



LYNWOOD UNIFIED SCHOOL DISTRICT
PROCUREMENT DEPARTMENT
11321 BULLIS ROAD
LYNWOOD, CA 90262

BID NO. 12MOT26

**RE-ROOFING AT VARIOUS BUILDINGS
AT MARK TWAIN, LINDBERGH, ROOSEVELT,
WILL ROGERS ELEMENTARY AND VISTA HIGH SCHOOL**

ADDENDUM NO. 01

DATE: 4/14/2026

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents. Acknowledge receipt of this Addendum in space provided on the Bid Form. Failure to acknowledge may subject Bidder to disqualification.

1. Technical Specifications Section:

1a) Attached: Tremco Technical Specifications for Lindbergh, Mark Twain, Roosevelt, Will Rogers Elementary and Vista High Schools

1b) Add: Will Rogers ES

(This only applies to the kindergarten classrooms and the walkway, not the admin building): This is to be fully adhered now due to the overhang sections as the District will not want exposed fasteners. Therefore, the system to be installed is as follows:

- Install tapered insulation to shed water towards low side of the roof in low rise foam (where existing tapered insulation exists)
- Install Dens Deck Prime board as specified using low low rise foam
- Install Powerply Heavy Duty Base fully adhered with Powerply Standard Cold Adhesive
- Install Powerply Endure 100 FR fully adhered with Powerply Standard Cold Adhesive
- Install coating system per spec
- Miscellaneous items in spec to remain as-is.

CONTINUATION Technical Specifications Section:

1c) Add: Mark Twain ES:

This is to be fully adhered now due to the overhang section as the District will not want exposed fasteners. Therefore, the system to be installed is as follows:

- Install tapered insulation to shed water towards low side of roof in low rise foam (only on wood deck roof section)
- Install Dens Deck Prime board as specified but in low rise foam
- Install Powerply Heavy Duty Base fully adhered with Powerply Standard Cold Adhesive
- Install Powerply Endure 100 FR fully adhered with Powerply Standard Cold Adhesive
- Install coating system per spec
- Miscellaneous items in spec to remain as-is.

2. Bid Document Section:

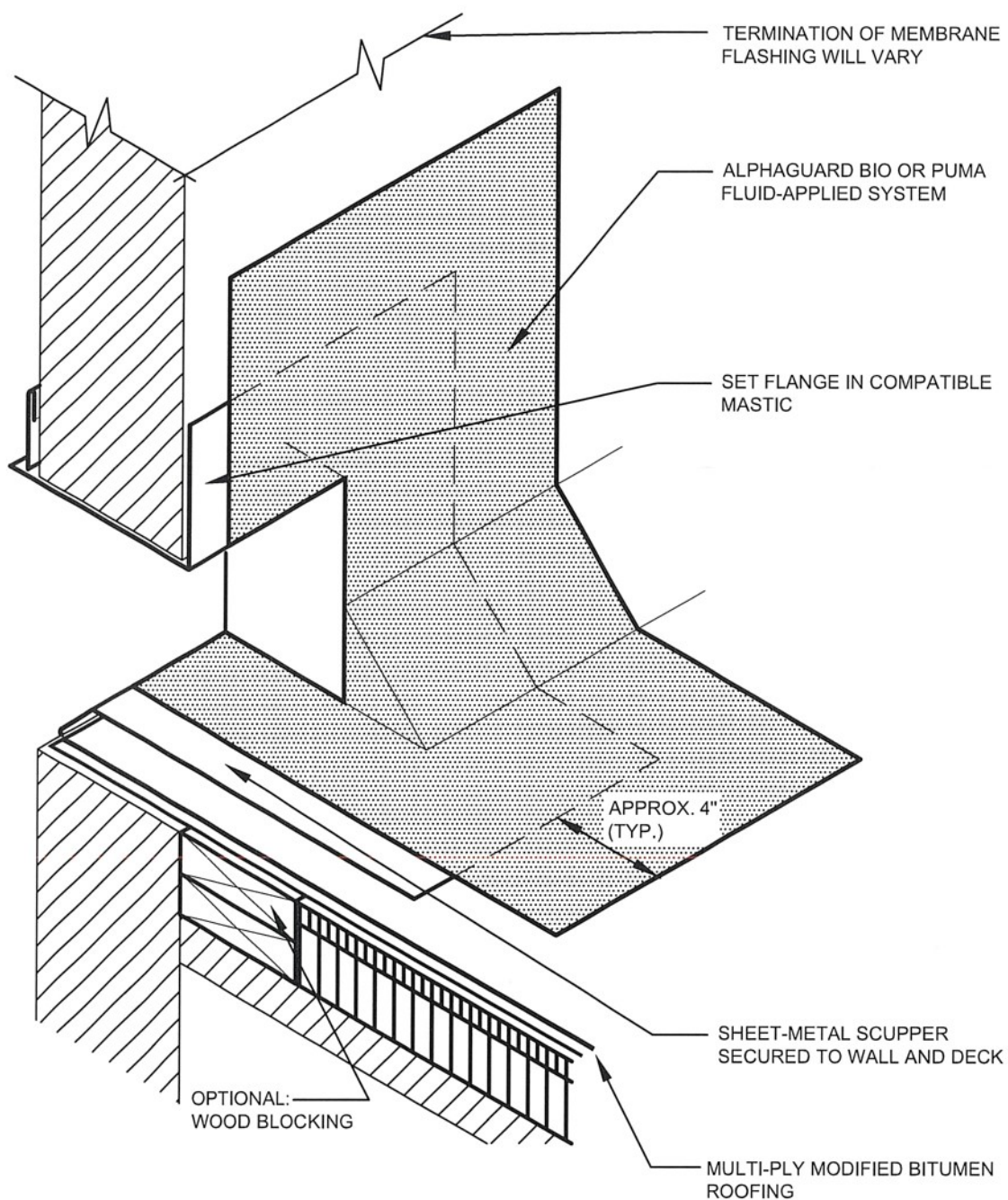
2A) Remove the Special Provisions and Replace with the attached Special Provisions (Pages 1 thru 14)

TREMCO
TECHNICAL SPECIFICATIONS
&
DETAILS

Re-Roofing at Lindbergh, Mark Twain,
Roosevelt, Will Rogers Elementary
Schools and Vista High School

BID NO. 12MOT26

APRIL 2026



NOTES

1. ONLY FOR USE WITH MODIFIED BITUMEN SYSTEMS CONSTRUCTED USING TORCH-APPLIED, HOT ASPHALT, THERMASTIC OR POWERPLY ENDURE BIO TF ADHESIVES.
2. PRIME ALL METAL SURFACES WITH APPROVED PRIMER.

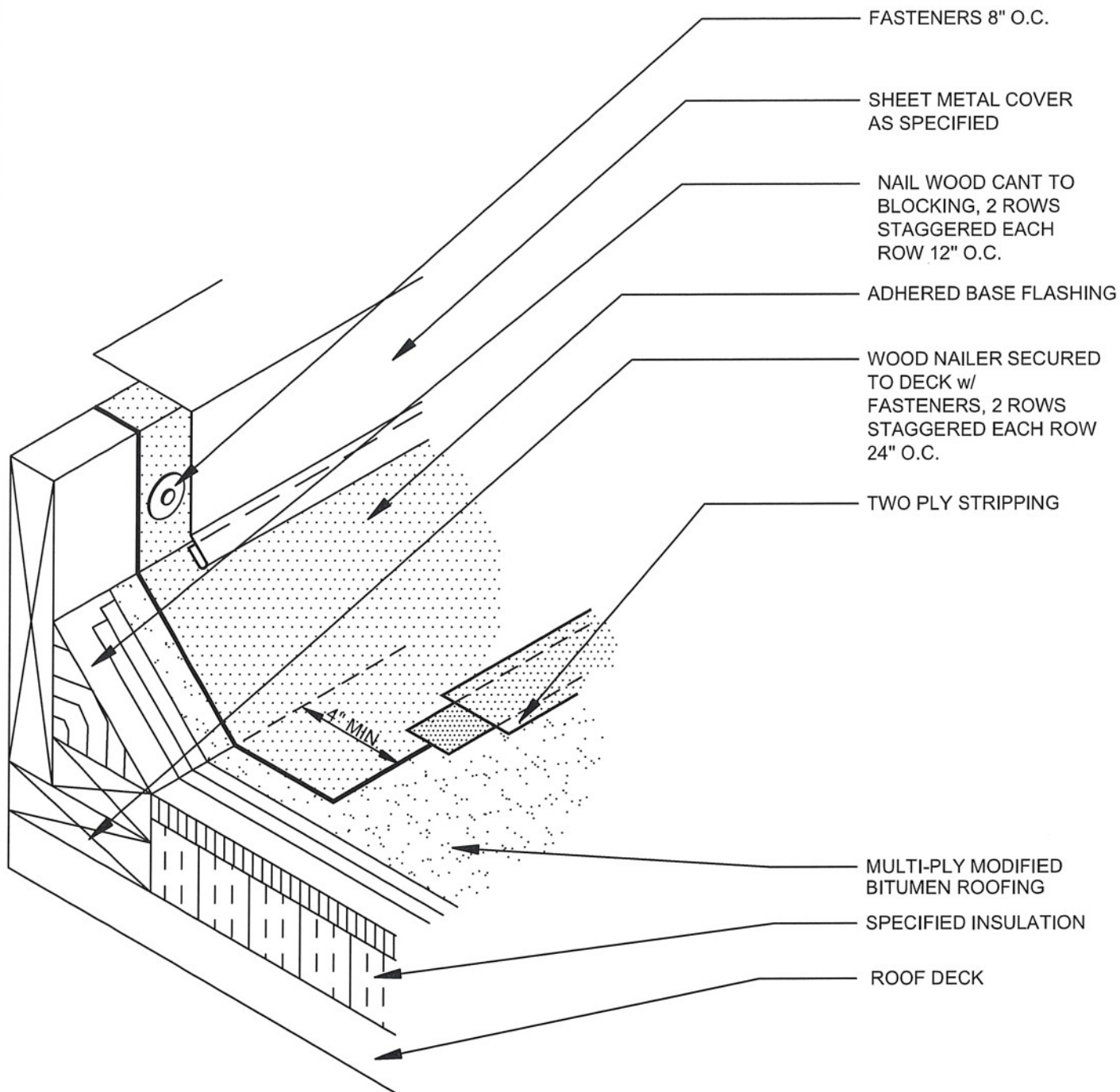
THROUGH-WALL SCUPPER LIQUID-APPLIED FLASHING SYSTEMS

DWG NO. 44

N.T.S.



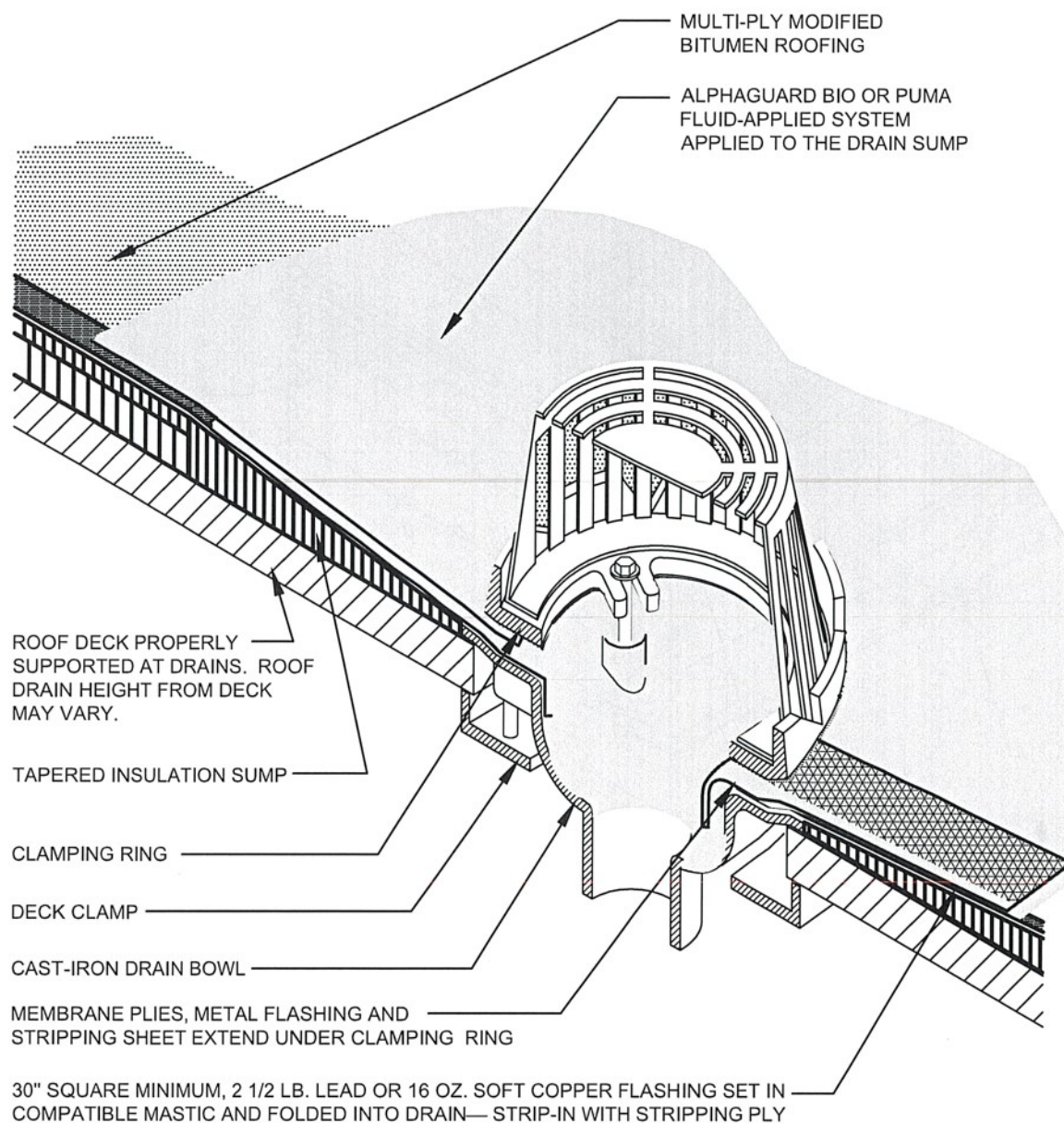
Roofing & Building Maintenance



WOOD CURB
DWG NO. 21

N.T.S.

TREMCO.
ROOFING & BUILDING MAINTENANCE



NOTES

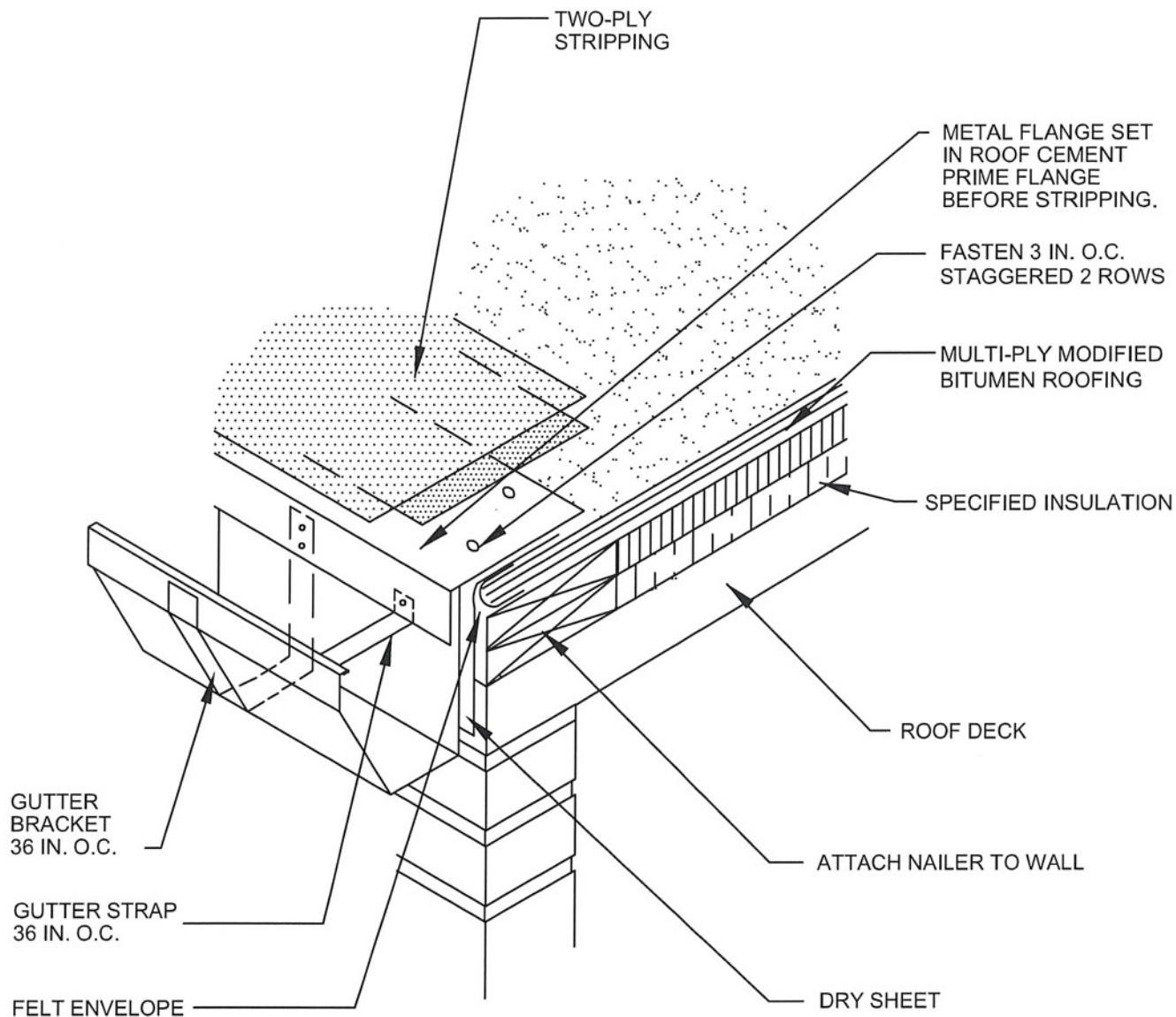
1. ONLY FOR USE WITH MODIFIED BITUMEN SYSTEMS CONSTRUCTED USING TORCH-APPLIED, HOT ASPHALT, THERMASTIC OR POWERPLY ENDURE BIO TF ADHESIVES.
2. PRIME ALL METAL SURFACES WITH APPROVED PRIMER.
3. INSTALL FLASHING SHEET IN APPROVED MASTIC AND STRIP-IN WITH APPROVED ADHESIVE.
4. PRIMING OF THE SUBSTRATE MAY BE REQUIRED, FOLLOW SPECIFICATIONS AND MANUFACTURER RECOMMENDATIONS.
5. REMOVE EXISTING FLASHINGS PRIOR TO INSTALLATION OF NEW FLUID APPLIED SYSTEMS.

ROOF DRAIN
LIQUID-APPLIED FLASHING SYSTEM
DWG NO. 13B

N.T.S.



Roofing & Building Maintenance



NOTES

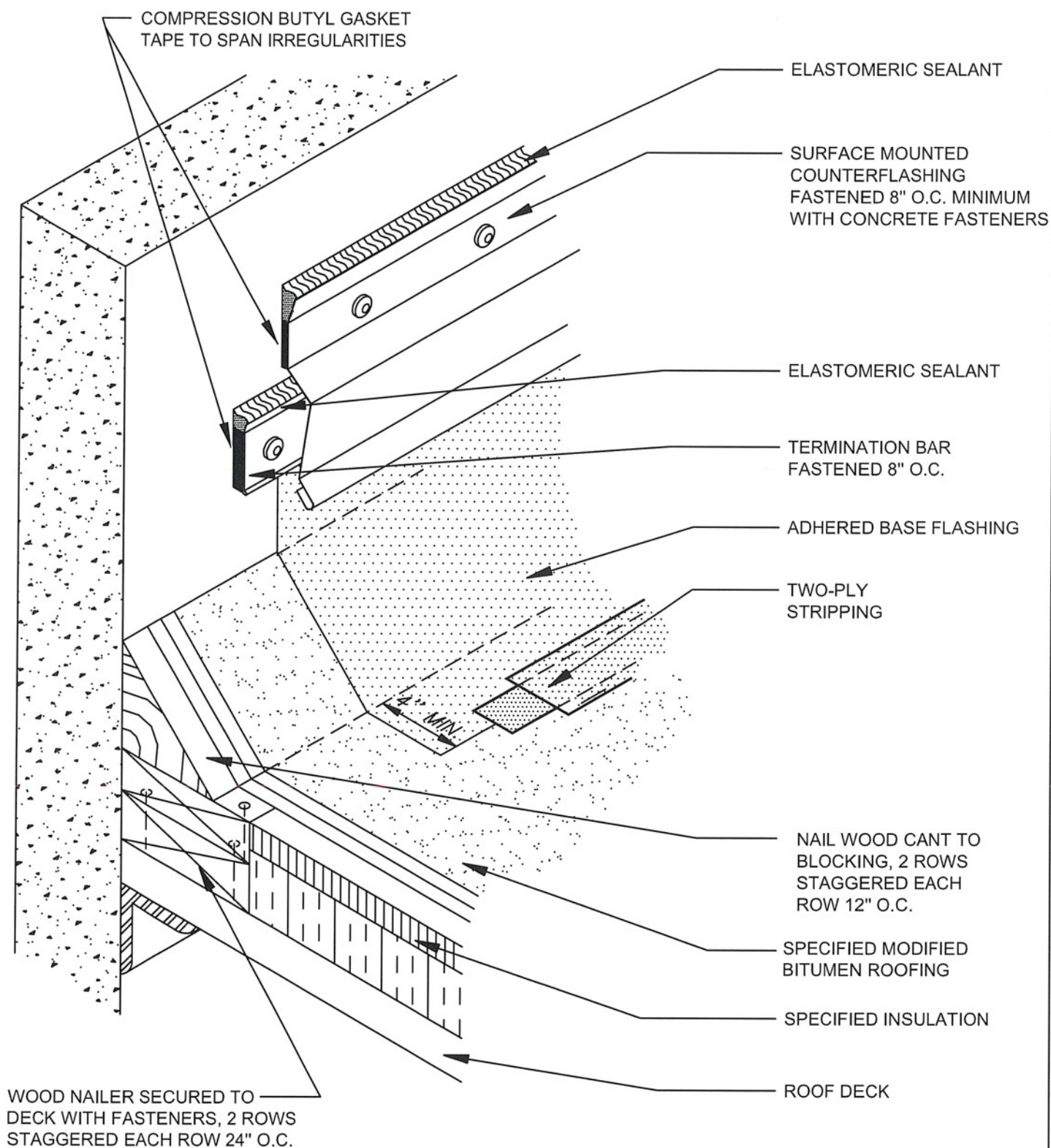
1. SLOPE GUTTER TO DOWNSPOUTS 1/4 IN./FT. MINIMUM

ROOF EDGE WITH GUTTER

DWG NO. 09

N.T.S.

TREMCO
ROOFING & BUILDING MAINTENANCE

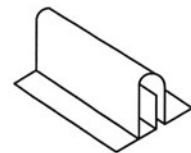


WALL FLASHING FOR CONCRETE
WALLS AND PARAPETS

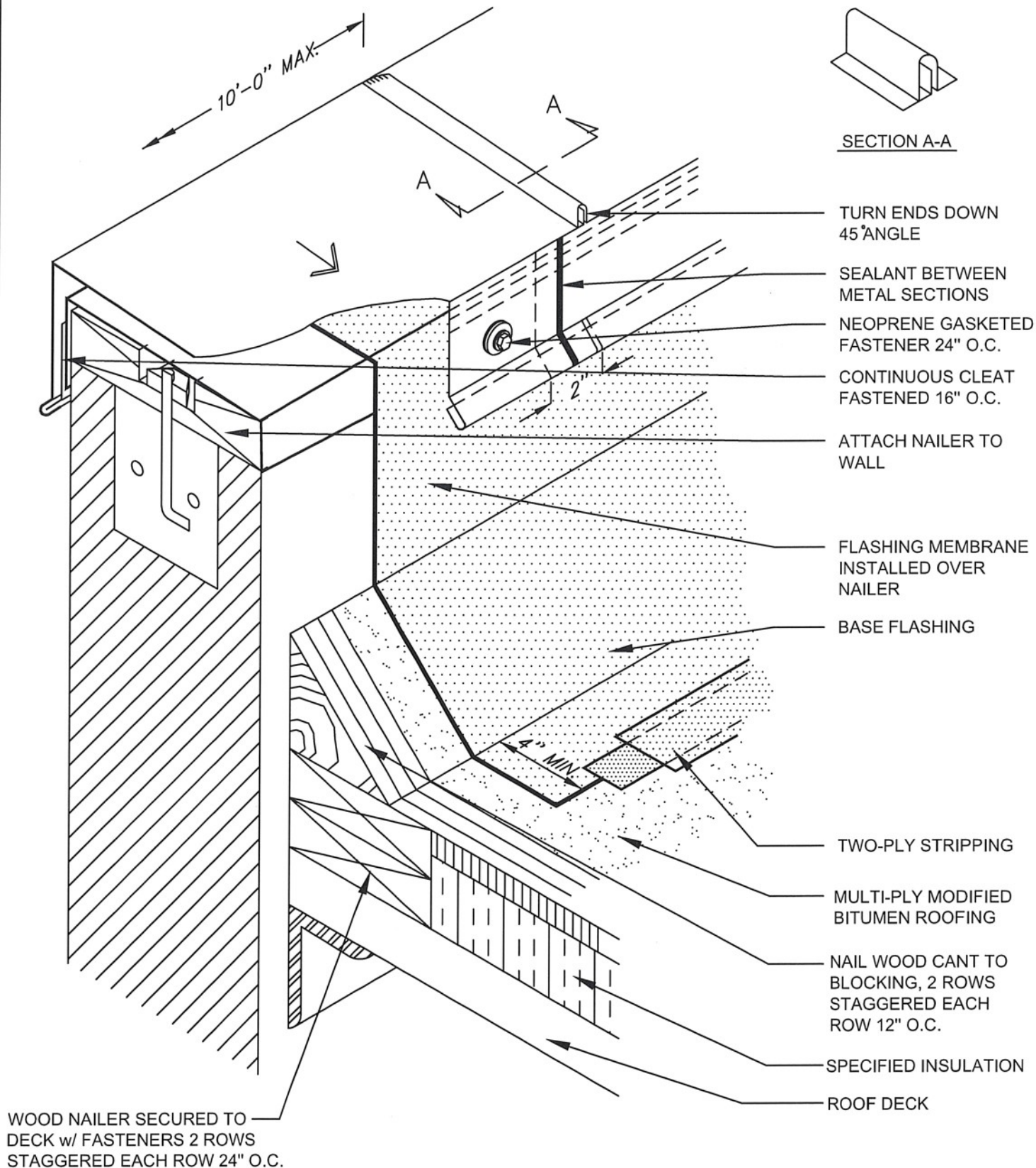
DWG NO. 06

N.T.S.

TREMCO
ROOFING & BUILDING MAINTENANCE



SECTION A-A



METAL COPING CAP

DWG NO. 03

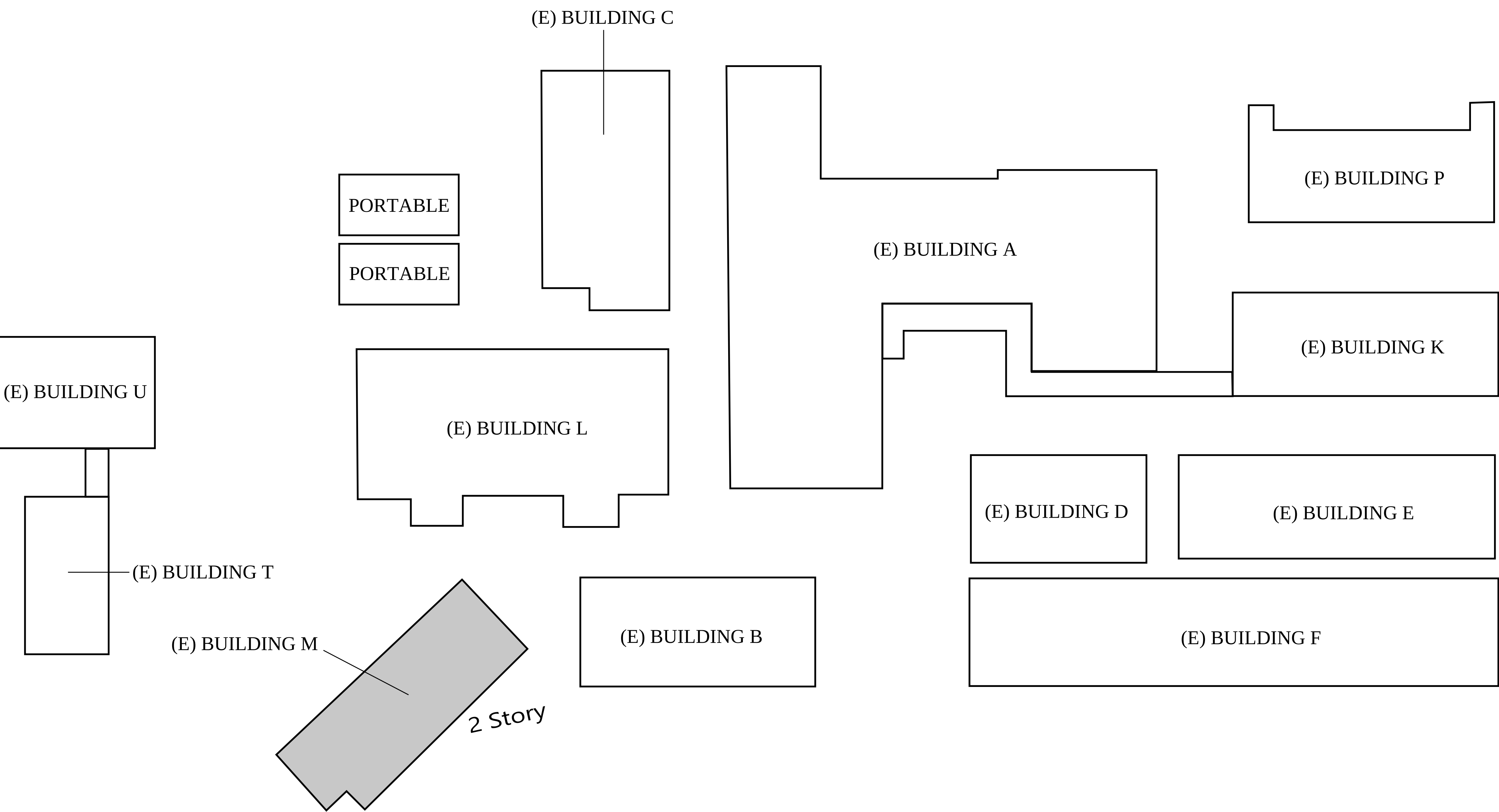
N.T.S.

TREMCO
ROOFING & BUILDING MAINTENANCE

LINDBERGH ELEMENTARY SCHOOL

BUILDING NOT PART OF SCOPE

REMOVE (E) ROOFING DOWN TO EXISTING ROOF DECK AND PREPARE FOR INSTALLATION OF NEW BUILT-UP ROOFING SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO THE EXISTING BUILT-UP ROOF, ROOFING ALONG THE CURBS AND PARAPET CAPS.



ARCHITECT STAMP		CONSULTANT STAMP	
REVISIONS			
			
NO.	DATE	DESCRIPTION	

PROJECT OWNER & TITLE
LYNWOOD UNIFIED SCHOOL DISTRICT
11321 BULLIS ROAD
LYNWOOD, CA, 90262

LINDBERGH ELEMENTARY SCHOOL
3300 CEDAR AVE,
LYNWOOD, CA, 90262

SHEET TITLE

SITE PLAN

SECTION 075216.15 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

- A. ~~All products in bold italics, listed in Part 2 – Products, and on “Attachment A’s”, will be furnished by Lynwood Unified School District using its authority under the CMAS Contract. All remaining products listed within the Part 2 section, and any additional needed quantities of the products listed on “Attachment A”, shall be furnished by the Roofing Contractor.~~
- B. ~~CMAS Contract #: 4-25-02-1015~~
- C. ~~Quote #: 5072001~~
- D. Section Includes:
 - 1. Section Includes: Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including:
 - a. Roof insulation.
 - b. Insulation cover board.
 - c. Mechanically-attached base-ply sheet.
 - d. Mineral granulated cap sheet.
 - e. Membrane flashing sheets.
 - f. Roof surfacing consisting of acrylic emulsion.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site
 - 1. Meet with Owner, Owner's insurer 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 drawings and 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 temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

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

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. Contractor's Product Certificate: Submit signed certification, on company letterhead, 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. Manufacturer Certificates:

1. Submit evidence of compliance with requirements specified in "Performance Requirements" Article.
2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives and sealants.

- D. Warranties: Unexecuted sample copies of special warranties.

- E. Field Quality Control Reports: 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. Submit reports within 48 hours after inspection.

- F. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

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, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer with roofing systems comparable 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 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.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products.

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 / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- 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. 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.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. 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 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.

2. Scope of Warranty: Work of this Section.
3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products or pre-approved equivalents.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 1. FM 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 2. FM 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 E108 or UL 790, 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.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- E. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- F. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 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.

2.4 ROOFING MEMBRANE MATERIALS

A. Base-Ply Sheet:

1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

B. SBS Modified Bituminous Cap Sheet:

1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .
 - a. Basis of design product: Tremco, POWERply Endure 100 FR.
 - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).
 - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).

- d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
- e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg. C).
- f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Membrane Flashing Backer Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

D. Membrane Flashing Sheet:

- 1. Flashing Sheet: Same as cap sheet.
 - a. Basis of design product: Flashing Sheet: Same as cap sheet.

2.5 COLD-APPLIED ADHESIVE MATERIALS

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

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

B. Base-Ply Sheet Lap Adhesive:

- 1. Cold-applied roofing membrane seam adhesive, elastomeric urethane adhesive, two-part, solvent-free, formulated for use as a seam adhesive for bituminous membrane seams, gun-grade.
 - a. Basis of design product: Tremco, Tremco LF Adhesive.

- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
- c. Hardness, Shore A, ASTM C661: 30 to 35.

C. Cap Sheet Adhesive:

- 1. Cold-applied roofing adhesive and surfacer, one-part, formulated for compatibility and use with specified roofing membranes and flashings.
 - a. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 250 g/L.
 - c. Nonvolatile Content, minimum, ASTM D6511: 72 percent.
 - d. Flash Point, minimum, ASTM D93: 100 deg F (38 deg C).

D. Flashing Backer Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

E. Flashing Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

2.6 AUXILIARY ROOFING MATERIALS

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

- B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- C. Base-Ply Sheet Mechanical Fasteners: Manufacturer's standard 2-inch wide barbed galvanized steel seam plate.
- D. Stripping Reinforcing Fabric:
 - 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
 - c. Color: Aqua green.
- E. 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. Color: Closest match to substrate.
- F. T-Tops: 22 gauge galvanized steel with sides and screens.
- G. Counterflashing: 22-gauge surface-mounted counterflashing skirt metal.
- H. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.
- I. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.

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

2.7 ROOF INSULATION MATERIALS

- A. Roof Insulation, General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
 - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, not less than two times the roof slope.
- B. Roof Insulation:
 - 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.

2.8 INSULATION ACCESSORIES

- A. Roof Insulation Cover Board:
 - 1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).
- B. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- C. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Substrate Joint Tape: 6- or 8-inch- (150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.9 SURFACING MATERIALS

- A. Acrylic Emulsion for Field and Flashing Coating Material:
 - 1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
 - a. Basis of design product: Tremco, Solargard 6083 Base and Top Coat.

- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
- c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
- d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
- e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
- f. Solids by weight, minimum ASTM D1644: 60 percent.
- g. Solids by volume, minimum ASTM D2697: 50 percent.
- h. Color, Top Coat: White.
- i. Application rate: 3 Gal/100 Sq. Ft.
- j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.10 WALKWAYS

A. Walkway Material:

- 1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - a. Basis of design product: Tremco, Trem-Tred.
 - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
 - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
 - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
 - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

- B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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 substrate is sound and dry.
 4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.
- B. Remove any obsolete items as identified by customer, if applicable.
- C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- D. 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, approved shop drawings, and Contract Documents.
- B. 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.

3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.5 INSULATION INSTALLATION

- A. Comply with roofing manufacturer's written instructions for installing roof insulation.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.

- D. Tapered Crickets: Install tapered crickets on the high side of all curbs.
- E. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- F. 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. Tape joints if required by roofing manufacturer.
 - 1. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
- B. Deck Type: Wood deck.
- C. Base-Ply Sheet: One.
 - 1. Adhering Method: Mechanically fastened.
- D. Granular-Surfaced SBS-Modified Bituminous Cap Sheet:
 - 1. Adhering Method: Cold-adhesive applied.
- E. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- F. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- G. Coordinate installation of roofing system so insulation and other components of the roofing membrane 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 membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic, with joints and edges sealed.
 - a. Comply with roofing membrane manufacturer's instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable "deadman" insulation boards.
 - 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.

- H. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheets according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
2. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Plan layout to stagger lap seams and end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
3. Commence layout at low point of roof area.
4. Repair tears and voids in laps and lapped seams not completely sealed.

- B. Mechanically-Fastened Base-Ply Sheet:

1. Install lapped base-ply sheet course, extending sheet over and terminating beyond cants.
2. Starting at one end of sheet, install mechanical fasteners along center of 4 inch (102 mm) side lap spaced as indicated on approved shop drawings. Install fasteners to set the seam plate tight to the membrane. Do not overdrive fastener. Do not ripple or wrinkle the membrane.
3. Adjust fastener spacing at perimeter and corners in accordance with approved shop drawings. Cover exposed fasteners in field of base sheet with 6 inch (150 mm) strips of base sheet adhered in base sheet overlap adhesive.
4. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

- C. Granular Surfaced Cap Sheet:

1. Fully embed sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer. Roll sheet using weighted roller. Ensure complete and continuous seal and contact between adhesive and membrane without wrinkles, fishmouths, and blisters.
2. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

3.8 FLASHING AND STRIPPING INSTALLATION

- A. Raise low curbs and penetrations that are 4" or lower off the finished roof surface to a minimum of 10" off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.
- A. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace drain strainer and clamping ring with new cast iron strainer and clamping rings. Install new bolts.
- B. Replace metal counterflashings and base flashings with new sheet metal to match existing size and like material.
- C. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.
- D. Three course all curb corners and base flashing seams with acrylic sealer and polyester.
- E. Existing Coping Metal
 - 1. Clean and prep all metal coping seams including but not limited to powerwashing.
 - 2. All existing coping metal seams are to be sealed using three-course application of acrylic sealer and polyester reinforcement.
 - 3. All coping metal is to be re-attached (where needed) using manufacturer approved fasteners with neoprene washers and sealed with Tremseal Pro. Coping metal is to be painted on all three sides after repairs have cured. Color to be selected by customer.
- F. Metal Panels:
 - 1. Power wash panels to clean.
 - 2. At metal low slope metal pans / basins, clean and prepare area for acrylic coating system installation. Install acrylic coating system and prime metal substrate.
- G. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 - 1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
 - 2. Prime substrates with asphalt primer if required by roofing system manufacturer.
 - 3. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.
 - 4. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet if recommended by

roofing manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

- a. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

- 1) Seal top termination of base flashing with a metal termination bar.

