Project Manual for:

RAYMORE-PECULIAR SCHOOL DISTRICT

LEAD CENTER ROOFING IMPROVEMENTS 2023

Owner: Raymore-Peculiar R-II School District

21005 S. School Rd.

Peculiar, MO 64078

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DOCUMENT 00101 –INVITATION FOR BIDS

PROJECT: Raymore Peculiar LEAD Center Roofing Improvements 2023
1210 W Foxwood Drive
Raymore, MO 64083

OWNER: Raymore Peculiar Schools
21005 S. School Rd.
Peculiar, MO 64078

BID SUBMITTAL AND BID SECURITY
All Contractors and Subcontractors shall conform to the State of Missouri, Division of Labor Standards, Annual Wage Order No. 30, Section 019, Cass County, in accordance with Section 290.262 CUM. Supp. RSMo (2000). All Contractors and Subcontractors shall conform to the Missouri Prevailing Wage Law Sections 290.550 to 290.580 Public Works during Excessive Unemployment, if such provision applies to this Project. Owner shall review bids, prepared in compliance with the Instructions to Bidders issued by the Owner, and delivered as follows:
Bid Date: Wednesday, September 20, 2023
Bid Time: 2:00 pm, local time.

Location: Raymore Peculiar Schools
21005 S. School St.
Peculiar, MO 64078

Bids will be thereafter publicly opened and read aloud. No bids may be withdrawn for a period of 60 days following opening of bids. The Owner reserves the right to reject any and all bids and to waive minor informalities and irregularities.

A 5% Bid Bond is required with the Bid; and a Performance Bond and a Material and Labor Payment Bond in amounts equal to one hundred percent (100%) of the Bid shall be furnished by the successful Bidder. Such bond shall be issued by a surety authorized to do business in the State of Missouri; and made payable to Raymore Peculiar School District as a guarantee that such Bidder will enter into a Contract with the Owner for the Work described in the Bid and furnish bond as specified.

All Bidders are subject to and must comply with applicable state and federal anti-discrimination laws. All Bidders must comply with OSHA standards.

PRE-BID CONFERENCE
A pre-bid conference for all bidders will be held at Raymore Peculiar LEAD Center, 1210 W Foxwood Drive, Peculiar, MO 64083 on Thursday, September 7, 2023 at 10:30 a.m., local time. All prospective bidders are re-quired to attend.

DOCUMENTS

Bidding documents may be obtained after September 7, 2023 by contacting the school office. Documents will be provided to prime bidders only; only complete sets of documents will be issued.

Contact: Scott Dobson 816-892-1300.

TIME OF COMPLETION

Bidders shall begin work upon receipt of Notice to Proceed and to complete the work within the Contract Time indicated in the Contract Documents. Liquated damages of $1000 per day will be applied to any work occurring after the Contract Time deadlines.

BIDDER'S QUALIFICATIONS

Bidders must be properly licensed under the state laws governing their respective trades. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to the Owner will be required of the successful Bidder. Bidders shall meet qualifications indicated in the Contract Documents.

Submission of a bid shall serve as evidence that the Bidder has confirmed that the Bidder is properly qualified to perform the work and is capable of obtaining the required bonds and insurance. Bidders shall, if requested, submit evidence in affidavit form of applicable experience, licensure, approvals, and certifications, adequate financial resources, work in hand capacity, adequate organization, and acceptable past performance. Submittal will be in the form of AIA Document A305 Contractor's Qualification Statement. Bidder's qualification information shall be considered privileged and confidential.

END OF DOCUMENT

DOCUMENT 00202 – INSTRUCTIONS TO BIDDERS

1.1 ADVERTISEMENT FOR BIDS

A. An Advertisement for Bids, published as a separate document, is part of these instructions.

1.2 LAWS AND REGULATIONS

A. Owner is a tax-exempt entity. This project shall be exempt from sales tax.

1.3 DEFINITION

A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bids, these Instructions to Bidders, bid forms, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract, Drawings, Specifications, and all Addenda issued prior to execution of the Contract.

B. Addenda are written or graphic instruments issued by the Owner prior to the execution of the Contract that modify or interpret the Bidding Documents.

C. The Base Bid is the sum stated in the Bid for which the bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

D. An Alternate Bid is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is not accepted. No alternate bids will be accepted for this project.

E. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work as described in the Bidding Documents.

F. A Bidder is a person or entity who submits a Bid to the Owner and who meets the requirements set forth in the Bidding Documents.

1.4 BIDDING DOCUMENTS

A. Examination of Bidding Documents and Site: Before submitting a bid, the Bidder shall carefully examine the drawings, read the specifications and all other contract documents and visit the site of the Work. The Bidder shall fully inform himself prior to bidding as to all existing conditions and limitations under which the Work is to be performed and he/she shall include in the bid a sum to cover the cost of all items necessary to perform the Work as set forth in the Contract Documents. No allowance will be made to the Bidder because of lack of such examination or

knowledge. The submission of a bid shall be construed as conclusive evidence that the Bidder has made such examination.

B. Interpretation or Correction of Bidding Documents: If the Bidder is in doubt as to the interpretation of any part of the Bidding Documents, or finds discrepancies in or omissions from any part of the Contract Documents, he/she must submit a written Request for Interpretation thereof not later than September 15, 2023, Noon, local time. Address all communications to the Owner.

1.5 ADDENDA

A. Any interpretation, correction to, or addition to the Contract Documents will be made by written Addendum and will be delivered by mail, fax, or email to each prime Bidder of record and the plan services indicated in the Advertisement for Bids. The written Addenda constitute the only interpretations of the Contract Documents; the Owner accepts no responsibility for any other claimed interpretations.

B. It is the responsibility of each Bidder to verify that he/she has received all Addenda prior to submitting a bid. It is also the responsibility of each Bidder to verify that all sub-Bidders and material suppliers whose prices are incorporated in the Bidder's bid are familiar with the Bidding Documents in their entirety, including all Addenda issued up to the time of bid opening.

C. In the event a conflict or omission is discovered in the Bidding Documents after the issuing of the last addendum such that an interpretation cannot be issued by the Owner prior to bidding, the Bidder is directed to estimate on and provide the quantity and quality of material and labor consistent with the overall represented work so as to provide all materials, equipment, labor, and services necessary for the completion of the Work.

1.6 BIDDING PROCEDURES

A. Form Of Bid
1. Bids must be submitted on the Bid Form provided, properly executed and with all items filled out in ink or typed. Do not change or add words to the Bid Form. Unauthorized conditions, limitations, or provisions on or attached to the Bid Form will be cause for rejection of the bid. Bidder's information on the Bid Form that is altered by erasure or by interlineation prior to submittal must be initialed and explained by notation on the Bid Form above the signature of the Bidder. All signatures must be witnessed.

B. Submission Of Bids
1. Each bid shall be delivered to the location indicated on the Bid Form on or before the day and hour set for receipt and opening of bids. Each bid shall be emailed, faxed, or submitted in an opaque, sealed envelope marked in the lower left-hand corner as follows:

Bid for (name of prime contract)	Raymore-Peculiar School District
Name of Project	LEAD CENTER Roofing Improvements 2023
Bidder's Name	
Bidder's Address	
Date and Time of Bid Opening	September 20, 2023
	2:00 p.m.

2. If not delivered in person, this envelope shall be enclosed in a second envelope for posting to the location indicated for receipt of bids. This envelope shall be addressed as follows:

Bid for (name of prime contract)	LEAD CENTER Roofing Improvements 2023
Owner name	Raymore-Peculiar School District
Street address OR Post Office Box 0000	21005 S. School Rd.
City Name, State, Zip Code	Peculiar, MO 64078
Owner fax	N/A
Owner e-mail	Scott.dobson@raypec.org
Date and Time of Bid Opening	September 20, 2023 2:00 p.m.

3. It is the sole responsibility of the Bidder to see that his/her bid is received in proper time. No faxed or e-mail bid or modification of a bid will be considered. No bids submitted after the time fixed for receiving bids will be considered; late bids will be returned to the Bidder unopened.

C. Acknowledgement Of Addenda
1. Bidder must acknowledge all Addenda received in the spaces provided on the Bid Form. By submitting a bid, Bidder indicates that all considerations issued by addendum are incorporated in the bid.

D. Bid Supplements
1. Attached to the Bid Form will be certain supplements that are included in this Project Manual following the Bid Form. Bidders shall complete all forms, entering "Not Applicable" where information does not apply to their portion of the Work. Absence of any of the Bid Supplements included in the Project Manual will be reason for possible rejection of bid.

E. Status Of Bidders
1. Proprietors submitting bids shall indicate their status as proprietors.
2. Bidders submitting bids for partnerships shall indicate their status as partners and shall submit, upon request of the Owner within 24 hours following receipt of bids, a certified copy of the power of attorney authorizing the executor of the bid to bind the partnership.
3. Bidders submitting bids for corporations shall indicate their status as corporations and shall submit, upon request of the Owner within 24 hours following receipt of bids, a certified copy of the board of directors' authorization for the Bidder to bind the corporation and shall affix the corporate seal on the bid.
4. Bidders shall provide, upon request of the Owner, within 24 hours following receipt of bids, the following:
    a. Names and addresses of proprietors, of all members of a partnership, or of the corporation's officers.
    b. Name of county or state where the partnership is registered or where the corporation is incorporated. Corporations must be licensed to do business in the project state at the time of executing the contract.

1.7 MODIFICATION AND WITHDRAWAL OF BIDS

A. A bid may be withdrawn on personal requests received from Bidder prior to submission time. A withdrawn bid may be resubmitted up to submission time. Negligence or error on the part of the Bidder in preparing his/her bid confers no right for withdrawal of the bid after it has been opened.

B. Telegraphic and faxed bids will not be considered.

C. No Bidder may withdraw a bid within 60 days following the opening of bids.

1.8 AWARD OR REJECTION OF BIDS

A. The contract, if awarded, will be awarded to the lowest responsible Bidder, subject to the Owner's right to reject any or all bids and to waive any informality in the bids or in the bidding. Failure to complete all information required on the Bid Form and Bid Form Supplements, may result in rejection of bid. The Owner shall have the right to accept alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low bidder on the basis of the sum of the Base Bid and Alternates accepted.

