

ROOFINGPROJECTS-COM

ROOF REPLACEMENT SPECIFICATION

Shaws #4534 48 John Stark Hwy., Newport, NH

Roof Sections: A, B, C, D, E, F & G

SECTION 075419 - POLYVINYL CHLORIDE (PVC) ROOFING - MECHANICALLY ATTACHED

PART 1 - GENERAL

1.1 SUMMARY SCOPE OF WORK

1. Existing roof assembly remains in place and is prepared as required by roofing manufacturer to receive a mechanically attached 60 mil Sikaplan Polyvinyl Chloride (PVC)(FeltBacked)&(BareBacked) roofing membrane.
2. Contractor is required to contact Lisa Andrukonis of Sika Sarnafil SSI for material quotes. No other contact at Sika Sarnafil can be used to obtain material quotes. Her contact information is listed in section 1.7 (C) of this specification.
3. The existing roof system is as follows: Sections A & B: Single Ply TPO Membrane followed by 1 inch wood fiber followed by un-swept gravel surfaced BUR membrane followed by 1 inch Isocyanurate Insulation followed by 1/2 inch Fiberglass Insulation followed by a Steel Deck. Sections C, D, E, F, & G: Single Ply EPDM Membrane followed by 1/2 inch coverboard followed by 4 1/2 inches Isocyanurate Insulation followed by a steel deck.
4. Tear off designated wet/damaged insulation roof areas identified during the course of the work. Non-Destructive moisture testing to be provided by others – (not in contractors scope or bid price) Fill in removed insulation areas to match the height of the existing adjacent roof area. A unit price line item on the bid form will address wet or damaged insulation removal and infill. Wet area removals will be treated as a change order based on the cost per square foot unit price provided on the bid form by the contractor. All removal areas are to be documented by the contractor through markup drawing and photos confirming the conditions. Property management and Roofingprojects.com to be notified and made aware of the conditions as they are encountered.
5. Sections A & B: Remove existing top layer of TPO single ply membrane including all flashings leaving the remaining field of roof system in place. Sweep the surface of all debris and dirt.
6. Sections C, D, E, F & G: Sweep the roof surface of all debris and dirt. Prepare existing roof surface: cut, set down and/or remove any blisters or ridges, walkway pads, etc. that would prevent a level and uniform application of the new roof system. Cut existing membrane every 10 feet on center.
7. Section A & B: In all areas, Install 60 mil thick Polyvinyl Chloride roof membrane (Sikaplan Fastened 60)(Bare Backed) (mechanically attached) over a mechanically attached 1/2" Sarnatherm HD isocyanurate cover board. The building is not FM insured, however, as a design standard, attach membrane to meet FM-1-90 guidelines (FM 100 mph wind zone) Confirm sheet width, maximum fastener spacing in the membrane seam areas, half sheets and increased fastener rates in the perimeter and corner zones with manufacturer prior to submitting bid. Note that the membrane sheets must be installed perpendicular to the steel deck flutes and that "picture framing" half sheets in the perimeter and corner zones is not an acceptable method to achieve the increased fastener rates required in these zones on mechanically attached installation.
8. Section C, D, E, F & G: In all areas, Install 60 mil thick Polyvinyl Chloride roof membrane (Sikaplan Fastened 60)(Felt Backed) (mechanically attached) directly over the existing membrane surface without separator board. The building is not FM insured, however, as a design standard, attach membrane to meet FM-1-90 guidelines (FM 100 mph wind zone) Confirm sheet width, maximum fastener spacing in the membrane seam areas, half sheets and increased fastener rates in the perimeter and corner zones with manufacturer prior to submitting bid. Note that the membrane sheets must be installed perpendicular to the steel deck flutes and that "picture framing" half sheets in the perimeter and corner zones is not an acceptable method to achieve the increased fastener rates required in these zones on mechanically attached installation.
9. Install Sarnafil G459 Grease resistant membrane around all sides of grease machines and kitchen exhaust fan units with the tan side up, fully welded at all sides as a sacrificial layer over base membrane (3'-0" wide in all directions).
10. Remove all existing flashings and adhere 60 mil thick Polyvinyl Chloride (PVC) Flashing membrane.