- b. Flashing Sheet Bottom Termination: Adhere flashing sheet to roofing membrane in continuous bed of cold-applied adhesive.

- 1) Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint.

- H. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.

- I. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

- J. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of manufacturer's recommended adhesive, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.

- K. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inch (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.9 SURFACING AND COATING INSTALLATION

- A. Acrylic Emulsion Coating:

1. Prime substrate as recommended by manufacturer.
 2. Coat roofing membrane surface with cold-applied adhesive surfacing adhesive applied at rate required by roofing manufacturer.
 3. Apply acrylic emulsion coating to prepared roofing membrane and base flashings according to manufacturer's written instructions, with number of coats, thickness of application, and application method as recommended in writing by coating manufacturer.
 4. Do not install Acrylic Emulsion Coating where walkway pads are installed.

3.10 WALKWAY INSTALLATION

- A. Walkways, General: Install walkways according to roofing manufacturer's written instructions.

1. Install walkways at following locations:
 - a. Where indicated by Customer or:
 - b. Perimeter of each rooftop unit.
 - c. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - d. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
 - e. Top and bottom of each roof access ladder.
 - f. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - B. 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. Sweep away loose aggregate surfacing.
 2. Set walkway pads in manufacturer's recommended, compatible adhesive.
 - C. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.
- 3.11 FIELD QUALITY CONTROL
- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
 1. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
 - B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
 1. Notify Owner 48 hours in advance of date and time of inspection.
 - C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.

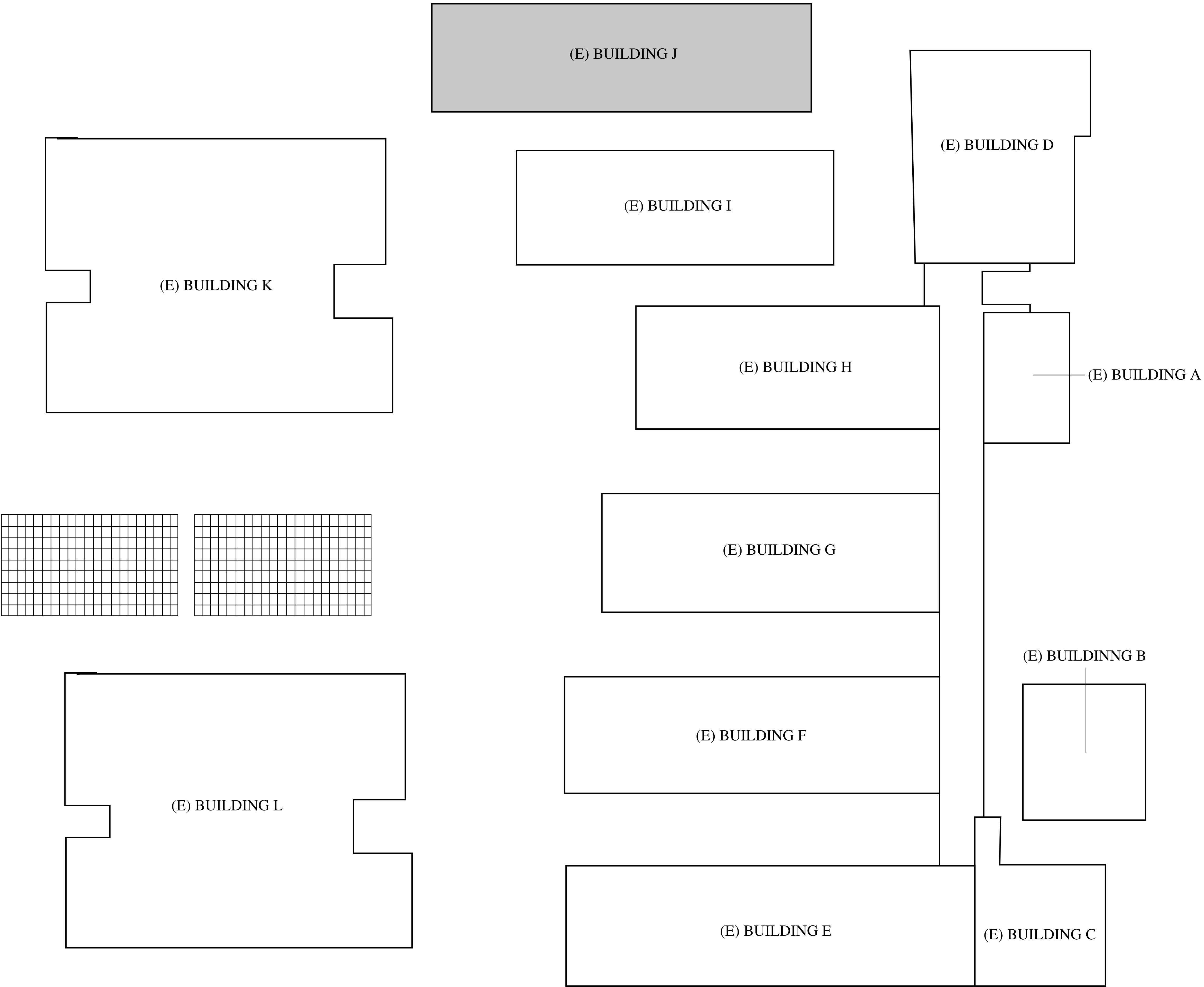
1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall 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 075216.15

MARK TWAIN ELEMENTARY SCHOOL



BUILDING NOT PART OF SCOPE

REMOVE (E) ROOFING DOWN TO EXISTING ROOF DECK AND PREPARE FOR INSTALLATION OF NEW BUILT-UP ROOFING SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO THE EXISTING BUILT-UP ROOF, ROOFING ALONG THE CURBS AND PARAPET CAPS.

ARCHITECT STAMP		CONSULTANT STAMP	
REVISIONS			
NO.	DATE	DESCRIPTION	
PROJECT OWNER & TITLE			
LYNWOOD UNIFIED SCHOOL DISTRICT			
11321 BULLIS ROAD			
LYNWOOD, CA, 90262			
MARK TWAIN ELEMENTARY SCHOOL			
12315 SOUTH THORSON AVE			
LYNWOOD, CA, 90262			
SHEET TITLE			
SITE PLAN			
G-101			

SECTION 070150.19 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof replacement preparation consisting of full roof tear-off of entire building roof system.
2. Removal of flashings and counterflashings.
3. Temporary roofing.
4. Temporary roof drainage.
5. Removal and reinstallation of indicated components, accessories, and equipment.

1.2 DESCRIPTION OF WORK

A. Re-roofing preparation Work consists of the following:

1. Preparation for Roof replacement:
 - a. Roof Area(s): J
 - b. Existing Roof Type: Granular surfaced modified bituminous.
 - c. Existing Deck Type: Wood deck.
 - d. Roof tear-off.
 - e. Removal and reinstallation of indicated components, accessories, and equipment.
 - f. Uplift securement.
 - g. Removal of base flashings.
 - h. Temporary roof membrane.

1.3 MATERIALS OWNERSHIP

- ##### A.
- Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.
- C. Full Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.
- F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 PREINSTALLATION MEETINGS

- A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.
 - 1. Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).
 - 2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
 - a. Reroofing preparation, including roofing system manufacturer's written instructions.
 - b. Temporary protection requirements for existing roofing system components that are to remain.
 - c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
 - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
 - e. Existing roof deck conditions requiring Owner notification.

- f. Existing roof deck removal procedures and Owner notifications.
- g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
- h. Structural loading limitations of roof deck during reroofing.
- i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
- j. HVAC shutdown and sealing of air intakes.
- k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
- l. Governing regulations and requirements for insurance and certificates if applicable.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer for refrigerant recovery technician.
- B. Field Test Reports:
 - 1. Fastener pull-out test report.
- C. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- D. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- E. Schedule of Re-Roofing Preparation Activities: Indicate the following:
 - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building.

- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.8 CLOSEOUT SUBMITTALS

- A. Certified statement from manufacturer of existing warranted roof system stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- C. Regulatory Requirements:
 1. Comply with governing EPA notification regulations before beginning membrane roofing removal.
 2. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.10 PROJECT / FIELD CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area.
 1. Conduct reroofing so Owner's operations will not be disrupted.
 2. Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.
 3. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
 4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.
 - a. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 - 1. Remove only as much roofing in one day as can be made watertight in the same day.
- F. 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.
- G. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

- A. EPS Insulation: Molded (expanded) polystyrene, ASTM C578.
- B. Plywood: NIST DOC PS 1, Grade CD, Exposure 1.
- C. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.

2.2 DECK REPAIR/REPLACEMENT MATERIALS

- A. Wood Roof Deck Components:
 - 1. Wood Deck Material:
 - a. Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
 - b. Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.
 - c. Match existing size, face surface and edge profile.
 - d. Decking Species: Balsam fir, Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), southern pine, spruce pine-fir (North), western hemlock, or western hemlock (North).

- e. Decking Grade: Commercial decking.
 - 1) Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.
 - f. Preservative Treatment: Pressure treat solid-sawn wood decking according to AWPA C31 with inorganic boron (SBX) and redry wood to 19 percent maximum moisture content.
 - g. Fasteners for Solid-Sawn Decking: Provide fastener size and type complying with decking standard for thickness of deck used.
 - 1) Fastener Material: Hot-dip galvanized or stainless steel.
2. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
- a. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A 153M or Type 304 stainless steel.
 - 1) Nails, Brads, and Staples: ASTM F1667.
 - 2) Power-Driven Fasteners: NES NER-272.
 - 3) Wood Screws: ASME B18.6.1.
 - b. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
 - 1) For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

2.3 ROOFING INFILL, PATCHING AND REPLACEMENT MATERIALS

- A. Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.
- B. Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."
 - 1. Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
- C. Fasteners: Factory-coated steel fasteners with metal or plastic plates listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.

2.4 TEMPORARY ROOFING MATERIALS

- A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.5 TEMPORARY ROOF DRAINAGE

- A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.6 AUXILIARY RE-ROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.
 - 1. Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.
 - a. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
 - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 - 3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.
- C. Shut off rooftop utilities and service piping before beginning the Work.
- D. Test existing roof drains to verify that they are not blocked or restricted.
 - 1. Immediately notify Owner of any blockages or restrictions.
- E. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
 - 1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

- F. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
 - 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.
- G. Refrigerant: Before starting re-roofing preparation, remove refrigerant from mechanical equipment to be removed and reinstalled, according to 40 CFR 82 and regulations of authorities having jurisdiction.
- H. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- I. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.
 - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
 - 2. Prevent debris from entering or blocking roof drains and conductors.
 - a. Use roof-drain plugs specifically designed for this purpose.
 - b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 - 3. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
 - a. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.2 ROOF TEAR-OFF

- A. Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.
- C. Roof Drainage: Remove roof drainage items indicated for removal.
- D. Full Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

1. Remove base sheets.
 - E. Roof Edge Specialties: Replace existing perimeter metal systems with new perimeter metal systems.
 1. New perimeter metal systems (fascia and coping) are specified in Division 07 Section "Sheet Metal Flashing and Trim."
 - F. Inspect wood blocking, curbs, and nailers for deterioration and damage.
 1. Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.
 2. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
- 3.3 DECK PREPARATION
- A. Inspect deck after tear-off of membrane roofing system.
 - B. Verify that deck is sound and dry.
 - C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.
 - D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.
- 3.4 DECK REPAIR/REPLACEMENT
- A. Repair existing deck to provide smooth working surface for installation of roof system.
 1. Replace deck that cannot be repaired to sound condition.
 - B. Wood Roof Deck Replacement:
 1. Install solid-sawn wood decking to match existing deck construction and to comply with applicable code.
 2. Wood Sheathing Panels: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

3.5 ROOFING INFILL AND PATCHING MATERIALS INSTALLATION

- A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.

3.6 EQUIPMENT REMOVAL AND REINSTALLATION

- A. General: Remove, store, protect and reinstall rooftop equipment as required to accommodate roof tear-off and subsequent roofing work.
 - 1. Raise roof curbs, equipment mountings and other roof penetration flashings as required to accommodate additional insulation thickness and maintain base flashing height of not less than 8 inches (200 mm), unless otherwise indicated.
 - a. Provide wood assemblies and additional support with miscellaneous galvanized steel angles, as required to rebuild or raise existing roof curbs.
 - b. Extend vent and soil stacks and other roof penetrations, using matching materials, as required to accommodate additional insulation thickness.
 - 2. Extend existing ductwork inside existing roof curbs to accommodate extension of curb.
 - a. Use materials matching existing ductwork; minimum of 20 ga. (0.9 mm) galvanized duct with Pittsburgh folded seam slip joints-typical.
- B. Rooftop Equipment, Electrical: Engage a qualified electrician to perform electrical disconnection and reconnection.
 - 1. Disconnect, reroute, extend and reconnect existing power feeders and control circuits (conduit and wiring) feeding the existing roof mounted equipment which is indicated to be raised and/or relocated to a new elevation/location and as required by the Contract.
 - 2. Provide weatherproof exterior junction boxes, when required.
 - 3. Make connections to mechanical equipment by using a maximum 18-inch (450-mm) length of liquid-tight flexible steel conduit.
 - a. Rigid connections to mechanical equipment are not permitted.
 - 4. Relocate and reconnect existing disconnect switches presently installed on existing roof mounted equipment indicated to be raised and/or relocated.
- C. Prevent discharge of refrigerant. Verify that refrigerant has been properly recovered from equipment to be removed.
- D. Reinstall designated equipment.
 - 1. Make electrical reconnections in accordance with applicable code and authorities having jurisdiction.

2. Recharge HVAC equipment with refrigerant required by equipment manufacturer.
3. Coordinate with Owner to test equipment and verify proper operation.

- E. Remove and dispose of designated abandoned equipment. Infill openings in deck with matching materials. Infill roofing system with materials of same type as existing, adjacent roofing system.

3.7 TEMPORARY ROOFING MEMBRANE

- A. Install approved temporary roofing membrane over area to be reroofed.
- B. Remove temporary roofing membrane before installing new roofing membrane.

3.8 BASE FLASHING REMOVAL

- A. Remove 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.
 1. Replace metal counterflashings damaged during removal with counterflashings specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.9 DISPOSAL

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

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 070150.19

SECTION 075216.15 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

- A. ~~All products in bold italics, listed in Part 2 – Products, and on “Attachment A’s”, will be furnished by **Lynwood Unified School District** using its authority under the CMAS Contract. All remaining products listed within the Part 2 section, and any additional needed quantities of the products listed on “Attachment A”, shall be furnished by the Roofing Contractor.~~
- B. ~~CMAS Contract #: 4-25-02-1015~~
- C. ~~Quote #: 5070835~~
- D. Section Includes:
 - 1. Section Includes: Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including:
 - a. Roof insulation.
 - b. Insulation cover board.
 - c. Mechanically-attached base-ply sheet.
 - d. Mineral granulated cap sheet.
 - e. Membrane flashing sheets.
 - f. Roof surfacing consisting of acrylic emulsion.
- E. Related Sections:
 - 1. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site

1. Meet with Owner, Owner's insurer 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 drawings and 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.

1.4 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. Contractor's Product Certificate: Submit signed certification, on company letterhead, 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. Manufacturer Certificates:

1. Submit evidence of compliance with requirements specified in "Performance Requirements" Article.

D. Warranties: Unexecuted sample copies of special warranties.

- E. Field Quality Control Reports: 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. Submit reports within 48 hours after inspection.

- F. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.

- B. Warranties: Executed copies of warranties.

1.6 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, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

- B. Manufacturer Qualifications: Approved manufacturer with roofing systems comparable 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 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. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products.

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 / FIELD CONDITIONS

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

1.9 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.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.

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- B. 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 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. SPRI Wind Design Standard: Manufacture and install copings according to SPRI ES-1.
 - 1. Design Pressure: As indicated on Drawings.
- D. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail

flashings and component materials and installation techniques that comply with requirements and recommendations of the following:

1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 2. FM Global 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.
 5. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".
- E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, 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.
1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- F. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- G. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 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.

2.4 ROOFING MEMBRANE MATERIALS

A. Base-Ply Sheet:

1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).

- e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
- f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

B. SBS Modified Bituminous Cap Sheet:

- 1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .
 - a. Basis of design product: Tremco, POWERply Endure 100 FR.
 - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).
 - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).
 - d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
 - e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg.C).
 - f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Membrane Flashing Backer Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

D. Membrane Flashing Sheet:

- 1. Flashing Sheet: Same as cap sheet.
 - a. Basis of design product: Flashing Sheet: Same as cap sheet.

2.5 COLD-APPLIED ADHESIVE MATERIALS

- A. General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Base-Ply Sheet Lap Adhesive:
 - 1. Cold-applied roofing membrane seam adhesive, elastomeric urethane adhesive, two-part, solvent-free, formulated for use as a seam adhesive for bituminous membrane seams, gun-grade.
 - a. Basis of design product: Tremco, Tremco LF Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
 - c. Hardness, Shore A, ASTM C661: 30 to 35.
- C. Cap Sheet Adhesive:
 - 1. Cold-applied roofing adhesive and surfacer, one-part, formulated for compatibility and use with specified roofing membranes and flashings.
 - a. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 250 g/L.
 - c. Nonvolatile Content, minimum, ASTM D6511: 72 percent.
 - d. Flash Point, minimum, ASTM D93: 100 deg F (38 deg C).
- D. Flashing Backer Sheet Adhesive:
 - 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).
- E. Flashing Sheet Adhesive:

1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

2.6 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
- B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- C. Base-Ply Sheet Mechanical Fasteners: Manufacturer's standard 2-inch wide barbed galvanized steel seam plate.
- D. Stripping Reinforcing Fabric:
 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
 - c. Color: Aqua green.
- E. 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. Color: Closest match to substrate.
- F. Coping Metal Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 340) pre-painted by the coil-coating process to comply with the ASTM A 755/A 755; structural quality.
- 1. Thickness: 0.0236-inch/24ga.(0.60-mm) minimum thickness.
 - 2. Color to be selected by Customer.
 - 3. 22-gauge galvanized cleat.
- G. Gutter Metal: Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 340) prepainted by the coil-coating process to comply with ASTM A 755/A 755M; structural quality.
- a. Thickness: 0.0236-inch/24 ga.(0.60-mm) minimum thickness.
 - b. Color to be selected by Owner.
 - c. 10 gauge powder coated brackets and 16 gauge galvanized straps.
2. Downspouts: 16-gauge powder coated steel. Color and shape to be selected by Owner.
- H. Provide new 24 gauge bonderized finished edge metal flashings.
- 1. 1/8" rise.
 - 2. 22 gauge cleat with a maximum 1" flange onto the deck.
 - 3. Fascia to extend 1" longer than the existing edge metal.
 - 4. Prime and paint new edge metal with customer approved paint color.
 - 5. Install 3 Pan head screws at seams.
- I. Counterflashing: 22-gauge surface-mounted counterflashing skirt metal.
- J. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.

- K. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.
- L. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

2.7 ROOF INSULATION MATERIALS

- A. Roof Insulation, General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
 - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, not less than two times the roof slope.
- B. Roof Insulation:
 - 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. Tapered Insulation (Building J): Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated by taper desing (to be sourced by contractor).

2.8 INSULATION ACCESSORIES

- A. Roof Insulation Cover Board:
 - 1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).
- B. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- C. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Substrate Joint Tape: 6- or 8-inch- (150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.9 SURFACING MATERIALS

- A. Acrylic Emulsion for Field and Flashing Coating Material:

1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
 - a. Basis of design product: Tremco, Solargard 6083 Top Coat.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
 - c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
 - d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
 - e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
 - f. Solids by weight, minimum ASTM D1644: 60 percent.
 - g. Solids by volume, minimum ASTM D2697: 50 percent.
 - h. Color, Top Coat: White.
 - i. Application rate: 3 Gal/100 Sq. Ft.
 - j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.10 WALKWAYS

A. Walkway Material:

1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - a. Basis of design product: Tremco, Trem-Tred.
 - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
 - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
 - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
 - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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 substrate is sound and dry.
 - 4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.
- B. Remove any obsolete items as identified by customer, if applicable.
- C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- D. 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, approved shop drawings, and Contract Documents.
- B. 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.

3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.5 INSULATION INSTALLATION

- A. Comply with roofing manufacturer's written instructions for installing roof insulation.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.
- D. Tapered Insulation and Crickets: Install tapered insulation under area of roofing to conform to slopes indicated.
 - 1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope, not less than 1/4 inch in 12 inches (1:48).
 - 2. Install crickets on the high side of all curbs.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- F. 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. Tapered Insulation System for Flat Roof Deck. Bldg. J and Specific Roofs Bldgs. K and L (shown on drawings): Install insulation as follows:
 - a. Average total thickness of Continuous Insulation:
 - 1) Minimum thickness of base layer: 1 inches or minimum required by code.
 - 2. Insulation Drain Sumps: Tapered insulation sumps, not less than 2 by 2 feet (600 by 600 mm), sloped to roof drain.
 - a. Maintain minimum 1 inch (25 mm) insulation thickness at low point or minimum required by code.
- G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- H. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- I. Mechanically Fastened Insulation Application Method: 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. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

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. Tape joints if required by roofing manufacturer.

1. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:

B. Deck Type: Wood deck.

C. Base-Ply Sheet: One.

1. Adhering Method: Mechanically fastened.

D. Granular-Surfaced SBS-Modified Bituminous Cap Sheet:

1. Adhering Method: Cold-adhesive applied.

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

F. Cooperate with testing agencies engaged or required to perform services for installing roofing system.

G. Coordinate installation of roofing system so insulation and other components of the roofing membrane 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 membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic, with joints and edges sealed.

a. Comply with roofing membrane manufacturer's instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable "deadman" insulation boards.

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.

- H. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheets according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
2. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Plan layout to stagger lap seams and end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
3. Commence layout at low point of roof area.
4. Repair tears and voids in laps and lapped seams not completely sealed.

- B. Mechanically-Fastened Base-Ply Sheet:

1. Install lapped base-ply sheet course, extending sheet over and terminating beyond cants.
2. Starting at one end of sheet, install mechanical fasteners along center of 4 inch (102 mm) side lap spaced as indicated on approved shop drawings. Install fasteners to set the seam plate tight to the membrane. Do not overdrive fastener. Do not ripple or wrinkle the membrane.
3. Adjust fastener spacing at perimeter and corners in accordance with approved shop drawings. Cover exposed fasteners in field of base sheet with 6 inch (150 mm) strips of base sheet adhered in base sheet overlap adhesive.
4. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

- C. Granular Surfaced Cap Sheet:

1. Fully embed sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer. Roll sheet using weighted roller. Ensure complete and continuous seal and contact between adhesive and membrane without wrinkles, fishmouths, and blisters.
2. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

3.8 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 - 1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
 - 2. Prime substrates with asphalt primer if required by roofing system manufacturer.
 - 3. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.
 - 4. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet if recommended by roofing manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - a. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1) Seal top termination of base flashing with a metal termination bar.
 - b. Flashing Sheet Bottom Termination: Adhere flashing sheet to roofing membrane in continuous bed of cold-applied adhesive.
 - 1) Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint.
- B. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace drain strainer and clamping ring with new cast iron strainer and clamping rings. Install new bolts.
- C. Grind top of metal supports and penetrations to bare metal.
- D. Coping metal:
 - 1. Remove and dispose of existing coping.
 - 2. Install new 22 gauge, galvanized steel continuous cleat fastened with galvanized steel roofing nails that penetrate wood nailer a minimum of 1". Secure at 6" oc.
 - 3. Install new 24 gauge, prefinished steel coping.
 - 4. Hook coping to continuous cleat and fasten interior portion of coping with galvanized steel hex head screws with neoprene washers. Secure at 18" oc.
 - 5. Install 3 panhead screws at seams.

- E. Gutters:
 - 1. Remove existing gutter system.
 - 2. Install 16" girth gutter supported by brackets and straps at locations identified on drawings.
 - 3. Install new outlet tubes.
 - 4. Install new heavy gauge downspouts matching existing location. Mouse hole end of downspout to direct water away from the building.
 - 5. Support downspouts with hangers from the gutter to the wall and support brackets every 60" going down the support. A minimum of two brackets per downspout.
 - 6. Install removable aluminum leaf screens to cover all new gutters.
- B. Leader Heads and Downspout: Install new leader heads. Match existing attachment.
- C. Raise low curbs and penetrations that are 4" or lower off the finished roof surface to a minimum of 10" off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.
- F. Replace base flashings with new sheet metal to match existing size and like material.
- G. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.
- H. Three course all curb corners and base flashing seams with acrylic sealer and polyester.
- I. Seal all duct, pan, HVAC to pan, and other sheet metal seams with acrylic sealer and polyester reinforcement. Surface all galvanized metal and roof rings and screens with metal coating system. Properly prepare and prime surfaces prior to coating which includes rust inhibitor and other primers as recommended by manufacturer.
- J. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- K. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.
- L. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of manufacturer's recommended adhesive, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.
- M. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inch (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.9 SURFACING AND COATING INSTALLATION

A. Acrylic Emulsion Coating:

1. Prime substrate as recommended by manufacturer.
2. Coat roofing membrane surface with cold-applied adhesive surfacing adhesive applied at rate required by roofing manufacturer.
3. Apply acrylic emulsion coating to prepared roofing membrane and base flashings according to manufacturer's written instructions, with number of coats, thickness of application, and application method as recommended in writing by coating manufacturer.
4. Do not install Acrylic Emulsion Coating where walkway pads are installed.

3.10 WALKWAY INSTALLATION

- A. Install walk-pad's at locations indicated by customer. At a minimum, install walk-pad's at all roof landing locations and to and surrounding all serviceable equipment. Confirm "roof landing locations" as suggested by customer to determine walk-path layout.
- B. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.
- C. 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. Sweep away loose aggregate surfacing.
 2. Set walkway pads in manufacturer's recommended, compatible adhesive.

3.11 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
 1. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.

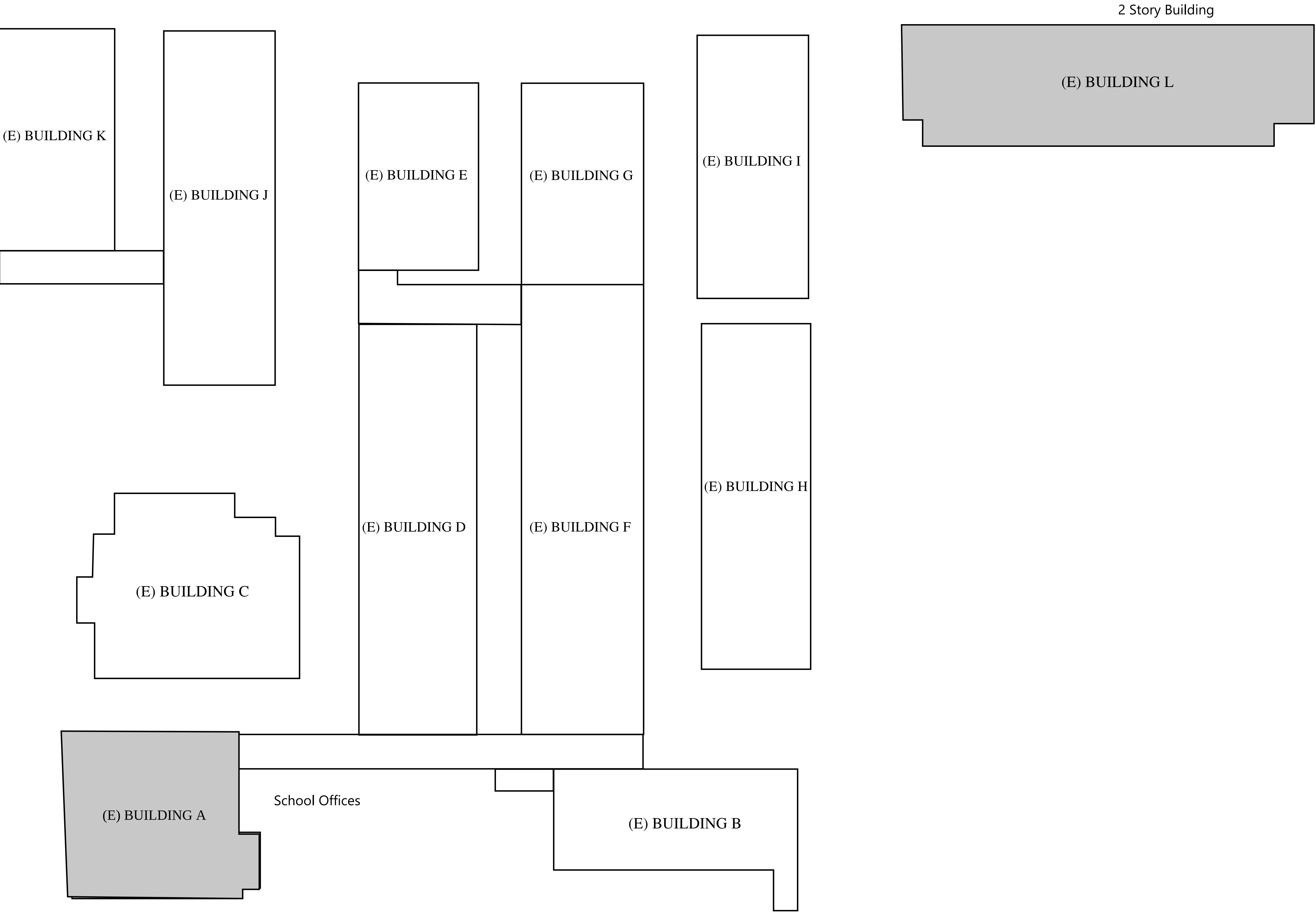
1. Notify Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.
 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall 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 075216.15

ROOSEVELT ELEMENTARY SCHOOL



BUILDING NOT PART OF SCOPE

REMOVE (E) ROOFING DOWN TO EXISTING ROOF DECK AND PREPARE FOR INSTALLATION OF NEW BUILT-UP ROOFING SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO THE EXISTING BUILT-UP ROOF, ROOFING ALONG THE CURBS AND PARAPET CAPS.

ARCHITECT STAMP

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT OWNER & TITLE

LYNWOOD UNIFIED SCHOOL DISTRICT

11321 BULLIS ROAD

LYNWOOD, CA, 90262

ROOSEVELT ELEMENTARY SCHOOL

10835 MALLISON AVE

LYNWOOD, CA, 90262

SHEET TITLE

SITE PLAN

SECTION 070150.19 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof replacement preparation consisting of full roof tear-off.
2. Removal of flashings and counterflashings.
3. Temporary roofing.
4. Temporary roof drainage.
5. Removal and reinstallation of indicated components, accessories, and equipment.

1.2 DESCRIPTION OF WORK

A. Re-roofing preparation Work consists of the following:

1. Preparation for Roof replacement:
 - a. Roof Area(s): Building L & A
 - b. Existing Roof Type: Granular surfaced modified bituminous.
 - c. Existing Deck Type: Wood deck.
 - d. Roof tear-off.
 - e. Removal and reinstallation of indicated components, accessories, and equipment.
 - f. Uplift securement.
 - g. Removal of base flashings.
 - h. Temporary roof membrane.

1.3 MATERIALS OWNERSHIP

- ##### A.
- Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.
- C. Full Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.
- F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 PREINSTALLATION MEETINGS

- A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.
 - 1. Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).
 - 2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
 - a. Reroofing preparation, including roofing system manufacturer's written instructions.
 - b. Temporary protection requirements for existing roofing system components that are to remain.
 - c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
 - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.

- e. Existing roof deck conditions requiring Owner notification.
- f. Existing roof deck removal procedures and Owner notifications.
- g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
- h. Structural loading limitations of roof deck during reroofing.
- i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
- j. HVAC shutdown and sealing of air intakes.
- k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
- l. Governing regulations and requirements for insurance and certificates if applicable.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer for refrigerant recovery technician.
- B. Field Test Reports:
 - 1. Fastener pull-out test report.
- C. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- D. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- E. Schedule of Re-Roofing Preparation Activities: Indicate the following:
 - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building.

- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.8 CLOSEOUT SUBMITTALS

- A. Certified statement from manufacturer of existing warranted roof system stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- C. Regulatory Requirements:
1. Comply with governing EPA notification regulations before beginning membrane roofing removal.
 2. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.10 PROJECT / FIELD CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area.
1. Conduct reroofing so Owner's operations will not be disrupted.
 2. Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.
 3. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
 4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.

- a. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 1. Remove only as much roofing in one day as can be made watertight in the same day.
- F. 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.
- G. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 DECK REPAIR/REPLACEMENT MATERIALS

- A. Wood Roof Deck Components:
 1. Wood Deck Material:
 - a. Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
 - b. Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.
 - c. Match existing size, face surface and edge profile.
 - d. Decking Species: Balsam fir, Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), southern pine, spruce pine-fir (North), western hemlock, or western hemlock (North).
 - e. Decking Grade: Commercial decking.
 - 1) Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.

- f. Preservative Treatment: Pressure treat solid-sawn wood decking according to AWPA C31 with inorganic boron (SBX) and redry wood to 19 percent maximum moisture content.
 - g. Fasteners for Solid-Sawn Decking: Provide fastener size and type complying with decking standard for thickness of deck used.
 - 1) Fastener Material: Hot-dip galvanized or stainless steel.
 - 2. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - a. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A 153M or Type 304 stainless steel.
 - 1) Nails, Brads, and Staples: ASTM F1667.
 - 2) Power-Driven Fasteners: NES NER-272.
 - 3) Wood Screws: ASME B18.6.1.
 - b. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
 - 1) For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

2.2 ROOFING INFILL, PATCHING AND REPLACEMENT MATERIALS

- A. Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.
- B. Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."
 - 1. Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
- C. Fasteners: Factory-coated steel fasteners with metal listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.

2.3 TEMPORARY ROOFING MATERIALS

- A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.4 TEMPORARY ROOF DRAINAGE

- A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.5 AUXILIARY RE-ROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.
 - 1. Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.
 - a. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
 - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 - 3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.
- C. Shut off rooftop utilities and service piping before beginning the Work.
- D. Test existing roof drains to verify that they are not blocked or restricted.
 - 1. Immediately notify Owner of any blockages or restrictions.
- E. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
 - 1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- F. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.

1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.
- G. Refrigerant: Before starting re-roofing preparation, remove refrigerant from mechanical equipment to be removed and reinstalled, according to 40 CFR 82 and regulations of authorities having jurisdiction.
- H. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- I. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.
1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
 2. Prevent debris from entering or blocking roof drains and conductors.
 - a. Use roof-drain plugs specifically designed for this purpose.
 - b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 3. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
 - a. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.2 ROOF TEAR-OFF

- A. Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.
- C. Roof Drainage: Remove roof drainage items indicated for removal.
- D. Full Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
1. Remove base sheets.

- E. Roof Edge Specialties: Replace existing perimeter metal systems with new perimeter metal systems.
 - 1. New perimeter metal systems (fascia and coping) are specified in Division 07 Section "Sheet Metal Flashing and Trim."
- F. Inspect wood blocking, curbs, and nailers for deterioration and damage.
 - 1. Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.
 - 2. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Verify that deck is sound and dry.
- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.
- D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.

3.4 DECK REPAIR/REPLACEMENT

- A. Repair existing deck to provide smooth working surface for installation of roof system.
 - 1. Replace deck that cannot be repaired to sound condition.
- B. Wood Roof Deck Replacement:
 - 1. Install solid-sawn wood decking to match existing deck construction and to comply with applicable code.
 - 2. Wood Sheathing Panels: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

3.5 ROOFING INFILL AND PATCHING MATERIALS INSTALLATION

- A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.

3.6 EQUIPMENT REMOVAL AND REINSTALLATION

- A. General: Remove, store, protect and reinstall rooftop equipment as required to accommodate roof tear-off and subsequent roofing work.
 - 1. Raise roof curbs, equipment mountings and other roof penetration flashings as required to accommodate additional insulation thickness and maintain base flashing height of not less than 8 inches (200 mm), unless otherwise indicated.
 - a. Provide wood assemblies and additional support with miscellaneous galvanized steel angles, as required to rebuild or raise existing roof curbs.
 - b. Extend vent and soil stacks and other roof penetrations, using matching materials, as required to accommodate additional insulation thickness.
 - 2. Extend existing ductwork inside existing roof curbs to accommodate extension of curb.
 - a. Use materials matching existing ductwork; minimum of 20 ga. (0.9 mm) galvanized duct with Pittsburgh folded seam slip joints-typical.
- B. Rooftop Equipment, Electrical: Engage a qualified electrician to perform electrical disconnection and reconnection.
 - 1. Disconnect, reroute, extend and reconnect existing power feeders and control circuits (conduit and wiring) feeding the existing roof mounted equipment which is indicated to be raised and/or relocated to a new elevation/location and as required by the Contract.
 - 2. Provide weatherproof exterior junction boxes, when required.
 - 3. Make connections to mechanical equipment by using a maximum 18-inch (450-mm) length of liquid-tight flexible steel conduit.
 - a. Rigid connections to mechanical equipment are not permitted.
 - 4. Relocate and reconnect existing disconnect switches presently installed on existing roof mounted equipment indicated to be raised and/or relocated.
- C. Prevent discharge of refrigerant. Verify that refrigerant has been properly recovered from equipment to be removed.
- D. Reinstall designated equipment.
 - 1. Make electrical reconnections in accordance with applicable code and authorities having jurisdiction.
 - 2. Recharge HVAC equipment with refrigerant required by equipment manufacturer.
 - 3. Coordinate with Owner to test equipment and verify proper operation.

- E. Remove and dispose of designated abandoned equipment. Infill openings in deck with matching materials. Infill roofing system with materials of same type as existing, adjacent roofing system.

3.7 BASE FLASHING REMOVAL

- A. Remove 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.
 - 1. Replace metal counterflashings damaged during removal with counterflashings specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.8 DISPOSAL

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

3.9 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 070150.19

SECTION 075216.15 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Section Includes: Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including:
 - a. Roof insulation.
 - b. Insulation cover board.
 - c. Mechanically-attached base-ply sheet.
 - d. Mineral granulated cap sheet.
 - e. Membrane flashing sheets.
 - f. Roof surfacing consisting of acrylic emulsion.

B. Related Sections:

1. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.

1.2 DEFINITIONS

- ##### A. Roofing Terminology:
- Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site

1. Meet with Owner, Owner's insurer 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 drawings and 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.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 1. Product Test Reports for Solar Reflectance: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.
 2. Product Data and Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-VOC/low-emitting materials.