B. Bids may be rejected if the Bid Form shows any unexplained erasures, omissions, alterations of form, additions not called for, added restrictions or qualifying conditions or other irregularities of any kind.

C. The Owner may make such investigations as he/she deems necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to the Owner all such information for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein within the Contract Time.

1.9 ACCEPTANCE

A. The acceptance of a bid will be a Notice of Award, signed by a duly authorized representative of the Owner; no other act by the Owner or his/her agents shall constitute the acceptance of a bid. The acceptance of a bid by the Owner shall bind the successful Bidder to execute the contract. The Bidder to whom the contract is awarded by the Owner, shall, sign and deliver to the Owner for execution by the Owner all required copies of the Agreement, along with all required insurance and bonding documents. The rights and obligations provided for in the Contract shall become effective upon the parties only with formal execution of the Agreement by the Owner.

1.10 BONDS AND CERTIFICATES

A. Unless otherwise stipulated in the Bidding Documents, the Bidder shall deliver to the Owner a Performance Bond, a Payment Bond, and a Labor and Material Bond, each in the amount of 100 percent of the Contract Sum, with a corporate surety authorized to transact business in the Project State, within 3 days following execution of the Contract, or prior to commencement of

the Work, whichever occurs first. Attorneys-in-fact who sign bonds must file with each bond a certified and effective dated copy of their power of attorney.

B. Satisfactory certificates of insurance in the amounts specified in the Contract Documents shall be furnished prior to commencement of Work.

C. All bonds and policies or certificates of insurance must meet with the approval of the Owner before the Contractor will be allowed to commence the Work. Failure or refusal to furnish bonds or insurance policies or certificates in a form satisfactory to the Owner shall subject the Bidder(s) to forfeiture of bid bond.

D. The form of the Agreement that the successful Bidder, as Contractor, will be required to execute is the form of Agreement referenced in the Project Manual.

END OF SECTION 00202

DOCUMENT 00411 – BID FORM

Raymore Peculiar Schools Bidder: _____
LEAD CENTER Roofing Improvements 2023 (Bidder enter name here)

BASE BID, SINGLE-PRIME CONTRACT
The undersigned Bidder, having carefully examined the drawings and complete specification, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services as described in the above documents, necessary to complete construction.

Roofs – Roofing Membrane Replacement LEAD Center

Base Bid – Roof Area 1 $_____

Deduct for no 2" polyisocyanurate $_____

UNIT PRICES

Unit Price #1 Metal Deck Repair $_____per sq. ft.
Unit Price #2 Wood Blocking Replacement $_____per board foot
Unit Price #3 Drain Clamping Ring Replacement $_____per board foot
Unit Price #4 Drain Bowl Replacement $_____per board foot

BONDING
The submitting bidder agrees to provide a 5% Bid Bond, and the successful bidder agrees to purchase a Payment & Performance Bond in the amount of 100% of total contract value.

TIME OF COMPLETION
Owner will make award by September 30, 2023. The undersigned Bidder proposes and agrees hereby to begin the Work of the Contract Documents after October 1, 2023; and shall reach substantial completion by May 17, 2024. Total Completion will be by May 31, 2024. All Tremco materials must bedelivered by April 30, 2022. Liquidated Damages of $1000 per day will be applied for work completed past the above-mentioned completion dates.

ACKNOWLEDGEMENT OF ADDENDA
The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

Addendum No. 1, dated _____
Addendum No. 2, dated _____

CONTRACTORS LICENSE

The undersigned further states that he is a duly licensed Contractor, for the type of work proposed, in the State of Missouri, and that all fees, permits, etc., pursuant to the submission of this proposal have been paid in full.

SUBMISSION OF BID

Respectfully submitted this ___ day of _____ , 2023.

By: _____

(Name of bidding firm or corporation)

By: _____

(Type or print name)

Title: _____

(Owner/Partner/President/Vice Pres.)

Address: _____

_____

Phone: _____

Attachment A

Owner Purchased Material List for LEAD Center Roof

The following material list is to be included in the bid form and signed/dated by the Contractor. Failure to provide this information will render your bid unresponsive. The owner is purchasing the following list of material through a pre-competed national cooperative purchasing organization. Only these materials, in the quantities listed, will be supplied. The Contractor is responsible for purchasing any additional material directly from the warranty-issuing manufacturer at the contractor's cost. The contractor is also responsible for ALL other items not on this list necessary for the completion of work specified.

This includes, but is not limited to, pre-finished metal, coverboard, fasteners, warranty charges, inspections, and other consumable materials. The unloading of material and the storage of said material in a secure area is the sole responsibility of the contractor. Any unused materials remain the property of the owner.

KEE ROOF INSTALLATION

Material	Quantity	Container Size
Tremply KEE Field Sheet (45 mil)	59	100" x 100' roll
Tremply KEE Field Sheet (45 mil)	18	37" x 100' roll
Tremply KEE LV Bonding Adhesive	25	5 gallon bucket
Tremply KEE Pipe Flashing	4	8 per case
Tremply KEE T-Joint Covers	4	100 per case
Tremply KEE Universal Corners	20	20 per case
Tremply KEE Strip In Sheet	5	6" x 100'
TremSeal Pro (white)	2	24 cartridge case
TremSeal Pro (Black)	5	24 cartridge case
DF 3" Isoweld TPA Plates	62	500 per case
24 Gauge KEE Coated Metal	10	48" x 10" sheet
24 Gauge Sheet metal (Charcoal)	30	48" x 10' sheet

Bidding Contractor:_____

Designated Representative of Contractor:_____

Contractor Signature:_____

Date:_____

SECTION 01100 – SUMMARY

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 the following:
1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Use of premises.
5. Owner's occupancy requirements.
6. Work restrictions.
7. Specification formats and conventions.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

1. LEAD Center Roofing Improvements

B. Owner: Raymore Peculiar Schools
1. Owner's Representative: Scott Dobson, Director of Facilities

C. Owner Furnished Materials (See Material List Attachments to Bid Form):
1. Please review attachments with bid form to determine the products and quantities that the Owner has purchased directly from manufacturer.
2. The contractor will be responsible for all other products needed to complete project per the specification and drawings.
3. The unloading of material and the storage of said material in a secure area is the sole responsibility of the contractor.

D. The Work consists of the following:
NOTE: This project will occur while the facility is in use for its intended purpose (manufacturing) during the course of this project. This project cannot disrupt the use of this building while project is occurring.
NOTE: Contractor will disconnect/reconnect of the all gas/electrical lines, replace any cracked, broken gas and conduit lines. Remove marked roof top equipment and curbs. Install new decking where the vacant curb was located. Contractor is also responsible for the mechanical contractor for lifting, removal/reinstall of the specified equipment.

1. **General conditions and details for all roof areas:**
a. It is the responsibility of the contractor to report in writing to the Owner, any areas of cracks or deterioration to the walls above/below the roofline.
b. It is the responsibility of the contractor for all underside clean up from drippage and debris coming through the roof deck.
c. Drains:

1. It is the responsibility of the contractor to inspect and confirm to the owner that all drains are properly flowing and not leaking prior to start of work. Any clogged or leaking scuppers after start of work are the contractor's responsibility to repair and unclog.
    a) Drains are assumed to be free flowing prior to start of project; it is the contractor's responsibility to identify to owner any non-free flowing drains before commencing any work; and for the drains to be free flowing and working properly when project is complete.
    b) Only roof drain plugs will use to plug roof drains while project is in process. Insulation, rags, materials, etc. will not be allowed for temporarily plugging the roof drains.
    c) Replace all strainers with new cast iron strainers that fit properly into drain ring.
    d) Install 30" x 30" specified flashing into drain and strip in specified membrane set in specified adhesive.
    e) Replace drains, and/or drain clamping rings and bolts as needed. Get approval from owner and roofing manufacturer prior to replacing drains and/or drain clamping rings.
    f) All strainers must be approved steel.
    g) Provide unit cost for drain and drain clamping ring replacement.

d. It is the responsibility of the contractor to examine the job site and document any damages or issues with pictures and/or video. Any damages found after start of work will be the responsibility of the contractor.

e. It is the responsibility of the contractor to clean roofs drains of all debris and trash at the end of the project and prior to the expiration of their two year warranty.

f. It is the contractor's responsibility to keep all RTU's clean and free of any roofing material, personal items, or debris.
    1) RTU's shall not be used to store tools, lunchbox's, or any items related to the project.

g. It is the contractor's responsibility to disconnect and raise all electrical conduit and gas lines as needed to complete work.

h. Install new pitch pans/pipe boots around existing pipe penetrations.

i. Fill new and existing pitch pans with specified, elastomeric materials; and install metal cover on the pitch boxes.

j. Repair and replace all PVC condensate lines on RTU's.

k. Removal of obsolete items and removal of obsolete curbs with deck replacement as needed. Fill in deck voids with like material that is properly secured and supported.

l. It is the responsibility of the contractor to submit detail drawings prior to job start. No sheet metal details shall be installed until submittal drawings are approved by roofing material manufacturer/warranty holder.

m. Where membrane flashings are used (in gutter, etc):
    1) New base flashing shall be installed without wrinkles.
    2) New base flashing will extend a minimum of 10" onto field of the roof.
    3) At Base Flashing:
        a) Install bar termination at the top edge of all base flashing where the flashing is not wrapped over a curb, wall, or expansion joint.
        b) Base flashing height shall be a minimum of 8" and shall not exceed 15".
            Flashing over 15" shall be bar terminated. New metal wall panels approved by roofing material manufacturer.
    4) Install specified counterflashing over termination bar. Termination bar shall always be covered with counterflashing.
        a) Counterflashing shall extend over bar termination a minimum of 4".

5) All brick and block walls shall require new 24-gauge reglet joint counterflashing.
   a) Width shall be sufficient to extend down over bar termination a minimum of four-inches.
6) New 24-gauge metal end covers and 90-degree corners shall be installed to properly terminate ends of all sheet metal details. Submit shop drawing prior to installation.
7) Install new 22-guage continuous cleat, fastened (meeting SMACNA standards) to secure copings raised metal edge detail.
   Install non-perlite, fiberboard or polyisocyanurate tapered edge strips as needed along perimeters, projections, and transitions to properly slope roof areas and eliminate ponding water.

n. Any broken or missing PVC components shall be replaced. Install PVC line to direct RTU affluent to the nearest drain, gutter, or scupper.