11. Install specified sheet metal flashings and accessories – include all clips, sealants, fasteners, and connections to make watertight. All edge metal flashings to be as specified in section 2.7 of this specification.
12. Coordinate all necessary disconnects and reconnection of roof top equipment required to install new roof system with Owner provided electrician and HVAC contractor.
13. The perimeter edge conditions are to be addressed as noted on the roof plan drawing and as detailed on the detail drawings. Curbs and any parapet walls are to be completely flashed with new 60 mil PVC membrane.
14. Install tapered insulation crickets to the up-slope side of all Roof Top Units as specified and as may be noted on the roof plan drawing.
15. Remove all existing drain strainers and clamping collars and replace with new cast iron. Roof drain body and piping to remain. A line item on the bid form will address drain bowl replacement and drain insert installation if required.
16. Remove existing metal scupper housing including all flashings. **Install new PVC coated metal scupper housing** and flash into new roof system. Where collector heads & leaders exist, replace with new units to match existing size and configuration (Refer to section 2.7 of this specification).
17. Replace existing drip edge, gutters and downspouts associated with the roof replacement referenced above. Contractor to include any blocking required to bring the drip-edge substrate up to match the height of the new roof system, including tapered edge strip to promote drainage into the gutter and to prevent ponding water along roof edge. Size and profile of the gutter and downspout system including downspout location and discharge points to match existing conditions – or as noted on the roof plan drawing. (Refer to section 2.7 of this specification).
18. Remove abandoned items as indicated on the roof plan drawing. Close opening in deck, infill opening w/ isocyanurate insulation to match existing roof thickness and roof over area. All obsolete satellite dishes are to be removed during the course of work (include in the bid price). Coordinate with on site contact to confirm that the dish is obsolete prior to removal.
19. Install new wall mounted galv'd. steel ladder between roof sections A & B (approx. 6' (h) between roof levels). Ladder as manufactured by McMaster-Carr with top extension to meet code and installation to be OSHA Compliant 29 CFR 1910.23
20. Install manufacturers walk pads at roof access points and at all sides of access hatches, serviceable RTU units and all sides of air cooled condensers. In all areas where Felt Backed membrane is installed directly over the existing membrane, install 4' wide area of ¼" dens deck under membrane at all walkpad areas. A lineal foot price is available on the bid form for additional walk pads to be determined later.
21. All pipe supports to be replaced. (Refer to section 2.9 and Part 3 of this specification)
22. Wood equipment support sleepers or dunnage: Replace with same size pressure treated lumber and fully wrap with membrane flashing screwed in place.
23. Install perimeter safety demarcation on roof surface at perimeter (Refer to section 2.6 and part 3 of this specification)
24. **Contractor to include in their lump sum pricing a Contingency Allowance of \$5,000.** All contingency allowance expenditures must be authorized in writing by Owner's representative and Roofingprojects.com prior to being performed. Payment will not be made on any unauthorized contingency expenditures. Any allowance value not approved during the course of the project will be credited back to the Owner.
25. All required municipal permits, project fees and taxes are to be included in the contractors base bid price.
26. All contractor payment applications are required to be submitted to the owner for payment processing. The awarded contractor will be given specific instructions regarding payment applications.
27. Unless otherwise specified, the roof and flashing membrane color is to be Energy Smart White.
28. A Twenty (20) year Manufacturer's Systems Warranty shall be provided to the Owner upon completion. (Refer to section 1.8 of this specification) No Hail coverage is required.
29. A Five (5) year Installer's workmanship and material warranty shall be provided to the Owner upon completion. Note: A leak response provision is included as part of the installer's obligation.

1.2 SUMMARY

A. Section Includes:

1. Mechanically attached Polyvinyl Chloride (PVC) roofing membrane including the following:
 - a. Coverboard
 - b. 60 mil PVC thermoplastic membrane. Surface color white unless otherwise specified.
2. System guidelines shall be one of the following:
 - a. Preparation of existing roofing overlaid with one or more of the following: felt backed membrane.

3. Albertson Stores Twenty (20) year performance warranty with 60 mph minimum windspeed as specified. Enhancements such as wind as specified.
4. Installer's Five (5) year workmanship and materials warranty as specified.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

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

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 1. Include tapered insulation layout plan as specified.
 2. Include sheet and fastener layout plan from the roofing manufacturer for each roof area showing dimensions and layout of single ply membrane sheets and the spacing of fasteners in the field, perimeter, and corner areas of each roof.
 3. Added roof accessories 'including OSHA fall protection, pipe supports, and roof mounted solar (**Solar items only if specified in the project summary scope of work**) shall be submitted to the roofing manufacturer's technical manager for review and acceptance as part of new or future roof enhancements. If solar mounts are not installed during roof installation and cannot be observed during final roof inspection, the solar installation could require the following technical site visits that could include:
 - a. Final roof installation inspection - pre solar array installation. (**No charge if it's the final roof inspection**)
 - b. Solar mount inspection (Power-Grip and U-Anchor, etc. solar roof mounts) when the solar mount (securement) requires penetrating and/or welding to the new roof membrane. (**There will be a technical inspection charge per requested inspection visit**)
 - c. Final roof surface surrounding solar installation inspection. (**Charge per visit**)
- C. Notice of Award (NOA) & Accepted Notice of Award (ANOA): Before starting this project, the roofer shall provide the Owner's Representative with copies of both the Notice of Award (NOA) application they submitted to the Manufacturer's Technical Department and the Manufacturer's Accepted Notice of Award (ANOA). These documents should verify that the proposed roofing assembly has been submitted and reviewed and approved by the manufacturer's technical department.
- D. System Verification:
 1. A 20-year NOAA Weather history for the County where this project will take place. Roofing wind and hail requirements shall be determined based on location history and as directed by Albertson Stores. A minimum of 60 miles per hour (mph) Manufacturer's wind speed warranty is required in roofing warranty. In hail prone locations, a Manufacturers minimum 1.5-inch hail warranty is required. Note: If greater than 60 miles per hour wind speeds coverage is required in the enhanced hail warranty coverage, the enhanced wind coverage shall be stated in these documents and specified by the Consultant.
 2. When the new roof installation will overlay the existing roofing, one of the following methods to verify the underlying roof assembly condition is required:
 - a. Infrared (IR) thermography scan. The IR scan shall be performed by a trained thermographer certified to perform and document these services. There should be a minimum of 3 roof cores per recorded anomaly to verify condition.
 - b. Non-Destructive (Tramex) moisture detection condition verified by roof cores. There should be a minimum of 3 roof cores per recorded anomaly to verify conditions.
 - c. Multiple roof cores that certify a dry underlayment. A minimum of 5 cores per 50,000 square feet and 2 additional cores for additional 50,000 square feet. Additional cores to be taken in previous leak areas.
 - d. If 20% of the existing roofing has wet underlayment, the existing roof should be removed and replaced.

3. A protective grease resistant membrane (G 459) is required over new roof membrane around kitchen and roof exhaust that vents and drains onto the finished roof surface.
4. Some properties have Anhydrous Ammonia lines that run across the roof. These lines should be checked for leaks at connections. If the joints are not sealed and they leak ammonia, the applicator is responsible to install 'under leaky lines', a chemical resistant buffer membrane (G459) under concrete splash blocks.
5. Existing flashing surfaces and conditions shall be approved by manufacturers field technician as either acceptable to cover or to be removed and prepared to receive selected flashing options.
6. Traffic matting is required at roof access locations, identified traffic areas, and around all serviceable roof equipment. Walkway protection shall be installed around all (4) sides of roof equipment. When matting isn't appropriate as determined by Owner/Owner's representative, a compatible liquid applied membrane with a granulated surface texture shall be installed where identified.
7. Properties where deep snow or the potential of roof top snow removal exist, all pipe penetrations shall be reinforced whether a liquid applied flashing (LAM), field fabricated flashing using roofing membrane or a reinforced prefabricated flashing. A stove pipe flashing versus cone flashing could be considered.

E. Research/Evaluation Reports:

1. Components of roofing system, from ICC-ES.

1.6 CLOSEOUT SUBMITTALS

- A. Roofing Installers Warranty filled out and signed by the roofing installer.
- B. Maintenance Data: Roofing system included in provided maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Sika applicators shall be approved by Albertson Stores and Sika Roofing in advance of bidding.

- 1). This roofing project shall be installed by the contractor selected and contracted by the Owner or Owner's representative. The roofing installation will not be subcontracted to different roofing applicators or companies not previously employed by the awarded roofer unless approved by the Owner, the Owner's representative, and Sika Roofing. Approval shall be in writing. Failure to gain prior permission to utilize subcontractors will allow Owner to exercise Owner's right to Terminate for Cause as outlined in section 9.2 in Albertsons Companies standard contract at Owner's sole discretion. Workers shall be experienced in welding PVC roofing. If needed, Sika Roofing can train employees on expected membrane workmanship and required quality levels.

- B. Technical Direction:

- 1). The following National Technical managers should be contacted regarding roofing clarification and consultation for projects within their regions. Additionally, these managers can provide contact information regarding Sika field technicians responsible to visit specific Albertson Store roofing projects. Copy correspondence with technical managers to Obrien.tom@us.sika.com and moosman.steve@us.sika.com.

Current National Sika Technical Managers include:

Northeast: Bryan Chelkonas – 774-287-3706 chelkonas.bryan@us.sika.com: **Connecticut, Maine, Massachusetts, New Hampshire, New England, Rhode Island, Vermont, New York.**

Mid-Atlantic: Sezair DeStani – 201-410-6055 destani.sezair@us.sika.com: **District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia.**

- 2). Field Reports: Roofing Manufacturer's Technical or Technical Sales representative shall document site visits and observed conditions in field reports. Pictures of conditions should be included. Reports shall be provided to the Roofing Contractor. Field reports can be provided to the Owner from the Roofing Contractor upon Owner's request. Roofing Consultants may also request copies of the documents from the Owner or applicator directly.

- C. Material Purchases: All roofing materials for this shall be purchased at same time from Sika Roofing. Albertson Stores roofing purchases are audited per location (project). No previously purchased or left over materials from other orders or projects are allowed on this project unless approved by Tom Obrien or Steve Moosman. To ensure

compliance with this direction, all materials shall be quoted through **Lisa Andrukonis 781.770-8398 - andrukonis.lisa@us.sika.com**.

All Albertson Store roofing orders shall be placed to and managed by Albertson Stores National account representatives **Michael Leatherbury @ 801.259.0121 leatherbury.mike@us.sika.com** or **Dan Hutchison @ 781.300.8764 hutchison.dan@us.sika.com**.

- D. Roof systems must satisfy the following criteria as specified by the Owner's representative [Select from the following]:
1. Standard Roof Installation: 20-year warranty, Sikaplan 60 mil, reinforced PVC membrane, white with a minimum 60-mph wind speed warranty. Available with a 9 oz. felt backing when installing directly over an approved existing roofing assembly. Note: Wind speed warranties up to 99 mph are available if required by Owner or Owner's representative, and the facility can sustain wind loading as specified in these documents. An air barrier is required for windspeed installation for warranties greater than 90 mph.
 2. Grease or asphalt resistant conditions: Sarnafil G-459 60 mil reinforced, chemically resistant PVC membrane, should be overlaid in contaminated areas or areas that will be contaminated by kitchen oils, grease, paints and Ammonia etc.
 3. Textured membrane: 60 or 80 mil reinforced Textured membrane can be used as the roof system membrane or as an overlaid membrane in selected roof areas where traffic is anticipated.
 4. Reinforced flashing: Field fabricated, premanufactured or Liquid Applied Membrane Flashings installed on roofs where snow and potential snow removal is expected, shall be reinforced. No prefabricated, injection molded non fabric reinforced flashings are acceptable.
- E. When overlaying the existing roof, the following is required:
1. All reroofing system details and project scope shall be approved per project by the Manufacturer's Regional Technical manager and Owner's representative.
 2. Roofing overlays require one of the following investigations to verify existing roof assembly conditions:
 - a. Infrared (IR) Thermal Scan followed with multiple roof cores that verify underlying conditions including type of roofing materials, material condition, material thickness and moisture.
 - b. Tramex non-destructive moisture survey followed with multiple roof cores that verify underlying conditions including type of roofing materials, material condition, material thickness and moisture.
 - c. Multiple roof cores certifying underlying conditions including identifying roofing materials, material conditions, material thickness and moisture. Multiple roof cores that certify a dry underlayment. A minimum of 5 cores per 50,000 square feet and 2 additional cores for additional 50,000 square feet. Additional cores to be taken in previous leak areas.
 - d. The Owner will consider roof recover systems on projects where the Owner's representative has evaluated the existing conditions and determined a feasible recovery option. If a recovery system is not feasible, the existing roof and flashings shall be completely removed and disposed of in preparation for a full replacement roof and receive a twenty (20) year System warranty from the National Roofing Manufacturer.
 - e. If required by local energy codes or as directed by Owner or Owner's representative, the existing roof will be prepared and covered with additional layers of polyisocyanurate insulation to satisfy Owner or building code requirements. Scope of existing roof preparation prior to the installation of rigid insulation shall be approved by Manufacturers technical department. If no insulation is required, a felt backed membrane overlay can be considered.
 3. Existing Thermoplastic Polyolefin (TPO) roof: Prepare existing TPO roof and flashings for recovery as required by local building code department and Sika Roofing Technical Department. Mechanically fasten Sikaplan 60 FB3: 3 ounce felt backed membrane.
 4. Existing Ethylene Propylene Diene Terpolymer (EPDM) roof: Prepare existing roof and flashings for recover as required by local Sika Roofing Technical Department. Mechanically fasten Sikaplan 60 FB3: 3 ounce felt backed membrane.
 5. Existing base and wall flashing: Existing flashing membrane shall be removed and disposed of. The exposed substrate shall be prepared for a compatible flashing that can include one of the following:
 - a. Contaminated substrates require either an asphalt resistant membrane (G459) or a separation layer of the following:
 - b. ¼ or ½ inch thick, primed gypsum-based cover board. Dens Deck Prime or Ultra-Light Coated Glass Mat.
 - c. Where acceptable, ½ inch thick or greater CDX exterior plywood.
 6. Existing sheet metal gutters: Remove and replace with new gutter and downspout system as specified.

