

**Bethany Public Schools Roof Maintenance
High School – Elementary School - Administration**

PART 1 GENERAL

1.01 DESCRIPTION

- A. Bethany Public Schools is located at 6721 NW 42nd Street, Oklahoma City, OK 73008
- B. The base portion of the project will include a variety of roofing repairs across multiple school facilities. The alternate portions of the project consists of the removal of existing roofing material down to the deck and installing a 2” base layer of ISO, 1/8” tapered ISO (not EPS), 1/2” HD ISO cover board and Carlisle Sure-Weld TPO 115 mil Fleece Back Adhered Roofing System.
- C. Estimates
- Base Project – Repairs
 - High School and Auditorium
 - Total Penetrations – 49
 - Total Penetrations Perimeter – 705 Feet
 - Total Penetrations Area – 950 SF
 - High School
 - Total Penetrations – 66
 - Total Penetrations Perimeter – 689 Feet
 - Total Penetrations Area – 672 SF
 - Middle School and Gym
 - Total Penetrations – 105
 - Total Penetrations Perimeter – 1,071 Feet
 - Total Penetrations Area – 1,019 SF
 - Middle School
 - Total Penetrations – 45
 - Total Penetrations – 489 Feet
 - Total Penetrations Area – 494 SF
 - Elementary and Administration
 - Total Penetrations – 65
 - Total Penetrations Perimeter – 373 Feet
 - Total Penetrations Area – 331 SF
 - Alternate Project - Replacements
 - High School Roof
 - Surface Area – 45,698.48
 - Total Perimeter Length – 2,598.00
 - Number of Squares – 456.98
 - Bitumen Roof – 525.53 SQ
 - Built Up Roof with Granulated Cap Sheet – 525.53 SQ
 - Insulation – ISO board – 502.68 SQ
 - Cap Flashing – 2,598.00 LF
 - Flashing – Pipe Jack – Lead – 15 EA
 - Exhaust Cap – Through Roof – 4 EA
 - Comb/straighten A/C/ fins – 13 EA
 - Elementary School Roof
 - Surface Area – 11,355.41
 - Total Perimeter Length – 603.00
 - Number of Squares – 113.55
 - Bitumen Roof – 130.59 SQ
 - Built-Up Roof with Granulated Cap Sheet – 130.59 SQ
 - Insulation – 124.91 SQ
 - Cap Flashing – 603.00 LF
 - Flashing – Pipe Jack – Lead – 11 EA
 - Exhaust Cap – 9 EA

- Comb/Straighten A/C fins – 17 EA
- Skylight – 1 EA
- Skylight Flashing Kit – 6 EA
- Administration Facility
 - Surface Area – 875.00
 - Total Perimeter Length – 120.00
 - Number of Squares – 8.75
 - Bitumen Roof – 10.06 SQ
 - Built-Up Roof with Granulated Cap Sheet – 10.06 SQ
 - Insulation – 9.63 SQ
 - Cap Flashing – 120.00 LF
 - Flashing – Pipe Jack – Lead – 1 EA
 - Comb/Straighten A/C fins – 1 EA

D. Exhibits

- Overhead View
- High School Roof Drawing
- Elementary School Roof Drawing
- Administration Roof Drawing
- Eagle Eye Penetration Reports (Base Bid Information)

1.02 EXTENT OF WORK

- A. Install 2” ISO and tapered ISO to slope to a perimeter gutter
- B. Install 115-mil thick Carlisle Sure-Weld Tan TPO Fleece Back membrane with Flexible Fast 4” on center
- C. Provide new 6” box style guttering and downspouts (24 gauge)
- D. Provide new drains
- E. Provide welded walkways pads around all mechanical equipment.
- F. Provide 20-year manufacturer’s warranty, NDL total system, 90 mph wind speed and a 3” hail warranty backed by Carlisle.

1.03 SUBMITTALS

- A. Prior to starting work, the roofing contractor must submit the following:
 - 1. Shop drawings showing layout, details of construction and identification of materials.
 - 2. A sample of the manufacturers Membrane System Warranty.
 - 3. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system and lists supervisors who have received training from the manufacturer along with the dates training was received.
 - 4. Certification from the membrane manufacturer indicating the membrane thickness over the reinforcing scrim (top ply membrane thickness) is nominal .024-mil or thicker for TPO.
 - 5. Certification of the manufacturer's warranty reserve.
- B. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the specifier prior to the issuance of the manufacturer's warranty.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.
- B. Comply with the manufacturer's written instructions for proper material storage.
 - 1. Store Sure-Weld membrane on provided pallets in the original undisturbed plastic wrap and cover

with light colored breathable waterproof tarpaulins in a cool, shaded area. Sure-Weld membrane that has been exposed to the elements must be prepared with Carlisle TPO cleaner prior to hot air welding.

