

madsen

ROOFING & WATERPROOFING, INC.

BID FORM

Date: 05/08/2019 Customer: Natomas Unified School District Attn: Mark Storage

Project: Two Rivers Elementary School
American Lakes Elementary School

Addendums Yes No If yes, addendums noted below:
1

Estimator: Christian Madsen David Patton Jamie Thagard Tyler Canaday Service Department

Description	Price
Install Roofing Systems per Tremco Specification.	
American Lakes Elementary School	\$37,287.00
Two Rivers Elementary School	\$180,255.00
American Lakes Elementary School - Owner Contingency Allowance	\$5,000.00
Two Rivers Elementary School - Owner Contingency Allowance	\$18,000.00
Project Reference Number: R180903-CA-302714	

Note: The bid includes ONLY the work set forth above. Total Price: \$240,542.00

Alternate: Plywood Replacement Unit Cost per 32 SF: \$130.00
 Alternate: _____
 Alternate: _____

Notes: Bid based on work occurring during normal working hours M-F. Excludes any structural repairs, mechanical work, electrical work, plumbing work, or scope beyond what is listed above.

This document is a bid and does not constitute a contract between the parties. Neither party is bound by this document. A contract, if and when one is reached by agreement of the parties, will be represented by a separate document negotiated by the parties. This bid is based on the representations of the person or entity requesting the bid and on contractual insurance requirements consistent with Madsen Roof Company, Inc.'s existing policies. This bid is subject to revision in the event that any representation of owner or other assumption relied upon in creating the bid is not accurate or changes.

May 8th, 2019

VIA E-MAIL: MSTORE@NATOMASUNIFIED.ORG

Mark Storage
Natomas Unified School District

**Re: Roofing Proposal – Roofing Replacement
Two Rivers Elementary School (3201 W River Drive, Sacramento, CA 95833)
American Lakes Elementary School (2800 Stone Creek Drive, Sacramento, CA**

Dear Mark,

Thank you for inviting Madsen Roofing & Waterproofing, Inc. to submit a single ply proposal for the above-referenced locations. We have been providing high quality roofing services in California for more than twenty-nine years. Our crews are carefully selected and regularly trained in the latest roofing techniques. All jobs are supervised by an experienced foreman and a full-time construction superintendent. I will serve as project manager on this job with oversight over all aspects of the work. We would be available to assist you should any questions or concerns arise.

The following outlines our proposed scope of work for this project by installing a new Tremco KEE 45mil TPA System at both above mentioned sites. Scope of work per project Tremco specification.¹

NIPA # R180903-CA-302714

¹ Excludes (i) vapor/air barriers, electrical, carpentry, painting/coatings, plumbing, and mechanical work, (ii) roof deck replacement and structural repairs, (iii) abatement of asbestos containing materials if any are present, and (iv) infrared/moisture testing, traffic control and bonds. The work will be performed during regular work days and hours.

Mark Storage
May 8, 2019
Page 2

Thank you for consideration of our proposal. Please contact me if you have any questions.

Very truly yours,

MADSEN ROOFING & WATERPROOFING, INC.



Tyler Canaday
Estimator

Bid Package Table of Contents

- A. CPN Process Document**
- B. Madsen Roofing Proposal**
- C. Two Rivers Specification**
- D. American Lakes Specification**
- E. Project Addendum**

OMNIA

PARTNERS



RE: CUSTOMER PROPOSAL NUMBER R180903-CA-302714

Dear Valued OMNIA Partners, Public Sector Participant:

Thank you for your consideration in accessing and potentially utilizing a cooperative contract in the OMNIA Partners portfolio. Each contract in the OMNIA Partners portfolio has been competitively solicited and publicly awarded by a government/education entity.

For those contracts that utilize proposals, particularly contracts for facility and construction projects, we have implemented the OMNIA Partners Customer Proposal Number (CPN) system, a proposal registration program. This system will track transactions from the initial proposal stage to the completion of each project and provide consistency and faster service for your agency. It will also allow us to assist you with verification of contract compliance and consistency.

THE CPN PROCESS

Awarded contract suppliers register your project with OMNIA Partners and receive a CPN. That CPN (noted above) should be prominently displayed on proposal(s) utilizing the cooperative contract. The CPN will also alert our dedicated and experienced OMNIA Partners team, who will work to support you and the awarded supplier during the process.

Your OMNIA Partners representative may be found at www.omniapartners.com/publicsector, or by contacting OMNIA Partners Customer Relations at info@omniapartners.com.

Thank you for your participation with OMNIA Partners.

Sincerely,

The OMNIA Partners Team

madsen

ROOFING & WATERPROOFING, INC.

Document B

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SECTION 075416 - KETONE ETHYLENE ESTER (KEE) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanically-fastened thermoplastic KEE roofing system on wood deck, including:
2. Roof insulation cover board.
3. Walkway material.