ROOFING/HVAC

1) Replace all pipe support with specified Miro Industries RAH series roller pipe supports.

b. Condensate RTU Piping:
c. Existing copper pipping to remain – alter as needed for new roof elevation
d. Gas pipe:

1) Disconnect gas piping at RTU's and gas roof penetrations during roofing work and add flexible gas connectors.
2) After roofing is complete, re-connect gas piping permanent to RTU's and gas roof penetrations making adjustments as needed for new roof elevation.
3) Provide and install new pipe supports – see attached spec sheets – note – slip sheets provided by roofer.
4) 3-RAH pipe supports on 3" and smaller gas piping.
5) 4 -RAH on the 4" gas piping.
6) Prime and paint gas piping – see attached paint and primer spec sheets – light grey.
7) Provide new conduit supports – see attached spec sheet 8-Base Strut-12.Raise one RTU – see attached map with RTU circled on roof plan.

Base Bid - Roof Restoration
NOTE: Any mention of FM standards is for reference only. These facilities are not FM insured.

1) Existing metal detail will remain and wall counterflashing metal on perimeter walls.
2) Install termination bar for all wall flashings. Three course termination bar in specified mastic/mesh/mastic. Install specified counterflashing to cover all termination bar.
3) Insall specified skirt flashings as specified.
4) Remove down to the roof deckthe 20 existing penetrations mark on the roof plan.
5) Install new metal decking and specified insulation in these locations.

Roofing:

a) Remove existing top layer and bottom layers of EPDM roofing.
b) Cut and relax any remaining EPDM membrane.
c) Install 2" layer of specified polyisocyanurate as specified.

NOTE: Include a deduct amount for this on your bid form.

d) Install specified 1/2" specified gypsum coverboard as specified.
e) Install specified flashings as specified.
f) Install specified Membrane using specified induction welded process.
g) Install specified walkways where specified on specification roof plan.
i) Provide specified 20 year warranty.

Install new 24-gauge pre-finished fascias, expansion joint caps, counterflashings, reglet joint counterflashings, gutters, scuppers, scupper inserts, scupper faceplates, and metal edge details per drawing, summary, and warranted material manufacturer accepted metal detailing standards.

a) Install concrete splash (with specified sheeting beneath) blocks under all downspouts and scupper face plates.
b) Replace line/conduit supports with specified supports.
c) Install specified fully re-enforced system to all base flashings.
d) Provide 20-year manufacturer's warranty.

2. **General conditions and details for all roof areas:**
   a. It is the responsibility of the contractor to provide 100% supervision of the ground equipment at all times when in use.
   b. As needed, raise and extend projection curbs and pipes, and perimeters to accommodate new flashing details.

      a) Install new downspouts where specified. Install new 24-gauge pre-finished copings, expansion joint caps, reglet joint counterflashings, and metal edge details per drawing, summary, and manufacturer accepted metal detailing standards. For both expansion joint areas: Submit shop drawing for manufacturer's approval prior to starting project.
      b) Install 24-gauge pre-finished metal perimeter details, gutters, and downspouts where specified. Any fascia length exceeding 6" needs to have a stiffening rib. Provide shop drawing of these metal details prior to starting project.
      c) Provide 20 yr. manufacturer's warranty.

3.

1.4 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.5 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of project site beyond areas in which the Work is indicated.
   1. Driveways 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 space and time requirements for storage of materials and equipment on-site.

B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

C. Security: Comply with Owner's requirements related to security.

D. Safety: Comply with all OSHA regulations and guidelines that apply to project.

E. No smoking on Molex property.

F. No changing into or from work clothes on site.

G. Use of adjacent roofs not related to the project is prohibited unless provided written approval by Molex

1.6 OWNER'S OCCUPANCY REQUIREMENTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's 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 authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.

1.7 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.

1. Weekend Hours: As approved by Molex.
2. Early Morning Hours: As approved by Molex.
3. Hours for Utility Shutdowns: Coordinated with and approved by Molex.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify District not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Molex's written permission.

1.8 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the

16-division format and CSI/CSC's "MasterFormat" numbering system.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01 22 00 - 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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or 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: See 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 schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: Metal Deck Material Repair:
   1. Description: Remove/replace existing deck material.
   2. Unit of Measurement: 1 square foot.

B. Unit Price No. 2: Wood Blocking Replacement:
   1. Description: Replace wood blocking
   2. Unit of Measurement: 1 board foot

C. Unit Price No. 3: Drain Bowl Replacement
   1. Description: Replace Drain
   2. Unit of Measurement: per unit

D. Unit Price No. 4: Drain Clamping Ring Replacement
   1. Description: Replace Drain Clamping
   2. Unit of Measurement: per unit

END OF SECTION 00433

SECTION 01250 - CONTRACT MODIFICATION PROCEDURES

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 specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

A. Owner will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Owner will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Owner are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within **3** days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Owner.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Owner will issue a Change Order for signatures of Owner and Contractor.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Owner may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01330 - 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Owner's responsive action.

B. Informational Submittals: Written information that does not require Owner's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Owner for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Submit complete submittal package.

C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's receipt of submittal.
   1. 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.
   2. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
   3. Resubmittal Review: Allow 10 days for review of each resubmittal.
   4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Owner and to Owner's consultants, allow 10 days for review of each submittal. Submittal will be returned to Owner before being returned to Contractor.

D. Identification: Place a permanent label or title block on each submittal for identification.

   1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Owner.
3. Include the following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name and address of Owner.
    d. Name and address of Contractor.
    e. Name and address of subcontractor.
    f. Name and address of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

F. Additional Copies: Unless additional copies are required for final submittal, and unless Owner observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Owner.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Owner will discard submittals received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810, CSI Form 12.1A, or similar form acceptable to Owner.
2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

H. 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 "Approved" or "Approved as Noted."

I. 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.

J. Use for Construction: Use only final submittals with mark indicating ""Approved" or "Approved as Noted."

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

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 printed 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 written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Standard product operation and maintenance manuals.
    f. Compliance with specified referenced standards.
    g. Testing by recognized testing agency.
    h. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit three copies of Product Data, unless otherwise indicated. Owner will return one copy. Mark up and retain one returned copy as a Project Record Document.

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. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Schedules.
    e. Compliance with specified standards.
    f. Notation of coordination requirements.

g. Notation of dimensions established by field measurement.
h. Relationship to adjoining construction clearly indicated.
i. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
3. Number of Copies: Submit two opaque (bond) copies of each submittal. Owner will return one copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner will return submittal with options selected.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Location.
3. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Owner will return one copy.

a. Mark up and retain one returned copy as a Project Record Document.

F. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

G. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Owner will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Owners and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare 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.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare 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.

J. Product Test Reports: Prepare written reports indicating 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.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare 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.

N. Compatibility Test Reports: Prepare 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.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, 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.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.

2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Construction Photographs: Comply with requirements specified in Division 1 Section " Photographic Documentation."

U. Material Safety Data Sheets (MSDSs): Submit information directly to Owner.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. 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. Mark with approval stamp before submitting to Owner.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 OWNER'S ACTION

A. General: Owner will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Owner will review each submittal, make marks to indicate corrections or modifications required, and return it. Owner will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Owner will review each submittal and will not return it, or will return it if it does not comply with requirements. Owner will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

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 requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Owner, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum.

B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Sanitary Facilities: Owner will allow reasonable use of sanitary facilities on site. Contractor may choose to provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

B. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

C. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

D. Telephone Service: Provide superintendent with cellular telephone or portable two-way radio for use on jobsite.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

D. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

   1. Comply with work restrictions specified in Division 1 Section "Summary."

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

B. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01700 - EXECUTION REQUIREMENTS

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 general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Protection of installed construction.
   4. Correction of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Allow for building movement, including thermal expansion and contraction.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.2 PROGRESS CLEANING

A. General: Clean Project site and work areas daily. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

D. Concealed Work: Remove debris from concealed work prior to concealing with subsequent construction.

E. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

H. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.4 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 01700

SECTION 01731 - CUTTING AND PATCHING

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 procedural requirements for cutting and patching.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.
    c. Provide an even surface of uniform finish, color, texture, and appearance.
    d. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01731

SECTION 01770 - 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Final completion procedures.
2. Final cleaning.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
2. Prepare and submit Project Record Documents, operation and maintenance manuals, and similar final record information.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements.
5. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
6. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
7. Instruct Owner's personnel in maintenance of products and systems.
8. Inspection: Submit a written report of final inspection as specified in Division 7 roofing section(s).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

1. Complete the following cleaning operations before Final Completion:

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. Clean exposed exterior 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.
f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
h. Leave Project clean and ready for occupancy.

B. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 061050 - MISCELLANEOUS ROUGH CARPENTRY

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. Rooftop equipment bases and support curbs.
2. Wood blocking, cants, and nailers.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. **Include data for fire-retardant treatment** from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. **For fire-retardant treatments**, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.
2. **Fire-retardant-treated wood**.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2[for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground].

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

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

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat all miscellaneous carpentry unless otherwise indicated.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

E. Application: Treat all miscellaneous carpentry unless otherwise indicated.

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.5 FASTENERS

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

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

B. Nails, Brads, and Staples: ASTM F 1667.

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

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Metal Framing: ASTM C 954, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.6 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Do not splice structural members between supports unless otherwise indicated.

F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

G. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

H. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

J. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

K. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

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

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

3.3 PROTECTION

A. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06105

SECTION 07 01 50.75 – REHABILITATION OF MODIFIED BITUMEN 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. This Section includes the following:

1. Roof re-coating preparation including roof patching and cleaning preparation for coating.
2. Rehabilitation or replacement of base flashings.
3. Application of fluid-applied roof membrane and flashings over existing modified bituminous membrane roofing.

B. Related Requirements:

1. Division 00 Document “Available Information,” including the following pre-construction test report attachments.

    a. Infrared roof moisture survey report.