2. Store curable materials (adhesives and sealants) between 60°F and 80°F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60°F minimum temperature before using.
 3. Store materials containing solvents in dry, well-ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.
- C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials.
- D. Any materials that are found to be damaged shall be removed and replaced at the applicator's expense.

1.05 WORK SEQUENCE

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

1.06 USE OF THE PREMISES

- A. Before beginning work, the roofing contractor must secure approval from the building owner's representative for the following:
1. Areas permitted for personnel parking.
 2. Access to the site.
 3. Areas permitted for storage of materials and debris.
 4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.
- B. Interior stairs or elevators may not be used for removing debris or delivering materials, except as authorized by the building superintendent.

1.07 EXISTING CONDITIONS

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

1.08 MANDATORY PRE-BID AND PRECONSTRUCTION CONFERENCE

- A. A mandatory pre-bid conference will held on 05/10/2023 at 10 AM. The pre-bid conference will be held at the Facilities shop located on the NE corner of campus (just north of 46th.) Bids from contractors that do not attend the mandatory pre-bid meeting will not be accepted. The mandatory pre-bid conference will be utilized for contractor to ask questions regarding the RFP as well as tour the facilities.
- B. Prior to bid submittal, the roofing contractor should schedule a job site inspection to observe actual conditions and verify all dimensions on the roof. The job site inspection may occur on the day of the pre-bid meeting or prior to such a meeting. The contractor is responsible for field verifying all estimates, measurements, etc.
- C. A mandatory preconstruction conference, with the awarded contractor, will be held at the job site prior to starting the project.

- D. All contractors must supply a project plan with estimated project start and end dates as well as identified project milestone dates with their bid proposal.

1.09 TEMPORARY FACILITIES AND CONTROLS

A. Temporary Utilities:

1. Water, power for construction purposes and lighting are not available at the site and /will not be made available to the roofing contractor.
2. Provide all hoses, valves and connections for water from a source designated by the owner when made available.
3. When available, electrical power should be extended as required from the source. Provide all trailers, connections and fused disconnects.

B. Temporary, Sanitary Facilities

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

C. Building Site:

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

D. Security:

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

1.10 JOB SITE PROTECTION

- A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.
- B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may shift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary, temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.
- C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.
- D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.
- E. Take precautions to prevent drains from clogging during the roofing application. Remove debris at the completion of each day's work and clean drains, if required. At completion, test drains to ensure the system is free running and drains are watertight. Remove strainers and plug drains in areas where work is in progress. Install flags or other telltales on plugs. Remove plugs each night and screen drain.
- F. Store moisture susceptible materials above ground and protect with waterproof coverings.

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

1.11 SAFETY

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

1.12 WORKMANSHIP

- A. Applicators installing new roof, flashing and related work shall be factory trained and approved by Carlisle. Contractor must be office and staffed within 120 miles of project location. In addition, Contractor shall provide proof of General Liability Insurance with coverage of at least three million dollars per occurrence and five million dollars aggregate.
- B. All work shall be of highest quality and in strict accordance with the manufacturer's published specifications and to the building owner's satisfaction.
- C. There shall be an English-speaking supervisor on the job site at all times while work is in progress.

1.13 QUALITY ASSURANCE

- A. The Sure-Weld Membrane Roofing System must achieve a UL Class A,
- B. The specified roofing assembly must have been successfully tested by a qualified testing agency to resist the design uplift pressures calculated according to

ANSI/SPRI WD-1 "Wind Design Standard Practice for Roofing Assemblies"
American Society of Civil Engineers (ASCE 7)
International Building Code (IBC)
- B. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.
- C. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least five (5) years successful experience installing single-ply TPO roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year.
- D. Provide adequate number of experienced workers regularly engaged in this type of work who are skilled in the application techniques of the materials specified including operation of hot air welding equipment and power supply. Provide at least one thoroughly trained and an experienced superintendent on the job at all times roofing work is in progress.
- E. There shall be no deviations made from this specification or the approved shop drawings without the prior written approval of the specifier. Any deviation from the manufacturer's installation procedures must be supported by a written certification on the manufacturer's letterhead and presented for the specifier's consideration.
- F. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether corrective work will be required before the warranty will be issued. Notify the building owner seventy-two (72) hours prior to the manufacturer's final inspection.

1.14 JOB CONDITIONS, CAUTIONS AND WARNINGS

Refer to Carlisle Sure-Weld specification for General Job Site Considerations.

- A. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.
- B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.
- C. When loading materials onto the roof, the Carlisle Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.
- D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.
- E. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.
- F. Provide protection, such as 3/4-inch-thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.
- G. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.
- H. New roofing shall be complete and weather tight at the end of the workday.
- I. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

1.15 WARRANTY

- A. Provide manufacturer's 20-year Total System Warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 90 mph measured at 10 meters above ground level. Hail warranty 3" Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.
- B. Pro-rated System Warranties shall **not** be accepted.
- C. Evidence of the manufacturer's warranty reserve shall be included as part of the project submittals for the specifier's approval.