1.2 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.

1.3 CLOSEOUT SUBMITTALS

- A. Executed copies of warranties.
- B. Maintenance Data: To include in maintenance manuals.

1.4 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. 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 the following:
1. An authorized full-time technical employee of the manufacturer.
- C. 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 specifications.

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

1.5 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.

1.6 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.

1.7 WARRANTY

- A. Manufacturer's standard warranty form, covering work of this Section, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period. Failure includes roof leaks.
 - 1. Warranty Period: 20 years from date of completion.
- B. Installer's warranty signed by Installer, covering the Work of this Section and extended system components indicated, on form acceptable to Roofing Manufacturer and Owner.
 - 1. Warranty Period: 2 years from date of completion.
- C. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
 - 1. Inspections to occur in following years: 2, 5, 10, 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.

2.2 MATERIALS, GENERAL

- A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

2.3 THERMOPLASTIC MEMBRANE MATERIALS

- A. KEE Roof Membrane:
 - 1. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced roof membrane sheet, ASTM D6754..
 - a. Basis of design product: Tremco, TremPly KEE Single Ply Roof Membrane.
 - b. Breaking Strength, minimum, ASTM D751: Machine direction, 500 lbf; Cross machine direction, 400 lbf.
 - c. Tear Strength, minimum, ASTM D751: 125 lbf (N).
 - d. Elongation at Break, ASTM D751: 20 percent.
 - e. Dynamic Impact/Puncture Resistance, ASTM D5635: Pass.
 - f. Minimum Membrane Thickness, nominal, less backing, ASTM D751: 45 mils (1.1 mm).

- g. Thickness over fiber, optical method: 0.014 inches.
 - h. Accelerated Weathering, ASTM G155 and ASTM G154: >5,000 hr., no cracking or crazing.
 - i. Abrasion Resistance, ASTM D3389: >2000 cycles, H-18 wheel, 1,000 g load.
 - j. Color: White.
 - k. Solar Reflectance Index (SRI), ASTM E1980: 110 (White, initial), 86 (White, 3-yr aged).
 - l. Solar Reflectance Index (SRI), ASTM E1980: 104 (Off-white, initial), 76 (Off-white, 3-yr aged).
 - m. Solar Reflectance Index (SRI), ASTM E1980: 84 (Gray, initial), 73 (Gray, 3-yr aged).
 - n. Solar Reflectance Index (SRI), ASTM E1980: 86 (Tan, initial), 76 (Tan, 3-yr aged).
- B. Sheet Flashing: Manufacturer's standard smooth-backed sheet flashing of same material, type, reinforcement, thickness, and color as KEE sheet membrane.

2.4 AUXILIARY 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 that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Flashing Membrane Adhesive:
- 1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE fleece-backed single ply membranes and flashings to substrates.
 - a. Basis of design product: TremPly KEE LV Bonding Adhesive.
 - b. VOC, maximum, ASTM D 3960: 200 g/L.
- C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.

- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to membrane roofing system manufacturer.
- E. 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.
- F. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- 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 MATERIALS

- A. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
 - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Cover Board:
 - 1. Glass-mat-faced gypsum panel, ASTM C 1177/C 1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck.
 - b. Thickness: 1/4 inch.

2.6 WALKWAY MATERIALS

- A. Walkway Material:
 - 1. Walkway roll, reinforced KEE membrane 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 foot (760 mm by 15.2 m).
 - c. Thickness: 0.047 inch (0.6 mm).
 - d. Breaking strength: 56 lbf.
 - e. Color: Light 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 cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Wood Roof Deck: Verify that deck is sound and dry and 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. Have an Owner's representative view the roof deck prior to covering with new roofing materials. All deck replacement needs to be approved by the District in writing prior to proceeding.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove the roof system, insulation and penetration flashings down to the roof deck, and dispose.
- B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- C. 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.

3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's written instructions and approved details.

3.4 INSULATION INSTALLATION

- A. Tapered Insulation and Crickets: Install tapered insulation at the high side of curbs that are greater than 2' in width.
 - 1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope and not less than 1/4 inch in 12 inches.
- B. Cover Boards: 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.
 - 1. Mechanically fasten cover boards - eight fasteners per board.

3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

- A. Mechanically fasten 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. Mechanically fasten 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. In-Seam Attachment: Secure one edge of membrane sheet using fastening plates or metal battens centered within membrane seam and mechanically fasten membrane sheet to roof deck.
- G. 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 rating 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.
- H. 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.
- I. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

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.

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 Install at roof access point to and surrounding rooftop equipment.

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.

END OF SECTION 075416

SECTION 075416 - KETONE ETHYLENE ESTER (KEE) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanically-fastened thermoplastic KEE roofing system on wood deck, including:
2. Roof insulation cover board.
3. Walkway material.