2. Division 01 Section "Summary" for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
3. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures.
4. Division 01 Section "Warranty and Maintenance of Thermal and Moisture Protection" for warranty and maintenance service agreement requirements.
5. Division 07 Section "Roof Specialties."
6. Division 07 Section "Preparation for Re-Roofing" for existing roofing tearoff and substrate preparation for installation of new roofing membrane.
7. Division 23 Sections for HVAC equipment removal and reinstallation.

C. **Allowances:** Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.

D. **Unit Prices:** Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 MATERIALS OWNERSHIP

A. Demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Roofing System: SBS-modified bituminous roofing, and components and accessories between deck and roofing membrane.

C. Roofing Re-Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.

D. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials.

E. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

F. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product specified.

B. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

C. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.

1. Letter written for this Project indicating manufacturer approval of Installer to apply specified products and provide specified warranty.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing rehabilitation system.

E. Warranties: Unexecuted sample copies of special warranties.

F. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by re-coating operations. Submit before Work begins.

G. Inspection Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions required and carried out.

H. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of approved warranty forms.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and the following:

1. Qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of specified products in successful use in similar applications.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.
2. An independent party certified as a Registered Roof Observer by the Roof Consultants Institute, retained by the Contractor or the Manufacturer and approved by the Manufacturer.

D. **Roofing Rehabilitation Preinstallation Conference**: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system.

1. Meet with Owner; roofing re-coating materials manufacturer's representative; roofing re-coating Installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.
2. Review methods and procedures related to re-coating preparation, including membrane roofing system manufacturer's written instructions.
3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
4. Review roof drainage during each stage of re-coating and review roof drain plugging and plug removal procedures.
5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
6. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.
7. Review HVAC shutdown and sealing of air intakes.
8. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
9. Review governing regulations and requirements for insurance and certificates if applicable.
10. Review existing conditions that may require notification of Owner before proceeding.

1.8 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

1. Store all materials prior to application at temperatures between 60 and 90 deg. F.

2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer. Do not apply materials when air temperature is below 50 or above 110 deg. F.
3. Do not apply roofing in snow, rain, fog, or mist.

E. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of coated roofing sheet set in roofing cement or hot roofing asphalt with joints and edges sealed.
2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
3. Remove temporary plugs from roof drains at end of each day.
4. Remove and discard temporary seals before beginning work on adjoining roofing.

F. **Hazardous Materials:** It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

1.9 WARRANTY

A. Special Warranty for Roof Rehabilitation: Written warranty in which Manufacturer agrees to repair roof rehabilitation installations that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Membrane failures including rupturing, cracking, or puncturing.
b. Deterioration of membranes, coatings, metals, metal finishes, and other associated materials beyond normal weathering.

2. Qualified Installer Requirement: Installer must meet requirements of Quality Assurance Article.
3. Installation Inspection Requirement: By Roofing Inspector in accordance with requirements of Part 3 Field Quality Control Article.
4. Annual Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum. Inspections to occur in Year 2 and 5 following completion.
5. Warranty Period: 10 years from date of completion of rehabilitation work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **Manufacturers**: Subject to compliance with requirements, provide products by a manufacturer meeting qualification requirements in Quality Assurance Article.

B. Source Limitations: Obtain roofing materials, sheet flashings from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Provide recoated roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Flashings: Comply with requirements of Division 07 Sections “Sheet Metal Flashing and Trim” and “Manufactured Roof Specialties.” Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:

1. FMG 1-49 Loss Prevention Data Sheet for Perimeter Flashings.
2. FMG 1-29 Loss Prevention Data Sheet for Above Deck Roof Components.
3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.

D. **Exterior Fire-Test Exposure**: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

2.3 MATERIALS

A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.

B. Temporary Roofing Materials: Selection of materials and design of temporary roofing is responsibility of Contractor.

C. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.

2.4 FLUID-APPLIED ROOFING MEMBRANE

A. Polyurethane Elastomeric Fluid-Applied System: Elastomeric, two-coat single-component moisture triggered polyurethane fluid-applied roofing formulated for application to existing built-up roofing, with the following minimum physical properties:

1. Base Coat: AlphaGuard BIO Base Coat

2. Aliphatic Urethane Top Coat: Alpha Guard Top Coat

B. Reinforcing Fabric: Permafab.

C. Polyester Reinforcing Fabric: Stitch-bonded polyester fabric, minimum 3 oz./sq. yd., for fluid-applied membrane and flashing.

2.5 AUXILIARY ROOFING COATING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system and fluid-applied roofing system.

B. Metal Surface Primer: Single-component, water based primer to promote adhesion of base coat to metal surfaces.

C. Joint Sealant: Single component, high solids, moisture curing polyurethane sealant recommended by coating manufacturer.

D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing roofing substrates, with Installer present, for compliance with requirements and for other conditions affecting application and performance of roof coatings.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
2. Verify compatibility of approved re-coating system with and suitability of substrates.
3. Verify that substrates are visibly dry and free of moisture.
4. Verify that roofing membrane surfaces have adequately aged to enable proper bond with re-coating system base coat.
5. Verify that existing roofing membrane is free of blisters, splits, open laps, indications of shrinkage, and puncture damage or other indications of impending roof system failure.
6. Application of fluid-applied re-coating membrane indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. **Protect existing roofing system** that is indicated not to be rehabilitated, and adjacent portions of building and building equipment.

B. **Shut down air intake equipment** in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.

1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.

C. **Maintain roof drains** in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.3 ROOFING RE-COATING PREPARATION

A. Membrane Surface Preparation:

1. Remove blisters, ridges, buckles, and other substrate irregularities from existing roofing membrane that would inhibit application of uniform, waterproof coating.
2. Repair membrane at locations where irregularities have been removed.
3. Broom clean existing substrate.
4. Clean substrate of contaminants such as dirt, debris, oil, and grease that can affect adhesion of coating by power washing at maximum 800 psi. Allow to dry thoroughly.
5. Verify that existing substrate is dry before proceeding with application of coating. Spot check substrates with an electrical capacitance moisture-detection meter.
6. Verify adhesion of new products.

B. **Roof Patching:** Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed.

1. Build-up isolated low spots on existing roofing membrane with recoating manufacturer's recommended products to alleviate ponding.
2. Install reinforcement at alligatored substrates, along valleys, at areas of ponding and where additionally indicated.
3. Install two ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.
4. Embed each ply sheet in a solid mopping of cold, fluid-applied adhesive, applied at rate required by roofing system manufacturer, to form a uniform membrane without ply sheets touching.

C. **Limited Roof Tear-Off**: Where indicated, remove existing roofing membrane and other membrane roofing system components down to the deck. Fill in the tear-off areas to match existing membrane roofing system construction.

1. Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed.
2. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

3.4 FLASHING REPAIR

A. Remove, where indicated, existing base flashings around parapets, curbs, walls, and penetrations.

1. 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 with 22 gage kynar coated galvanized steel; match existing color.

C. Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.

D. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal.

E. Prime metal surfaces with manufacturers recommended primer.

3.5 SEAM TREATMENT

A. Primer: Prime seams of existing roof system with asphaltic surfaces primer at manufacturer’s recommended application rate and allow to dry.

B. Roofing Seam Reinforcement: Coat seams with aliphatic urethane base coat according to manufacturer's written instructions at a minimum 4 inches (150 mm) wide application at 1 gal/80 lineal feet minimum.

3.6 FLUID-APPLIED MEMBRANE APPLICATION

A. Primer: Apply primer to surfaces to be recoated when recommended by coating manufacturer.

B. Fluid-Applied Flashing Application: Complete base coat and polyester reinforcement at parapets, curbs, penetrations, and drains prior to applying fluid-applied membrane to field of roof.

1. Extend coating minimum of 8 inches up vertical surfaces and 4 inches onto horizontal surfaces.
2. Roof Drains: Install base coat onto surrounding membrane surface and metal drain bowl flange. Install target piece of reinforcing fabric immediately into wet base coat and roll to fully embed and saturate fabric. Reinstall clamping ring and strainer following application of top coat. Replace broken drain ring clamping bolts.

C. Base Coat: Apply base coat to flashing surfaces in accordance with manufacturer's written instructions. Back roll to achieve minimum wet mil coating thickness of 64 mils unless otherwise recommended by manufacturer; verify thickness of base coat as work progresses.

1. Apply base coat on prepared and primed surfaces and spread coating evenly.
2. Embed polyester reinforcing fabric into wet base coat. Lap adjacent flashing pieces of fiberglass minimum 3 inches along edges and 6 inches at end laps.
3. Roll surface of polyester reinforcing fabric to completely embed and saturate fabric. Leave finished base coat with fabric free of pin holes, voids, or openings.
4. Allow base coat to cure prior to application of top coat.
5. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of fiberglass reinforcement.

D. Top Coat: Apply top coat uniformly in a complete installation to field of roof and flashings.

1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
2. Apply top coat to flashings extending coating up vertical surfaces and out onto horizontal surfaces 4 inches. Install top coat over field base coat and spread coating evenly.
3. Back roll to achieve wet mil thickness of 32 mils unless otherwise recommended by manufacturer.
4. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.

E. Slip-Resistant Walkway Topcoat: Apply walkway second topcoat following application and curing of top coat. Locate as indicated, or as directed by Owner.

1. Mask walkway location with tape.
2. Prime first top coat prior to application of walkway top coat if walkway top coat is not applied within 72 hours of the first top coat application, using manufacturer's recommended primer.
3. Back roll to achieve wet mil thickness of 20 mils unless otherwise recommended by manufacturer.
4. Broadcast 20 to 30 lbs. per 100 sq. ft. of Slip-Resistant Top Coat Aggregate in wet top coat.
5. Back roll sand and top coat creating even dispersal of sand. Remove masking immediately.

3.7 WALKWAY INSTALLATION

A. **Walkway Pads**: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.

1. Broom clean existing substrate.
2. Set walkway pads in cold-applied adhesive.

3.8 FIELD QUALITY CONTROL

A. Roofing Inspector: **Owner will engage** a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

B. Roof Inspection: **Contractor shall engage** roofing system manufacturer's technical personnel to inspect roofing installation, and submit report to the Architect. Notify Architect or Owner 48 hours in advance of dates and times of inspections. Inspect work as follows:

1. Upon completion of preparation of first component of work, prior to application of re-coating materials.
2. Following application of re-coating to flashings and application of base coat to field of roof.
3. Upon completion of re-coating but prior to re-installation of other roofing components.

C. Repair fluid-applied membrane where test inspections indicate that they do not comply with specified requirements.

D. Arrange for additional inspections, at Contractor's expense, to verify compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 01 50.75

SECTION 075416 - KETONE ETHYLENE ESTER (KEE) 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. Adhered KEE membrane roofing system.
2. Roof insulation.

B. Related Sections:

1. Division 06 Section " Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.
3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane 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. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.

1. Fire/Windstorm Classification: **Class 1A-90 Class 1A**>.
2. Hail Resistance: **SH**.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification, if requested: For the following products:

1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
2. Roof insulation.
3. 10 lb (4.5 kg) of aggregate ballast in gradation[**and color**] indicated.
4. Roof paver[**, full sized,**] in each color and texture required.
5. Walkway pads or rolls.
6. Metal termination bars.
7. Battens.
8. Six insulation fasteners of each type, length, and finish.
9. Six roof cover fasteners of each type, length, and finish.

D. Qualification Data: For qualified Installer and manufacturer.

E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

F. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is **UL listed** for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

C. Exterior Fire-Test Exposure: ASTM E 108, **Class A** ; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

D. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

E. Preinstallation Roofing Conference: Conduct conference at **Project site**.

1. Meet with Owner, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

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

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.Retain options in first subparagraph below based on those used on Project. Verify availability of manufacturer's total-system warranty and components included.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of membrane roofing system.
2. Warranty Period: 20 years from date of completion.

B. Manufacturer Inspection and Preventive Maintenance Service: To report maintenance responsibilities necessary for preservation of Owner's warranty rights and to perform periodic routine maintenance required, as described in Manufacturer's standard form. The cost of manufacturer's inspections and preventive maintenance is included in the Contract Sum.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period: 2 year.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 KEE MEMBRANE ROOFING

A. KEE Sheet: ASTM D 6754, fabric reinforced and fabric backed.

1. Manufacturers: Tremco, Inc.
   a. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced fleece-backed sheet, ASTM D6754
2. Thickness: **60 mils (1.5 mm), nominal**.
3. Exposed Face Color: **White**.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

A. A.General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Membrane Bonding Adhesive:

1. Bonding adhesive, solvent-borne. for bonding KEE fleece-backed single ply membranes and flashings to substrates.

a. Basis of design product: Tremco, TremPly KEE FB Bonding Adhesive.

b. VOC, maximum, ASTM D3960: 234 gm/L.

C. Flashing Membrane Adhesive:

1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE smooth-backed single ply membranes and flashings to substrates.

a. Basis of design product: Tremco, TremPly KEE L V Bonding Adhesive.

b. VOC, maximum, ASTM D 3960: 200 g/L.

D. Joint Sealant: Elastomeric joint sealant compatible with roofing materials, with movement capability appropriate for application.

1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.

a. Basis of design product: Tremco, TremSEAL Pro.

b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.

c. Hardness, Shore A, ASTM C661: 40.

d. Adhesion to Concrete, ASTM C794: 35 pli.

e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).

f. Colors: Bronze, Limestone, White.

E. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside comer sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.3 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured **or approved** by KEE membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated to meet current Nebraska codes (City of Lincoln is currently 2018 IEEC).

B. Roof lnsulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:

1. Board Insulation, Polyisocyanurate: CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.

   a. Basis of design product: Tremco, Trisotech Insulation.

   b. Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).

   c. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

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

2.4 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and **cover boards** to substrate, and acceptable to roofing system manufacturer.

C. Roof lnsulation Adhesive:

1. Urethane adhesive, bead-applied, low-rise two-component solvent-free low odor, formulated to adhere roof insulation to substrate.

   a. Basis of design product: Tremco, Low Rise Foam Insulation Adhesive.

   b. Flame Spread Index, ASTM E84: 10.

   c. Smoke Developed Index, ASTM E84: 30.

   d. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.

   e. Tensile Strength, minimum, ASTM D412: 250 psi (1720 kPa).

   f. Peel Adhesion, minimum, ASTM D903: 17 lbf/in (2.50 kN/m).

   g. Flexibility, 70 deg. F (39 deg. C), ASTM D816: Pass.

D. Cover Board:

1. Gypsum panel, cellulosic fiber reinforced, water-resistant, ASTM C1278/C1278M.

   a. Basis of design product: Tremco/USG Securock.

   b. Thickness: 1/4 inch (6mm).

2.5 WALKWAY

A. Walkway/ Protection Mat Material:

1. Walkway roll, reinforced KEEmembrane roll with serrated slip-resistant surface, fabricated for heat welding to compatible KEE membrane surface.
    a. Basis of design product: Tremco, TremPly KEE Walkway Roll.
    b. Roll Size: 30 inches by 50 ft (760 mm by 15.2 m).
    c. Thickness: 0.047 inch (0.6 mm).
    d. Breaking strength: 56 lbs (9.8 kN/m).
    e. Color: Light yellow.

2. Protection mat, reinforced KEEmembrane mat with serrated slip-resistant surface and enhanced puncture resistance, fabricated for heat welding to compatible KEE membrane surface.
    a. Basis of design product: Tremco, TremPly KEE Protection Mat.
    b. Mat Size: 28 inches by 48 feet (710 mm by 13.1 m).
    c. Thickness: 0.234 inch (5.9 mm).
    d. Puncture resistance: 850 lbs (148 kN/m).
    e. Tear strength: 350 lbs (60 kN/m).
    f. Color: Yellow.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.

1. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m) and allow primer to dry.
2. Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F (14 deg C) of equiviscous temperature.
3. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

4. Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

H. Mechanically Fastened and Adhered Insulation: Install each layer of insulation and secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
2. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
3. Set each subsequent layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F (14 deg C) of equiviscous temperature.
4. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
5. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

I. Loosely Laid Insulation: Loosely lay insulation units over substrate.

J. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.

3.4 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

I. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition **and to not void warranty for existing membrane roofing system**.

3.5 FULLY ADHERED MEMBRANE ROOFING INSTALLATION

A. Fully adhere membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

G. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

H. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.6 BASE FLASHING INSTALLATION

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

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings **and mechanically anchor to substrate through termination bars and seal termination bars beneath the copings and counterflashings**.

3.7 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

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3.10 ROOFING INSTALLER'S WARRANTY

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

1. Owner: <**Insert name of Owner**>.

2. Address: <**Insert address**>.
3. Building Name/Type: <**Insert information**>.
4. Address: <**Insert address**>.
5. Area of Work: <**Insert information**>.
6. Acceptance Date: <**Insert date**>.
7. Warranty Period: <**Insert time**>.
8. Expiration Date: <**Insert date**>.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

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

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

    a. Lightning;
    b. Peak gust wind speed exceeding 74 mph (m/sec);
    c. Fire;
    d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. Vapor condensation on bottom of roofing; and
    g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

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

1. Authorized Signature: <**Insert signature**>.
2. Name: <**Insert name**>.
3. Title: <**Insert title**>.

END OF SECTION 075416

SECTION 075416 - KETONE ETHYLENE ESTER (KEE) ROOFING (BASE BID)

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. Adhered thermoplastic KEE roofing system, including:
2. Vapor Retarder.
3. Roof insulation.
4. Roof insulation cover board.
5. Base Sheet.
6. Walkways.
7. All roofing components, including but limited to, flashing heights, perimeter edge details, drain and scupper sums, any insulation crickets and saddles, penetrations, expansion joints, copings (use drive cleats), and any and all other roofing items warranted by the roofing manufacturer must be approved manufacturer’s representative for this project.

B. Related Sections:

1. Division 01 Section Summary
2. Division 06 Section “Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
3. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.
4. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PREINSTALLATION MEETINGS

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

1. Meet with Owner, and Owner's representative, if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, 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 substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.
10. Product Data: For adhesives and sealants, indicating VOC content.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.

a. Indicate details meet requirements of NRCA and FMG required by this Section.

2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
5. Membrane fastening or adhesion requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.

1. Include letter from Manufacturer written for this Project indicating approval of Installer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements, including FM Global system approval.
2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

D. Warranties: Unexecuted sample copies of special warranties.

E. Field Quality Control Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: Manufacturer listed in this Section who is UL listed [and FM Global approved] for roofing systems identical to those specified for this Project, with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.

C. Roofing Inspector Qualifications: A Roofing Inspector not engaged in the sale of products, e, experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer’s compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.

1.8 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.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

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

1.9 PROJECT CONDITIONS

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

B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.
2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.

3. Remove temporary plugs from roof drains at end of each day.
4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.10 WARRANTY

A. Warranty, General: Warranties specified 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.

B. Manufacturer's Warranty: Manufacturer's standard or customized form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Manufacturer's warranty includes roofing membrane, base flashings, fasteners, roofing membrane accessories , roof insulation, cover boards, walkway products, and other components of roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

C. Installer's Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section[and Work of related Sections listed in "Roof System Warranty" Paragraph, including all components of roofing system, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

D. Manufacturer Inspection Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and/or preventive maintenance is included in the Contract Sum. Inspections to occur in Years 2, 5, 10 and 15 following completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

B. Tremco Roofing Product Only.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane 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. Membrane roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-60
2. Hail Resistance: MH.

D. Flashings: Comply with requirements of Division 07 Sections “Sheet Metal Flashing and Trim” and “Manufactured Roof Specialties.” Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:

1. FMG 1-49 Loss Prevention Data Sheet for Perimeter Flashings.
2. FMG 1-29 Loss Prevention Data Sheet for Above Deck Roof Components.
3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.

E. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

F. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 THERMOPLASTIC MEMBRANE ROOFING (BASE BID AND ALTERNATE BIDS)

A. **BASE BID: Tremply KEE Sheet**: Tremco Tremply KEE, 45 mil membrane..

B. **BASE BID: Elastomeric Flashing Sheet: Tremco, TremPly Kee Roof Membrane**.

C. MECHANICALLY FASTENED BASE SHEET for BASE and ALTERNATE BIDS: Composite Ply HT

D. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as thermoplastic membrane.