- F. HVAC and mechanical work including removal and disposal, shall be provided by the Albertson Stores Mechanical Contractor. Units to be removed shall be identified with a red painted X. Albertsons HVAC contractor should be invited to the re-roofing pre-bid meeting as required by Owner and Owner's representative. Any necessary plumbing and/or electrical work shall be provided by Albertsons unless the selected roofing contractor can perform the necessary task. Albertson Stores Certified plumbing and electrical contractor contact information will be provided by Albertson Stores.

1.8 WARRANTY

- A. System Warranty: Albertson stores Manufacturer's roofing system guarantee in which the manufacturer agrees to repair or replace defective workmanship or materials of the roofing system that fail within 20 years from date of Substantial Completion. Warranty includes the cost of materials and labor. Damage or deterioration to the roofing system caused by others is not covered. System warranty includes roofing, flashings, roof insulation, fasteners, roofing accessories, and other components of roofing system provided by and warranted by the Roofing Manufacturer.
 - 1. The roofing manufacturer shall provide a minimum of 60 miles per hour wind speed warranty coverage. Higher wind speed coverage is available upon direction of Albertson Stores and/or Albertson Stores representatives and stated in these bid documents.
 - 2. Roofing Installer's Warranty: Installer to sign and submit warranty form at end of this Section, covering all work related to the roofing system for 5 years from date of Substantial Completion. Installer's Warranty shall include labor, components, and material of the new roof system. As part of the manufacturer's warranty and Albertson Stores warranty obligation, the installer agrees to subscribe to Albertson Stores/JLL Corrigo property management platform.
- B. Maintenance: Along with the issuance of the warranty, a set of instructions shall be included detailing preventative maintenance and noting a list of harmful substances which may damage the thermoplastic roofing membrane.
- C. A sign identifying the installer, date of installation and other additional information is required to be provided by the roofer. The sign is shown and addressed in the documents at the end of this bid document.

PART 2 - PRODUCTS

2.1 NATIONAL VENDOR

- A. Upon request Sika Roofing shall provide a list of approved applicators to Owner and/or Owner's representative. Roofing Contractor shall be responsible for repair of damages and replacement of missing material upon his signed receipt of material. Related materials not listed in this Article shall be furnished by the Roofing Contractor and provided with a manufacturer warranty. Roofer is obligated to subscribe to 'Corrigo' repair and maintenance program to participate in Albertson's roofing program.
- B. The following installation requirements, materials and Manufacturer's Roofing Warranty shall be provided by Albertson Stores National Vendor; Sika Sarnafil. Materials to be quoted and purchased as previously noted on the Albertson Stores Primary Contacts are Tom O'Brien 781-883-8692 obrien.tom@us.sika.com and/or Steve Moosman 801-201-6269 moosman.steve@us.sika.com.

2.2 PERFORMANCE REQUIREMENTS

- A. Membrane Accelerated Weathering: Roof membrane shall withstand 5000 hours of exposure when tested per ASTM G 152, ASTM G 154, or ASTM G 155.
- B. Impact Resistance: Roofing system shall resist impact damage when tested per ASTM D 3746 or ASTM D 4434 or ASTM D 6878.
- C. Roofing Assembly Wind Uplift: Tested by a qualified testing agency to design indicated on drawings for corner, perimeter, and field of roof following ANSI 4474 to resist uplift pressures calculated per the American Society of Civil Engineers (ASCE) 7-10 and after multiplying the results with a safety factor (Refer to Scope of Work).
 - 1. Albertson Stores require a minimum 60 mph Manufacturers wind speed coverage in their roofing warranty for all their roofing properties. The Owner and specifier can require higher windspeed warranty coverage depending on the type and condition of the roof substrate and enhanced membrane and attachment requirements and local wind history.

- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 MEMBRANES

- A. Reinforced PVC Sheet: ASTM D4434, internally fabric - or scrim-reinforced, uniform, flexible sheet.
1. Membrane thickness and type as described in Part 1.6, D of this Bid Document.
 2. Exposed Face Color: White meeting Cool Roof Standards. Note: Tan and light gray membranes have been required on specific properties where the roof can be observed by surrounding properties.
 3. Unless otherwise specified, 60 mil Sikaplan is Albertson Stores standard roof membrane.
 4. Membrane options include:
 - a. Standard Membrane: White Sikaplan 60 mil, reinforced. Bare back or with a 3 or 9 oz. felt backing.
 - b. Self-Adhered: White G-410 SA 60 mil, reinforced with self-adhesive backing.
 - c. Chemical Resistance: White G-459 60 mil, reinforced asphalt and grease resistant.
 5. Sheet Membrane adhesives:
 - a. Standard Membrane: Sarnacol 2170 solvent based reactive adhesive.
Sarnacol 2121 latex-based adhesive.
Sarnacol 2170 VC solvent based reactive adhesive for use in VOC limited applications.
Stabond VOC compliant adhesive for use in VOC limited applications such as California.
Sikafast 3341 adhesive for use when adhering membrane to Kynar/Hylar finished metals. (edge metal, etc.)
Sika D-100 sheet adhesive for use with applications where odors and application access prevents or limits the use of a liquid type adhesive.
- B. Liquid Applied Membrane options (Unique Flashing):
- a. 20-year Curb/Wall/Equipment LAM flashing that ties onto PVC membrane roofing:
 - a. Primer, reinforcement, and Sikalastic Roof Pro, white as required.
 - b. Primer, reinforcement, and PMMA, white as required.

2.4 INSULATION BOARD (Infill and Tapered Crickets)

- A. Insulation Board: Polyisocyanurate (Polyiso) Sarnatherm Iso. R-value as required to satisfy State or local energy codes or as directed by Owner or Owner's representative. ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
- B. Coverboard: ½" HD Polyisocyanurate (Polyiso) Sarnatherm HD Iso. ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
- C. Tapered Insulation: Provide factory-tapered insulation boards, fabricated to have a finished roof slope of 1/4 inch per 12 inches unless otherwise indicated.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes as indicated for sloping roof to drain. Fabricate to slopes indicated on drawings.

2.5 Attachment Hardware:

- A. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing/flushing to substrate, and acceptable to roofing system manufacturer. Miscellaneous fastener accessories include but not limited to: Metal termination bars, metal battens, coated metal flashing, termination reglets, and other accessories as required. Fasteners: Factory-coated steel fasteners and plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer. Includes Rhino Bond plates with PVC coating use for induction welded installations, etc.
- a. Attachment Plates: Sikaplan or Sarnadisc securement plates.
 - b. Metal Deck: Sikaplan #15 Fasteners.
 - c. CMU/Masonry etc: As required by Roofing Manufacturer.

- 2.6 Safety Demarcation Membrane:
1. OSHA Perimeter Safety Warning membrane:
 - a. Sarnafil 4" x 100' wide OSHA Yellow Perimeter warning membrane.
 - b. Sika perimeter warning tape is not an acceptable substitute for the Demarcation membrane.
- 2.7 Sheet Metal Flashing:
1. Metal Flashing:
 - a. All Sheet metal shall satisfy ES-1 (Flashing) or GT (Gutter) certification requirements.
 - b. **Fascia:**
 - 1). Fascia - One Edge 24 ga. galvanized clip and cover with prefabricated cover, inside and outside angles and end caps. Fascia clip color as selected by Albertson Stores. Must be purchased through Sika Sarnafil to be included in the Albertson Store warranty.
 - b. **Scupper/Collector Box/Gutter:**
 - 1). 24 ga. galvanized steel with Kynar finish scupper & collector box. Color as selected by Albertson Stores. Includes 5-year material warranty and must be purchased through Sika Sarnafil to be included in the Albertson Stores warranty.
 - 2). Seal-Tite Gold Industrial Gutter. 24 ga. galvanized steel with Kynar finish. Color as selected by Albertson Stores. Must be purchased through Sika Sarnafil to be included in the Albertson Stores warranty.
 - 3). 24 ga. galvanized steel with Kynar finish down spout in either an open or closed faced configuration. Must be purchased through Sika Sarnafil to be included in the Albertson Stores warranty.
 - c. **Fascia/Drip Edge:**
 - 1). 24 ga. galvanized steel with a PVC coated membrane finish, foil release tape and a heat weldable membrane cover strip. Color shall be white unless otherwise selected by Albertson Stores. Sarnaclad must be purchased through Sika Sarnafil to be included in the Albertson Stores warranty.
- 2.8 Gas and Mechanical Piping, ballasted solar mounts, conduits and supports:
1. All supports that rest on the new roof membrane are required to have a buffer membrane between the support and the membrane surface. The buffer membrane is to be hot air welded to the roof membrane center below the support.
 2. Miro Industries – Heber City, Utah 84032. Product as selected from one of Miro Industries supports and specified by Owner or Owner's representative.
 3. 4" x 4" redwood blocking with length as required for support, fully wrapped with Sikaplan membrane with all overlaps welded. Incapsulate redwood blocking from exposure to weather. A 24-gauge galvanized sheet metal strap shall be fastened to the blocking and over the piping/conduit to allow support to remain stationary under the piping/conduit. A polyester reinforced membrane strap welded to the wrapped membrane block can be used.
- 2.9 AUXILIARY ROOFING MATERIALS
- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
 - B. Bonding Adhesive: Manufacturer's standard adhesives in compliance with local VOC regulations and project requirements. May include the following:
 - a. Solvent based adhesive satisfying VOC regulations: 2170 or 2170 VC by Sika Roofing.
 - b. Latex based adhesive satisfying VOC regulations: 2121 or Stay bond by Sika Roofing.
 - c. Sheet adhesive: DS100 by Sika Roofing.
 - d. Catalyst adhesive for bonding to Kynar finished galvanized sheet metal surfaces: Sika fast 3341 by Sika Roofing.
 - C. Miscellaneous Accessories: Provide metal termination bars, metal battens, coated metal flashing, pourable sealers, preformed cone, and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, and other accessories. Please note the following:
 1. Roofing in deep snow conditions require reinforced flashings and not injection formed pipe boots. Penetrations can be flashed using a jobsite fabricated flashings or pre-manufactured flashings of reinforced membrane. Injection molded pipe boots etc. will be rejected for use.

