Amendment 3

PROJECT/CONTRACT NUMBER: 24-25-03

Hidden Valley School MPR Roof Project

Brookside
Hidden Valley
Manor
Wade Thomas
White Hill

Collaborate · Learn · Inspire · Mentor · Believe

ROSS VALLEY SCHOOL DISTRICT

Issued May 6, 2025

AMENDMENT 3

Please find attachment A (Siplast), and Attachment B (Soprema) with the acceptable roof systems and specifications for the Multipurpose Room Roof at Hidden Valley School.

As specified in Amendment 2, the Bid Opening is Friday, May 9, 2025, at 2:00PM. The location remains unchanged at 100 Shaw Drive, San Anselmo, CA 94960.

END OF DOCUMENT

ROOFING GUIDE SPECIFICATION PREPARED BY SIPLAST, INC.

PARADIENE 20/30 ROOF MEMBRANE SYSTEM
RIGID INSULATION – WOOD/PLYWOOD DECK

This specification is provided as a general guide for use of Siplast, Inc. products based on typical building conditions and standard roofing practices. This guide specification is not a substitute for professional design services. The information in this guide specification must be reviewed/approved by a design professional and modified as necessary and appropriate for each project. Each project has unique requirements and Siplast, Inc. recommends that the Owner's representative independently verify the accuracy and appropriateness of the specification provided for a particular project. Each selection or deletion made to this guide

specification should be carefully considered. Users of this guide specification assume sole responsibility for its use.

May 5, 2025

SECTION 07 52 16 – STYRENE BUTADIENE STYRENE MODIFIED BITUMINOUS MEMBRANE ROOFING jd

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The project plans, details and general Contract requirements apply to this Section.

1.2 SUMMARY

A. Items Included:

1. Roof insulation.
2. Cover panel.
3. SBS modified bituminous membrane roofing.
4. Walktread.

B. Related Sections:

1. [Section 06 10 00 "Rough Carpentry"] [Section 061053 "Miscellaneous Rough Carpentry"] for wood nailers, curbs, and blocking, and for wood-based, structural-use roof deck panels.
2. