, plates, fixtures, and similar items that are not to be coated. If removal is not practical, provide protection for installed items prior to cleaning and preparation activities.
- C. Cleaning: Clean substrates to remove contaminants and foreign material by pressure cleaning, wire brushing, grinding or other method recommended by elastomeric coatings manufacturer.
- D. Substrate Repair: Repair deteriorated or damaged substrates, repair masonry joints, and fill cracks, voids, honeycomb, and other defects using materials as recommended by manufacturer. Allow patching materials to cure.
- E. Protection: Protect adjacent surfaces not designated to receive coatings. Provide protection for pedestrians, vehicles, landscaping, and surrounding areas to prevent contact with coating materials.

3.3 APPLICATION

- A. Primer: Apply primer to substrates where required based upon pre-installation testing and elastomeric coating manufacturer's recommendations, using application methods and rate of application recommended by manufacturer. Allow to dry prior to application of elastomeric coating.
 - 1. Apply block filler as primer on concrete masonry unit substrates where required to fill pores and provide smooth, continuous water-resistant finish coat(s).
- B. Elastomeric Coating: Apply elastomeric coating using application methods and rate of application recommended by manufacturer. Apply using nap roller, nylon brush, or airless sprayer, as allowed by authorities having jurisdiction.
 - 1. Apply elastomeric coating from top to bottom of substrate. Work down vertical surface and cover rundown in process. Avoid excessive overlapping.
 - 2. Apply coating free of cloudiness, spotting, laps, brush marks, roller tracks, and other surface imperfections. Cut in color breaks and terminations with sharp lines.
 - 3. Apply additional coats as required to provide cured film with uniform finish, color, and appearance.
 - 4. Provide a minimum of two coats of not less than 20 mil total wet film thickness (10 mil wet film thickness per coat) to provide finished dry film thickness of not less than 10 mils.
- C. Cleaning: Remove overspray and excess material using materials and methods approved by manufacturer that will not damage adjacent materials.
- D. Curing and Protection: Allow coatings to cure before exposure to traffic. Use test specimens formed at time of coating application to verify curing time. Prevent damage to coatings resulting from construction operations or other causes. Replace damaged coatings at time of Substantial Completion.

3.4 FIELD QUALITY CONTROL

- A. Owner may retain testing agency to perform the following tests:
 - 1. Verification that substrate preparation meets requirements.
 - 2. Testing and certification that coating materials comply with requirements.
 - 3. Testing of application for compliance with adhesion and film thickness requirements.
- B. If testing indicates products or work do not meet requirements, Owner may stop work and require Contractor to remove non-complying materials and materials applied over non-complying substrates, and correct application.

3.5 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from application of elastomeric coatings.
- B. Remove rubbish and discarded materials from Project site daily. Clean overspray from adjacent surfaces as work progresses, using methods recommended by manufacturer.
- C. Remove temporary coverings and protection upon completion. Clean and repair adjacent surfaces damaged by water repellent application.
- D. Prior to substantial completion, touch up and restore damaged or defaced coated surfaces.

END OF SECTION

2018 Roof Improvements at
But Creek Elementary School
401 W. Braker Lane, Austin, Texas 78753

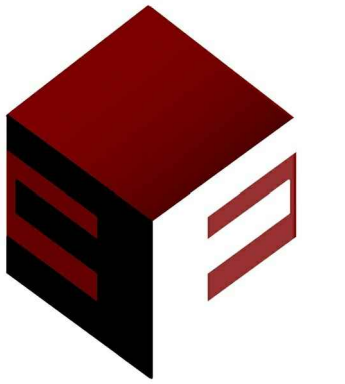
AISD PROJECT NO. 18-0028-WALCK



Austin

Independent School District

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SEPTEMBER 18, 2018
ENGINEERED
EXTERIORS, PLLC
F-12811

**Roof Improvements at
Walnut Creek Elementary**
401 W. Braker Lane
Austin, Texas 78753

Austin Independent School District
18-0028-WALCK

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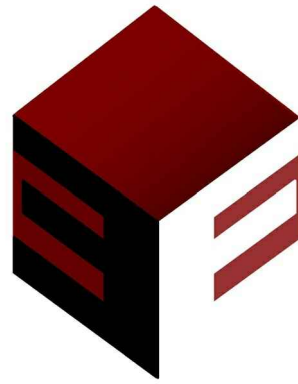
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A001

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR THOROUGHLY READING THE PROJECT MANUAL AND REVIEWING ALL DRAWINGS AND GENERAL NOTES. WHERE CONFLICT EXISTS BETWEEN THESE DOCUMENTS, THE MOST STRINGENT REQUIREMENT SHALL PREVAIL.
2. VERIFY ALL DIMENSIONS AND COORDINATE ALL DRAWINGS WITH ACTUAL FIELD CONDITIONS PRIOR TO BIDDING ON THE PROJECT. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO BIDDING.
3. ALL SPECIFIED WORK PERFORMED BY CONTRACTOR SHALL COMPLY WITH THE CURRENT ADOPTED LOCAL BUILDING, PLUMBING, ELECTRIC AND FIRE CODES WITH AMENDMENTS. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IF SPECIFIED SCOPE OF WORK WILL CONFLICT WITH THESE REQUIREMENTS.
4. FASTENING OR ATTACHMENT OF WOOD BLOCKING, NAILERS, STEEL ANGLES, DECKING AND SHEET METAL SHALL BE IN ACCORDANCE WITH ANSI/SPRI ES-1.
5. ALL WOOD BLOCKING AND LUMBER SHALL BE TREATED. ALL FASTENERS USED IN TREATED WOOD SHALL BE STAINLESS STEEL. STAGGER JOINTS WHEN STACKING LUMBER IN MULTIPLE LAYERS.
6. INSTALL A 1" PER FOOT MINIMUM SLOPED CONTINUOUS SUBSTRATE BENEATH ALL SHEET METAL CAPS AT EXPANSION JOINTS TO PROMOTE DRAINAGE.
7. USE STAINLESS STEEL FASTENERS FOR LUMBER, UNLESS SPECIFIED OTHERWISE.
8. FURNISH AND INSTALL PLYWOOD IN ACCORDANCE WITH THE AMERICAN PLYWOOD ASSOCIATION.
9. SHEET METAL WORK SHALL COMPLY WITH SMACNA.
10. PROVIDE CONTINUOUS 22 GA. GALVANIZED STEEL CLEATS WITH FASTENERS AT A MAXIMUM SPACING OF 6" O.C. MAXIMUM FOR METAL/WOOD SUBSTRATES AND AT 12" O.C. MAXIMUM AT MASONRY/CONCRETE SUBSTRATES AT ALL SHEET METAL EDGES, FASCIA AND COPING. FOR METALS OTHER THAN GALVANIZED STEEL, INSTALL CONTINUOUS CLEAT ONE GAUGE HEAVIER THAN SHEET METAL COMPONENT BEING ATTACHED. STAGGER CLEAT JOINTS FROM JOINTS OF ATTACHED COMPONENTS.
11. PROVIDE BACK-UP PLATES AT ALL EDGE METAL JOINTS. PROVIDE DOUBLE BEAD TAPE SEALANT BETWEEN BOTH SIDES OF FASCIA AND PLATES. SECURE PLATES TO FASCIA WITH STAINLESS STEEL POP RIVETS AT 2" O.C. MAX.
12. PROVIDE ROOFING MEMBRANE AND/OR SELF ADHERED, HIGH TEMPERATURE RATED WATERPROOFING MEMBRANE, CONTINUOUS BETWEEN SHEET METAL AND LUMBER, AND BETWEEN STEEL DECKS AND TREATED LUMBER.
13. HEM ALL EXPOSED SHEET METAL EDGES A MINIMUM OF ½".
14. PROVIDE SHEET METAL COMPONENT CORNERS, INTERSECTIONS, AND TERMINATIONS WITH JOINTS SPACED A MINIMUM OF 18" IN EITHER DIRECTION.
15. SOLDER ALL VERTICAL GALVANIZED STEEL SHEET METAL JOINTS, EXCEPT FOR PRE-FINISHED GALVANIZED STEEL. POP-RIVET AND SEAL ALL VERTICAL JOINTS OF PRE-FINISHED GALVANIZED STEEL.
16. SLOPE GUTTERS A MINIMUM OF 1/16" PER FOOT FOR DRAINAGE. PROVIDE GUTTER EXPANSION JOINTS AT HIGH POINTS, SPACED NOT TO EXCEED 50 FEET. PROVIDE GUTTER SPACERS MADE OF 1/8" x 1" GALVANIZED STEEL SPACED 3'-0" O.C. PROVIDE EXTERNAL GUTTER BRACKETS MADE OF 1/8" x 1" GALVANIZED STEEL SPACED 6'-0" O.C. WRAP GUTTER BRACKETS WITH PREFINISHED METAL TO MATCH GUTTERS.
17. DO NOT INSTALL SCUPPERS, DOWNSPOUTS, OVERFLOW DRAIN OUTLETS, OR OTHER WATER DISCHARGE POINTS OVER DOORS, WINDOWS OR SIDEWALKS. IF THE DRAWINGS CONFLICT WITH THE ABOVE REQUIREMENT, CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ROOF CONSULTANT FOR DIRECTION PRIOR TO INSTALLING.
18. SPACE GUTTER DOWNSPOUTS A MAXIMUM OF 40 FEET APART, WITH EXPANSION JOINTS LOCATED AT THE HIGHEST POINTS BETWEEN DOWNSPOUTS, A MAXIMUM OF 50 FEET APART.
19. PROVIDE A MINIMUM OF TWO DOWNSPOUT STRAPS PER DOWNSPOUT, MAXIMUM VERTICAL SPACING OF 4'-0". PROVIDE 36" MIN. HEIGHT PAINTED CAST IRON DOWNSPOUT BOOTS AT ALL DOWNSPOUTS. PROVIDE A CONCRETE SPLASH BLOCK AT DOWNSPOUTS THAT DISCHARGE TO NON-PAVED SURFACES AT GRADE.
20. PROVIDE 1/2" PER FOOT TAPERED CRICKETS BETWEEN ALL DRAINS AND AT WALLS WHERE NECESSARY FOR POSITIVE DRAINAGE, AND ON THE UP-SLOPE SIDE OF ALL CURBS WIDER THAN 12" PERPENDICULAR TO THE ROOF SLOPE DIRECTION.
21. MINIMUM INSULATION THICKNESS AT DRAINS IS 1.5", UNLESS OTHERWISE SPECIFIED OR SHOWN IN DRAWINGS.
22. PROVIDE A MINIMUM BASE FLASHING HEIGHT OF 12" ABOVE THE PLANE OF THE FINISHED ROOF AT THE PEAK OF THE UPSLOPE CRICKET AT ALL CURBS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING IF LESS THAN 12" BASE FLASHING HEIGHT IS SPECIFIED OR SHOWN IN DRAWINGS.
23. PROVIDE TWO-PIECE COUNTERFLASHING AND RECEIVER FOR ALL ROOFTOP EQUIPMENT CURBS.
24. PROVIDE WOOD BLOCKING BENEATH ALL EMBEDDED METAL FLASHINGS. WOOD BLOCKING SHALL EXTEND A MINIMUM OF 1-1/2" PAST THE METAL FLANGE OF THE FLASHING.
25. PRIME ALL SURFACES RECEIVING ELASTOMERIC SEALANT PRIOR TO INSTALLATION OF SEALANT. MATCH SEALANT COLOR TO PRE-FINISHED METAL SEALANT IS BEING APPLIED TO, OR TO SUBSTRATE FOR GALVANIZED METAL. SUBMIT SEALANT COLORS FOR OWNER APPROVAL PRIOR TO INSTALLATION.
26. INSTALL ROOF PROTECTION PADS AS SHOWN IN THE DRAWINGS, AND AT A MINIMUM, AROUND ALL ROOF MOUNTED MECHANICAL EQUIPMENT LOCATED WITHIN THE SCOPE OF WORK, AT ALL ROOF ACCESS POINTS, INCLUDING DOORWAYS AND LADDERS, AND BETWEEN ROOF ACCESS POINTS AND THE ROOF MOUNTED EQUIPMENT. SUBMIT SHOP DRAWING OF PROPOSED LOCATIONS PRIOR TO INSTALLATION.
27. INSTALL MECHANICAL EQUIPMENT OR ACCESSORY CURBS TO BEAR ON STRUCTURAL ROOF DECK OR WOOD