- D. Flexible Walkways:
 - a. Factory-formed, nonporous, heavy-duty, surface-textured walkway, approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer. Adhered and hot air welded to surface of roof membrane.
 - b. Field applied Liquid applied coating with textured surface creating a limited slipprey surface.
 - a. PVC Membrane Primer: Sikalastic EP Primer/Sealer.
 - b. Kiln-dried sand: As approved by Sikalastic and/or Sika Roofing Technical.
- E. Drain Insert: OMG Hercules Retro Drain with PVC membrane coated flashing flange.
- F. Replacement Roof Drains: As required by Owner or Owner's representative and approved by Sika Roofing.

2.10 WARRANTY / INSTALLATION SIGN

- A. A 24-inch-wide x 18" tall sign addressing the roofing installation and warranty information is required to be provided by the installer. Refer to the sign at end of this bid document (Page 15).
- B. The installer can either provide a sign including the information shown on this sign or by contacting Jason Maxwell of Sika Roofing 801-910-9905 maxwell.jason@us.sika.com to get sign vendor information.

PART 3 - EXECUTION

3.1 GENERAL

- A. All work shall be in accordance with Federal, State and local Health and Safety regulations.
- B. Current OSHA guidelines shall be complied with.

3.2 EXISTING ROOFING PREPARATION

- A. Replace loose, deteriorated, and damaged materials prior to installation of the new roofing system.
- B. Projects with wood decking and/or existing roof insulation require a prior investigation to identify hidden conditions or trapped moisture within the existing roofing. Material with moisture damage shall be removed and replaced with rigid insulation to match the type and level of the surrounding board insulation. Fastener pull test are required to confirm wood deck condition and to engineer required attachment spacing requirements.
- C. Hidden structural deficiencies, contaminates and non-compatible material shall be reported to Owner's representative and remediated prior to continuing roofing installation.
- D. If the existing roofing system must be removed, dispose of all roofing membrane, flashings, and related accessories in accordance with Health and Safety regulations of the Authority having Jurisdiction.
- E. Remove and dispose of existing base and wall flashing to provide an acceptable substrate/surface to flash to. Owner and manufacturer shall approve existing flashing surfaces in advance of application. Membrane flashing options include adhered reinforced sheet membrane (self-adhered and/or adhesively attached) or compatible liquid applied flashing membrane (Polyurethane or PMMA Liquid Applied Membrane).

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system per roofing system manufacturer's written instructions.
- B. Clean substrate of dust, debris, and other substances detrimental to roofing system installation according to National Vendor's most current requirements. Remove all sharp objects/projections.
- C. Prevent materials from entering and clogging roof drains or flashing and from spilling or migrating onto surfaces of other construction. Remove roof drain plugs when no work is taking place or when rain is in forecast.
- D. 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.
- E. Coordinate installation so insulation and protection boards are not exposed to precipitation or other sources of moisture during the project.

3.4 NATIONAL VENDOR SITE VISITS

- A. National Vendor shall provide a minimum of two (2) site visits during the roofing system installation (additional visits may be required based on complexity). One visit shall occur early in the installation process and another to close out the project and verify compliance with National Vendor Warranty requirements. Owner or Owner's Roofing Consultant may require additional site visits based on project conditions. There will be a charge for additional site visits unless previously quoted. Note: This requirement could vary depending on the geographical location of project.
- B. Site visits during the roofing installation may be performed by the following:
 - 1. During Installation: Local Sika Roofing Technical Sale's Representative or full time Roofing Technical Representative.
 - 2. Final Inspection: Sika Roofing full time Technical Representative.
- C. When installation questions come up on the jobsite, Sika Technical has a service referred to as a Video Call where the applicator, Store Manager or Consultant can face time the issues and/or conditions to get an immediate answer to the question. Additionally, if intermediate roof access by a Sika Technical / Sales representative is limited by timing or location etc. the applicator should engage Sika Technical for installation progress review by video conferencing. This Video Call will be documented by Sika Technical and reported to the applicator. Please contact the regional Technical Manager listed in these documents for additional information.

3.5 INSULATION BOARD

- A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Install saddles 'crickets' on the up-slope side of all curbs that are 24 inches wide or greater.
- C. Install insulation to achieve project specific minimum thickness (determined and provided by a design professional) in compliance with authority having jurisdiction including the State or local energy codes. When installing two or more layers, stagger each insulation layer from joints of previous insulation layer a minimum of 12 inches in each direction.
- D. Mechanically Fastened Insulation: Install insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Inseam Mechanically Fastened Membrane: Use (6) fasteners per 4-foot by 8-foot board throughout the entire roof.
 - 2. Rhino Bond Mechanically Fastened: Use the fastener quantity based on project uplift requirements. All fastener quantities are per 4-foot by 8-foot board: Unless otherwise directed by Manufacturers Technical representative, select fastener density from the following:
 - a. Minimum requirements for wind speed up to 60 miles per hour:
 - 1) Field of Roof: (6) fasteners.
 - 2) Perimeter: (10) fasteners.
 - 3) Corner: (16) fasteners.
 - b. Minimum requirements for wind speed up to 85 miles per hour:
 - 1) Field of Roof: (8) fasteners.
 - 2) Perimeter: (14) fasteners.
 - 3) Corner: (20) fasteners.

3.6 COVER BOARD

- A. Install cover board with long joints in continuous straight lines, perpendicular to roof slopes with joints staggered twelve (12) inches from the underlying insulation board joints. Tightly butt joints together, with no board joint exceeding 1/4 inch.

3.7 MECHANICALLY FASTENED MEMBRANE

- A. Mechanically fasten roofing over area to receive. Unroll roofing and allow to relax before retaining.
- B. Accurately align roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Mechanically fasten or adhere roofing securely at terminations, penetrations, and perimeter of roofing.