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. Contractor's Product Certificate: Submit signed certification, on company letterhead, 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. Field Quality Control Reports: 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. Submit reports within 48 hours after inspection.
- D. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

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, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer with roofing systems comparable 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 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.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products.

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 / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- 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. 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.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. 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 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. SPRI Wind Design Standard: Manufacture and install copings according to SPRI ES-1.
 - 1. Design Pressure: As indicated on Drawings.
- D. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. FM 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 - 2. FM 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.
 - 5. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".

- E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, 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.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- F. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- G. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 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.

2.4 ROOFING MEMBRANE MATERIALS

A. Base-Ply Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

B. SBS Modified Bituminous Cap Sheet:

- 1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .
 - a. Basis of design product: Tremco, POWERply Endure 100 FR.
 - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).

- c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).
- d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
- e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg. C).
- f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Membrane Flashing Backer Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

D. Membrane Flashing Sheet:

- 1. Flashing Sheet: Same as cap sheet.
 - a. Basis of design product: Flashing Sheet: Same as cap sheet.

2.5 COLD-APPLIED ADHESIVE MATERIALS

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

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

B. Base-Ply Sheet Lap Adhesive:

- 1. Cold-applied roofing membrane seam adhesive, elastomeric urethane adhesive, two-part, solvent-free, formulated for use as a seam adhesive for bituminous membrane seams, gun-grade.

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- a. Basis of design product: Tremco, Tremco LF Adhesive.
- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
- c. Hardness, Shore A, ASTM C661: 30 to 35.

C. Cap Sheet Adhesive:

- 1. Cold-applied roofing adhesive and surfacer, one-part, formulated for compatibility and use with specified roofing membranes and flashings.
 - a. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 250 g/L.
 - c. Nonvolatile Content, minimum, ASTM D6511: 72 percent.
 - d. Flash Point, minimum, ASTM D93: 100 deg F (38 deg C).

D. Flashing Backer Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

E. Flashing Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

2.6 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
- B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- C. Base-Ply Sheet Mechanical Fasteners: Manufacturer's standard 2-inch wide barbed galvanized steel seam plate.
- D. Stripping Reinforcing Fabric:
 - 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
 - c. Color: Aqua green.
- E. 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. Color: Closest match to substrate.
- F. Provide new 24 gauge bonderized finished edge metal flashings.
 - 1. 1/8" rise.
 - 2. 22 gauge cleat with a maximum 1" flange onto the deck.

3. Fascia to extend 1" longer than the existing edge metal.
4. Prime and paint new edge metal with customer approved paint color.
5. Install 3 Pan head screws at seams.

G. Counterflashing: 22-gauge surface-mounted counterflashing skirt metal.

H. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.

I. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.

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

2.7 ROOF INSULATION MATERIALS

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

1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, not less than two times the roof slope.

B. Roof Insulation:

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.

2.8 INSULATION ACCESSORIES

A. Roof Insulation Cover Board:

1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).

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

- C. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Substrate Joint Tape: 6- or 8-inch- (150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.9 SURFACING MATERIALS

- A. Acrylic Emulsion for Field and Flashing Coating Material:
 - 1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
 - a. Basis of design product: Tremco, Solargard 6083 Top Coat.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
 - c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
 - d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
 - e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
 - f. Solids by weight, minimum ASTM D1644: 60 percent.
 - g. Solids by volume, minimum ASTM D2697: 50 percent.
 - h. Color, Top Coat: White.
 - i. Application rate: 3 Gal/100 Sq. Ft.
 - j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.10 WALKWAYS

- A. Walkway Material:
 - 1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - a. Basis of design product: Tremco, Trem-Tred.
 - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
 - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
 - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
 - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

- B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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 substrate is sound and dry.
 - 4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.
- B. Remove any obsolete items as identified by customer, if applicable.
- C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- D. 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, approved shop drawings, and Contract Documents.
- B. 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.

3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.5 INSULATION INSTALLATION

- A. Comply with roofing manufacturer's written instructions for installing roof insulation.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.
- D. Tapered Crickets: Install crickets on the high side of all curbs.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- 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 (150 mm) in each direction. Loosely butt cover boards together. Tape joints if required by roofing manufacturer.
 - 1. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
- B. Deck Type: Wood deck.
- C. Base-Ply Sheet: One.
 - 1. Adhering Method: Mechanically fastened.
- D. Granular-Surfaced SBS-Modified Bituminous Cap Sheet:

1. Adhering Method: Cold-adhesive applied.
- E. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- F. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- G. Coordinate installation of roofing system so insulation and other components of the roofing membrane 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 membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic, with joints and edges sealed.
 - a. Comply with roofing membrane manufacturer's instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable "deadman" insulation boards.
 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.
- H. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheets according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond eaves, installing as follows:
 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
 2. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Plan layout to stagger lap seams and end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
 3. Commence layout at low point of roof area.
 4. Repair tears and voids in laps and lapped seams not completely sealed.
- B. Mechanically-Fastened and adhered Base-Ply Sheet:

1. Install lapped base-ply sheet course, extending sheet over and terminating beyond cants.
2. Starting at one end of sheet, install mechanical fasteners along center of 4 inch (102 mm) side lap spaced as indicated on approved shop drawings. Install fasteners to set the seam plate tight to the membrane. Do not overdrive fastener. Do not ripple or wrinkle the membrane.
3. Adjust fastener spacing at perimeter and corners in accordance with approved shop drawings. Cover exposed fasteners in field of base sheet with 6 inch (150 mm) strips of base sheet adhered in base sheet overlap adhesive.
4. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

C. Granular Surfaced Cap Sheet:

1. Fully embed sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer. Roll sheet using weighted roller. Ensure complete and continuous seal and contact between adhesive and membrane without wrinkles, fishmouths, and blisters.
2. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

3.8 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
 2. Prime substrates with asphalt primer if required by roofing system manufacturer.
 3. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.
 4. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet if recommended by roofing manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - a. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1) Seal top termination of base flashing with a metal termination bar.
 - b. Flashing Sheet Bottom Termination: Adhere flashing sheet to roofing membrane in continuous bed of cold-applied adhesive.

- 1) Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint.
- B. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace drain strainer and clamping ring with new cast iron strainer and clamping rings. Install new bolts.
- C. Grind top of metal supports and penetrations to bare metal.
- D. Existing Coping Metal:
 - a. Clean and prep all metal coping seams.
 - b. All existing coping metal seams are to be sealed using three-course application of acrylic sealer and polyester reinforcement.
 - c. All coping metal is to be re-attached using manufacturer approved fasteners with neoprene washers and sealed with Tremseal Pro. Coping metal is to be painted on all three sides after repairs have cured. Color to be selected by customer.
- E. Leader Heads and Downspout: Install new leader heads and downspouts. Match existing attachment. Mouse hole end of downspout to direct water away from the building.
- F. Raise low curbs and penetrations that are 4" or lower off the finished roof surface to a minimum of 10" off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.
- G. Replace base flashings with new sheet metal to match existing size and like material.
- H. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.
- I. Three course all curb corners and base flashing seams with acrylic sealer and polyester.
- J. Seal all duct, pan, HVAC to pan, and other sheet metal seams with acrylic sealer and polyester reinforcement. Surface all galvanized metal and roof rings and screens with metal coating system. Properly prepare and prime surfaces prior to coating which includes rust inhibitor and other primers as recommended by manufacturer.
- K. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- L. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

- M. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of manufacturer's recommended adhesive, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.
- N. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inch (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.
 - 1. Install stripping according to roofing system manufacturer's written instructions.

3.9 SURFACING AND COATING INSTALLATION

- A. Acrylic Emulsion Coating:
 - 1. Prime substrate as recommended by manufacturer.
 - 2. Coat roofing membrane surface with cold-applied adhesive surfacing adhesive applied at rate required by roofing manufacturer.
 - 3. Apply acrylic emulsion coating to prepared roofing membrane and base flashings according to manufacturer's written instructions, with number of coats, thickness of application, and application method as recommended in writing by coating manufacturer.
 - 4. Do not install Acrylic Emulsion Coating where walkway pads are installed.

3.10 WALKWAY INSTALLATION

- A. Install walk-pad's at locations indicated by customer. At a minimum, install walk-pad's at all roof landing locations and to and surrounding all serviceable equipment. Confirm "roof landing locations" as suggested by customer to determine walk-path layout.
- B. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.
- C. 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. Sweep away loose aggregate surfacing.
 - 2. Set walkway pads in manufacturer's recommended, compatible adhesive.

3.11 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

1. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
 1. Notify Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.
 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

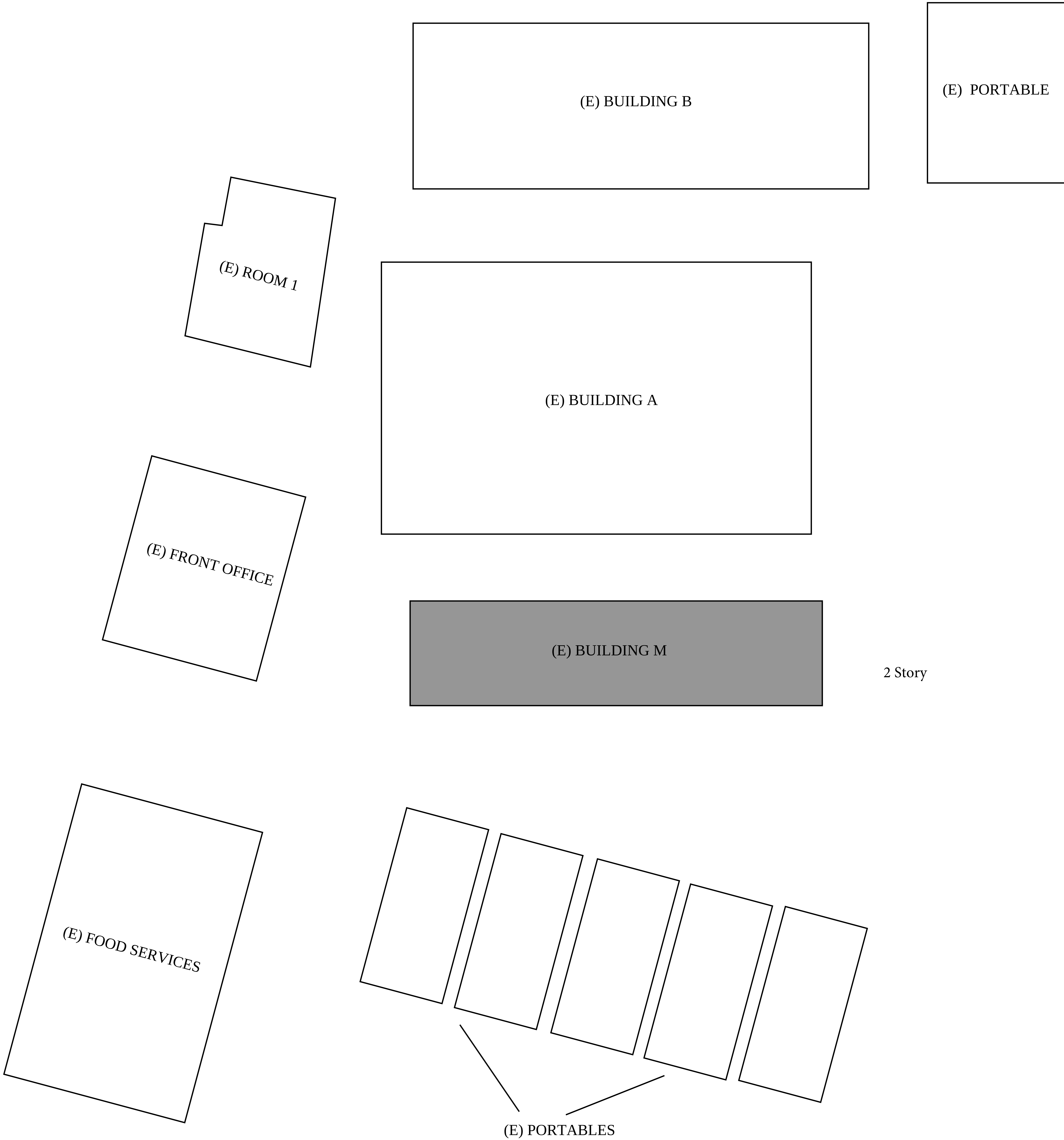
- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall 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 075216.15

VISTA HIGH SCHOOL

SITE PLAN LEGEND

- BUILDING NOT PART OF THIS SCOPE.
- REMOVE (E) ROOFING DOWN TO ROOF DECK AND PREPARE FOR INSTALLATION OF NEW BUILT UP ROOF SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO THE EXISTING BUILT UP ROOF, ROOFING ALONG THE CURBS AND PARAPET CAPS.



SECTION 075216.15 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

- A. ~~All products in bold italics, listed in Part 2 - Products, and on "Attachment A's", will be furnished by Lynwood Unified School District using its authority under the CMAS Contract. All remaining products listed within the Part 2 section, and any additional needed quantities of the products listed on "Attachment A", shall be furnished by the Roofing Contractor.~~
- B. ~~CMAS Contract #: 4-25-02-1015~~
- C. ~~Quote #: 5072002~~
- D. Section Includes:
 - 1. Section Includes: Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including:
 - a. Roof insulation.
 - b. Insulation cover board.
 - c. Mechanically-attached base-ply sheet.
 - d. Mineral granulated cap sheet.
 - e. Membrane flashing sheets.
 - f. Roof surfacing consisting of acrylic emulsion.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site
 - 1. Meet with Owner, Owner's insurer 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 drawings and 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 temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

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

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. Contractor's Product Certificate: Submit signed certification, on company letterhead, 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. Manufacturer Certificates:

1. Submit evidence of compliance with requirements specified in "Performance Requirements" Article.
2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives and sealants.

- D. Warranties: Unexecuted sample copies of special warranties.

- E. Field Quality Control Reports: 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. Submit reports within 48 hours after inspection.

- F. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

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, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer with roofing systems comparable 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 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.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products.

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 / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- 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. 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.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. 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 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.

2. Scope of Warranty: Work of this Section.
3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products or pre-approved equivalents.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 1. FM 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 2. FM 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 E108 or UL 790, 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.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- E. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- F. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 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.

2.4 ROOFING MEMBRANE MATERIALS

A. Base-Ply Sheet:

1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

B. SBS Modified Bituminous Cap Sheet:

1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .
 - a. Basis of design product: Tremco, POWERply Endure 100 FR.
 - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).
 - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).

- d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
- e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg. C).
- f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Membrane Flashing Backer Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

D. Membrane Flashing Sheet:

- 1. Flashing Sheet: Same as cap sheet.
 - a. Basis of design product: Flashing Sheet: Same as cap sheet.

2.5 COLD-APPLIED ADHESIVE MATERIALS

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

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

B. Base-Ply Sheet Lap Adhesive:

- 1. Cold-applied roofing membrane seam adhesive, elastomeric urethane adhesive, two-part, solvent-free, formulated for use as a seam adhesive for bituminous membrane seams, gun-grade.
 - a. Basis of design product: Tremco, Tremco LF Adhesive.

- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
- c. Hardness, Shore A, ASTM C661: 30 to 35.

C. Cap Sheet Adhesive:

- 1. Cold-applied roofing adhesive and surfacer, one-part, formulated for compatibility and use with specified roofing membranes and flashings.
 - a. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 250 g/L.
 - c. Nonvolatile Content, minimum, ASTM D6511: 72 percent.
 - d. Flash Point, minimum, ASTM D93: 100 deg F (38 deg C).

D. Flashing Backer Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

E. Flashing Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

2.6 AUXILIARY ROOFING MATERIALS

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

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- B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- C. Base-Ply Sheet Mechanical Fasteners: Manufacturer's standard 2-inch wide barbed galvanized steel seam plate.
- D. Stripping Reinforcing Fabric:
 - 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
 - c. Color: Aqua green.
- E. 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. Color: Closest match to substrate.
- F. T-Tops: 22 gauge galvanized steel with sides and screens.
- G. Counterflashing: 22-gauge surface-mounted counterflashing skirt metal.
- H. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.
- I. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.

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

2.7 ROOF INSULATION MATERIALS

- A. Roof Insulation, General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
 - 1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, not less than two times the roof slope.
- B. Roof Insulation:
 - 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.

2.8 INSULATION ACCESSORIES

- A. Roof Insulation Cover Board:
 - 1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).
- B. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- C. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Substrate Joint Tape: 6- or 8-inch- (150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.9 SURFACING MATERIALS

- A. Acrylic Emulsion for Field and Flashing Coating Material:
 - 1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
 - a. Basis of design product: Tremco, Solargard 6083 Base Coat and Top Coat.

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- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
- c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
- d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
- e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
- f. Solids by weight, minimum ASTM D1644: 60 percent.
- g. Solids by volume, minimum ASTM D2697: 50 percent.
- h. Color, Top Coat: White.
- i. Application rate: 3 Gal/100 Sq. Ft.
- j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.10 WALKWAYS

A. Walkway Material:

- 1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - a. Basis of design product: Tremco, Trem-Tred.
 - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
 - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
 - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
 - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

- B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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 substrate is sound and dry.
 4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.
- B. Remove any obsolete items as identified by customer, if applicable.
- C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- D. 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, approved shop drawings, and Contract Documents.
- B. 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.

3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.5 INSULATION INSTALLATION

- A. Comply with roofing manufacturer's written instructions for installing roof insulation.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.

- D. Tapered Crickets: Install tapered crickets on the high side of all curbs.
- E. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- F. 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. Tape joints if required by roofing manufacturer.
 - 1. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
- B. Deck Type: Wood deck.
- C. Base-Ply Sheet: One.
 - 1. Adhering Method: Mechanically fastened.
- D. Granular-Surfaced SBS-Modified Bituminous Cap Sheet:
 - 1. Adhering Method: Cold-adhesive applied.
- E. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- F. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- G. Coordinate installation of roofing system so insulation and other components of the roofing membrane 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 membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic, with joints and edges sealed.
 - a. Comply with roofing membrane manufacturer's instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable "deadman" insulation boards.
 - 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.

- H. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheets according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
2. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Plan layout to stagger lap seams and end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
3. Commence layout at low point of roof area.
4. Repair tears and voids in laps and lapped seams not completely sealed.

- B. Mechanically-Fastened Base-Ply Sheet:

1. Install lapped base-ply sheet course, extending sheet over and terminating beyond cants.
2. Starting at one end of sheet, install mechanical fasteners along center of 4 inch (102 mm) side lap spaced as indicated on approved shop drawings. Install fasteners to set the seam plate tight to the membrane. Do not overdrive fastener. Do not ripple or wrinkle the membrane.
3. Adjust fastener spacing at perimeter and corners in accordance with approved shop drawings. Cover exposed fasteners in field of base sheet with 6 inch (150 mm) strips of base sheet adhered in base sheet overlap adhesive.
4. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

- C. Granular Surfaced Cap Sheet:

1. Fully embed sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer. Roll sheet using weighted roller. Ensure complete and continuous seal and contact between adhesive and membrane without wrinkles, fishmouths, and blisters.
2. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

3.8 FLASHING AND STRIPPING INSTALLATION

- A. Raise low curbs and penetrations that are 4" or lower off the finished roof surface to a minimum of 10" off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.
- A. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace drain strainer and clamping ring with new cast iron strainer and clamping rings. Install new bolts.
- B. Replace metal counterflashings and base flashings with new sheet metal to match existing size and like material.
- C. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.
- D. Three course all curb corners and base flashing seams with acrylic sealer and polyester.
- E. Existing Coping Metal
 - 1. Clean and prep all metal coping seams including but not limited to powerwashing.
 - 2. All existing coping metal seams are to be sealed using three-course application of acrylic sealer and polyester reinforcement.
 - 3. All coping metal is to be re-attached (where needed) using manufacturer approved fasteners with neoprene washers and sealed with Tremseal Pro. Coping metal is to be painted on all three sides after repairs have cured. Color to be selected by customer.
- F. Metal Panels:
 - 1. Power wash panels to clean.
 - 2. At metal low slope metal pans / basins, clean and prepare area for acrylic coating system installation. Install acrylic coating system and prime metal substrate.
- G. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 - 1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
 - 2. Prime substrates with asphalt primer if required by roofing system manufacturer.
 - 3. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.
 - 4. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet if recommended by

roofing manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

- a. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

- 1) Seal top termination of base flashing with a metal termination bar.