PART 2 PRODUCTS

2.01 GENERAL

- A. **BASIS OF DESIGN:** All components of the specified roofing system shall be products of Carlisle or accepted by Carlisle as compatible. Carlisle Syntec is approved by name and must provide a roofing system that meets or exceeds specified products. No other manufacture substitutions will be considered.
- B. All products (including insulation, fasteners, fastening plates, prefabricated accessories, and edgings) must be **manufactured and supplied** by the roofing system manufacturer and covered by the warranty.

2.02 MEMBRANE

- A. Furnish Sure-Weld 115 mil thick white Fleece Back TPO Tan membrane as needed to complete the roofing system. Membrane thickness over the reinforcing scrim (top-ply thickness) shall be nominal .024-mil or thicker. Membrane sheets are packaged in rolls 120” wide.
 - 1. **Membrane Weathering Performance:** The TPO membrane shall be formulated with a minimum of 30% polymer to withstand:
 - a. ASTM D 3045: 56 days exposure @ 176° F and 670 hrs. @ 240°
 - b. ASTM G 155 (xenon arc): a min. of 17,640 kj/m² resistance @ 63° C without cracking or showing signs of material failure.

2.03 INSULATION/UNDERLAYMENT

- A. When applicable, insulation shall be installed in multiple layers. The first and second layers of insulation shall be attached to the substrate in accordance with the manufacturer's published specifications.
- B. Insulation shall be 2” polyisocyanurate as supplied by Carlisle.
- C. Tapered insulation shall be 1/8” as supplied by Carlisle.
 - 1. **Polyiso** – A foam core insulation board covered on both sides with a medium weight fiber-reinforced felt facer meeting ASTM C 1289-06, Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi).

2.04 FASTENING COMPONENTS

To be used for adhered attachment of insulation on the roof and to provide additional membrane securement:

- A. **Insulation Adhesive:** Maximum bead spacing to be 6” OC
 - 1. **Flexible Fast Adhesive:** A two-component insulating urethane adhesive used to attach insulation.

2.05 ADHESIVES, CLEANERS AND SEALANTS

All products shall be furnished by Carlisle and specifically formulated for the intended purpose.

- A. **Carlisle TPO Bonding Adhesive:** A high-strength, synthetic rubber adhesive used for bonding Sure-Flex

membrane to various surfaces. The adhesive is applied to both the membrane and the substrate at a coverage rate of approximately 45 - 50 square feet per gallon per finished surface (includes coverage on both surfaces).(updated in 1997) and as further regulated by California's Air Quality Control Districts listing VOC grams per liter limitations. This product also meets the <250 gpl VOC content requirements of the OTC Model Rule for Single Ply Roofing Adhesives.

- B. **Carlisle Sure-Weld TPO Cut-Edge Sealant:** A clear-colored sealant used to seal cut edges of reinforced Sure-Flex membrane. A coverage rate of approximately 225 - 275 linear feet per squeeze bottle can be achieved when a 1/8" diameter bead is applied.
- C. **Water Cut-Off Mastic:** Used as mastic to prevent moisture migration at drains, compression terminations and beneath conventional metal edging (at a coverage rate of approximately 10' per tube or 100' per gallon).
- D. **Universal Single-Ply Sealant:** A 100% solids, solvent free, one-part, polyether sealant that provides a weather tight seal to a variety of building substrates. Sealant can be used as a termination bar sealant or for use in counter flashing, coping, and scupper details.
- E. **TPO One-Part Pourable Sealer:** A one-part, moisture curing, elastomeric polyether sealant used to fill Molded Sealant Pockets. Packaged in four 1/2-gallon pouches per plastic bucket. One pouch will fill one Molded Sealant Pocket.
- F. **Foil Grip Aluminum Tape:** A general-purpose pressure-sensitive sealant used as a bond break at joints in TPO Coated Metal. Packaged in rolls 2" wide by 100' long.
- G. **TPO Membrane Cleaner:** Used to prepare membrane that has been exposed to the elements for approximately 7 days prior to heat welding or to remove general construction dirt at an approximate coverage rate of 400 square feet per gallon (one surface).