- D. Apply roofing with side laps shingled with slope of roof deck where possible.
- E. Membrane Attachment:
 - 1. In-Seam Attachment: Secure one edge of PVC sheet using fastening plates centered within seam, and mechanically fasten membrane to roof deck. Membrane fastening plates shall be spaced to satisfy specified wind and deck requirements based on fastener pull out values but not greater than:
 - a. Steel Deck - Twelve (12) inches on center.
 - b. Enhanced fastener spacing must satisfy wind speed coverage warranty and local codes. Fastener spacing shall be as directed by Sika Roofing Technical representative and wood decking as verified by fastener pull out testing. Consult Sika technical for fastener spacing requirements.
- F. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings per manufacturer's written instructions to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity.
 - 2. Verify field strength of seams and Rhino bond welds, a minimum of twice daily. Patch and repair seam sample areas following seam strength test. Record test results for field technician.
 - 3. Repair tears, voids, and lapped seams in roofing that do not comply with manufacturers requirements.
- G. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with drain clamping ring.

3.8 FLASHINGS AND PROTECTIVE MEMBRANE

- A. Prepare surfaces to an acceptable condition to receive flashing materials. Install liquid and/or sheet flashings and preformed flashing accessories to substrates per roofing system manufacturer's written instructions.
 - 1. Approve flashing application as directed by membrane manufacturers technical representative.
 - 2. Remove existing flashing materials that are not approved as acceptable or compatible with selected flashing option.
 - 3. Flash penetrations, field-formed inside and outside corners and other conditions with reinforced membrane (including liquid membrane) or unreinforced sheet flashing.
 - 4. Mechanically fasten and seal top of sheet flashings.
 - 5. Please note that Albertson Stores require reinforced pipe penetration flashings in regions where deep snow and/or snow removal could damage pipe penetration flashings. Non-reinforced membrane pipe boots are not acceptable for these installations. Penetrations can be flashed using Liquid Applied Membrane (LAM), field fabricated reinforced membrane or pre-manufactured reinforced membrane flashings.
 - 6. Equipment and supports that rest on the roof membrane require a buffer membrane to protect the roof membrane from abrasion caused by expansion and contraction, vibration etc.
- B. Sheet Adhesive Flashing:
 - 1. Confirm adhesive compatibility to specific substrate.
 - a. Trim flashing membrane to conform to substrate including membrane overlaps.
 - b. Trim sheet adhesive to conform to adhered area. Remove release film from back side of sheet adhesive. Set flashing/adhesive onto substrate and hand roll sheet adhesive to set adhesive and secure in place. Remove top release film to expose applied sheet adhesive.
 - c. Set sheet membrane in place and hand roller membrane surface to set adhesive and secure in place. Ensure adequate membrane to membrane overlap to complete a satisfactory hot air weld without sheet adhesive interference.
 - d. Mechanically secure and seal top of sheet flashings.
- C. Bonding Adhesive Flashing:
 - 1. Installations which require adhesive applied adhered flashing:
 - a. Prime substrate surfaces such as cement block with adhesive prior to application of primary adhesive coat(s) to ensure proper bond strength. Allow to cure. Note: A double application of adhesive is required to prevent a dry laid installation where the adhesive is mostly absorbed into the porous surface of the substrate, providing a tenacious bond between the substrate and the flashing membrane.
 - b. Apply adhesive to underside of membrane and allow to cure (wet or tacky) then set membrane onto previously applied adhesive and firmly roll membrane with steel or silicon roller into the adhesive. Welded membrane seams shall be clean and free of debris and adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
 - c. Mechanically fasten and seal top of sheet flashing.

- D. Protective Membrane:
1. Grease vents shall require a chemically resistant membrane (G459) to be installed 'inverted' around exhaust curbs and exhaust vents. G459 shall be installed over newly applied roof membrane.
 2. If the roof exhaust vent(s) drains grease away from the unit and into a valley, the valley shall also be covered with G459 membrane to limit non-compatible grease/oil contact direct to roof / flashing membrane. Shingle lap seams when possible.
 3. In reroof applications where asphalt residue from previous roofing exists, the chemically resistant membrane (G459) shall be installed with direct contact to the asphalt residue.
 4. Equipment and supports that rest on the roof membrane require a buffer membrane to protect the roof membrane from abrasion caused by expansion and contraction, vibration etc.
- E. Roof and Flashing Terminations:
1. Flashing terminations, such as drip edges and parapets shall be a high wind edge detail utilizing a mechanically fastened 22-gauge galvanized hold down cleat, a sealant air dam or added fasteners and Sarnaclad coated metal. Additionally, factory prefabricated metal flashing purchased through Sika Roofing can be used.
 2. As noted above, installer has the option of using prefabricated flashing terminations purchased from the roofing manufacturer as directed by Owner or Owner's representative.
 3. Sika Fast 3341 adhesives can be used to adhere PVC membrane directly to Kynar/Hylar finished sheet metal.
- F. Liquid Flashing – Unique flashing conditions require prior approval from National Vendor.
1. All flashing surfaces should be clean, dry, free of dirt, dust, debris, loose particles, loose coatings, and other contaminants. Preparation could include grinding or removal of non-acceptable surfaces.
 2. Clean and prime substrate and membrane surface as required by Membrane Manufacturer.
 3. Apply required coats of liquid flashing. Coating applications shall be reinforced with a flashing fabric as directed by manufacturer.
 4. Complex and irregular shapes, such as nuts, bolts etc. may require additional applications of sealants and/or liquid flashing per manufacturer recommendation.

3.9 PERIMETER SAFETY DEMARCATION

- A. OSHA Yellow Safety membrane: Roof sections with perimeters (parapets) that are less than 45 inches above the finished roof surface require a roof demarcation six (6) feet inside roof perimeters. Note: Sika yellow safety tape is not allowed for this application.
- B. After identifying line of demarcation, clean roof surface in preparation to weld OSHA yellow membrane parallel to the roof perimeter.
- C. Hot air weld OSHA membrane in place.
- D. Albertsons shall instruct all trades entering the roof that access to areas between the warning demarcation and perimeter edge will require OSHA safety compliance.

3.10 TRAFFIC PROTECTION INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Walk pads are required on all four (4) sides of identified roof equipment. Adhere and heat weld walkway perimeter edge to-finished roof membrane surface per roofing system manufacturer's written instructions.
1. Leave a minimum of 1 inch and maximum of 6 inches between walkway products.
 2. When possible do not install walkway products over membrane seams.

3.11 SAFETY RAIL

- A. Ensure the roof hatch / parapet curb is in satisfactory condition and will support safety rail attachment.
- B. Follow SafePro Roof Hatch Safety Rail installation instructions included with each system.

3.12 PIPE / CONDUIT SUPPORT

- A. No pipe or conduits running across the finished roof shall rest directly onto the surface of the roof membrane. Pipe supports whether cradled or suspended are required. A Sikaplan buffer membrane shall be hot air welded to finished roof surface and centered under the pipe support base or blocking. Support spacing shall be as required by Owner's representative.
- B. Acceptable supports as specified. Wrapped and welded redwood block supports require either a membrane loop over the pipe/conduit and welded to the wrapped redwood block, or a metal strap is acceptable as a pipe attachment to the blocking.

3.13 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner and Owners representative.
- 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 per warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.
- D. Clean all work areas. Clean interior exterior surfaces exposed to view; remove stains and foreign substances. Clean equipment supplied and installed by others as required.
- E. Clean all drains and drainage systems. Test all drains to ensure unrestricted flow into drains and drainage systems.
- F. Install "Warranty Notification Sign" as described at end of this Section.

3.14 ATTACHMENTS

- A. Roofing Installer's Warranty
- B. Warranty Notification Sign

END OF SECTION 075419



ROOFING INSTALLER'S WARRANTY

WHEREAS _____ of _____, herein called "Roofing Installer," has performed roofing and associated Work including roofing membrane, base flashing, flashing of penetrations and curbs, roof insulation, fasteners, and walkway products ("Work") on the following Project:

Owner: _____

Address: _____

Building Name/Type: _____

Address: _____

Intersection: _____

Grand Opening Date: _____

Five Year Warranty Expiration Date: _____

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a Subcontractor) to warrant said Work weather-tight against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period of 5 years after Grand Opening, Roofing Installer shall, at Installer’s own cost and expense, make or cause to be made such repairs to or replacements of said Work as are necessary to correct faulty and defective Work and as are necessary to maintain said Work in a watertight condition.

ADDITIONALLY Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer shall, upon notification by written or verbal to Installer’s person, staff, or owned recording device by Owner’s Store Manager or Assistant Manager of a failure of weather-tightness of roofing system, shall within 24 hours respond with staff and materials as required to seal and correct such failures to roofing system. Failure to respond within identified time conditions will allow Owner to contract with another roof installer to make such repairs as necessary to protect Owner’s interest and limit damages to building and contents. Roof Installer under this warranty shall compensate Owner for costs of the other roofing installer’s Work and what additional damages result due to delay of required repairs. This warranty shall remain in full effect for time duration stated, including repairs made for Roofing Installers failure to respond within 24-hour period.

This Warranty is made subject to the following terms and conditions. Specifically excluded from this Warranty are damages to Work and other parts of building, and to building contents caused by:

- A. Lightning.
- B. Hail exceeding project specified requirements.
- C. Fire.
- D. Wind speed exceeding project specific membrane selection with documentation that roofing system wind speed was approved by Owner, Roofing Consultant and National Vendor.
- E. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition.
- F. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of Work.
- G. Activity on roofing by others, including Contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner (except as noted for failure to respond to loss of weather-tight conditions as noted above).



When Work has been damaged by foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until Roofing Installer has been paid for repairs. Payment will be based on standard time and material basis.

Roofing Installer is responsible for damage to Work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.

During Warranty Period, if Owner allows alteration of Work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other Work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said Work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying a limitation or termination of this Warranty.

During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to extent said change affects work covered by this Warranty.

This Warranty is recognized to be the only warranty of Roofing Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original Work per requirements of Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

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

Company: _____

Authorized Signature: _____

Name: _____

Title: _____

*****Attention*****



BUILDING TRUST

This is a Sika Sarnafil PVC roofing system installed at this location. Only Sika approved applicators may conduct roofing related work at this site.



Albertsons

Store Location: _____ Store Number: _____

Roofing Applicator Contact Information

Company: _____

Address: _____

City: _____ State: _____

Phone: _____

Applicators Warranty Expiration: _____

ALL ROOFING REPAIRS - PLACE REQUESTS USING STANDARD OPERATING PROCEDURE AND THE WARRANTY VENDOR WILL BE DISPATCHED.

Sika Sarnafil Warranty Information

Sika Membrane: _____ Mil. _____

Warranty System: _____

Warranty #: _____

Warranty Date Issued: _____

Warranty System Expiration Date: _____

CONTACT THE SIKA WARRANTY DEPARTMENT FOR ALL ROOF INSPECTIONS AND QUESTIONS. USA.SIKA.COM

Please exercise caution while accessing the roofing system and follow all OSHA safety requirements while working.

Albertsons Companies Warranty Notification

Contractor to provide a 24-inch wide by 18-inch-tall sign including all information shown on the above graphic. The sign graphic shall be adhered to a solid substrate and mechanically fastened to a wall. Locate sign in direct line-of-sight from the bottom of the roof access ladder (inside the building).