- NAILERS TO MATCH THE HEIGHT OF THE ROOF SYSTEM. ALL ROOFTOP MEP EQUIPMENT SHALL BE SUPPORTED BY CURBS WITH MINIMUM 12" BASE FLASHING HEIGHT. STRIPPED IN FLANGE VENTS ARE PROHIBITED.
28. INSTALL MECHANICAL EQUIPMENT CURB BASE FLASHING, SHEET METAL COUNTERFLASHING, AND SEALING GASKETS PRIOR TO SETTING EQUIPMENT ON CURB. PROVIDE MINIMUM 1" CLEARANCE BETWEEN CURB AND EQUIPMENT FLANGE. DO NOT INSTALL EQUIPMENT PRIOR TO OBSERVATION AND ACCEPTANCE BY ENGINEER.
29. SCOPE OF WORK FOR RAISING MECHANICAL EQUIPMENT CURBS AND ROOF MOUNTED PIPING TO SPECIFIED HEIGHTS INCLUDES MODIFYING ALL MECHANICAL, ELECTRICAL AND PLUMBING ASSOCIATED WITH THE EQUIPMENT FOR A COMPLETE OPERATIONAL ASSEMBLY THAT MEETS CURRENT CODE REQUIREMENTS. WORK SHALL BE PERFORMED BY LICENSED INSTALLERS FOR THE APPLICABLE TRADE.
30. PENETRATION POCKETS ARE PROHIBITED.
31. PROVIDE ROOF PENETRATION CURB WITH HOODED SHEET METAL ENCLOSURE FOR ALL PIPE AND CONDUIT THAT PENETRATES THE ROOF. SLOPE PIPES DOWN AND AWAY FROM HOOD AND PROVIDE A DRIP LOOP. DO NOT PROVIDE DRIP LOOP IF IT WILL IMPAIR NORMAL OPERATION OF PIPE. INSTALL EXPANDING FOAM TO SEAL AROUND AND BETWEEN PIPES AT DECK TO PROVIDE WEATHER TIGHT BARRIER/SEAL.
32. SUPPORT ALL ROOF MOUNTED PIPING AND CONDUIT WITH SPECIFIED SUPPORTS, SPACED MAXIMUM 10 FEET O.C. AND WITHIN 2 FEET OF ALL ELBOWS AND TEES. COMPLY WITH MANUFACTURER'S INSTALLATION REQUIREMENTS. SUPPORT PIPE AND CONDUIT SO THAT BOTTOM ELEVATION OF PIPE OR CONDUIT IS A MINIMUM OF 8" ABOVE THE PLANE OF THE FINISHED ROOF.
33. PROVIDE A MINIMUM 18" CLEARANCE BETWEEN PLUMBING VENTS AND EQUIPMENT CURBS, WALLS/PERIMETER EDGES OR OTHER ROOF PENETRATIONS.
34. INFILL LOW SPOTS/AREAS AT EXISTING LWIC DECKS WITH NEW LWIC PATCHING MATERIALS PRIOR TO INSTALLATION OF NEW ROOFING.



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SEPTEMBER 18, 2018
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F-12811

Roof Improvements at

Walnut Creek Elementary

401 W. Braker Lane
Austin, Texas 78753

Austin Independent School District

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A101

SCOPE OF WORK

BASE BID:

1. Remove existing membrane and flashings to deck. Refer to Roof System Log below for existing materials. Repair existing 5/8' gypsum sheathing board at A-12 and A-12 Corridor roofs as needed, on a unit price basis.
2. Install New Roof System as specified at Roof Area A-10 and A-14:

Install mechanically fastened base sheet to existing lightweight fill deck.

Install tapered polyisocyanurate insulation and 1/2" coverboard set in adhesive.
3. Install New Roof System as specified at Roof Area A-12 and A-12 (Corridor):

Install R-25 polyisocyanurate insulation, first layer mechanically fastened to steel deck with subsequent layers and 1/2" coverboard set in adhesive.

Install new two ply modified bitumen roof system as specified, with all associated flashings and sheet metal.
4. MEP Modifications:

Inspect all existing piping and conduit lines at reroof areas for deteriorated joints prior to disturbing. Notify A/E of any conditions requiring repair before beginning work. Damage to existing equipment or interiors as a result of disturbing existing lines without notification/repair will be addressed at contractor's expense.

Increase height of existing curbs indicated in Drawings to provide 12" minimum base flashing height.

Relocate existing penetrations at locations identified on the Drawings to provide minimum specified clearances indicated in General Notes.

Raise existing piping and conduit lines to provide 8" clearance above new roof and 12" clearance at roof penetration curbs; provide drip loops at new penetration curbs for all lines except condensate drains.

Provide new pipe supports at all existing gas, refrigerant, and conduit lines at new roof areas.

Prep, prime and repaint all gas pipe lines at new roofs.
5. Walls above new roofs at A-10 and A-12 Corridor: Install new silicone elastomeric wall coating system as specified, over existing masonry, stucco, and exposed steel framing.

ALTERNATE BIDS:

1. Install Roof Coating System at Roof Areas A-1, A-09, A-11, A-13, A-16:

Replace wet substrate at locations identified in the Drawings.

Clean existing roof surface and install reinforcing set in coating at seams and detail areas, as required by coating manufacturer.

Install coating system per manufacturer requirements.
2. Install New Skylights at A-11:

Remove existing damaged skylights indicated in the Drawings.

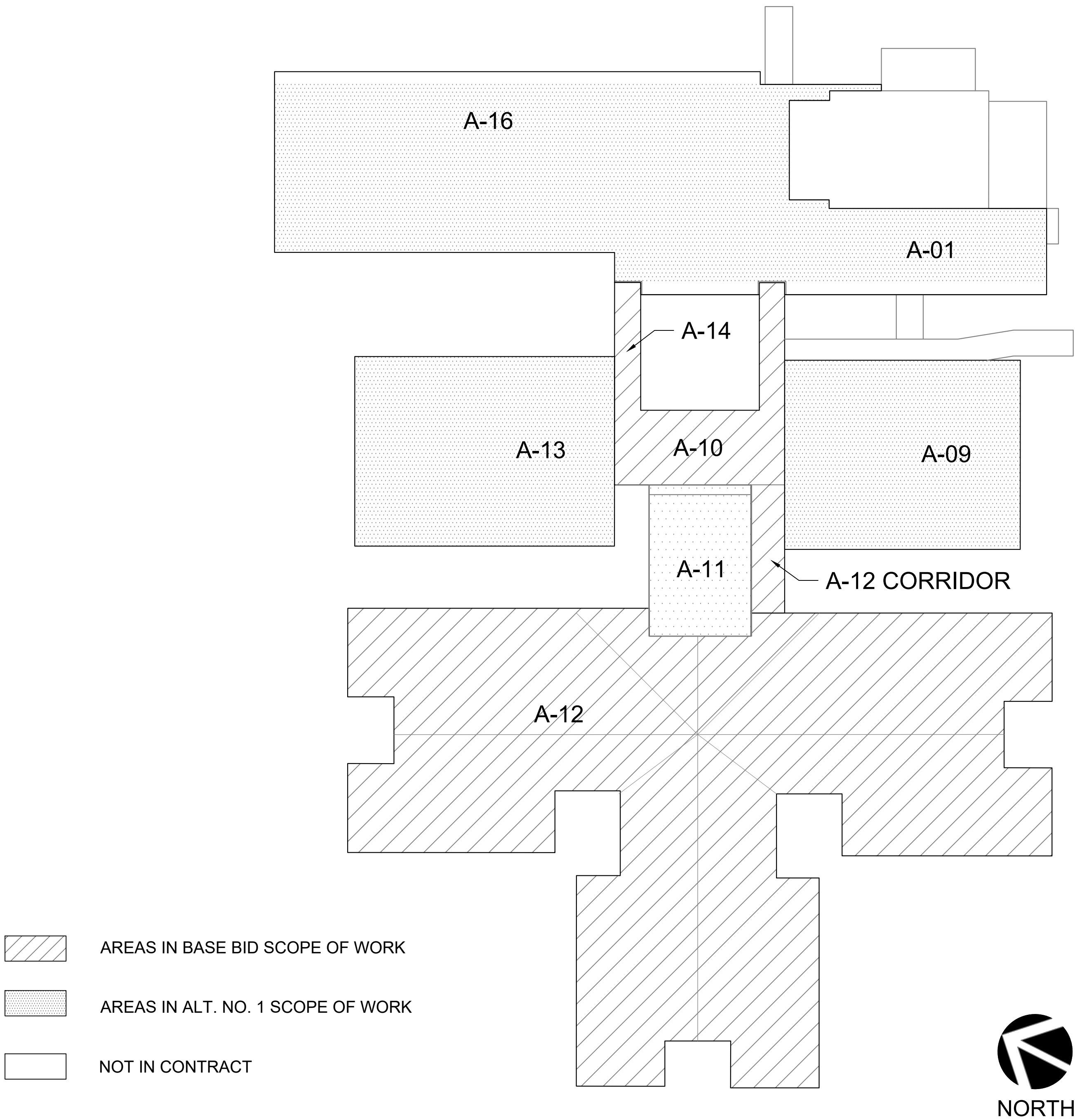
Install new skylights as specified.

WIND ZONE INFORMATION
FIELD: 75 PSF MIN. UPLIFT PRESSURE
PERIMETER: 90 PSF MIN. UPLIFT PRESSURE, PROVIDE MINIMUM 8'-0" ZONE WIDTH
CORNER: 120 PSF MIN. UPLIFT PRESSURE, PROVIDE "L" SHAPED AREA, 16'-0" ON EACH SIDE OF CORNER MINIMUM.

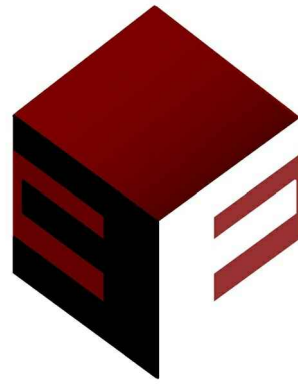
ROOF SYSTEM LOG

ROOF I.D.	DECK	EXISTING DECK SLOPE	EXISTING INSULATION	EXISTING ROOF TYPE	BASE SHEET	NEW INSULATION	NEW ROOF MEMBRANE
A-1	LWIC ON TECTUM DECK	0" PER FT.	1/8" PER FT. POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	N/A	ALTERNATE: ELASTOMERIC ROOF COATING
A-9	LWIC ON TECTUM DECK	0" PER FT.	1/8" PER FT. POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	N/A	ALTERNATE: ELASTOMERIC ROOF COATING
A-10	LWIC ON FIBERGLASS FORMBOARD DECK	0" PER FT.	NONE	GRANULE SURFACED, MODIFIED BITUMEN	YES	1/8" PER FT. POLYISOCYANURATE (AVG. R-25), WITH 1/2" PER FT. EDGE STRIP, 1/2" COVERBOARD	TWO PLY MODIFIED BITUMEN WITH GRANULE SURFACING
A-13	LWIC ON TECTUM DECK	0" PER FT.	1/8" PER FT. POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	N/A	ALTERNATE: ELASTOMERIC ROOF COATING
A-12	STEEL DECK	1/2" PER FT.	3" POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	4.5" POLYISOCYANURATE IN LAYERS, 1/2" COVERBOARD	TWO PLY MODIFIED BITUMEN WITH GRANULE SURFACING
A-12 CORRIDOR	STEEL DECK	1/2" PER FT.	2.5" POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	4.5" POLYISOCYANURATE IN LAYERS, 1/2" COVERBOARD	TWO PLY MODIFIED BITUMEN WITH GRANULE SURFACING
A-13	LWIC ON TECTUM DECK	0" PER FT.	1/8" PER FT. POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	N/A	ALTERNATE: ELASTOMERIC ROOF COATING
A-14	LWIC ON TECTUM DECK	0" PER FT.	NONE	GRANULE SURFACED, MODIFIED BITUMEN	YES	1/8" PER FT. POLYISOCYANURATE (AVG. R-25), WITH 1/2" PER FT. EDGE STRIP, 1/2" COVERBOARD	TWO PLY MODIFIED BITUMEN WITH GRANULE SURFACING
A-16	LWIC, STEEL DECK	0" PER FT.	1/8" PER FT. POLYISOCYANURATE, 3/4" PERLITE	GRANULE SURFACED, MODIFIED BITUMEN	N/A	N/A	ALTERNATE: ELASTOMERIC ROOF COATING

SCOPE OF WORK PLAN



- AREAS IN BASE BID SCOPE OF WORK
- AREAS IN ALT. NO. 1 SCOPE OF WORK
- NOT IN CONTRACT



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Roof Improvements at

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401 W. Braker Lane
Austin, Texas 78753

Austin Independent School District

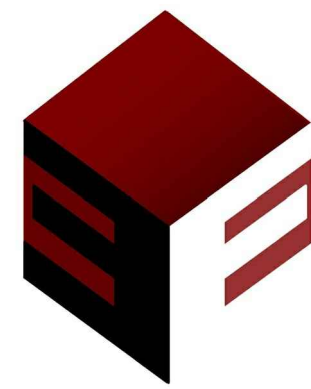
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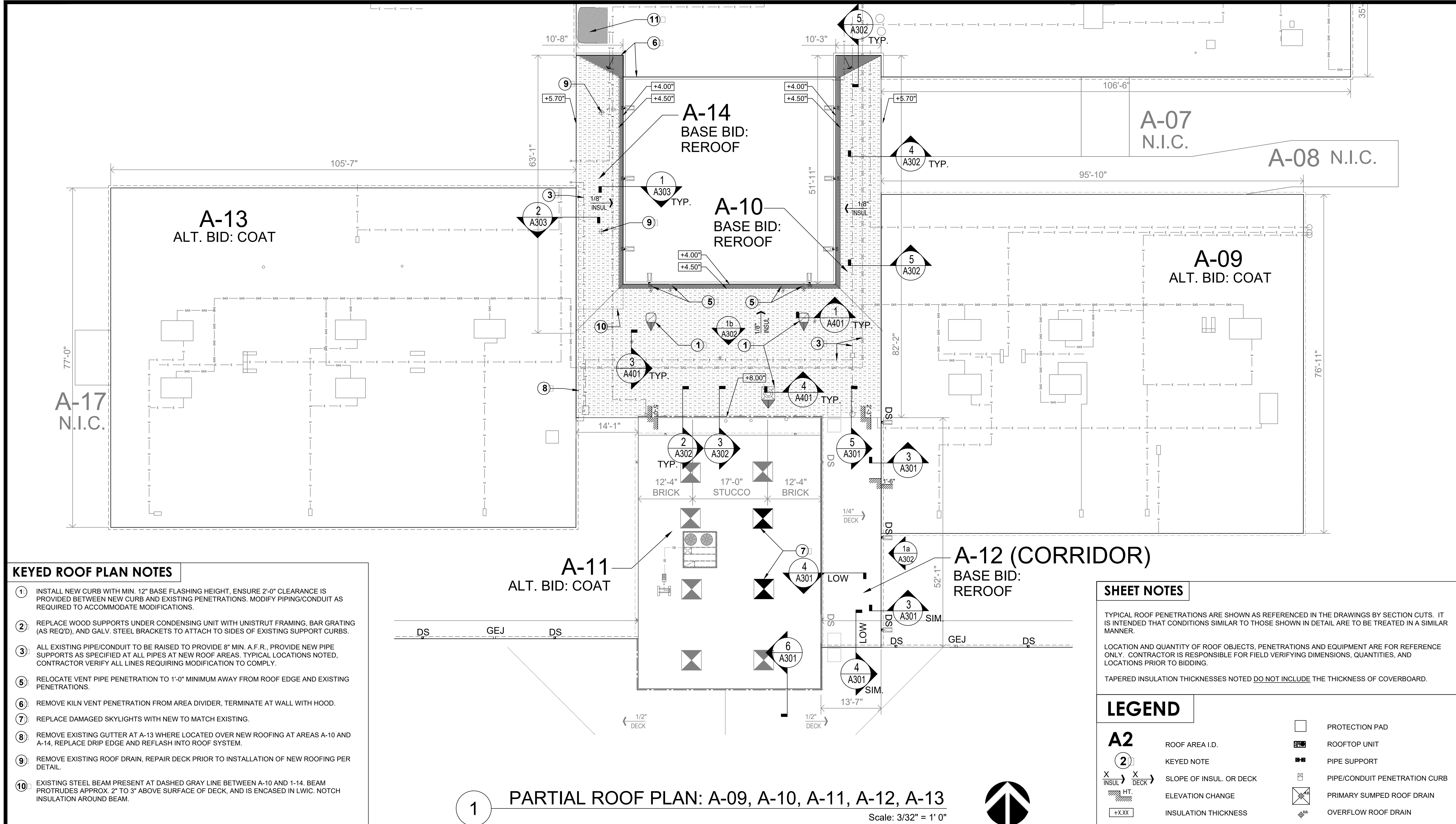
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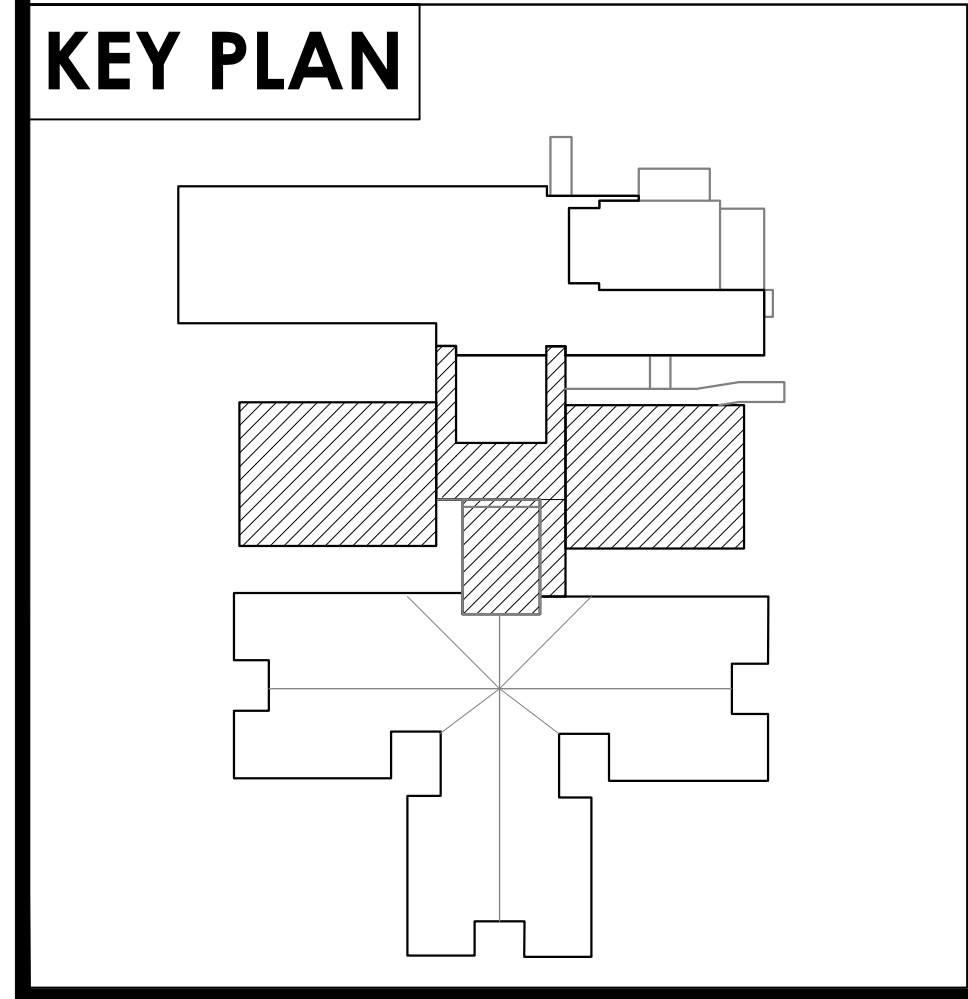
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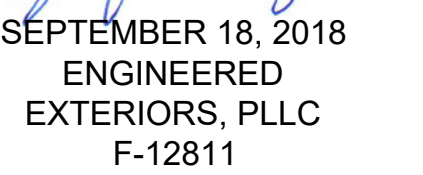


- KEYED ROOF PLAN NOTES**
1. INSTALL NEW CURB WITH MIN. 12" BASE FLASHING HEIGHT, ENSURE 2'-0" CLEARANCE IS PROVIDED BETWEEN NEW CURB AND EXISTING PENETRATIONS. MODIFY PIPING/CONDUIT AS REQUIRED TO ACCOMMODATE MODIFICATIONS.
 2. REPLACE WOOD SUPPORTS UNDER CONDENSING UNIT WITH UNISTRUT FRAMING, BAR GRATING (AS REQ'D), AND GALV. STEEL BRACKETS TO ATTACH TO SIDES OF EXISTING SUPPORT CURBS.
 3. ALL EXISTING PIPE/CONDUIT TO BE RAISED TO PROVIDE 8" MIN. A.F.R., PROVIDE NEW PIPE SUPPORTS AS SPECIFIED AT ALL PIPES AT NEW ROOF AREAS. TYPICAL LOCATIONS NOTED, CONTRACTOR VERIFY ALL LINES REQUIRING MODIFICATION TO COMPLY.
 5. RELOCATE VENT PIPE PENETRATION TO 1'-0" MINIMUM AWAY FROM ROOF EDGE AND EXISTING PENETRATIONS.
 6. REMOVE KILN VENT PENETRATION FROM AREA DIVIDER, TERMINATE AT WALL WITH HOOD.
 7. REPLACE DAMAGED SKYLIGHTS WITH NEW TO MATCH EXISTING.
 8. REMOVE EXISTING GUTTER AT A-13 WHERE LOCATED OVER NEW ROOFING AT AREAS A-10 AND A-14, REPLACE DRIP EDGE AND REFLASH INTO ROOF SYSTEM.
 9. REMOVE EXISTING ROOF DRAIN, REPAIR DECK PRIOR TO INSTALLATION OF NEW ROOFING PER DETAIL.
 10. EXISTING STEEL BEAM PRESENT AT DASHED GRAY LINE BETWEEN A-10 AND 1-14. BEAM PROTRUDES APPROX. 2" TO 3" ABOVE SURFACE OF DECK, AND IS ENCASED IN LWIC. NOTCH INSULATION AROUND BEAM.