2.4 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants shall comply with the following limits for VOC content:

a. Plastic Foam Adhesives: 50 g/L.
b. Contact Adhesives: 80 g/L.
c. PVC Welding Compounds: 510 g/L.
d. Other Adhesives: 250 g/L.
e. Single-Ply Roof Membrane Sealants: 450 g/L.
f. Nonmembrane Roof Sealants: 300 g/L.
g. Sealant Primers for Nonporous Substrates: 250 g/L.
h. Sealant Primers for Porous Substrates: 775 g/L.

B. **BASE BID: Single Ply Membrane Bonding Adhesive: Tremco, Tremply KEE LV Bonding Adhesive**.

C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

D. Fasteners, Induction Welding System: Factory-coated FM Global approved drill point steel fasteners for insulation and membrane attachment to wood, steel and structural concrete roof decks, separation pads, and polyester-backed, adhesive-coated metal stress plates approved for bonding to roofing membrane using welding method described in Part 3, complying with corrosion-resistance provisions in FM Global 4470, and acceptable to membrane roofing system manufacturer.

E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

F. Termination Joint Sealant: Silicone, S, NS, 25 or 50, NT: Single-component, nonsag, plus 25 to 50 percent and minus 25 to 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, and compatible with adjacent materials.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 ROOF INSULATION (For 6,000 sq. ft. of lightweight deck replacement)

A. General: Preformed roof insulation boards manufactured or approved by thermoplastic membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated

B. Insulation and Tapered Insulation: Pro **Polyisocyanurate Board Insulation:** ASTM C1289, Type II, Class 1, approved and listed by FM Global for windstorm and fire characteristics specified, CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces. CCMC listed.
   1. Compressive Strength, ASTM C1621: Grade 2: 20 psi (138 kPa)
   2. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

C. Provide factory-tapered insulation boards fabricated to slope of 1/8 inch per 12 inches (1:96) unless otherwise indicated.

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

2.6 INSULATION ACCESSORIES

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation[and cover boards] to substrate, and acceptable to roofing system manufacturer.

C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

D. Coverboards: 1/2” Securock or warranting manufacturer approved equal gypsum board.

E. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.

2.7 WALKWAYS (ALTERNATE #1)

A. Tremply KEE Walkway Roll:
1. **Tremco, Tremply KEE Walkway Roll**.
2. Roll Size: 36 inches by 60 foot (914 mm by 18.3 m).
3. Thickness: 0.08 inch (2 mm).
4. Color: To be determined by owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Steel Roof Deck:
    a. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
    b. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
4. Verify that existing insulation and substrate is sound and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer's recommendations.

B. Install wood cants, blocking, curbs, and nailers in accordance with requirements of Division 06 Section "Miscellaneous Rough Carpentry."

C. Install roofing membrane, base flashings, and component materials in compliance with requirements in FM Global 4450 and FM Global 4470 as part of a membrane roofing system as listed in FM Global's "Approval Guide" for fire/windstorm classification indicated. Comply with recommendations in FM Global Loss Prevention Data Sheet 1-49.

D. NRCA Installation Details: Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations; modify as required to comply with requirements of FM Global references if applicable:

1. Base Flashing at Parapet Wall: Plates TP-1 and TP-1S.
2. Base Flashing and Counterflashing at Parapet Wall: Plates TP-5 and TP-5S.
3. Base Flashing and Counterflashing at Parapet Wall, Movement Joint: Plates TP-6 and TP-6S.
4. Base and Surface-mounted Counterflashing: Plates TP-4 and TP-4S.
5. Perimeter Edge, Raised: Plates TP-2 and TP-2S.
6. Perimeter Edge, Embedded Edge: Plates TP-3 and TP-3S.
7. Perimeter Edge, Draining: Plates TP-3A and TP-3AS.
8. Options for Perimeter Base Securement (Roof-to-Wall and Roof-to-Curb Intersections) – Single Ply Table 7.1
9. Options for Perimeter Base Securement (Roof-to-Wall and Roof-to-Curb Intersections) – Single Ply Table 7.2
10. Guide for Sheet Metal Fascia Edges for Thermoset and Thermoplastic Membranes – Single-Ply – Table 1
11. Scupper, Raised: Plates TP-21 and TP-21S.
12. Gutter at Draining Edge: Plates TP-22 and TP-22S.
13. Expansion Joint, with metal cover: Plates TP-7 and TP-7S and Division 7 Section "Sheet Metal Flashing and Trim."
14. Expansion Joint, with manufactured cover: Plates TP-7A and TP-7AS and Division 7 Section "Roof Expansion Assemblies."
15. Curb Detail at Rooftop HVAC Units, Manufactured: Plates TP-12 and TP-12S.
16. Curb Detail at Rooftop HVAC Units, Job-Built, Wood: Plates TP-13 and TP-13S.
17. Curb Detail at Skylight, Roof Hatch, and Smoke Vents: Plates TP-14 and TP-14S.
18. Penetration, Structural Member: Plates TP-15 and TP-15S.
19. Penetration, Sheet Metal Enclosure: Plates TP-16 and TP-16S.
20. Penetration, Stack Flashing: Plates TP-17 and TP-17S.
21. Penetration, Plumbing Vent: Plates TP-18 and TP-18S.
22. Penetration, Plumbing Vent, Manufactured Boot: Plates TP-18A and TP-18AS.
23. Penetration, Pocket: Plates TP-19 and TP-19S.
24. Roof Drain: Plates TP-20 and TP-20S.
25. Guide for Clearances between Pipes / Walls / Curbs – Table 4
26. Guide for Crickets and Saddles – Table 5
27. Guide for Edge Scuppers with Tapered Saddles - Table 6

3.4 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated, where specified.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.5 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.

1. Install insulation at minimum thickness of 1-1/2 inches.
2. Install insulation at maximum thickness of 2.5” per layer.
3. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together [and fasten to roof deck].

1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.

I. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

J. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

K. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.

2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

L. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

M. Install membrane roofing and auxiliary materials to tie into existing roofing to maintain weathertightness of transition, and to not void warranty for existing membrane roofing system.

N. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

O. Install t-joints as required by manufacturer.

P. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

Q. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

R. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

S. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

T. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

3.5 INDUCTION WELDED MEMBRANE ROOFING INSTALLATION

A. Mechanically fasten insulation and cover board over area to receive roofing using membrane manufacturer's approved fastening patterns at the appropriate fastening rate required to meet performance requirements.

B. Metal Stress Plate Installation:

1. Locate plates in grid pattern in accordance with membrane manufacturer's instructions.
2. Install plates in straight rows in the specified number and spacing to achieve the required wind uplift resistance in the main field, edges and corners of the roof.
3. Install plates and separation pads using fasteners that comply with the specified Factory Mutual and applicable building code wind uplift rating and the fastener and membrane manufacturer's requirements. Ensure that all fasteners are properly driven normal to the surface of the sub-structure. Do not over-drive fasteners; plates that are recessed into and/or not flush with the surface of the insulation are not acceptable.

C. Mechanically fasten membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.

1. Install sheet according to applicable portions of ASTM D 5082.

D. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

E. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

F. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

G. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

H. Induction Welded Attachment: Secure KEE sheet by welding to coated metal stress plates using membrane manufacturer's approved plates, fasteners, separation pads where required, and approved induction welding tool.

1. Operate induction welding tool in accordance with tool manufacturer's and membrane manufacturer's written instructions. Utilize installers trained by manufacturer in application of induction welding tool.
2. Calibrate tool prior to performing welding. Perform test weld to verify manufacturer criteria are met.
3. Utilize welding tool manufacturer's magnet assembly to apply clamping pressure to welded membrane points.

I. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

J. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

K. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

L. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

M. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

N. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

3.5A ADHERED MEMBRANE ROOFING INSTALLATION (FLASHINGS)

U. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.
1. Install sheet according to ASTM D 5036.

V. Install initially in presence of membrane roofing system manufacturer's technical personnel.

W. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

X. **Bonding Adhesive**: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

Y. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

Z. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

AA. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

BB. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

CC. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

DD. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

EE. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

3.5 BASE FLASHING INSTALLATION

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

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

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

3.6 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

A. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 20 full-time days on site to examine substrates and conditions, verify materials, observe and inspect the Work, perform roof tests and inspections on completed portions of the Work, and to prepare and submit start up, interim, and final inspection reports.

1. Roofing Inspector's quality assurance inspections shall comply with criteria established in ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

SECTION CONTINUES

3.9 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: _____
2. Address: _____
3. Building Name/Type: _____
4. Address: _____
5. Area of Work: _____
6. Acceptance Date: _____
7. Warranty Period: _____
8. Expiration Date: _____

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

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

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

    a. lightning;
    b. peak gust wind speed exceeding 74 mph (33 m/s);
    c. fire;
    d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. vapor condensation on bottom of roofing; and
    g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

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

1. Authorized Signature: _____

2. Name: _____

3. Date: _____

END OF SECTION 07 54 16

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following sheet metal flashing and trim:
   1. Manufactured reglets.
   2. Formed low-slope roof flashing and trim.
   3. Formed wall flashing and trim.
   4. Formed equipment support flashing.

B. Related Sections include the following:
   1. Division 1 Section “Summary for installing sheet metal flashing and trim.
   2. Division 6 Section " Miscellaneous Carpentry" for wood nailers, curbs, and blocking.
   3. Division 7 Section "Cold Applied Built-Up Roofing” for installing sheet metal flashing and trim integral with roofing membrane.

1.3 PERFORMANCE REQUIREMENTS

A. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS

A. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:

   1. Identify material, thickness, weight, and finish for each item and location in Project.
   2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
   3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
   4. Details of expansion-joint covers, including showing direction of expansion and contraction.

B. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.

   1. Include similar Samples of trim and accessories involving color selection.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1. Meet with Owner, Manufacturer, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

B. Coordinate all sheet metal flashing and trim with roofing material manufacturer who will be warranting roof system, which will include sheet metal flashing and trim.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SHEET METALS

1. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.