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1.3 CLOSEOUT SUBMITTALS

- ##### A. Executed copies of warranties.
- ##### B. Maintenance Data: To include in maintenance manuals.

1.4 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. 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 the following:
1. An authorized full-time technical employee of the manufacturer.
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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 specifications.

3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
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1.5 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.
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- A. Manufacturer's standard warranty form, covering work of this Section, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period. Failure includes roof leaks.
 - 1. Warranty Period: 20 years from date of completion.
- B. Installer's warranty signed by Installer, covering the Work of this Section and extended system components indicated, on form acceptable to Roofing Manufacturer and Owner.
 - 1. Warranty Period: 2 years from date of completion.
- C. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
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PART 2 - PRODUCTS

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

2.2 MATERIALS, GENERAL

- A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

2.3 THERMOPLASTIC MEMBRANE MATERIALS

- A. KEE Roof Membrane:
 - 1. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced roof membrane sheet, ASTM D6754..
 - a. Basis of design product: Tremco, TremPly KEE Single Ply Roof Membrane.
 - b. Breaking Strength, minimum, ASTM D751: Machine direction, 500 lbf; Cross machine direction, 400 lbf.
 - c. Tear Strength, minimum, ASTM D751: 125 lbf (N).
 - d. Elongation at Break, ASTM D751: 20 percent.
 - e. Dynamic Impact/Puncture Resistance, ASTM D5635: Pass.
 - f. Minimum Membrane Thickness, nominal, less backing, ASTM D751: 45 mils (1.1 mm).

- g. Thickness over fiber, optical method: 0.014 inches.
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 - j. Color: White.
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 - l. Solar Reflectance Index (SRI), ASTM E1980: 104 (Off-white, initial), 76 (Off-white, 3-yr aged).
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 - n. Solar Reflectance Index (SRI), ASTM E1980: 86 (Tan, initial), 76 (Tan, 3-yr aged).
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- 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
 - 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services) "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Flashing Membrane Adhesive:
- 1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE fleece-backed single ply membranes and flashings to substrates.
 - a. Basis of design product: TremPly KEE LV Bonding Adhesive.
 - b. VOC, maximum, ASTM D 3960: 200 g/L.
- C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.

- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to membrane roofing system manufacturer.
- E. 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.
- F. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- 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 MATERIALS

- A. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
 - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Cover Board:
 - 1. Glass-mat-faced gypsum panel, ASTM C 1177/C 1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck.
 - b. Thickness: 1/4 inch.

2.6 WALKWAY MATERIALS

- A. Walkway Material:
 - 1. Walkway roll, reinforced KEE membrane 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 foot (760 mm by 15.2 m).
 - c. Thickness: 0.047 inch (0.6 mm).
 - d. Breaking strength: 56 lbf.
 - e. Color: Light 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 cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Wood Roof Deck: Verify that deck is sound and dry and 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. Have an Owner's representative view the roof deck prior to covering with new roofing materials. All deck replacement needs to be approved by the District in writing prior to proceeding.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove the roof system, insulation and penetration flashings down to the roof deck, and dispose.
- B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- C. 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.

3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's written instructions and approved details.

3.4 INSULATION INSTALLATION

- A. Tapered Insulation and Crickets: Install tapered insulation at the high side of curbs that are greater than 2' in width.
 - 1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope and not less than 1/4 inch in 12 inches.
- B. Cover Boards: 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.
 - 1. Mechanically fasten cover boards - eight fasteners per board.

3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

- A. Mechanically fasten 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. Mechanically fasten 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. In-Seam Attachment: Secure one edge of membrane sheet using fastening plates or metal battens centered within membrane seam and mechanically fasten membrane sheet to roof deck.
- G. 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 rating 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.
- H. 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.
- I. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

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.

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 Install at roof access point to and surrounding rooftop equipment.

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.

END OF SECTION 075416

Natomas Unified School District

Two Rivers and American Lakes Roof Replacement Addendum CPN R180903-CA-302714

Two Rivers:

1. Remove copings and extend the base flashings up and over the wall. Reuse copings and replace any damaged sections.
2. Install counterflashing skirting at all base flashings where existing counterflashings do not sufficiently cover the top of the base flashings for warranty purposes.

America Lakes:

1. Leave existing metal roof in place.
2. Install a 2" x 6" wood nailer at the roof perimeter and mechanically fasten to the substrate.
3. Install polyisocyanurate insulation between the flutes.
 - a. Thickness on the insulation to be equal or greater than the height of the standing seams.
 - b. Mechanically attach over the classroom space and fully adhere with low rise insulation adhesive over the eaves.
4. Install ¼" Den Deck Prime over the insulation.
 - a. Fully adhere with low rise insulation adhesive.
5. Install new gutters to match existing.
6. Install new 45 mil FB TPA, fully adhered in WB Bonding Adhesive.

END OF ADDENDUM