1 PARTIAL ROOF PLAN: A-09, A-10, A-11, A-12, A-13
Scale: 3/32" = 1' 0"
NORTH

SHEET NOTES	
TYPICAL ROOF PENETRATIONS ARE SHOWN AS REFERENCED IN THE DRAWINGS BY SECTION CUTS. IT IS INTENDED THAT CONDITIONS SIMILAR TO THOSE SHOWN IN DETAIL ARE TO BE TREATED IN A SIMILAR MANNER.	
LOCATION AND QUANTITY OF ROOF OBJECTS, PENETRATIONS AND EQUIPMENT ARE FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING DIMENSIONS, QUANTITIES, AND LOCATIONS PRIOR TO BIDDING.	
TAPERED INSULATION THICKNESSES NOTED <u>DO NOT INCLUDE</u> THE THICKNESS OF COVERBOARD.	
LEGEND	
A2	PROTECTION PAD
(2)	ROOFTOP UNIT
X INSUL X DECK	PIPE SUPPORT
HT	PIPE/CONDUIT PENETRATION CURB
+XXX	PRIMARY SUMPED ROOF DRAIN
	OVERFLOW ROOF DRAIN
	PIPE PENETRATION THROUGH ROOF
	FLUE STACK ON CURB
	GOOSENECK ON CURB
	GRAVITY EXHAUST VENT ON CURB
DS	POWERED EXHAUST VENT ON CURB
SC OFSC	EQUIPMENT CURB
	ABANDONED PENETRATION
	SKYLIGHT
	SMOKE VENT
	LADDER
	1/2" PER FT. INSUL.
	1/4" PER FT. INSUL.
	1/8" PER FT. INSUL.
	AREA OF WET SUBSTRATE AT COATING AREA, TO BE REPLACED

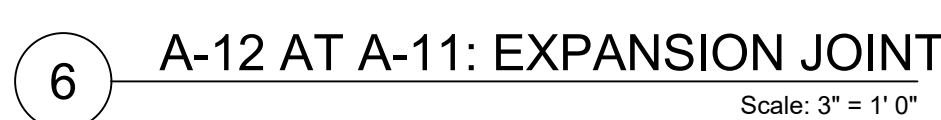


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INSTALL SILICONE SEALANT AT ALL WALL PENETRATIONS PRIOR TO INSTALLATION OF COATING

INSTALL SILICONE COATING OVER BRICK AND PAINTED EXPOSED STEEL BEAM AREAS OVER NEW ROOF



REMOVE EXISTING FLASHINGS

INSTALL SILICONE COATING OVER BRICK AND PAINTED EXPOSED STEEL BEAM AREAS OVER NEW ROOF



INSTALL SILICONE COATING OVER BRICK AND STUCCO WALL AREAS OVER NEW ROOFS. ROUT AND SEAL EXISTING CRACKS (IF PRESENT) PRIOR TO INSTALLATION OF COATING



SEAL CONDUIT PENETRATIONS WITH SILICONE SEALANT PRIOR TO INSTALLATION OF COATING

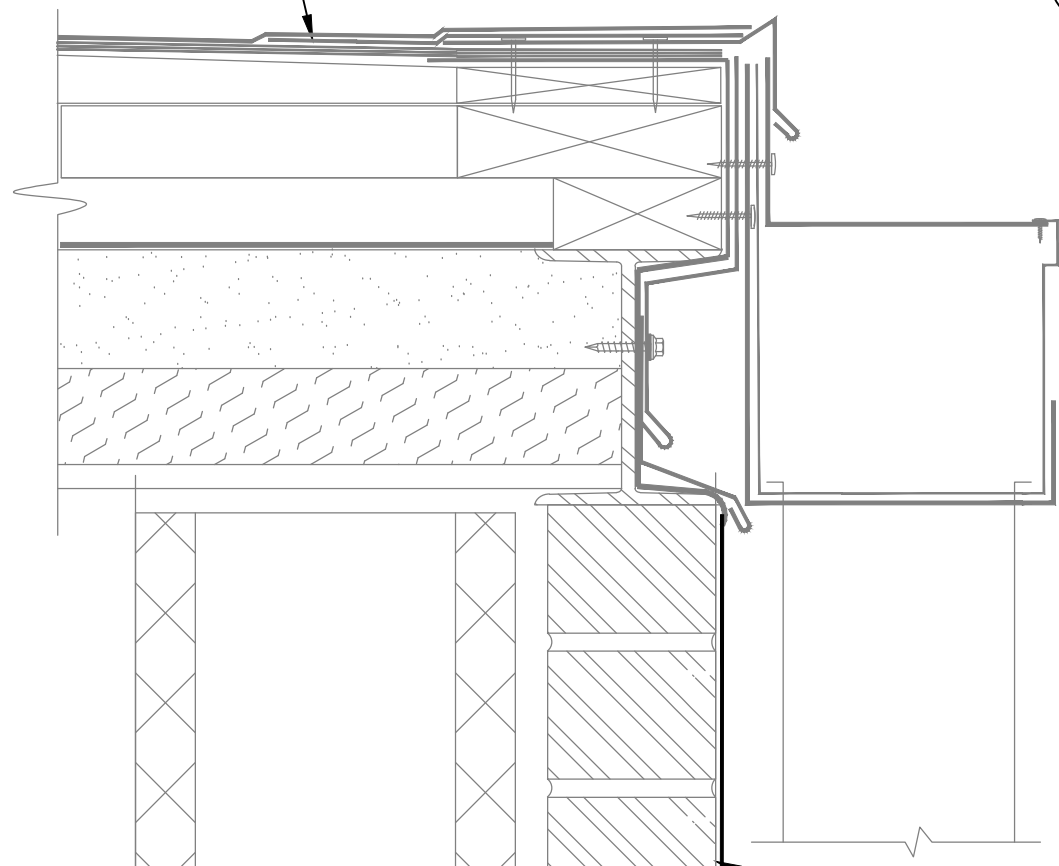
REMOVE EXISTING FLASHINGS

SEAL LADDER BRACKETS. PROVIDE FILLET BEAD OF SEALANT AT BRICK-STUCCO INTERFACE PRIOR TO INSTALLATION OF COATING

REMOVE AND REINSTALL CONDUIT SUPPORT AND DOWNSPOUTS FOR INSTALLATION OF COATING

EXISTING ROOF A-11 (ALT BID COAT)

1a A-12 CORRIDOR: PHOTO ELEVATION AT A-11
Scale: N.T.S.



SILICONE COATING AT EXISTING STUCCO AND MASONRY WALL AT AREAS ABOVE NEW ROOFS

NOTE: AT ALL TERMINATIONS OF BASE FLASHINGS PROVIDE SEALED, STRIPPED IN PREFINISHED GALV. STEEL CLOSURE PLATES.

SILICONE SEALANT

24 GA. PREFIN. GALV. STEEL COUNTERFLASHING, FASTEN TO MASONRY AT 12" O.C. MAX. WITH S.S. GASKETED MASONRY SCREWS

TWO PLY MODIFIED BITUMEN BASE FLASHING

CANT STRIP

GRANULE SURFACED, MODIFIED BITUMEN CAP SHEET AND SMOOTH MODIFIED BITUMEN BASE PLY, EXTEND PLIES 2" ABOVE CANT

1/2" COVERBOARD

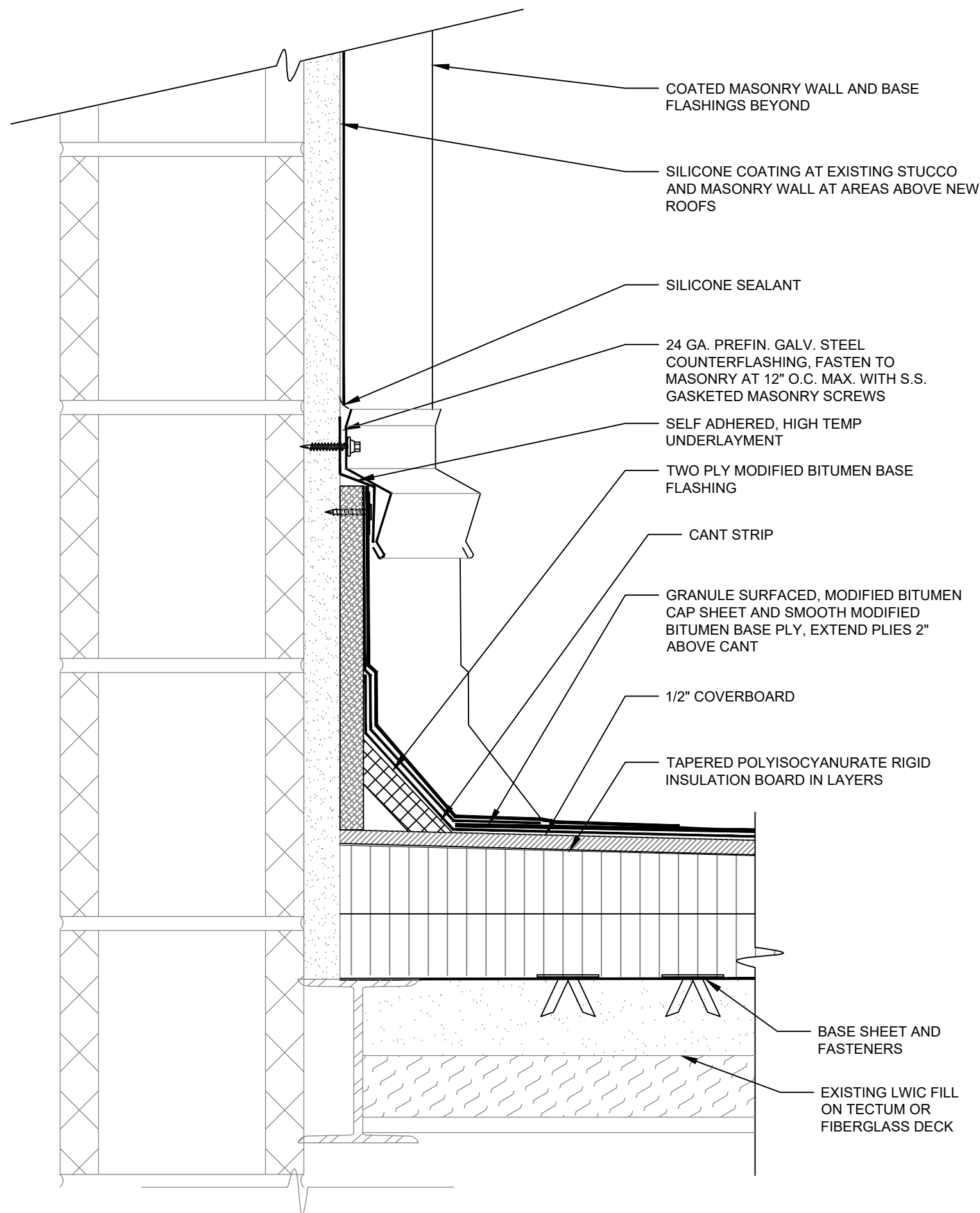
TAPERED POLYISOCYANURATE RIGID INSULATION BOARD IN LAYERS

BASE SHEET AND FASTENERS

EXISTING LWIC FILL ON TECTUM OR FIBERGLASS DECK

2 A-10 AT A-11: RISE WALL - BRICK
Scale: 3" = 1' 0"

3 A-10 AT A-11: RISE WALL: STUCCO
Scale: 3" = 1' 0"



COATED MASONRY WALL AND BASE FLASHINGS BEYOND

SILICONE COATING AT EXISTING STUCCO AND MASONRY WALL AT AREAS ABOVE NEW ROOFS

SILICONE SEALANT

24 GA. PREFIN. GALV. STEEL COUNTERFLASHING, FASTEN TO MASONRY AT 12" O.C. MAX. WITH S.S. GASKETED MASONRY SCREWS

SELF ADHERED, HIGH TEMP UNDERLAYMENT

TWO PLY MODIFIED BITUMEN BASE FLASHING

CANT STRIP

GRANULE SURFACED, MODIFIED BITUMEN CAP SHEET AND SMOOTH MODIFIED BITUMEN BASE PLY, EXTEND PLIES 2" ABOVE CANT

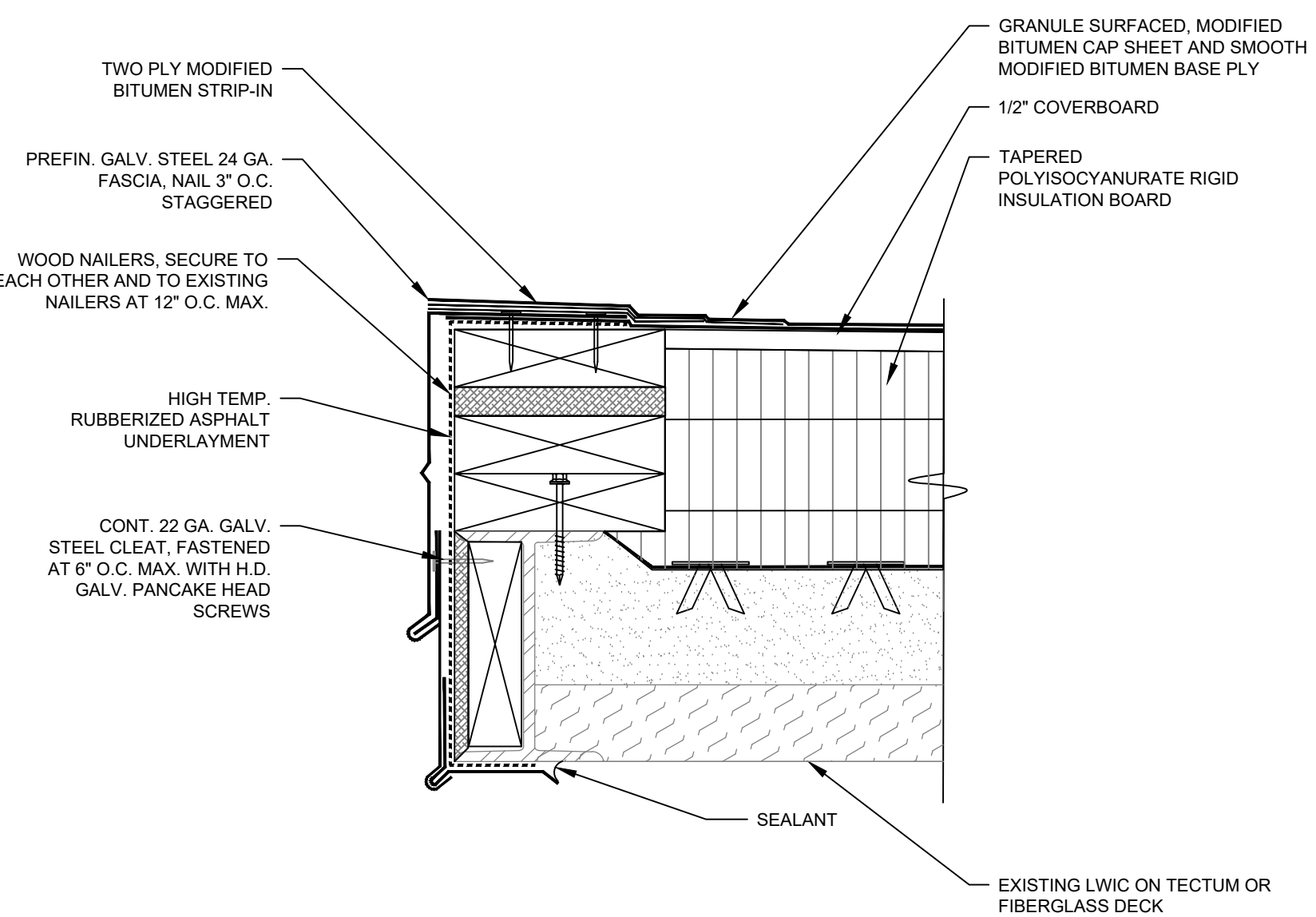
1/2" COVERBOARD

TAPERED POLYISOCYANURATE RIGID INSULATION BOARD IN LAYERS

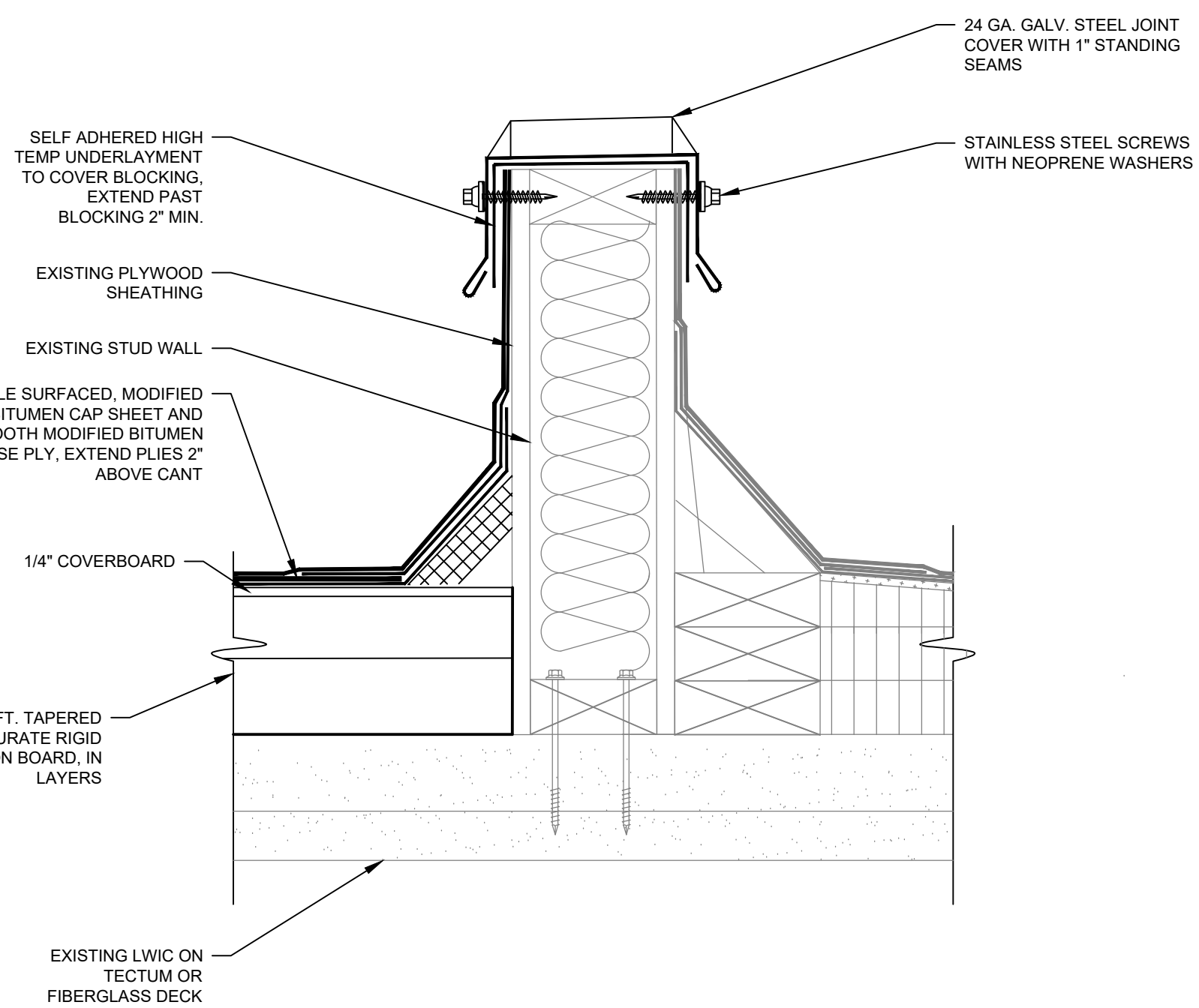
BASE SHEET AND FASTENERS

EXISTING LWIC FILL ON TECTUM OR FIBERGLASS DECK

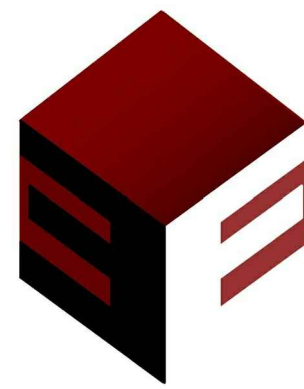
1b A-10: PHOTO ELEVATION AT A-11
Scale: N.T.S.