- b. Flashing Sheet Bottom Termination: Adhere flashing sheet to roofing membrane in continuous bed of cold-applied adhesive.

- 1) Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint.

- H. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.

- I. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

- J. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of manufacturer's recommended adhesive, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.

- K. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inch (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.9 SURFACING AND COATING INSTALLATION

- A. Acrylic Emulsion Coating:

1. Prime substrate as recommended by manufacturer.
 2. Coat roofing membrane surface with cold-applied adhesive surfacing adhesive applied at rate required by roofing manufacturer.
 3. Apply acrylic emulsion coating to prepared roofing membrane and base flashings according to manufacturer's written instructions, with number of coats, thickness of application, and application method as recommended in writing by coating manufacturer.
 4. Do not install Acrylic Emulsion Coating where walkway pads are installed.

3.10 WALKWAY INSTALLATION

- A. Walkways, General: Install walkways according to roofing manufacturer's written instructions.

1. Install walkways at following locations:
 - a. Where indicated by Customer or:
 - b. Perimeter of each rooftop unit.
 - c. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - d. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
 - e. Top and bottom of each roof access ladder.
 - f. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - B. 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. Sweep away loose aggregate surfacing.
 2. Set walkway pads in manufacturer's recommended, compatible adhesive.
 - C. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.
- 3.11 FIELD QUALITY CONTROL
- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
 1. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
 - B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
 1. Notify Owner 48 hours in advance of date and time of inspection.
 - C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.

Lynwood Unified School District
2 Story Building
Vista High School 2 Story Building Re-Roof

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall 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 075216.15

WILL ROGERS ELEMENTARY SCHOOL

SITE PLAN LEGEND

BUILDING NOT PART OF SCOPE

REMOVE (E) ROOFING DOWN TO EXISTING ROOF DECK AND PREPARE FOR INSTALLATION OF NEW BUILT-UP ROOFING SYSTEM. THIS INCLUDES BUT IS NOT LIMITED TO THE EXISTING BUILT-UP ROOF, ROOFING ALONG THE CURBS AND PARAPET CAPS.

NOTES

The site plan shows the layout of Will Rogers Elementary School. Buildings are represented by rectangles: (E) BUILDING B (a large, irregular shape), (E) BUILDING H (a long horizontal rectangle), (E) BUILDING D (a vertical rectangle), (E) BUILDING E (a vertical rectangle), (E) BUILDING MAIN OFFICE (a small square), (E) BUILDING WALKWAY (a horizontal rectangle), (E) BUILDING LUNCH SHELTER (a vertical rectangle), (E) BUILDING LIBRARY (a vertical rectangle), (E) BUILDING CLASSROOM 3 (a small rectangle), (E) KINDERGARTEN CLASSROOMS (a small rectangle), and (E) BUILDING PORTABLES (a row of six small rectangles). The plan also shows various walkways and a row of portables. The buildings are labeled with their respective names and are color-coded: white for buildings not part of the scope and grey for buildings where roofing is to be removed. The plan is oriented with North at the top.

SITE PLAN

N.T.S

1

ARCHITECT STAMP

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT OWNER & TITLE

LYNWOOD UNIFIED SCHOOL DISTRICT

11321 BULLIS ROAD

LYNWOOD, CA, 90262

WILL ROGERS ELEMENTARY SCHOOL

11220 DUNCAN AVE.

LYNWOOD, CA, 90262

SHEET TITLE

SITE PLAN

G-101

SECTION 070150.19 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof replacement preparation consisting of full roof tear-off.
2. Removal of flashings and counterflashings.
3. Temporary roofing.
4. Temporary roof drainage.
5. Removal and reinstallation of indicated components, accessories, and equipment.

1.2 DESCRIPTION OF WORK

A. Re-roofing preparation Work consists of the following:

1. Preparation for Roof replacement:
 - a. Roof Area(s): Main Office, Kindergarten Classroom's, Building D & E
 - b. Existing Roof Type: Granular surfaced modified bituminous.
 - c. Existing Deck Type: Wood deck.
 - d. Roof tear-off.
 - e. Removal and reinstallation of indicated components, accessories, and equipment.
 - f. Uplift securement.
 - g. Removal of base flashings.
 - h. Temporary roof membrane.

1.3 MATERIALS OWNERSHIP

- ##### A.
- Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.
- B. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.
- C. Full Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.
- F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 PREINSTALLATION MEETINGS

- A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.
 - 1. Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).
 - 2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
 - a. Reroofing preparation, including roofing system manufacturer's written instructions.
 - b. Temporary protection requirements for existing roofing system components that are to remain.
 - c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
 - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
 - e. Existing roof deck conditions requiring Owner notification.

- f. Existing roof deck removal procedures and Owner notifications.
- g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
- h. Structural loading limitations of roof deck during reroofing.
- i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
- j. HVAC shutdown and sealing of air intakes.
- k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
- l. Governing regulations and requirements for insurance and certificates if applicable.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer for refrigerant recovery technician.
- B. Field Test Reports:
 - 1. Fastener pull-out test report.
- C. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- D. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- E. Schedule of Re-Roofing Preparation Activities: Indicate the following:
 - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building.

- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.8 CLOSEOUT SUBMITTALS

- A. Certified statement from manufacturer of existing warranted roof system stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- C. Regulatory Requirements:
 1. Comply with governing EPA notification regulations before beginning membrane roofing removal.
 2. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.10 PROJECT / FIELD CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area.
 1. Conduct reroofing so Owner's operations will not be disrupted.
 2. Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.
 3. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
 4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.
 - a. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 - 1. Remove only as much roofing in one day as can be made watertight in the same day.
- F. 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.
- G. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 DECK REPAIR/REPLACEMENT MATERIALS

- A. Wood Roof Deck Components:
 - 1. Wood Deck Material:
 - a. Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
 - b. Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.
 - c. Match existing size, face surface and edge profile.
 - d. Decking Species: Balsam fir, Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), southern pine, spruce pine-fir (North), western hemlock, or western hemlock (North).
 - e. Decking Grade: Commercial decking.
 - 1) Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.
 - f. Preservative Treatment: Pressure treat solid-sawn wood decking according to AWPA C31 with inorganic boron (SBX) and redry wood to 19 percent maximum moisture content.

- g. Fasteners for Solid-Sawn Decking: Provide fastener size and type complying with decking standard for thickness of deck used.
 - 1) Fastener Material: Hot-dip galvanized or stainless steel.
 - 2. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - a. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A 153M or Type 304 stainless steel.
 - 1) Nails, Brads, and Staples: ASTM F1667.
 - 2) Power-Driven Fasteners: NES NER-272.
 - 3) Wood Screws: ASME B18.6.1.
 - b. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
 - 1) For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.
- 2.2 ROOFING INFILL, PATCHING AND REPLACEMENT MATERIALS
- A. Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.
 - B. Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."
 - 1. Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.
 - C. Fasteners: Factory-coated steel fasteners with metal listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.
- 2.3 TEMPORARY ROOFING MATERIALS
- A. Design and selection of materials for temporary roofing are responsibilities of Contractor.
- 2.4 TEMPORARY ROOF DRAINAGE
- A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.5 AUXILIARY RE-ROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.
 - 1. Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.
 - a. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
 - 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 - 3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.
- C. Shut off rooftop utilities and service piping before beginning the Work.
- D. Test existing roof drains to verify that they are not blocked or restricted.
 - 1. Immediately notify Owner of any blockages or restrictions.
- E. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
 - 1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- F. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
 - 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.

- G. Refrigerant: Before starting re-roofing preparation, remove refrigerant from mechanical equipment to be removed and reinstalled, according to 40 CFR 82 and regulations of authorities having jurisdiction.
- H. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- I. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.
 - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
 - 2. Prevent debris from entering or blocking roof drains and conductors.
 - a. Use roof-drain plugs specifically designed for this purpose.
 - b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 - 3. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
 - a. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.2 ROOF TEAR-OFF

- A. Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.
- C. Roof Drainage: Remove roof drainage items indicated for removal.
- D. Full Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
 - 1. Remove base sheets.
- E. Roof Edge Specialties: Replace existing perimeter metal systems with new perimeter metal systems.
 - 1. New perimeter metal systems (fascia and coping) are specified in Division 07 Section "Sheet Metal Flashing and Trim."
- F. Inspect wood blocking, curbs, and nailers for deterioration and damage.

1. Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.
2. Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Verify that deck is sound and dry.
- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.
- D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.

3.4 DECK REPAIR/REPLACEMENT

- A. Repair existing deck to provide smooth working surface for installation of roof system.
 1. Replace deck that cannot be repaired to sound condition.
- B. Wood Roof Deck Replacement:
 1. Install solid-sawn wood decking to match existing deck construction and to comply with applicable code.
 2. Wood Sheathing Panels: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

3.5 ROOFING INFILL AND PATCHING MATERIALS INSTALLATION

- A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.

3.6 EQUIPMENT REMOVAL AND REINSTALLATION

- A. General: Remove, store, protect and reinstall rooftop equipment as required to accommodate roof tear-off and subsequent roofing work.
 1. Raise roof curbs, equipment mountings and other roof penetration flashings as required to accommodate additional insulation thickness and maintain base flashing height of not less than 8 inches (200 mm), unless otherwise indicated.

- a. Provide wood assemblies and additional support with miscellaneous galvanized steel angles, as required to rebuild or raise existing roof curbs.
 - b. Extend vent and soil stacks and other roof penetrations, using matching materials, as required to accommodate additional insulation thickness.
 2. Extend existing ductwork inside existing roof curbs to accommodate extension of curb.
 - a. Use materials matching existing ductwork; minimum of 20 ga. (0.9 mm) galvanized duct with Pittsburgh folded seam slip joints-typical.
 - B. Rooftop Equipment, Electrical: Engage a qualified electrician to perform electrical disconnection and reconnection.
 1. Disconnect, reroute, extend and reconnect existing power feeders and control circuits (conduit and wiring) feeding the existing roof mounted equipment which is indicated to be raised and/or relocated to a new elevation/location and as required by the Contract.
 2. Provide weatherproof exterior junction boxes, when required.
 3. Make connections to mechanical equipment by using a maximum 18-inch (450-mm) length of liquid-tight flexible steel conduit.
 - a. Rigid connections to mechanical equipment are not permitted.
 4. Relocate and reconnect existing disconnect switches presently installed on existing roof mounted equipment indicated to be raised and/or relocated.
 - C. Prevent discharge of refrigerant. Verify that refrigerant has been properly recovered from equipment to be removed.
 - D. Reinstall designated equipment.
 1. Make electrical reconnections in accordance with applicable code and authorities having jurisdiction.
 2. Recharge HVAC equipment with refrigerant required by equipment manufacturer.
 3. Coordinate with Owner to test equipment and verify proper operation.
 - E. Remove and dispose of designated abandoned equipment. Infill openings in deck with matching materials. Infill roofing system with materials of same type as existing, adjacent roofing system.
- 3.7 BASE FLASHING REMOVAL
- A. Remove 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.

1. Replace metal counterflashings damaged during removal with counterflashings specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.8 DISPOSAL

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

3.9 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 070150.19

SECTION 075216.15 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 SUMMARY

- A. ~~All products in bold italics, listed in Part 2 – Products, and on “Attachment A’s”, will be furnished by **Lynwood Unified School District** using its authority under the CMAS Contract. All remaining products listed within the Part 2 section, and any additional needed quantities of the products listed on “Attachment A”, shall be furnished by the Roofing Contractor.~~
- B. ~~CMAS Contract #: 4-25-02-1015~~
- C. ~~Quote #: 5070841~~
- D. Section Includes:
 - 1. Section Includes: Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system on wood deck, including:
 - a. Roof insulation.
 - b. Insulation cover board.
 - c. Mechanically-attached base-ply sheet.
 - d. Mineral granulated cap sheet.
 - e. Membrane flashing sheets.
 - f. Roof surfacing consisting of acrylic emulsion.
- E. Related Sections:
 - 1. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Standard Terminology Relating to Roofing and Waterproofing" and applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" and NRCA's Glossary for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site

1. Meet with Owner, Owner's insurer 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 drawings and 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.

1.4 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. Field Quality Control Reports: 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. Submit reports within 48 hours after inspection.

C. Manufacturer's Instructions: Submit copy of manufacturer's written installation instructions for specified roofing system.

1.5 CLOSEOUT SUBMITTALS

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

1.6 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, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer with roofing systems comparable 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 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.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products.

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 / FIELD CONDITIONS

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

1.9 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.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. 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 and 15 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

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: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.
- C. SPRI Wind Design Standard: Manufacture and install copings according to SPRI ES-1.
 - 1. Design Pressure: As indicated on Drawings.
- D. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. FM 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 - 2. FM 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.
 - 5. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".

- E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, 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.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- F. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- G. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 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.

2.4 ROOFING MEMBRANE MATERIALS

A. Base-Ply Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

B. SBS Modified Bituminous Cap Sheet:

- 1. SBS/RET/Urethane-modified asphalt-coated glass-fiber-reinforced high-tensile strength sheet, white granular surfaced, ASTM D6163 Type III Grade G .
 - a. Basis of design product: Tremco, POWERply Endure 100 FR.
 - b. Tensile Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 185 lbf/in (32 kN/m); Cross machine direction 210 lbf/in (35 kN/m).

- c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction, 325 lbf (1445 N); Cross machine direction 325 lbf (1445 N).
- d. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 6 percent; Cross machine direction 8 percent.
- e. Low Temperature Flex, maximum, ASTM D5147: Machine Direction, -40 deg. F (-40 deg. C); Cross machine direction -35 deg. F (-37 deg. C).
- f. Thickness, minimum, ASTM D5147: 0.130 inch (3.3 mm).

C. Membrane Flashing Backer Sheet:

- 1. SBS-modified asphalt-coated composite glass fiber mat / glass fiber scrim sheet, ASTM D6163 Type III Grade S.
 - a. Basis of design product: Tremco, POWERply Heavy Duty Base Sheet.
 - b. Tensile Strength at 0 deg. F (18 deg. C), minimum, ASTM D5147: Machine direction, 220 lbf/in (38 kN/m); Cross machine direction, 190 lbf/in (33 kN/m).
 - c. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D5147: Machine direction, 3.0 percent; Cross machine direction, 3.5 percent.
 - d. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D5147: Machine direction 220 lbf (975N); Cross machine direction, 240 lbf (1065N).
 - e. Low Temperature Flexibility, minimum, ASTM D5147: 0 deg. F (-18 deg. C).
 - f. Thickness, minimum, ASTM D5147: 0.120 inch (3.0 mm).

D. Membrane Flashing Sheet:

- 1. Flashing Sheet: Same as cap sheet.
 - a. Basis of design product: Flashing Sheet: Same as cap sheet.

2.5 COLD-APPLIED ADHESIVE MATERIALS

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

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

B. Base-Ply Sheet Lap Adhesive:

- 1. Cold-applied roofing membrane seam adhesive, elastomeric urethane adhesive, two-part, solvent-free, formulated for use as a seam adhesive for bituminous membrane seams, gun-grade.

- a. Basis of design product: Tremco, Tremco LF Adhesive.
- b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.
- c. Hardness, Shore A, ASTM C661: 30 to 35.

C. Cap Sheet Adhesive:

- 1. Cold-applied roofing adhesive and surfacer, one-part, formulated for compatibility and use with specified roofing membranes and flashings.
 - a. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D6511: 250 g/L.
 - c. Nonvolatile Content, minimum, ASTM D6511: 72 percent.
 - d. Flash Point, minimum, ASTM D93: 100 deg F (38 deg C).

D. Flashing Backer Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

E. Flashing Sheet Adhesive:

- 1. Roof Cement, Asphalt-Based: ASTM D4586, Type II, Class I, fibrated roof cement formulated for use in installation and repair of asphalt ply and modified bitumen roofing plies and flashings; UL-classified for fire resistance.
 - a. Basis of design product: Tremco, ELS.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 190 g/L.
 - c. Non-Volatile Matter, ASTM D4586: 85 percent.
 - d. Resistance to sag ASTM D4586: 1/8 in. (3 mm).

2.6 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
- B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- C. Base-Ply Sheet Mechanical Fasteners: Manufacturer's standard 2-inch wide barbed galvanized steel seam plate.
- D. Stripping Reinforcing Fabric:
 - 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, min ASTM D146: Warp, 65 lbf/in (285 N); fill, 75 lbf/in (310 N).
 - c. Color: Aqua green.
- E. 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. Color: Closest match to substrate.
- F. Provide new 24 gauge bonderized finished edge metal flashings.
 - 1. 1/8" rise.
 - 2. 22 gauge cleat with a maximum 1" flange onto the deck.

3. Fascia to extend 1" longer than the existing edge metal.
4. Prime and paint new edge metal with customer approved paint color.
5. Install 3 Pan head screws at seams.

G. Coving Metal Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 340) pre-painted by the coil-coating process to comply with the ASTM A 755/A 755; structural quality.

1. Thickness: 0.0236-inch/24ga.(0.60-mm) minimum thickness.
2. Color to be selected by Customer.
3. 22-gauge galvanized cleat.

H. Counterflashing: 22-gauge surface-mounted counterflashing skirt metal.

I. Metal Primer: Water based acrylic metal primer that provides a tough, flexible film for the protection of steel against corrosion. Must be VOC compliant.

J. Metal Coating: ASTM D 6083, solar-reflective acrylic elastomer emulsion coating.

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

2.7 ROOF INSULATION MATERIALS

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

1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where needed for sloping to drain. Fabricate to slopes required, not less than two times the roof slope.

B. Roof Insulation:

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.

2.8 INSULATION ACCESSORIES

A. Roof Insulation Cover Board:

- 1. Gypsum panel, glass-mat-faced, primed, ASTM C1177/C1177M.
 - a. Basis of design product: Tremco/GP Gypsum DensDeck Prime.
 - b. Thickness: 1/2 inch (12 mm).

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

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

D. Substrate Joint Tape: 6- or 8-inch- (150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.9 SURFACING MATERIALS

A. Acrylic Emulsion for Field and Flashing Coating Material:

- 1. Acrylic Roof Coating, Elastomeric: ASTM D6083, applied as base coat plus finish coat over prepared and primed roof surfaces.
 - a. Basis of design product: Tremco, Solargard 6083 Top Coat.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 50 g/L.
 - c. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D2370: 250 psi (1700 kPa).
 - d. Elongation at 73 deg. F (23 deg. C), minimum, ASTM D2370: 350 percent.
 - e. Flexibility at -15 deg F (-26 deg C), ASTM D522: Pass 1/2 inch mandrel bend after 1000 hrs. accelerated weathering.
 - f. Solids by weight, minimum ASTM D1644: 60 percent.
 - g. Solids by volume, minimum ASTM D2697: 50 percent.
 - h. Color, Top Coat: White.
 - i. Application rate: 3 Gal/100 Sq. Ft.
 - j. Solar Reflectance Index (SRI), white, ASTM E1980: 105 initial; 100 3-Year aged.