2.06 METAL EDGING AND MEMBRANE TERMINATIONS

- A. **General:** All metal edging s shall be tested and meet ANSI/SPRI ES-1 standards and comply with International Building Code.
- B. **SecurEdge 300:** a metal coping system. Metal Coping color shall be as designated by the Owner's Representative.
- C. **Carlisle Sure-Weld Weld Drip Edge:** 4'x 10' coated metal sheets made from 24-gauge galvanized steel with a minimum .035" thick non-reinforced tan Sure-Weld laminate. Sure-Weld membrane can be welded directly to the Sure-Weld Coated Metal in accordance with the manufacturer's detail.
- D. **Carlisle Coping:** incorporates a 20-gauge anchor cleat with 4 pre-slotted holes, a concealed joint cover and 10 foot continuous sections of coping cap; can accommodate minimum 5 "wide parapet walls. Metal coping cap color shall be as designated by the Owner's Representative. 063 clear anodized aluminum.
- E. **Termination Bar:** a 1" wide and .098" thick extruded aluminum bar pre-punched 6" on center; incorporates a sealant ledge to support Lap Sealant and provide increased stability for membrane terminations.

2.07 WALKWAYS

Protective surfacing for roof traffic shall be Sure-Weld TPO Walkway Rolls installed per manufacturer's requirements or concrete pavers loose laid over an approved slip-sheet (pavers not recommended for slopes greater than 2" in 12").

2.08 OTHER MATERIALS

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with the manufacturer's published instructions for the installation of the membrane roofing system including proper substrate preparation, job site considerations and weather restrictions.
- B. Position sheets to accommodate contours of the roof deck and shingle splices to avoid bucking water.

3.03 INSULATION PLACEMENT AND ATTACHMENT

- A. Install insulation or membrane underlayment over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints horizontally and vertically if multiple layers are provided.
- B. Secure insulation to the substrate with the required adhered rate of 6" OC per 2 square feet in accordance with the manufacturer's specifications. Special care is to be taken to avoid penetration of existing conduits and piping presently located below the deck with new insulation fasteners.
- C. Adhere new tapered ISO system in ribbons of 2-part, low-rise foam adhesive placed 6" OC.

3.04 MEMBRANE PLACEMENT AND ATTACHMENT

- A. Position Carlisle Sure -Weld membrane over the acceptable substrate.
- B. Apply Flexible Fast Adhesive in accordance with the manufacturer's published instructions, to the exposed underside of the membrane and the corresponding substrate area. **Do not apply Bonding Adhesive.** Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.
 - 1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Roll a 150# pound weighted roller as manufacture recommends on membrane to achieve uniform adhesion and maximum contact.
- D. Position adjoining sheets to allow a minimum overlap of 2 inches to provide a minimum 1-1/2" hot air weld.
- E. Continue to install adjoining membrane sheets in the same manner, overlapping edges a minimum of 2 inches

3.05 MEMBRANE HOT AIR WELDING PROCEDURES

- A. Heat weld the Sure-Weld membrane using an Automatic Heat Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's specifications. At all splice intersections, roll the seam with a silicone roller immediately after the welder causes the membrane step off to ensure a continuous hot air welded seam.

Note: When using .060-mil thick membrane, all splice intersections shall be overlaid with Sure-Weld T Joint Covers.

- B. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).
- C. Repair all seam deficiencies the same day they are discovered.
- E. Apply Cut Edge Sealant on all cut edges of reinforced membrane (where the scrim reinforcement is exposed) after seam probing is complete. Cut Edge Sealant is not required on vertical splices.

3.06 FLASHING

- A. Flashing of parapets, curbs, expansion joints and other parts of the roof must be performed using Sure-Flex reinforced membrane. Sure-Weld non-reinforced membrane can be used for flashing pipe penetrations, Sealant Pockets, and scuppers, as well as inside and outside corners, when the use of pre-molded accessories is not feasible.
- B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

3.07 WALKWAYS

- A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and all locations as identified on the specifier's drawing.
- B. Hot air weld walkway material to the membrane in accordance with the manufacturer's specifications.

Note: Pavers are not recommended when the roof slope exceeds 2" in 12"

3.08 DAILY SEAL

- A. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the workday, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.
- B. Complete an acceptable membrane seal in accordance with the manufacturer's requirements.

3.09 CLEAN UP

- A. Perform daily clean up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.
- B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

3.10 QUESTIONS

- A. Questions regarding this RFP may be directed to Michael Mondt at mmondt@bethanschools.com. All questions must be submitted by 2PM on 05/17/2023.

3.11 BASE PROJECT PRICING - REPAIRS

- A. High School + Auditorium \$ _____
- B. High School (cont.) \$ _____
- C. Middle School + Gym \$ _____
- D. Middle School (cont.) \$ _____
- E. Elementary + Administration \$ _____
- F. Elementary School Roof \$ _____
- G. Administration Roof \$ _____
- a. TOTAL PROJECT COST \$ _____

ALTERNATE PROJECT PRICING – ROOF REPLACEMENTS

- A. High School \$ _____
- B. Elementary School \$ _____
- C. Administration \$ _____
 - a. TOTAL PROJECT COST \$ _____