4 A-10 AND A-14: HIGH EAVE
Scale: 3" = 1' 0"



5 A-10 AND A-14 AT A-01, A-10 AT A-9: AREA DIVIDER
Scale: 3" = 1' 0"



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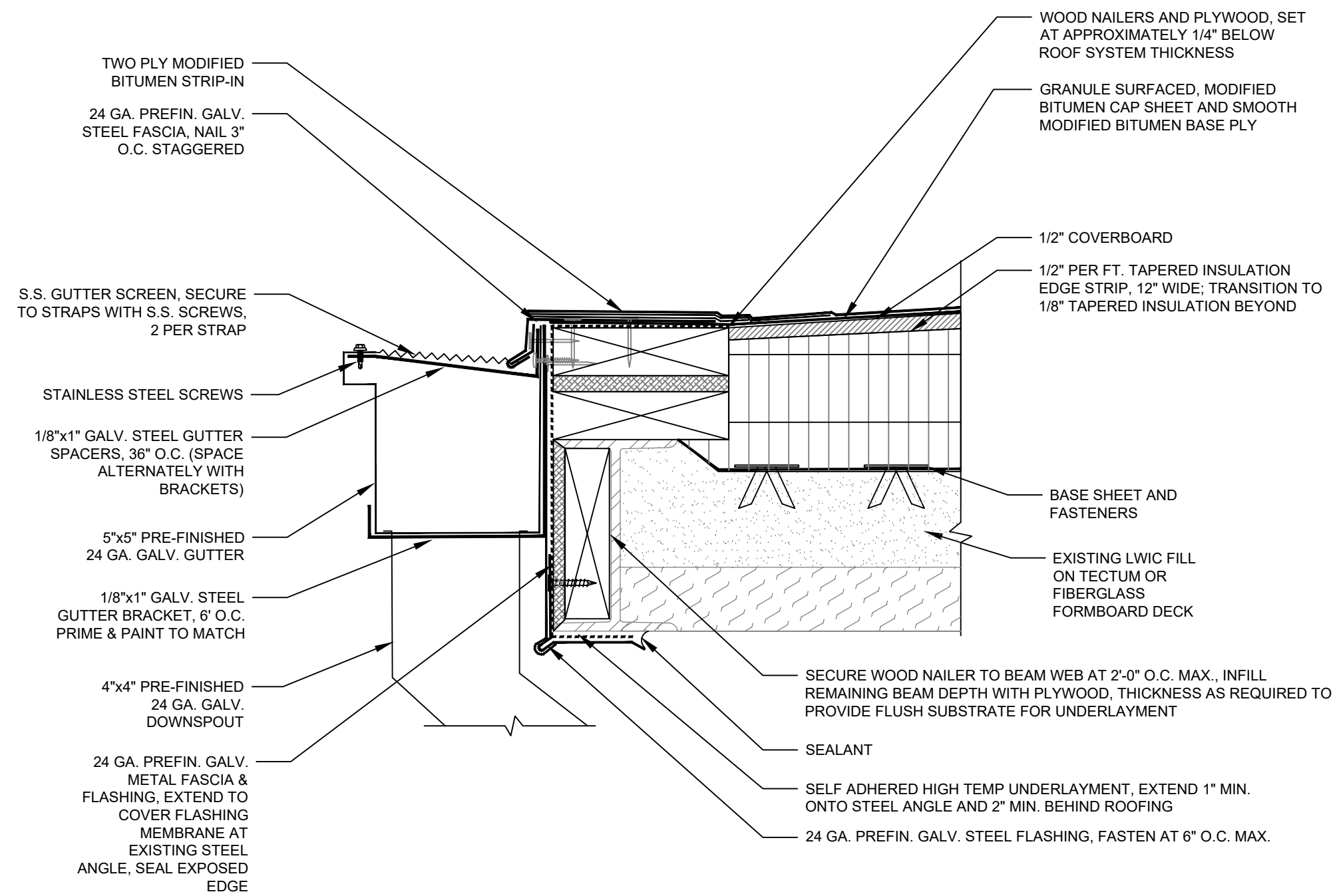
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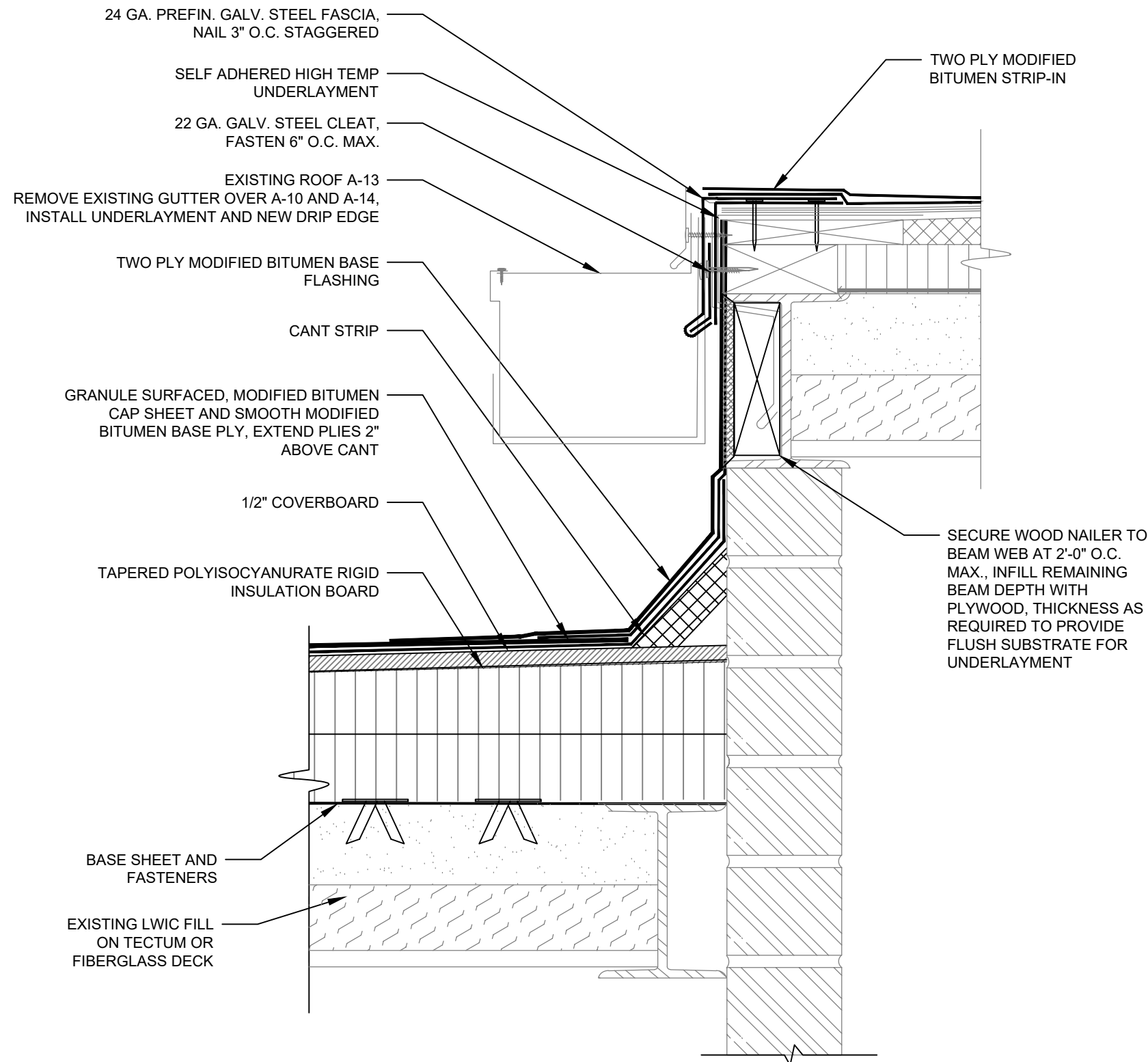
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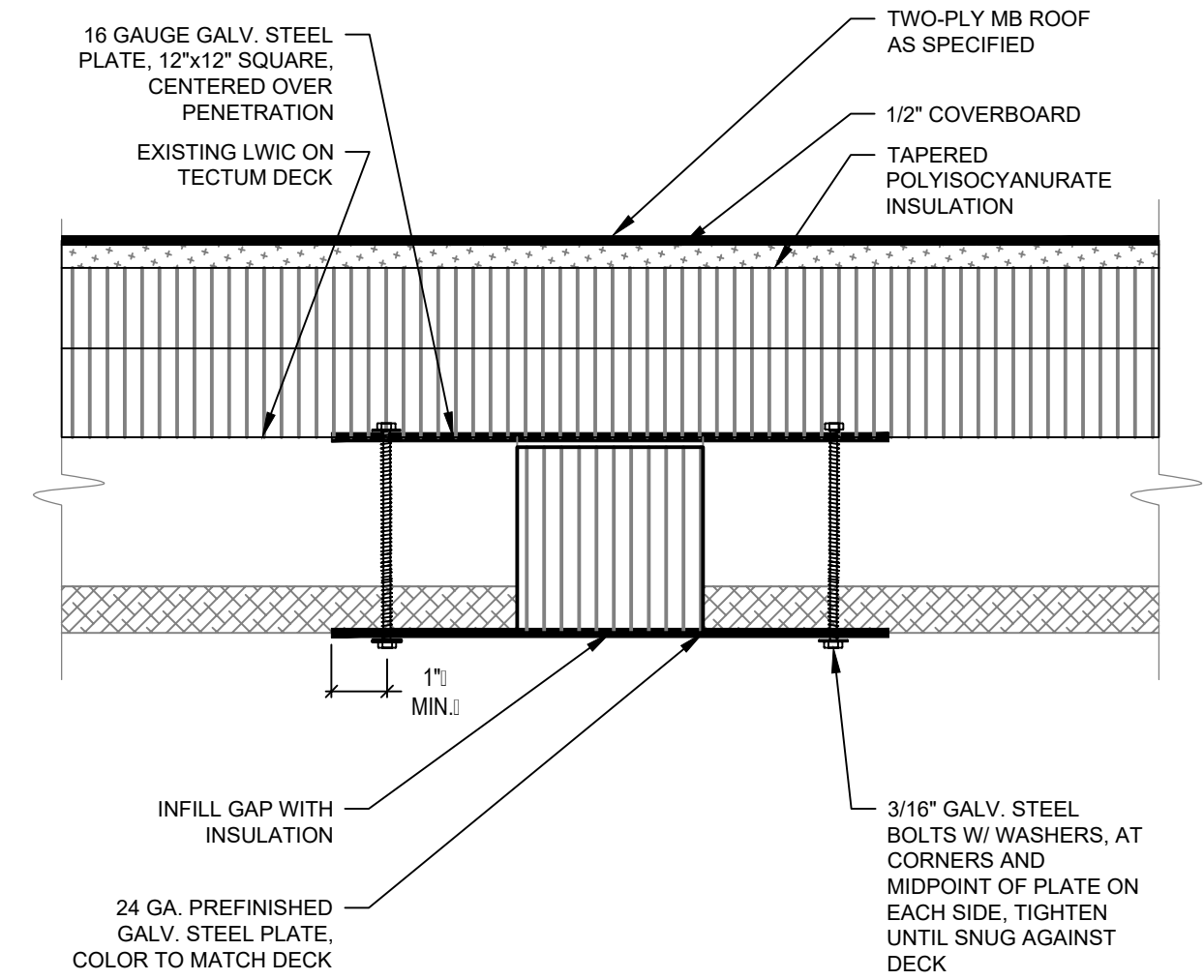
A302



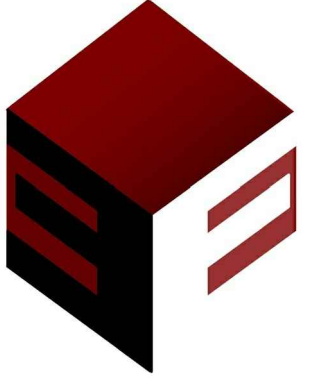
1 A-10 AND A-14: GUTTER EDGE
Scale: 3" = 1' 0"