2.10 WALKWAYS

A. Walkway Material:

1. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - a. Basis of design product: Tremco, Trem-Tred.
 - b. Flexural Strength at max. load, minimum, ASTM C203: 218 psi (1.5 kPa).
 - c. Granule adhesion (weight loss), maximum, ASTM D4977: 1.1 gram.
 - d. Impact Resistance at 77 deg. F (25 deg. C), ASTM D3746: No Damage to Roof.
 - e. Pad Size: 36 by 48 inch (914 by 1220 mm).

- B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

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 substrate is sound and dry.
 4. Wood Roof Deck: Verify that deck shows no signs of damage, rot or deterioration, and 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Water test all roof drains prior to roof removal. Notify the owner in writing of any clogged or slow draining drains.
- B. Remove any obsolete items as identified by customer, if applicable.

- C. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- D. 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, approved shop drawings, and Contract Documents.
- B. 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.

3.4 ROOFING INSTALLATION DETAILS

- A. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.5 INSULATION INSTALLATION

- A. Comply with roofing manufacturer's written instructions for installing roof insulation.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.
- D. Tapered Crickets: Install crickets on the high side of all curbs.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- 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 (150 mm) in each direction. Loosely butt cover boards together. Tape joints if required by roofing manufacturer.

1. Preliminary insulation attachment shall meet FM Loss Prevention Data Sheet 1-29.

3.6 COLD-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
- B. Deck Type: Wood deck.
- C. Base-Ply Sheet: One.
 1. Adhering Method: Mechanically fastened and adhered at laps.
- D. Granular-Surfaced SBS-Modified Bituminous Cap Sheet:
 1. Adhering Method: Cold-adhesive applied.
- E. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- F. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- G. Coordinate installation of roofing system so insulation and other components of the roofing membrane 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 membrane sheets and insulation with a course of coated felt set in compatible roofing cement/mastic, with joints and edges sealed.
 - a. Comply with roofing membrane manufacturer's instructions and details for waterstop/daily tie-in; utilize staggered layout and unadhered, removable "deadman" insulation boards.
 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.
- H. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheets according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
 - 2. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Plan layout to stagger lap seams and end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
 - 3. Commence layout at low point of roof area.
 - 4. Repair tears and voids in laps and lapped seams not completely sealed.
- B. Mechanically-Fastened and adhered Base-Ply Sheet:
 - 1. Install lapped base-ply sheet course, extending sheet over and terminating beyond cants.
 - 2. Starting at one end of sheet, install mechanical fasteners along center of 4 inch (102 mm) side lap spaced as indicated on approved shop drawings. Install fasteners to set the seam plate tight to the membrane. Do not overdrive fastener. Do not ripple or wrinkle the membrane.
 - 3. Adjust fastener spacing at perimeter and corners in accordance with approved shop drawings. Cover exposed fasteners in field of base sheet with 6 inch (150 mm) strips of base sheet adhered in base sheet overlap adhesive.
 - 4. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.
- C. Granular Surfaced Cap Sheet:
 - 1. Fully embed sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer. Roll sheet using weighted roller. Ensure complete and continuous seal and contact between adhesive and membrane without wrinkles, fishmouths, and blisters.
 - 2. Lap Seam Treatment: Adhere side and end lap seams with base sheet overlap adhesive and roll using weighted roller in accordance with manufacturer's instructions.

3.8 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:

1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
2. Prime substrates with asphalt primer if required by roofing system manufacturer.
3. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.
4. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet if recommended by roofing manufacturer. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - a. Flashing Sheet Top Termination: Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1) Seal top termination of base flashing with a metal termination bar.
 - b. Flashing Sheet Bottom Termination: Adhere flashing sheet to roofing membrane in continuous bed of cold-applied adhesive.
 - 1) Bituminous Flashing: Seal bottom termination of base flashing by adhering to roofing membrane and stripping flashing to membrane joint.
- B. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace drain strainer and clamping ring with new cast iron strainer and clamping rings. Install new bolts.
- C. Grind top of metal supports and penetrations to bare metal.
- D. Coping metal (main office only):
 1. Remove and dispose of existing coping
 2. Install new 22 gauge, galvanized steel continuous cleat fastened with galvanized steel roofing nails that penetrate wood nailer a minimum of 1". Secure at 6" oc.
 3. Install new 24 gauge, prefinished steel coping.
 4. Hook coping to continuous cleat and fasten interior portion of coping with galvanized steel hex head screws with neoprene washers. Secure at 18" oc.
 5. Install 3 panhead screws at seams.
- E. Existing Coping Metal (all buildings minus main office)
 - a. Clean and prep all metal coping seams.

- b. All existing coping metal seams are to be sealed using three-course application of acrylic sealer and polyester reinforcement.
 - c. All coping metal is to be re-attached using manufacturer approved fasteners with neoprene washers and sealed with Tremseal Pro. Coping metal is to be painted on all three sides after repairs have cured. Color to be selected by customer.
- F. At walls that have roofing over 3' tall, install TPA and adhere with TPA LV bonding adhesive. Use Rock-It Adhesive WB and Burmesh to tie-in to new built up roofing system. Perform a 5-course detail of these products to properly flash-in and seal. Wrap TPA completely over walls and then install coping cap as specified.
- G. Raise low curbs and penetrations that are 4" or lower off the finished roof surface to a minimum of 10" off the finished roof surface. Contractor is responsible for properly disconnecting and re-connecting all utility lines associated with the equipment to be raised.
- H. Replace base flashings with new sheet metal to match existing size and like material.
- I. Install skirt metal counterflashing at units and where counterflashing does not extend at least two inches over the top of the base flashing.
- J. Three course all curb corners and base flashing seams with acrylic sealer and polyester.
- K. Seal all duct, pan, HVAC to pan, and other sheet metal seams with acrylic sealer and polyester reinforcement. Surface all galvanized metal and roof rings and screens with metal coating system. Properly prepare and prime surfaces prior to coating which includes rust inhibitor and other primers as recommended by manufacturer.
- L. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- M. Install stripping, according to roofing manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.
- N. Flashing-Sheet Stripping: Install flashing-sheet stripping in a continuous coating of manufacturer's recommended adhesive, and extend onto roofing membrane. Apply number of courses recommended by manufacturer.
- O. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inch (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.
1. Install stripping according to roofing system manufacturer's written instructions.

3.9 SURFACING AND COATING INSTALLATION

A. Acrylic Emulsion Coating:

1. Prime substrate as recommended by manufacturer.
2. Coat roofing membrane surface with cold-applied adhesive surfacing adhesive applied at rate required by roofing manufacturer.
3. Apply acrylic emulsion coating to prepared roofing membrane and base flashings according to manufacturer's written instructions, with number of coats, thickness of application, and application method as recommended in writing by coating manufacturer.
4. Do not install Acrylic Emulsion Coating where walkway pads are installed.

3.10 WALKWAY INSTALLATION

- A. Install walk-pad's at locations indicated by customer. At a minimum, install walk-pad's at all roof landing locations and to and surrounding all serviceable equipment. Confirm "roof landing locations" as suggested by customer to determine walk-path layout.
- B. Install new rubber blocks to replace all wood blocks. Add additional blocks to insure at least one every 8 feet and support at conduit changes in direction. Install oversized walkpad sections under all blocks. Use pipe support extenders to support high conduit and provide proper slope for condensate. For conduit runs close to the roof surface where the rubber blocks will not fit use new redwood blocks set on walkpad section.
- C. 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. Sweep away loose aggregate surfacing.
 2. Set walkway pads in manufacturer's recommended, compatible adhesive.

3.11 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
 1. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 1 full-time days on site, per 40-hour crew week, to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
 1. Notify Owner 48 hours in advance of date and time of inspection.

- C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.

- 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect 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 roofing system that does not comply with requirements, repair substrates, and repair or reinstall 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 075216.15

SPECIAL PROVISIONS/SPECIAL CONDITIONS

1. **Application of Special Conditions.** These Special Conditions form a part of the Contract Documents for the Work generally described as: **Bid# 12MOT26 Re-Roofing at Lindbergh ES, Mark Twain ES, Roosevelt ES, Will Rogers ES and Vista High School**
2. **Notice to Proceed; Commencement of Contract Time.** The Contractor shall commence Work and the Contract Time shall be deemed to commence on the date stated in the Notice to Proceed issued by or on behalf of the District to the Contractor. The Contractor shall achieve Substantial Completion of the Work within the Contract Time set forth in the Agreement.
3. **Project Manager.** The Project Manager for the Work is Susan Trevizo.
4. **Liquidated Damages.**
 - 4.1 **Liquidated Damages Scheduled.** If the Contractor does not achieve Completion of the Work, the Contractor shall be assessed Liquidated Damages in the amount of Four hundred fifty Dollars **(\$450.00)** per day, until completion of the work is achieved.
5. **Hours and Days of Work at the Site.**
 - 5.1 **Noise Ordinance Work Hours/Days.** In addition to requirements established in other portions of the Contract Documents and by the Laws, the Contractor's performance of Work at the Site shall comply with and limited by roofing activity limitations and/or roofing noise limitations established by ordinance, rule or regulation by the City of Lynwood. The foregoing notwithstanding, the Contractor is solely responsible for: (i) determining municipal ordinances, rules or regulations relating to roofing activities/ roofing noise limitations; and (ii) compliance with such ordinances, rules or regulations without adjustment of the Contract Price or the Contract Time.
The City of Lynwood Noise Ordinance is enforced between 7:00pm - 7:00am.
 - 5.2 **Limitations on Work Hours/Days.**
Work activities at the Site will be limited or prohibited on days (i) devoted to student testing or when testing of students may be adversely affected by Work activities at the Site; or (ii) when other special events or functions are scheduled. The contractor shall familiarize itself with District activities at the Site to avoid Work activity interferences or disturbances to such District activities. The Contractor's roofing schedule shall take into account District activities which limit or preclude Work activities at the Site.
6. **Insurance Coverage Limits.**
 - 6.1 **Contractor Insurance.** Pursuant to Article 6 of the General Conditions, the Contractor shall obtain and maintain the following insurance coverages with minimum coverage limits as set forth below:

Policy of Insurance	Minimum Coverage Limits
Commercial General Liability Insurance	Per Occurrence: \$1,000,000.00
	Aggregate: \$2,000,000.00
Workers Compensation	In accordance with the Laws
Employers Liability	One Million Dollars (\$1,000,000)
Contractor's Pollution Liability	Per Occurrence: N/A
	Aggregate: N/A

- 6.2 **Subcontractor Insurance.** Pursuant to Article 6 of the General Conditions, each Subcontractor shall obtain and maintain the following insurance coverages with minimum coverage limits as set forth below:

Policy of Insurance	Minimum Coverage Limits
Commercial General Liability Insurance	Per Occurrence: \$1,000,000.00
	Aggregate: \$ 2,000,000.00
Workers Compensation	In accordance with the Laws
Employers Liability	One Million Dollars (\$1,000,000)
Contractor's Pollution Liability (As applicable, if Subcontractor's work involves SWPPP, the removal of asbestos, the removal/replacement of underground tanks or the removal of toxic chemicals and substances)	Per Occurrence: N/A.
	Aggregate: N/A

- 6.3 **Additional Insured.** "The Lynwood Unified School District, its Board, officers, agents and employees are named additional insured." The wording indicated above must be included in all ISO forms.

7. **District Provided Temporary Utilities.** Pursuant to Article 4.3.4 of the General Conditions, during the Contractor's performance of the Work, the District will provide the Contractor with utility services. If the District provides any utility services for use by the Contractor: (i) the District may discontinue, limit or condition use of such services by a Contractor if the District reasonably determines that the Contractor has wasted such utilities, and (ii) the District shall not be liable to the Contractor, nor shall the Contract Time or the Contract Price be increased if any District provided temporary utility service is discontinued or disrupted for any reason other than the District's non-payment of undisputed utility charges. If provided by the District, the Contractor may use the temporary electrical power and domestic potable water service in connection with the Work provided that: (i) the District may discontinue, limit or condition use of such services by a Contractor if the District reasonably determines that the Contractor has wasted such utilities, and (ii) the District shall not be liable to the Contractor, nor shall the Contract Time or the Contract Price be increased if any District provided temporary utility service is discontinued or disrupted for any reason other than the District's non-payment of undisputed utility charges. Notwithstanding any provision of the Contract Documents to the contrary, the Contractor shall not use District provided water supply in connection with any earthwork or grading operations; water supply for earthwork or grading operations shall be obtained by the Contractor, without adjustment of the Contract Time or the Contract Price, from an offsite source or mobile water delivery service. Further, notwithstanding the District providing a point of connection for the Contractor's telephone/data service at the Site, the Contractor is solely responsible for the payment of utility service charges therefor.
8. **Critical Submittals.** Critical Submittals are Contractor prepared shop drawings, product data or samples that are critical to the achieving Substantial Completion of the Work within the Contract Time. Critical Submittals may include, but not be limited to, steel shop drawings, concrete precast panel shop drawings, DSA required Deferred Approval submittals, or any submittals in conjunction with roofing activities within the first thirty (30) days of the roofing Schedule or long lead fabrication/procurement item requiring Submittals. Notwithstanding any provision of the Contract Documents to the contrary, Critical Submittals must be submitted by the Contractor within thirty (30) calendar days of the commencement date for the Work as set forth in the Notice to Proceed issued by or on behalf of the District. If there is a dispute or disagreement between the District and the Contractor as to whether any Submittal is deemed a Critical

Submittal, the determination of the Project Manager and the Architect shall be final and binding on the Contractor and the District.

- 9. Contractor Personnel Parking.** Personnel of the Contractor, Subcontractors and others performing Work at the Site will be allowed to park, with a valid District parking permit, in the parking spaces at a location designated by the District. Parking permit charges, if any, shall be borne and paid by the Contractor without adjustment of the Contract Price. The foregoing notwithstanding, the extent or location of parking for such personnel may be modified by the District as reasonably necessary to facilitate and accommodate necessary parking for the District's activities and functions in and about the Site. Neither the Contract Price nor the Contract Time shall be adjusted as a result of any such District
- 10. Site Perimeter Fencing.** As required by the Contract Documents, the Contractor shall install a site perimeter fence with fabric privacy screen. All fencing shall be securely and safely installed, and shall include proper access gates, supports, braces and shall not be a tripping or safety hazard to the public. Safety barricades, flags, reflectors, cones or other safety equipment shall be provided for a safe and orderly demarcation of the Contractor's areas of control and the public's interaction with it. Provide reflectors on fencing in driveway or parking lot areas to ensure fencing is highly visible to vehicles at night. Without adjustment of the Contract Time or the Contract Price, the Contractor shall maintain all fencing in good condition and clear of any graffiti or damage. The Contractor shall remove or relocate such fencing as necessary to assure staff/student/public safety while maintaining a positive isolation barrier between the public and the Site, and as directed by the District or the Roofing Manager, and shall perform all repairs as needed after removal and as caused by the fence or any other damages as a result of Contractor's use of the Site or adjacent areas.
- 11. Project Signage and Barricades.** In addition to safety signage required per General Conditions 4.9.3, the Contractor shall furnish and install and maintain additional project signage as set forth in the Contract Documents. Contractor shall provide temporary utilities, barricade, enclosures, temporary signs, storage units, chutes, hoist, scaffolds railing, and other facilities or services as required. Prior to Application for Final Payment, Contractor shall remove all temporary facilities, utilities and equipment from the site. Contractor shall clean, repair and/or reconstruct, as necessary, the site so as to restore it to the condition as found at the point of Notice to Proceed.
- 12. Mark-Ups on Changes to the Work.** In the event of Changes to the Work, pursuant to Article 9 of the General Conditions, the mark-up for all overhead (including home and field office overhead), general conditions costs and profit, shall not exceed the percentage of allowable direct actual costs for performance of the Change as set forth below.

 - 12.1 Subcontractor Performed Changes.** For the portion of any Change performed by Subcontractors of any tier, the percentage mark-up on allowable actual direct labor and materials costs incurred by all Subcontractors, the foregoing mark-up shall not be applied to the Subcontractor mark-up.
 - 12.2 Blank Intentionally**
 - 12.3 Bond Premium Costs.** A bond premium expense in an amount equal to the lesser of the Contractor's actual bond premium rate of the total actual direct costs of labor and materials (before Subcontractor and Contractor mark-ups) will be allowed.
 - 12.4 Exclusions from Mark-Up of Actual Costs.** Mark-ups on the actual cost of materials/equipment incorporated into a Change or for purchase/rental of roofing Equipment shall not be applied to any portion of such costs which are for sales, use or other taxes arising out of the purchase of materials/equipment and/or for purchase/rental of roofing Equipment.

13. Rain Days. Pursuant to Article 7.4.1 of the General Conditions, the number of Rainy Days (including inclement weather) for this Contract is 7 days. Include a critical path activity entitled "Remaining Inclement Weather Days" on the initial Contract Schedule. This activity shall have an initial duration of seven (7) work days and shall be the last activity in the schedule prior to the activity entitled "Completion". All predecessor activities must pass through the Inclement Weather day's activity. The contractor shall request use of the Inclement Weather Day when a critical path activity has been delayed due to inclement weather. This request must occur in the same month as the inclement weather delay and must be approved by a Change Order. Inclement Weather Delays to non-critical activities will not be considered. If, at completion, there are inclement weather days still remaining, the Completion date shall not be adjusted. If at or near completion, additional inclement weather days are required, the completion date shall be adjusted accordingly by processing a Change Order for a non-compensable time extension.

14. Blank Intentionally

15. Waste and Recycling Report Log. As required by the Laws, the District collects data and submits reports of all waste and recycling streams. As a part of this effort, the District requires the Contractor to submit reports on all roofing generated waste, including soils exports, roofing generated debris, and all general roofing debris ("Waste/Recycling Report").

SPECIAL PROVISIONS/SPECIAL CONDITIONS**SP-1. ~~\$35,000 Allowance~~**

~~Provide a \$35,000 allowance as part of the Contractor's bid, to be used at the discretion of the DISTRICT for unforeseen conditions. All work pertaining to the allowance must be approved by the DISTRICT. If work is authorized for less than the allowance, a deductive change order will be issued. Work to be directed by the DISTRICT. The allowance shall be listed as a line item on the CONTRACTOR'S schedule of values.~~

SP-1. Construction Duration by Work Area

Contractor shall complete the Work within the Contract Time established in the Agreement. For purposes of scheduling and coordination, the PRORITY SITES ARE FOLLOWS:

1. MARK TWAIN ES -
2. WILL ROGERS ES BLDG D, E, & ADM
3. ROOSEVELT ES - SCHOOL OFFICE
4. LINDBERGH ES
5. VISTA HIGH SCHOOL

The Contractor shall coordinate the sequence of Work activities, manpower, materials, and equipment necessary to complete the Work within the time durations identified above. All Work shall be performed in accordance with the approved construction schedule and coordinated with the District to minimize disruption to school operations.

Failure to complete the Work within the required durations shall be subject to the Contract Time requirements and Liquidated Damages provisions identified in the Contract Documents.

SP-1. Manufacturer Approval. Contractor shall be approved and authorized by the roofing system manufacturer to install the specified roofing system. The Contractor shall provide written documentation from the manufacturer confirming current approval status.

All Work shall be installed in accordance with the manufacturer's requirements and warranty provisions. Failure to comply may result in rejection of the Work, at no additional cost to the District.