    1) Color: As indicated by manufacturer's designations.

2.3 UNDERLAYMENT MATERIALS

A. Felts: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

C. Solder for Lead: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.

D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.

E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
   1. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

   1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing, Gravel Stop, and Fascia Caps: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Furnish with 6-inch wide joint cover plates.

   1. Joint Style: Lap, 4 inches (100 mm) wide.
      a. Prepainted, Metallic-Coated Steel: 24-gauge.

B. Copings and Raised Edge Caps: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.

   1. Joint Style: Butt, with 12-inch- (300-mm-) wide concealed backup plate and 6-inch- (150-mm-) wide exposed cover plates.
   2. Fabricate copings from the following material:
      a. Prepainted, Metallic-Coated Steel: 24-gauge.
      b. Continuous Perimeter Cleat: 22-gauge.

C. Expansion-Joint Cover: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 24-gage.

D. Counterflashing: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 24-gauge.

E. Flashing Receivers: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 24-gauge

F. Roof-Penetration Flashing: Fabricate from the following material:

1. Galvanized Steel: 24-gauge.

G. Roof-Drain Flashing: Fabricate from the following material:

1. Lead: 4.0-lb/sq. ft. (1.6 mm thick), hard tempered.

2.7 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:
1. Prepainted, Metallic-Coated Steel: 24-gauge.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

C. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and butyl sealant.

D. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

E. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

F. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
2. Aluminum: Use aluminum or stainless-steel fasteners.
3. Copper Use copper or stainless-steel fasteners.
4. Stainless Steel: Use stainless-steel fasteners.

G. Seal joints with butyl sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm) except where pretinned surface would show in finished Work.

1. Do not solder prepainted and metallic-coated steel sheet.
2. Where surfaces to be soldered are lead coated, do not tin edges, but wire brush lead coating before soldering.
3. Lead-Coated Copper Soldering: Wire brush edges of sheets before soldering.
4. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Raised Edge Caps: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 16-inch (400-mm) centers.

2. Anchor interior leg of coping with screw fasteners and washers at 18-inch (450-mm) centers.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for butyl sealant, extending a minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant.

1. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
2. Seal with butyl sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglets: Installation of reglets into masonry joints as specified and approved by roofing material manufacturer.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with butyl sealant to equipment support member.

3.7 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

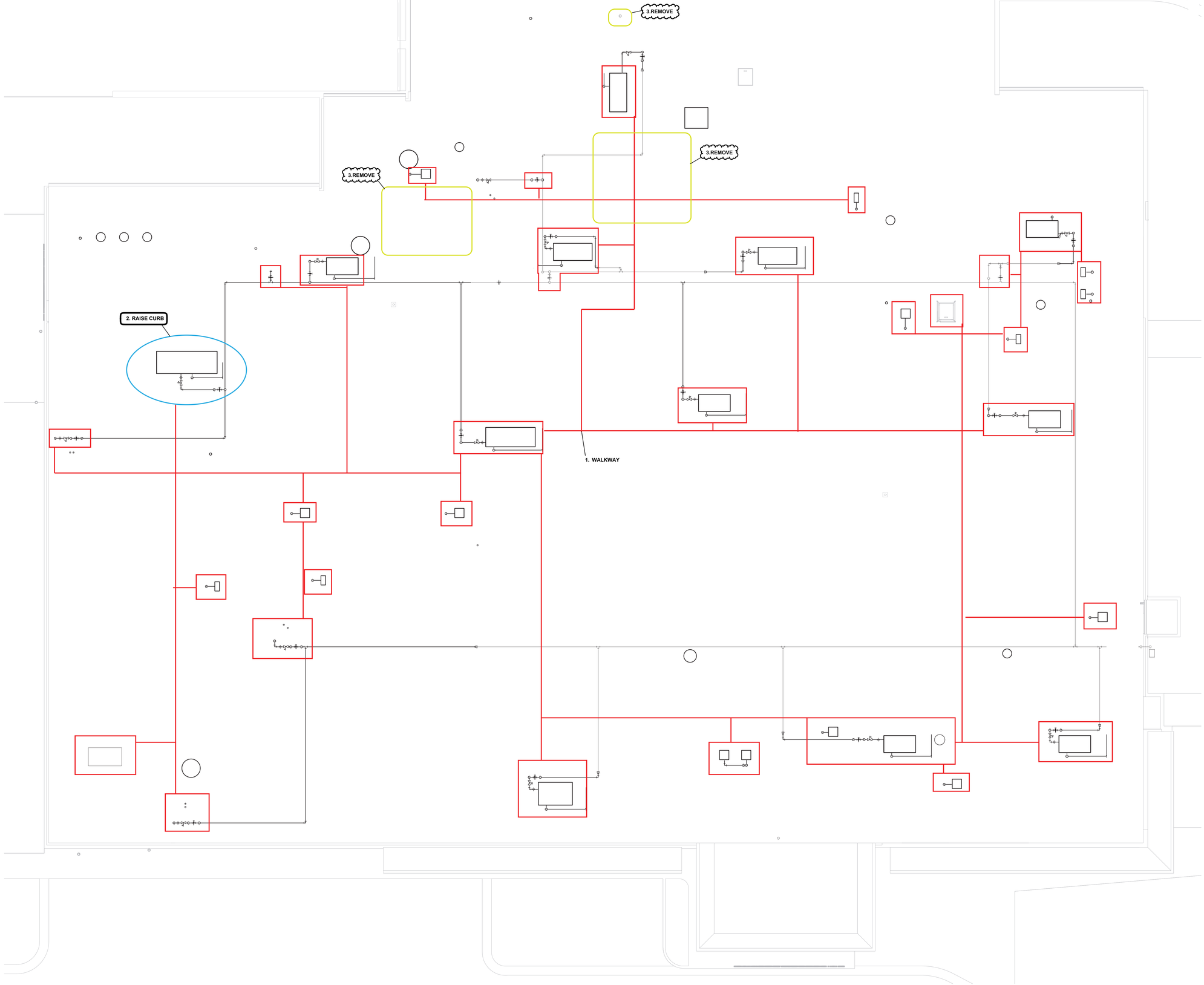
C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07620

MP PLAN NOTES:

ALL EXISTING COPINGS, METAL EDGES, COUNTERFLASHINGS AND GUTTERS WILL REMAIN IN PLACE.
INSTALL A TERMINATION BAR AND SKIRT FLASHING AT THESE LOCATIONS.
RAISE ALL CURBS TO MEET MANUFACTURER'S REQUIREMENTS.



1 MECHANICAL PLUMBING ROOF PLAN
1/8" = 1'-0"

LEGEND:

1. WALKWAY PADS INSTALLATION AREA
2. RAISE CURB
3. REMOVE ITEMS DOWN TO DECK

DATE:
09.07.2023

REVISED DATE:

RAYMORE - PECULIAR R-II SCHOOL DISTRICT
LEAD CENTER ROOFING IMPROVEMENTS 2023

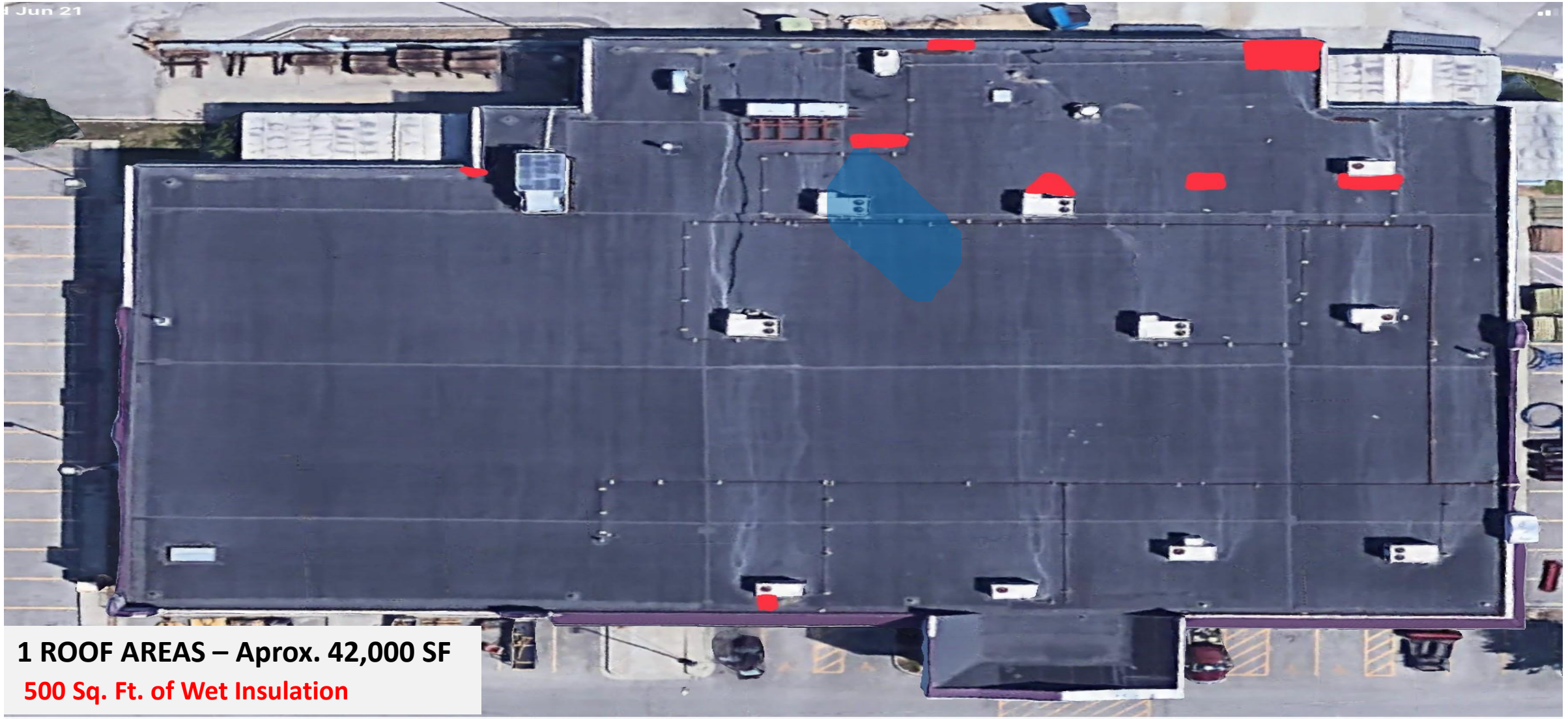
RAYMORE - PECULIAR R-II SCHOOL DISTRICT
1210 MO-58, RAYMORE, MO 64083