2 A-14 AT A-13: RISE WALL (A-10 AT A-13 SIM.)
Scale: 3" = 1' 0"



3 A-14: DECK REPAIR AT ABANDONED ROOF DRAINS
Scale: 3" = 1' 0"



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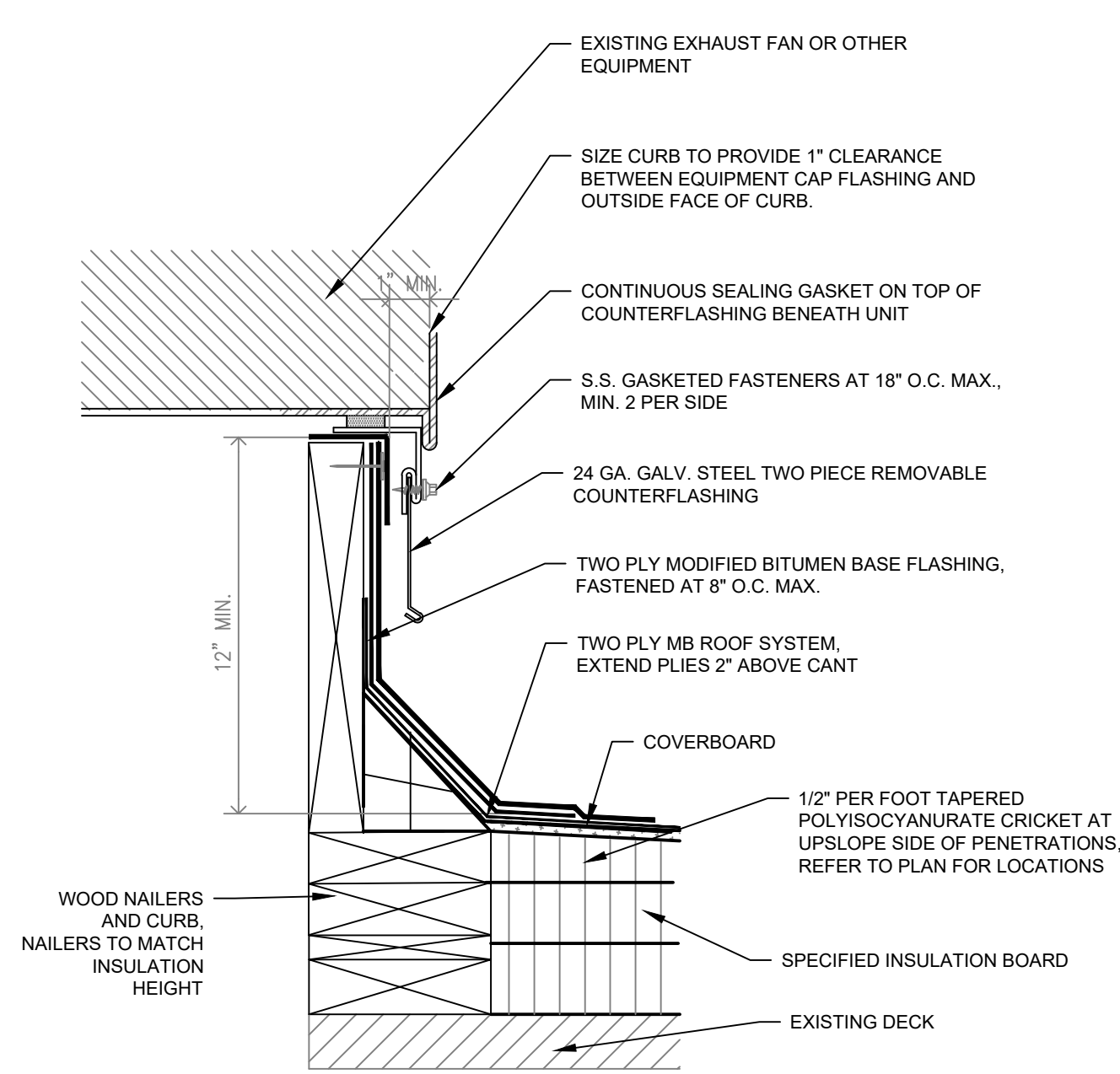
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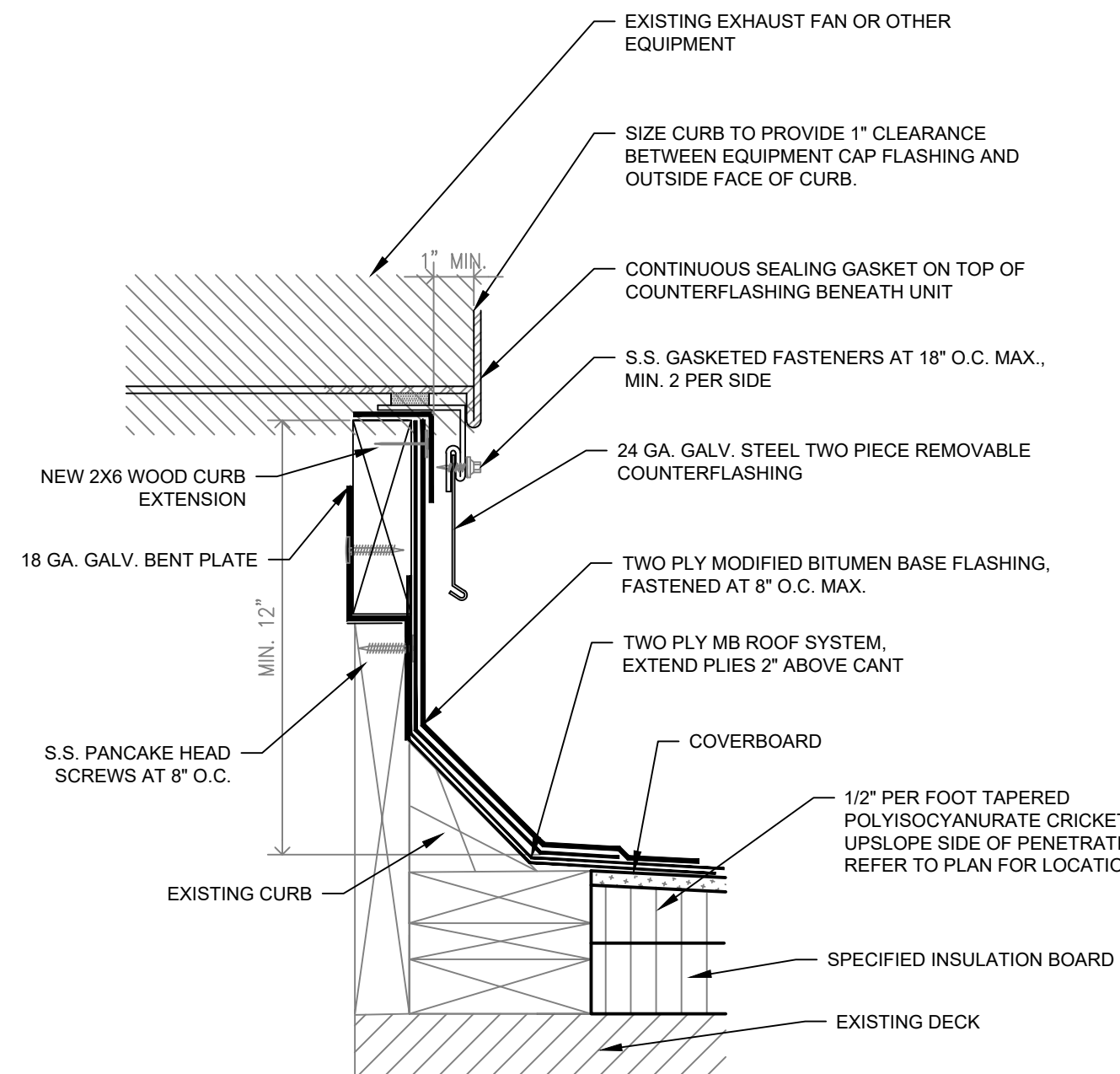
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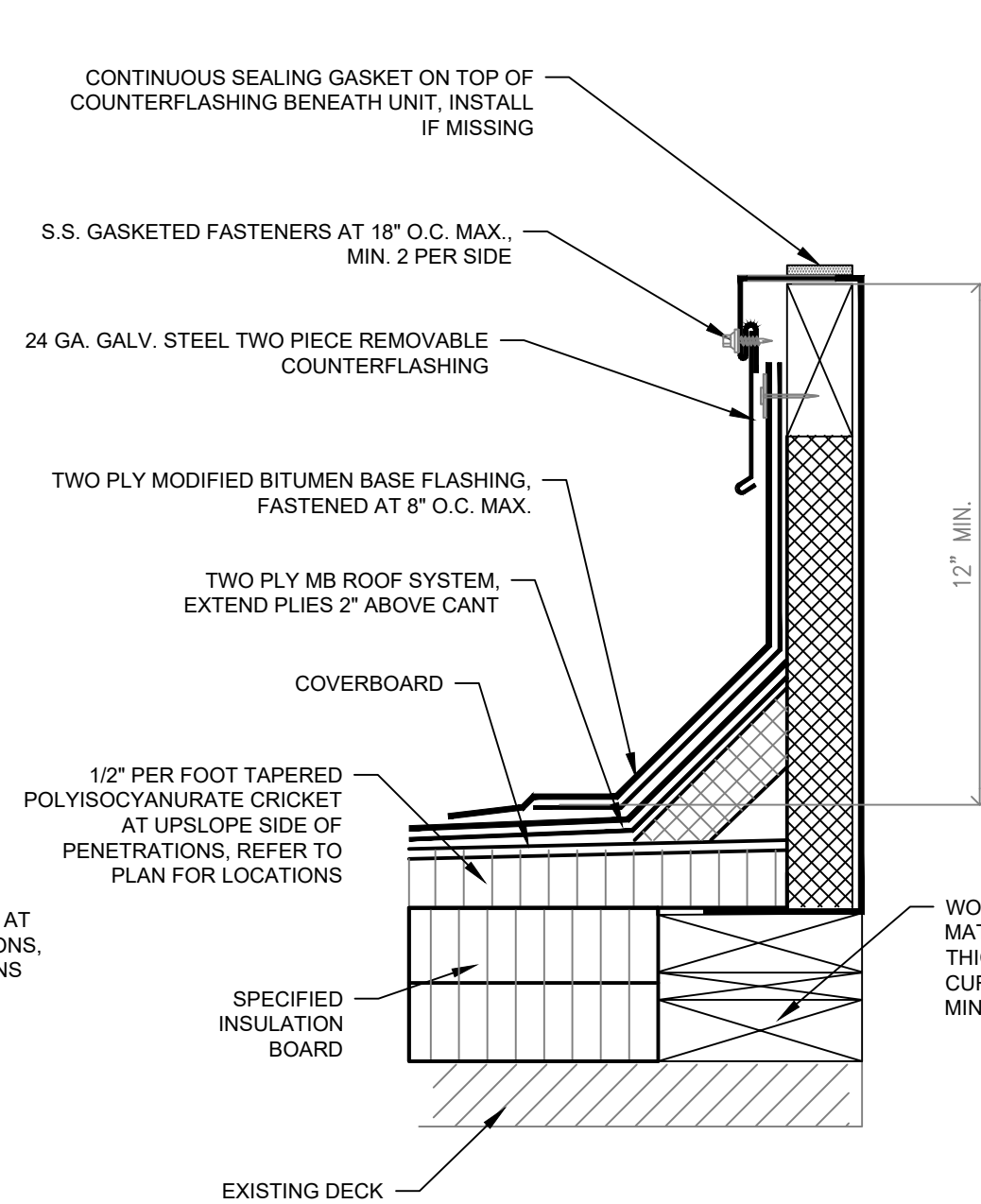
A303



A - FIELD FABRICATED WOOD EQUIPMENT CURB



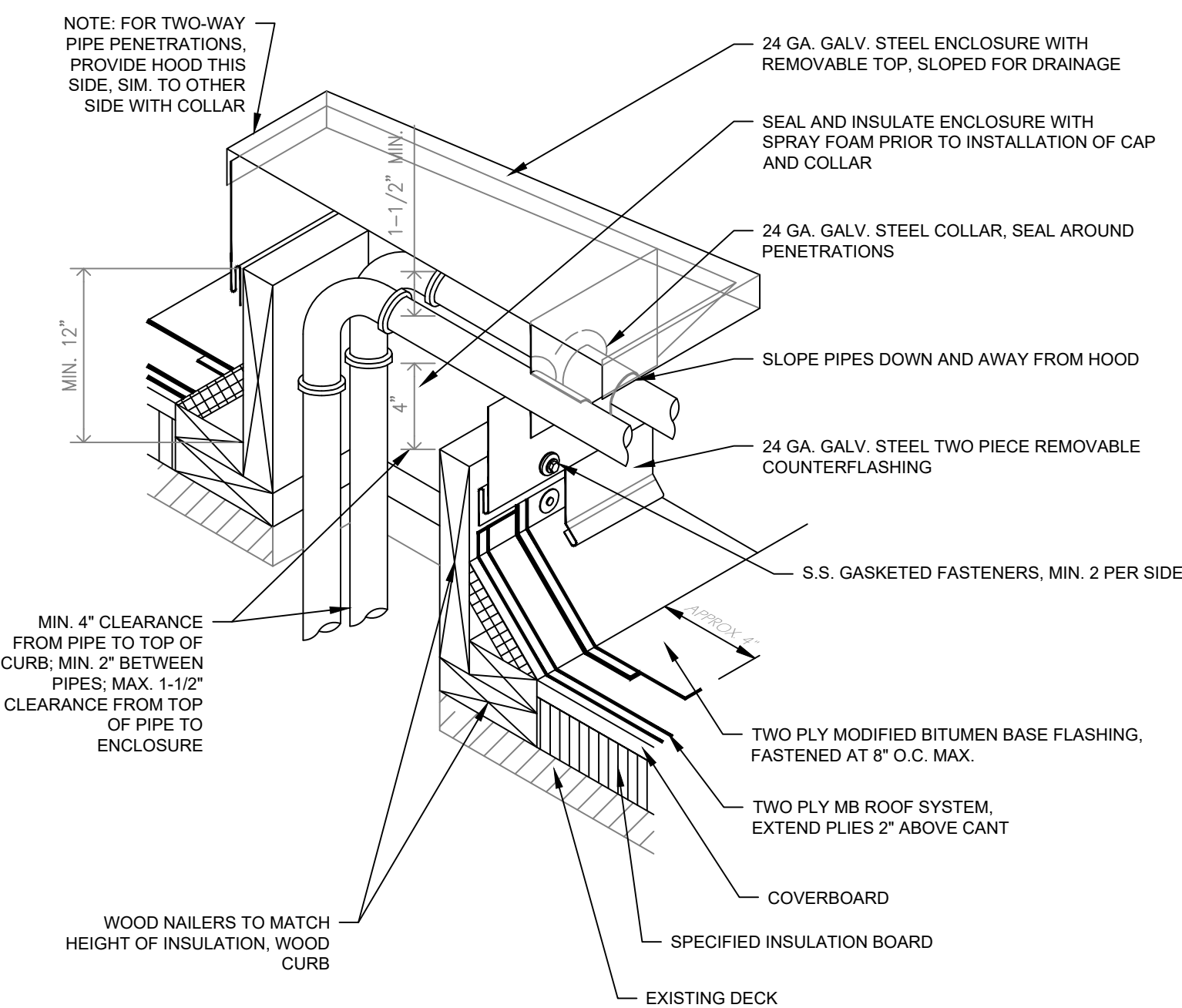
B - EXISTING WOOD CURB EXTENSION



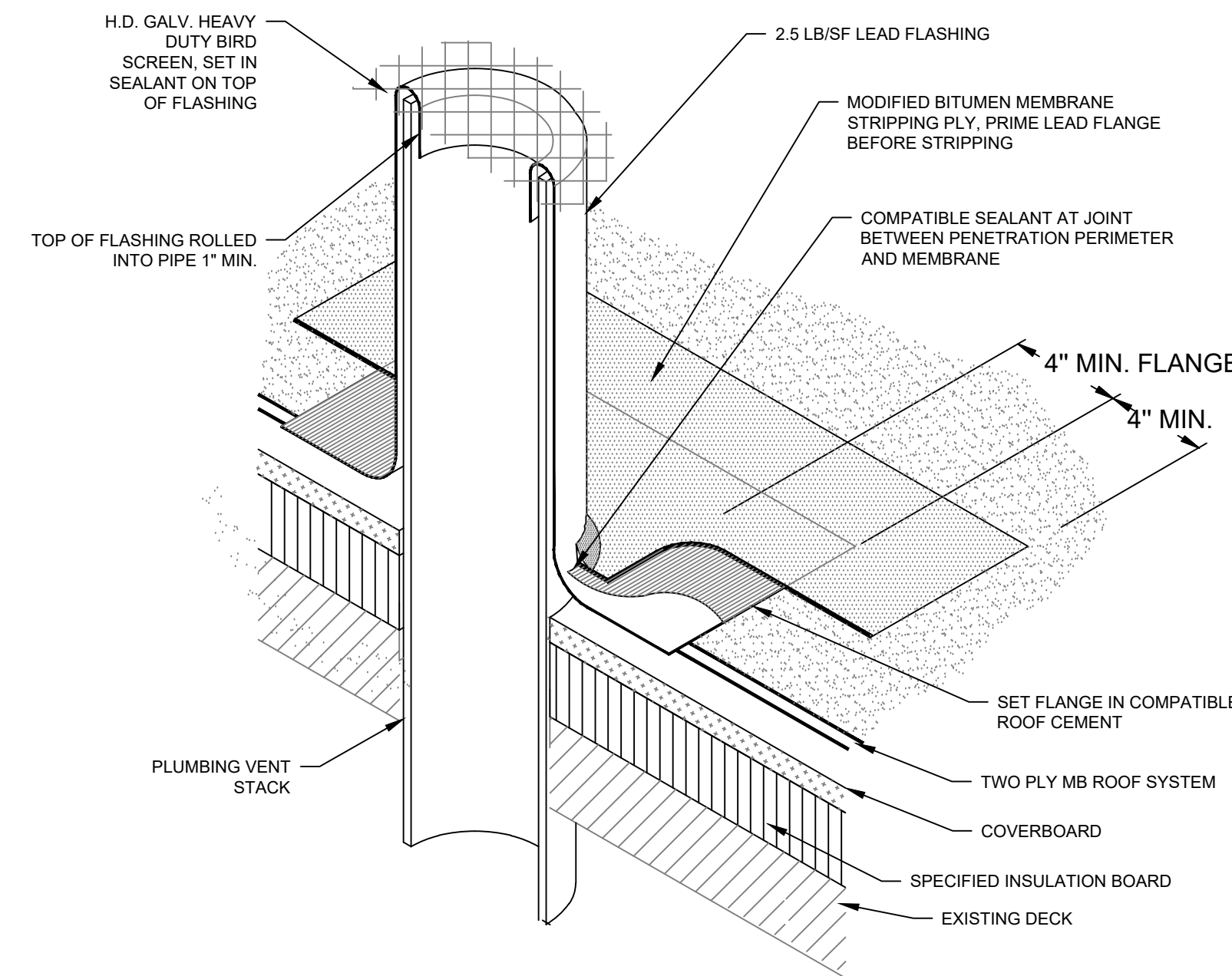
C - NEW OR EXISTING METAL CURB

1 CURB FLASHING DETAILS
Scale: 3"=1'-0"

MECHANICAL UNITS SHALL BE RAISED TO ALLOW INSTALLATION OF BASE FLASHING AND SHEET METAL COUNTERFLASHING. DO NOT SET UNITS UNTIL WORK HAS BEEN REVIEWED BY ENGINEER/ROOF CONSULTANT.

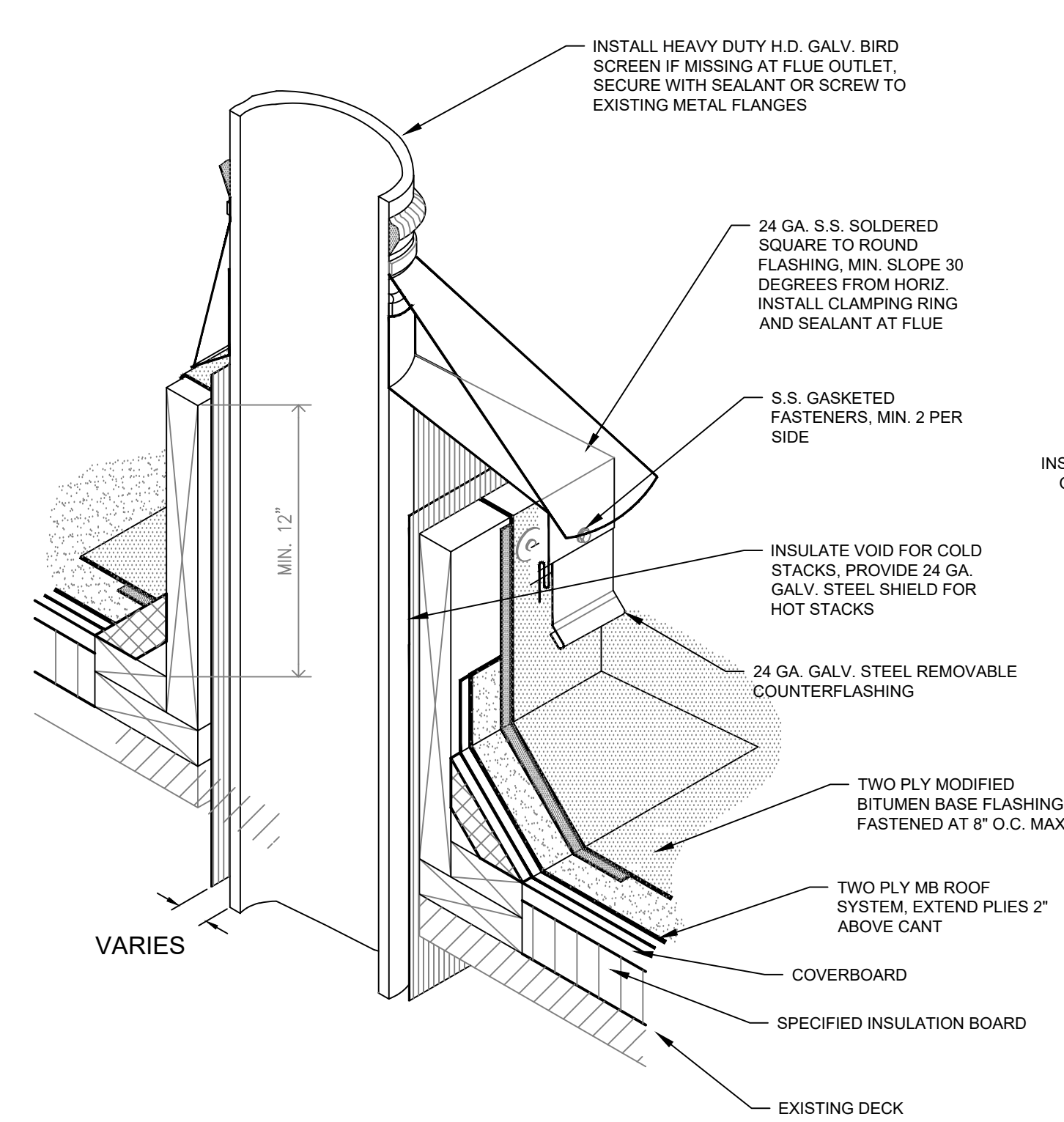


2 PIPE/CONDUIT PENETRATION CURB
Scale: N.T.S.

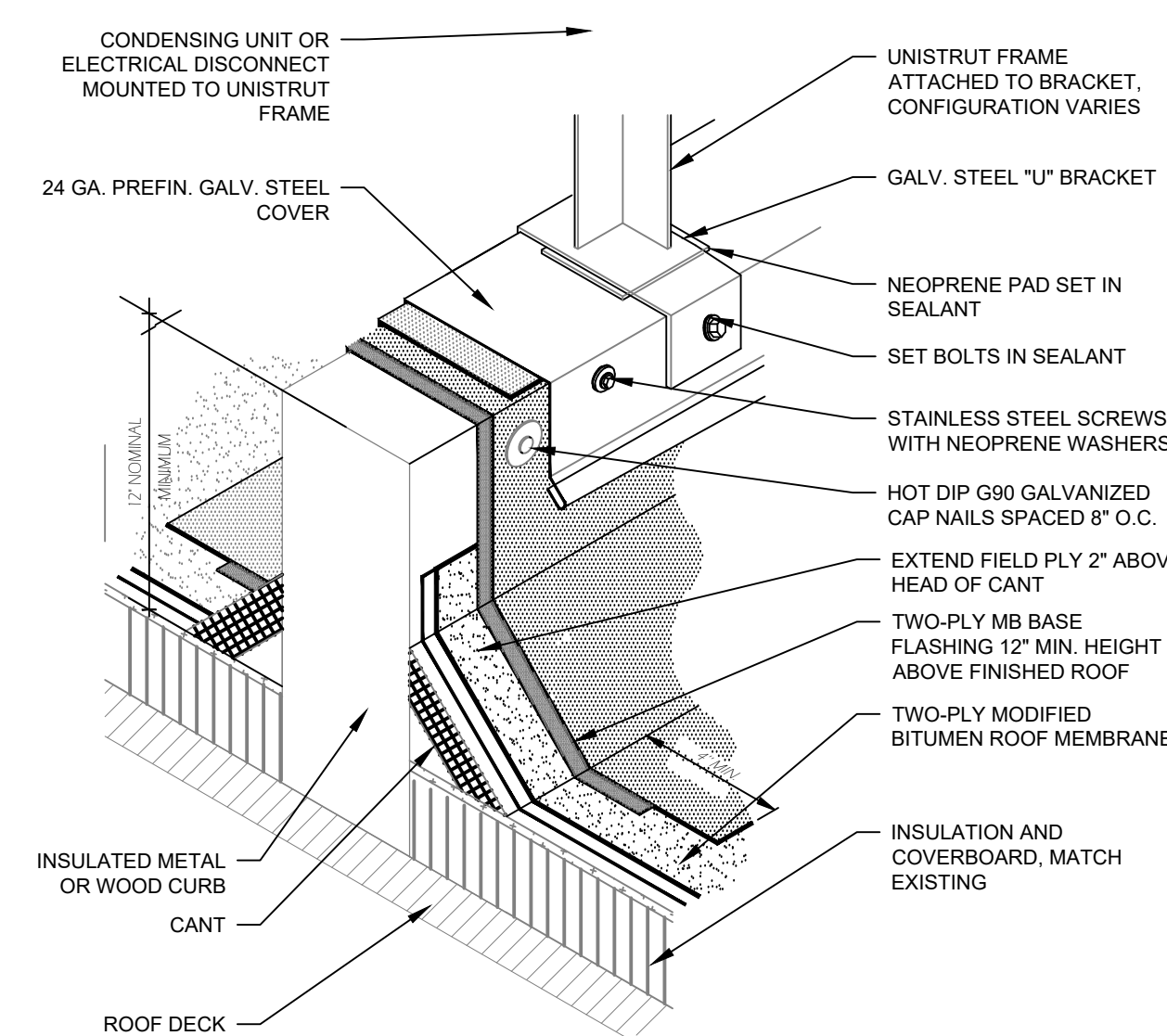


NOTES:
1. PRECAUTIONS SHALL BE TAKEN NOT TO DAMAGE THE SHEET LEAD WHEN HEAT WELDING STRIP-IN.
2. VENT STACKS AND OTHER PIPES SHALL HAVE A MINIMUM OF 12 INCHES CLEARANCE ON ALL SIDES FROM WALLS, CURBS, AND OTHER PROJECTIONS TO FACILITATE PROPER FLASHING.

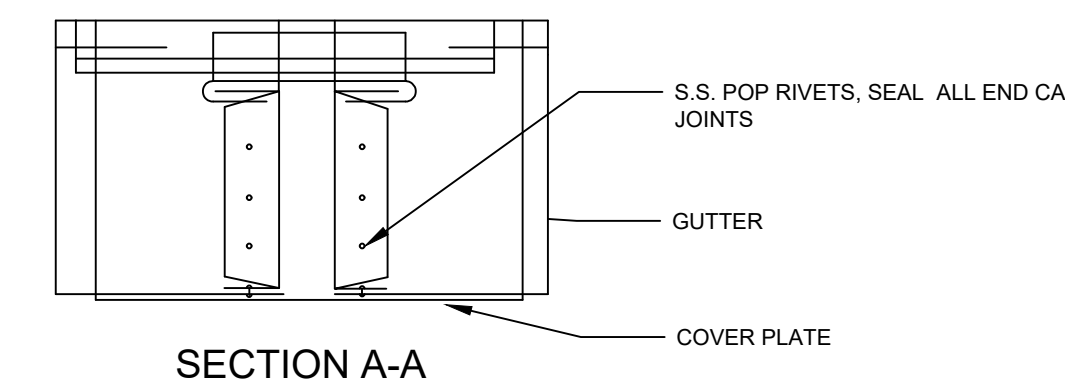
3 PIPE PENETRATION
Scale: N.T.S.



4 SQUARE TO ROUND FLASHING
Scale: N.T.S.



5 SUPPORT CURB FLASHING
Scale: 3"=1'-0"



6 GUTTER EXPANSION JOINT
Scale: N.T.S.

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