SP-2. ~~Owner Furnished Materials (CMAS Procurement).~~

~~The Owner will furnish certain roofing materials procured through CMAS Contract No. 4 25-02 1015 (Quote No. 5071773) as listed in Attachment A - Owner Purchased Material List.~~

~~The Contractor shall include Attachment A in the bid form, properly signed and dated, acknowledging receipt and understanding of the Owner furnished materials. Failure to provide the signed attachment may render the bid non-responsive.~~

~~Only the materials and quantities identified in Attachment A will be provided by the Owner. The Contractor shall be responsible for purchasing all additional materials required to complete the Work at the Contractor's cost. This includes, but is not limited to, fasteners, wood components, insulation, tapered insulation, cants, taper edge strips, sheet metal, warranty charges, inspections, and other consumable materials necessary to complete the Work in accordance with the Contract Documents.~~

~~The Contractor shall be responsible for unloading, handling, and storing Owner furnished materials~~

~~in a secure location at the project site. Any unused materials remaining at the completion.~~

- SP-1. Cooperation.** Contract shall recognize that the District Administration will remain in operation during progress of the work. Contractor shall cooperate at all times with the administration to provide minimum inconvenience to the District's employees and visitors on the site. Adequate notice shall be given to the administration of any interruption of utilities or services required for the proper completion of the work. Contractor shall notify District 72 hours in advance of interrupting any utilities including heating, Air Conditioning, Plumbing and Electrical.
- SP-2. Weekly Meeting.** Contractor shall attend and participate in weekly coordination meetings with the District, Design Team and other parties associated with the Work, as required. The purpose of these meetings is to review the status of the Work, identify and resolve issues, and coordinate upcoming activities and pending tasks.
- SP-3. Protection.**
- A. All existing improvements adjacent to work shall be protected from damage. Contractor shall exercise all required precautions necessary to protect the District's property from damage. The contractor shall be responsible for and bear all expenses for any damage to District's property occasioned on account of operations under the contract. Contractor shall provide temporary gates and barricades to protect work areas. Such protection shall remain in place during the extent of this Contract, or
- SP-3. Special Clean-Up.** When Contractor is required to perform work in rooms or areas after regular working hours, in these rooms or areas, the following cleaning shall be done upon completion of work each day:
- A. Remove debris and unused materials on a daily basis.
 - B. Contractor shall cleanup all debris, resulting from roofing and roof deck removal, that may fall onto ceiling(s) below. Building P has the original ceiling and a suspended ceiling beneath it.
 - C. Contractor shall perform all work so as to avoid unnecessary inconvenience on the School Site Facilities Buildings, staff and students.
 - D. The Contractor shall clean all soils and debris from construction vehicles and cover both earth and debris loads prior to leaving the project site.
 - E. Cleanup and dust palliation shall be performed as required and all rubbish and debris shall be disposed of frequently off district property.
 - F. The contractor is responsible of dust control on and off the Project site. When work operations produce dust the Project site and/or streets shall be sprinkled with water to minimize the generation of dust.
- SP-4. Work Site Designation for Staging Areas, Temporary Facilities and Parking:**
- A. The Contractor shall be responsible for installing and maintaining barricades to protect workers and the public.
 - B. Contractor shall provide temporary utilities, barricades, enclosures, temporary signs, storage units, chutes, hoist, scaffolds, railing, and other facilities or services as required.
 - C. Prior to Application for Final Payment, the Contractor shall remove all temporary facilities, utilities and equipment from the site. Contractor shall clean, repair and/or reconstruct, as necessary, the site so as to restore it to the condition as found at the point of Notice to Proceed.
 - D. Contractor shall not use the District's trash containers.
 - E. Contractor's trash bins are to be covered with lids and locked to prevent vandalism
 - F. All contractor and subcontractors shall park off site unless otherwise approved by the District
 - G. Contractor shall not block or obstruct intersections, traffic lanes, driveways or parking lot entrances.
 - H. When moving equipment, Contractor to provide a Spotter and backup warning devices.
 - I. Temporary fencing shall be erected around construction and work areas or as directed by the district.
 - J. Contractor shall provide Construction traffic control including flagmen as necessary during

deliveries. Contractor to provide flagmen and other traffic control personnel at any other location as may be deemed necessary by the construction manager-for safety of all students, staff and visitors. Contractor will follow a predetermined route for access and exit to the campus and shall direct/park all haul vehicles as directed by the Program Management Team.

SP-5. Badges for Construction Related Work.

- A. The Contractor shall provide identification Badges and vest for all employees and subcontractors working in the project.
- B. Identification shall include the Name of Construction Company, the Name of the Project, Name and Picture of person and title.
- C. Guest Budes shall include the Name of the Construction Company, the Name of the Project and the word "Guest"

SP-6. Security. In addition to the security requirements set forth elsewhere in the Contract Documents, the Contractor must adhere to the following:

- A. Locked Door Policy. No building, room or site gate shall be left unsecured for any period of time when not occupied by the Contractor and/or after the Contractor's daily work hours.
- B. Parking Facilities. Any movement of vehicles on district property, including trucks and passenger vehicles for construction purposes, shall be approved by district authorities. Parking in parking lots, if required, shall be arranged in advance with proper authorities.

SP-7. Protection of Persons and Property

- A. The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered to and from the site and work performed until completion and final acceptance by the District. All work shall be solely at the Contractor's risk, with the exception of damage to the work caused by "acts of God" as defined in Public Contract Code Section 7105(b)(2).
- B. Contractor shall take, and require all subcontractors to take, all necessary precautions for the safety of workers on the site and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes. Contractor shall furnish, erect and properly maintain at all times, as directed by the District or Project Manager or required by conditions and progress of work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction.
- C. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.
- D. Requirements for Existing Sites.

Contractor shall (unless waived by the District in writing):

- a. When performing Roofing on existing sites, become informed and take into specific account the maturity of the students on the site. Contractor shall perform Work which may interfere with school routine before or after school hours, enclose the working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Contractor shall comply with specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with school functioning.
- b. Provide substantial barricades around any shrubs or trees indicated to be preserved.
- c. Deliver materials to building area over route designated by the District through the
 - i. Project Manager.
- d. Take preventive measures to minimize objectionable dust, noise, or other
 - i. Disturbances.
- e. Take preventive measures to prevent disturbing or covering any survey markers,
 - i. Monuments or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with the County and local authorities, at no cost to the District. All filing and plan check fees shall be paid by the Contractor.
- f. Provide to the District on request, the Contractor's written safety program and
 - i. Safety plan for each site.
- g. Covering and Cleaning: Cover and protect the District's property within the project limits, as required to prevent soiling or damage by dust, dirt, water, fumes, or otherwise as deemed necessary by the District or Project Manager.
- h. Repair or replace any damage to existing structures, improvements and equipment caused by Contractor's operations, at Contractor's expense.
- i. Repair or replace damaged work with new materials, to restore the damaged areas and surfaces equal to and matching, the conditions which existed prior to damage, or at start of the work of this Contract, at no cost to the District.
- j. Prior to start of work, Contractor, District and Construction Manager shall conduct an on-site inspection of existing conditions and the Contractor shall clearly document and report damaged conditions to the District. Items not reported to the District at time of inspection will be assumed to be the result of Contractor's work, whose responsibility it will be to repair or replace those items. Contractors shall include, along with his report to the District, digital, dated photographs.
SP-8. Working Hours.

Work hours are subject to standard construction hours per the Noise Ordinance set by the City of Lynwood. Contractor is expected to work days and times as necessary, to complete the work within

the specified time of completion without any additional cost to the District.

Legal and Local Holidays: Friday, June 19, 2026 and Saturday, July 4, 2026

Summer Recess TBD "Summer school will be held at the site."

7:30 – 4:30 P.M. Monday - Friday

Other Important Dates:

First Day of School: Wednesday, August 12, 2026

Teacher work day: Monday, August 10, and Tuesday, August 11, 2026

- 0.8.1 During performance of this Contract, the school site will remain occupied at various buildings on campus. Work outside buildings will be permitted during work hours, provided that they are not disruptive and safe access to and exits from buildings are maintained while students and office personal are on site temporary barriers shall be erected around construction and work areas.
- 0.8.2 If any work performed during business hours (7:00 a.m. to 4:30 p.m.) is found to be disruptive (as determined by the District), the contractor will be required to re-schedule subject work to occur during non-working hours and or weekends without any additional cost to the District.
- 0.8.2 Alternate shift is defined as work performed after business hours. Business hours are from 7:00 AM to 4:30 PM, Monday through Friday.
- 0.8.3 Work hours are subject to standard construction hours per the Noise Ordinance set by the City of Lynwood. Contractor is expected to work weekends and holidays, as necessary, to complete the work within the specified time of completion without any additional cost to the District. At the District's request, Contractor shall modify the working hours for the Contract without adjustment of the Contract Time or Contract Price. (Reference General Conditions Article 8.2).

SP-9. Operational Constraints

- A. The Contractor is required to furnish all materials, labor, equipment, power, and maintenance to provide temporary power during power shutdowns. During the remodel and renovation project and for taps into existing feeders, shutdown of feeders and services may be necessary. These shutdowns may have to occur after normal working hours and extended schedules and or weekend or holidays due to district activities to prevent interruption to critical operations. All shutdowns must be carefully coordinated with the district. Temporary power shall be provided to maintain services to critical loads such as computers, freezers, coolers, fire alarm, security, etc.

SP-10. Work Sequence

Conduct work smoothly without interfering or delaying work under this contract or other contacts of other parties with the District.

SP-11. District's Project Manager

The District's Project Manager is Susan Trevizo.

SP-12. Award of Contract.

The district reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding.

SP-13. Number of Contract Documents.

The number of executed copies of the **Agreement is Two (2)**, the number of **Performance Bonds and Payment Bonds** required is **Two (2)**.

SP-14. Site Examination. Before bidding on this work, the Contractor shall make a careful examination of the premises and existing equipment and services. By act of submitting a proposal from the work indicated in this contract, the Contractor shall be deemed to have made such study and examination, and that he is familiar with and accepts all conditions at the site.

Part 1 GENERAL**1.01. MEASUREMENTS AND DRAWINGS**

A. Drawings or measurements included with Contract Documents are for the convenience of the Contractor. The Contractor shall **field verify all existing dimensions, elevations, clearances, and site conditions prior to fabrication, procurement of materials, or commencement of Work**. Any discrepancies between Contract Documents and field conditions shall be reported to the District Project Manager for clarification prior to proceeding with the Work.

1.02. SUBMITTAL REQUIREMENTS

A. Prior to mobilization and commencement of construction activities, the Contractor shall submit the following documents for review and approval by the District and Construction Manager:

- Material Submittals and Product Data
- Baseline Construction Schedule
- Construction Site Logistics Plan
- Schedule of Values (SOV)
- Shop Drawings as required by the Contract Documents

Submittals shall be provided in accordance with the Contract Documents and shall be reviewed prior to fabrication, delivery, or installation of materials.

1.03. CONSTRUCTION LOGISTICS PLAN

A. The Contractor shall submit a Site Logistics Plan for review and approval by the District and Construction Manager prior to mobilization. The plan shall include, but not be limited to:

- Construction fencing limits
- Contractor parking locations
- Access and delivery routes
- Equipment staging and laydown areas
- Temporary facilities (including portable toilets and storage units)
- Emergency access routes

No construction staging shall occur until the logistics plan has been approved.

1.04. CODES AND ORDINANCES

A. All work covered by these Contract Documents is to be done in full accord with national, state and local codes, ordinances, and safety regulations as are in effect at time of Contract award.

1.05. CONTRACTOR'S PROPERTY

- A. Purchaser's insurance policy covers work and equipment in place in the building and approved and accepted by Consultant and Owner. All material and equipment stored on site and not actually installed is not included in Owner's policy and such material and equipment shall be covered under Contractor's Property Damage and/or theft Insurance.

1.06. LABOR LAWS

- A. Contractor and its Subcontractors performing work under this Contract shall comply with applicable provisions of all federal, state, and local labor laws.

1.07. ASSIGNMENTS OF PAYMENT

- A. Neither party to this Contract shall assign Contract or sublet it as a whole without written consent of the other party, nor shall Contractor assign any payment due him or to become due to him hereunder without previous written consent of Owner.

1.10. ADVERTISING

- A. Advertising privileges will be retained by Owner. It is the duty of the Contractor to keep premises free from posters, signs, decorations, etc., unless specifically approved by Owner.

1.11. PROTECTION OF WORK AND PROPERTY

- A. Contractor shall continuously maintain adequate protection of all its work from damage and shall protect Owner property from injury or loss arising out of this Contract. Contractor shall make good any such damages, injury, or loss, except such as may be directly caused by agents, subcontractors, or employees of the Owner. Design of barricades in public areas shall be approved by Owner prior to fabrication and installation.
- B. If Contract includes work which would be disruptive during normal business operations or would be dangerous to building occupants, said work shall be performed during hours as building management dictates. Examples of such work include, without limitation, saw cutting of concrete, jack hammering, welding, metal cutting, pouring concrete, erecting steel or hoisting equipment over occupied portions of the building, or performing tests. Contractor shall perform such work during off-hours and shall include all costs in its quotation.
- C. Contractor shall install a suitable protective covering on all finished floors (whether marble, wood, carpet or other) in areas where work is being performed. No material handling equipment shall be permitted on or over finished floors unless said floors have been protected in a manner approved by building management.
- D. Portable fire extinguishers shall be provided throughout the Contractor's area of work and shall be placed so as to be accessible at all times. Extinguishers shall be multi-purpose dry chemical type, provided on a basis of one 2A-20BC rated unit for each 3,000 square feet of floor area. Extinguishers to remain the property of the Contractor.
- E. Contractor shall at all times maintain work areas so that all portions are accessible to fire department personnel and apparatus. Fire hydrants and fire department connections to building sprinkler systems must be kept free from obstruction at all times.
- F. Contractor shall keep the noise level below 80 dB level during normal building hours. When it is

necessary to produce noise above this level, the Contractor shall advise building management of such needs and times will be scheduled as directed. The Contractor shall anticipate and schedule excessive noise-generating procedures and include allowance for the same in its quotation and schedule.

1.12. HAZARDOUS MATERIALS COMPLIANCE

A. If hazardous materials including asbestos-containing materials (ACM) or lead-containing materials are identified within the Project limits, the Contractor shall comply with all applicable federal, state, and local regulations including but not limited to:

1. **SCAQMD Rule 1403**
2. **Cal/OSHA regulations**
3. **EPA and DOT waste handling requirements**

The Contractor shall submit all required notifications, waste manifests, transport records, and disposal documentation to the District within **five (5) working days of material transport or disposal**.

1.13. ASBESTOS DISTURBANCE PROCEDURES

A. In the event asbestos-containing materials are unexpectedly disturbed or damaged, the Contractor shall:

1. Immediately stop Work in the affected area.
2. Isolate and secure the area.
3. Notify the District Project Manager and Environmental Consultant immediately.
4. Resume work only after written authorization is provided by the District.

1.14. WORK AREA SAFETY CONTROLS

- A. The **Contractor** shall maintain a **safe work environment** for **students, staff, visitors, and District personnel** at all times during the performance of the **Work**. All **construction areas** shall be clearly identified and secured with **temporary fencing, barricades, cones, caution tape, warning signs, or other protective measures** necessary to prevent **unauthorized access**.
- B. The **Contractor** shall maintain **safe pedestrian access** at all times and shall not block or obstruct **means of egress, fire lanes, or accessible paths of travel**. When **construction activities** occur near **occupied areas or pedestrian circulation**, the Contractor shall implement appropriate **safety controls**, including **spotters, temporary barriers, or suspension of work operations** until the area is clear.
- C. All **Work activities** shall be **coordinated with the District and Construction Manager** to minimize disruption to **school operations**. The **Contractor** shall immediately correct any **unsafe condition** identified by the **District or Construction Manager**. Failure to maintain proper **safety controls** may result in **suspension of Work** until adequate measures are implemented, without adjustment to the **Contract Time or Contract Price**.

1.15. ACCIDENT REPORTS

A. In the event of accidents of any kind, the Contractor shall furnish the Owner with copies of all accident reports. Reports shall be sent without delay and at same time that they are forwarded to any other parties.

1.16. STORAGE OF MATERIALS

A. Contractor shall confine storage of materials on job site to limits approved by Owner and shall not unnecessarily encumber premises or overload any portion of building with materials to a greater extent than structure design load.

1.17. MATERIALS AND WORKMANSHIP

- A. All materials and equipment furnished shall be new and best quality. Installation shall be accurate, workmanlike, and subject to approval of the Project Manager. All materials and equipment provided shall conform to regulations of enforcement bodies having jurisdiction. Contractor shall furnish material samples for approval.

1.18. SUPERVISION

- A. Contractor shall assign a competent Project Manager, superintendent, and on-site foreman for a project satisfactory to the Owner and Project Manager. Such persons shall represent Contractor and all instructions given to them shall be binding as if given to Contractor.

1.19. ROUTINE BUSINESS

- A. After award of Contract all business relating to required work shall be transacted through Project Manager unless otherwise directed.

1.20. LIENS AND AFFIDAVITS

- A. Neither final payment nor any part of billing retention shall become due until Contractor shall deliver to Owner a complete release of all liens arising out of this Contract, or receipts marked paid in full in lieu thereof. In addition, the Contractor shall furnish an affidavit to the Owner that so far as he has knowledge or information, releases or receipts include all labor and materials for which a lien could be filed. If any lien remains unsatisfied after all payments are made by Owner, Contractor shall refund to Owner all monies the latter may be compelled to pay in discharging such a lien, including all costs and reasonable attorney's fees.

1.21. CLAIMS FOR EXTRA COST

- A. Contractor claims for extra cost due to additions or changes to required work shall be submitted to Project Manager in writing within a reasonable time after such additions or changes identified or are requested and, in any event, before proceeding with required work. No such claim shall be valid unless so made. Maximum charge for additions/changes to work shall be Contractor cost +10% handling fee + 15% for overhead and profit. Contractors' cost shall be verifiable from actual supplier invoices, purchase orders, time tickets, etc. Contractor shall make no additions, changes alterations, or omissions, or perform extra work, without receipt of written authorization of Owner.

1.22. DELAYS AND EXTENSION OF TIME

- A. If Contractor progress is delayed due to acts of Owner, Project Manager, acts of other Contractors, fire, floods, strikes, or other casualties beyond the control or without fault or negligence of Contractor, time for completion of the work shall be extended for a period determined by Owner/

Project Manager to be equivalent to time of such delay. Contractor must notify the Project Manager, in writing, of such delay within 48 hours after delay commences or no extension of time will be granted. Extension of time without written request within said period on one or more occasions shall not be deemed a waiver of provisions of this article.

1.23. PROGRESS OF WORK

- A. Upon award, verbally or in writing, Contractor shall reconfirm in writing the starting and completion schedule including equipment delivery dates based upon the information submitted on its bid form.
- B. Contractor shall submit, in writing, monthly reports with payment request, including current equipment delivery dates and anticipated completion dates for individual units and groups of units.

1.24. PROJECT CLOSEOUT REQUIREMENTS

- A. Prior to final acceptance of the Work, the Contractor shall:
 - 1. Coordinate a final punch list walk with the District and Construction Manager.
 - 2. Correct all identified punch list items.
 - 3. Submit As-Built Drawings, O&M manuals, warranties, and closeout documentation.No final payment shall be processed until all closeout documentation has been accepted by the District.

1.25. Final Cleaning and Project Closeout.

Prior to final acceptance of the Work, the Contractor shall perform a thorough final cleaning of all construction areas and surfaces impacted by the Work. The Contractor shall submit As-Built Drawings, Operation and Maintenance manuals, warranties, and other closeout documentation as required by the Contract Documents and shall complete all punch list items.

1.26. WARRANTY REQUIREMENTS

- A. The Contractor shall provide a **minimum one-year warranty for workmanship and materials** furnished under this Contract unless a longer warranty period is specified elsewhere in the Contract Documents.

[END OF SECTION]