SHEET CONTENTS:
ROOF PLAN

LEAD ROOFING IMPROVEMENTS 2023

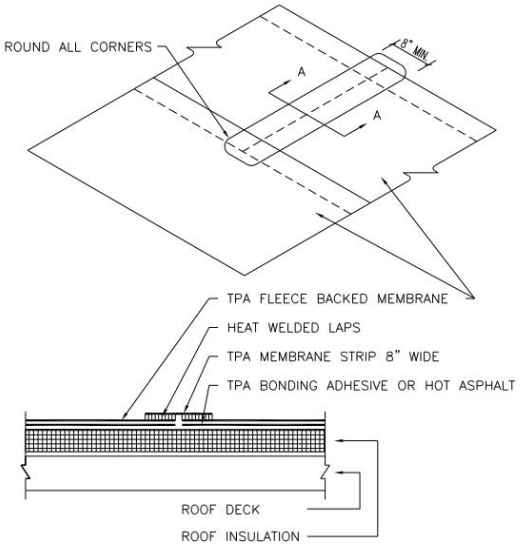
SHEET NUMBER:
A - 1

COLLEGE OAKS ROOF AREA CONDITIONS

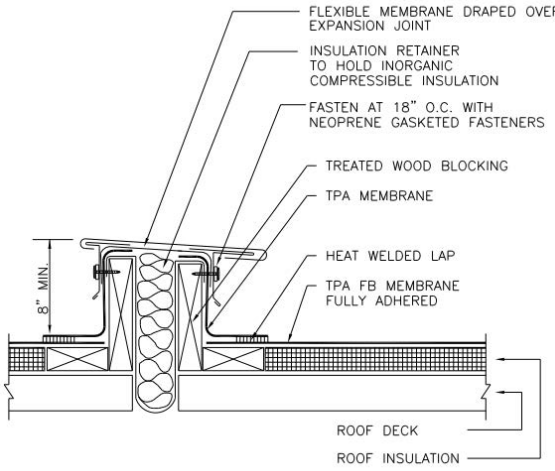


1 ROOF AREAS – Aprox. 42,000 SF

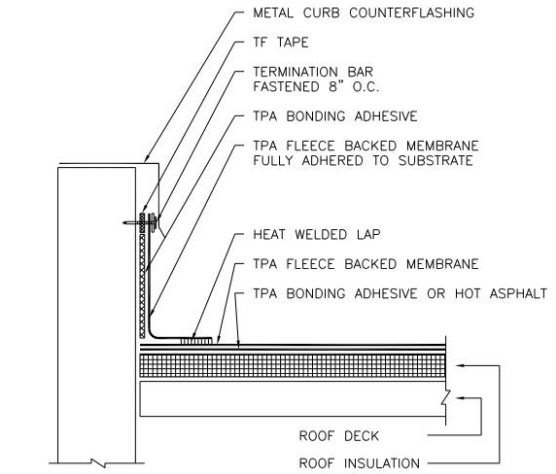
500 Sq. Ft. of Wet Insulation



DETAIL A - END LAP
NOT TO SCALE



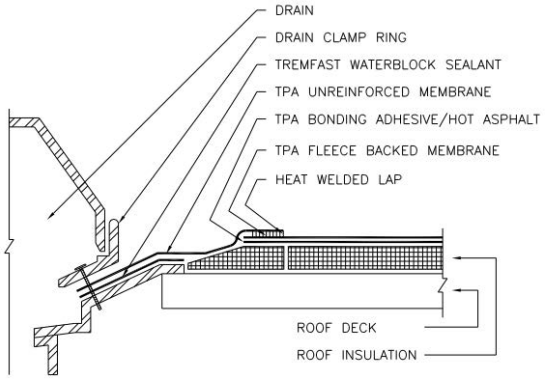
DETAIL B - EXPANSION JOINT AT CURB
NOT TO SCALE



NOTES:

ALL FLASHING MUST BE A MINIMUM OF 8" HIGH.

DETAIL C - CURB FLASHING
NOT TO SCALE



NOTES:

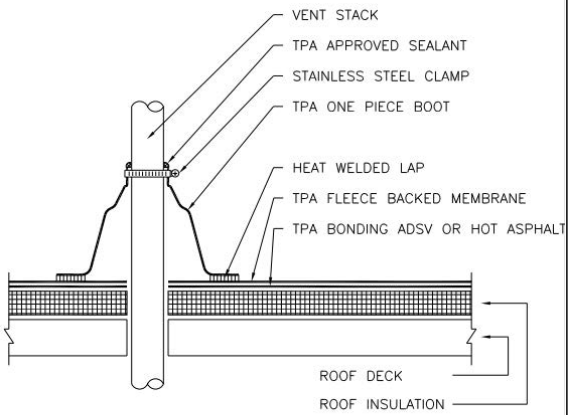
THIS TWO PIECE DESIGN MUST BE USED WHEN INSTALLING THE TPA FLEECE BACKED MEMBRANE.

MEMBRANE MUST EXTEND MINIMUM 1" BEYOND THE BOLT HOLES.

FIELD WELD MUST NOT PASS UNDER THE CLAMPING RING.

THE CLAMPING RING BOLT MUST PENETRATE THE MEMBRANE.

DETAIL D - DRAIN FLASHING
NOT TO SCALE

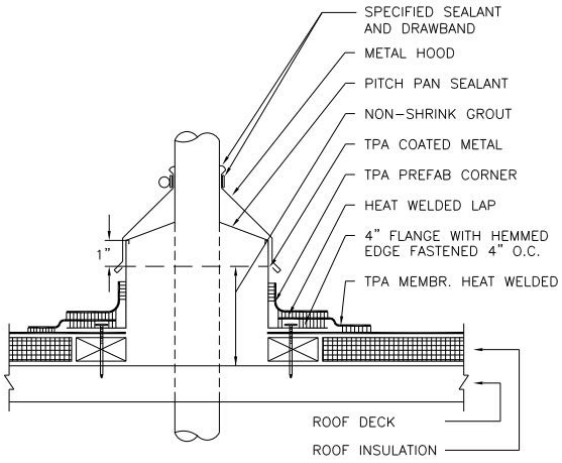


NOTES:

DO NOT CUT PREFABRICATED BOOT. IT MUST BE PULLED OVER VENT PIPE.

PREFABRICATED BOOTS ARE AVAILABLE IN SMALL & LARGE SIZES, AND MUST BE USED WHENEVER POSSIBLE TO FLASH PIPES 1" TO 8" IN DIAMETER.

DETAIL E - PREFABRICATED VENT PIPE FLASHING
NOT TO SCALE



NOTES:

USE TPA COATED METAL TO FORM PITCH PAN.

ALLOW 2" MINIMUM CLEARANCE AROUND THE PROJECTION.

TPA PREFABRICATED CORNERS MUST BE USED AT ALL 4 CORNERS

DETAIL F - PITCH POCKET FLASHING
NOT TO SCALE

REVISIONS	No.	DATE	BY

NOTES:

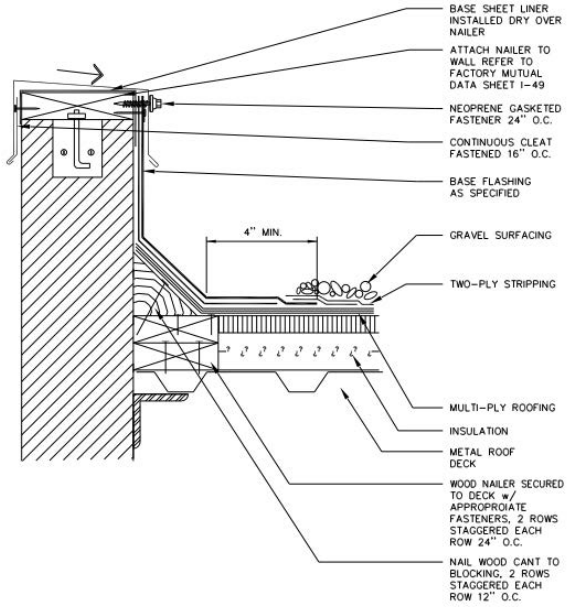
LEGEND:

COMMUNITIES UNITED FOR EDUCATION

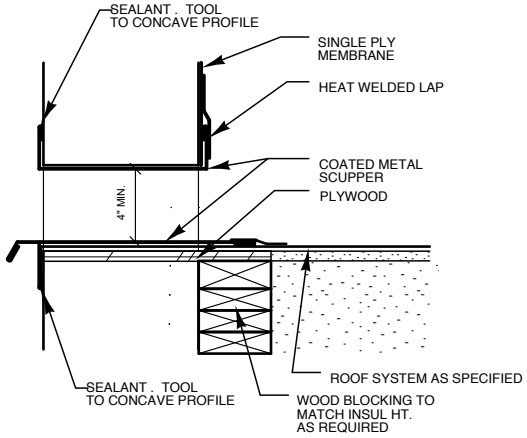
CUSTOMER: **RAYMORE-PECULIAR SCHOOL DISTRICT**

BUILDING: **LEAD CENTER**

LOCATION: **PECULIAR, MISSOURI**



DETAIL G - LIGHT- METAL PARAPET CAP
NOT TO SCALE



DETAIL J - THROUGH WALL SCUPPER
NOT TO SCALE

REVISIONS	No.	DATE	BY

NOTES:

LEGEND:

COMMUNITIES UNITED FOR EDUCATION

CUSTOMER: ***RAYMORE-PECULIAR SCHOOL DISTRICT***

BUILDING: ***LEAD CENTER***

LOCATION: ***PECULIAR, MISSOURI***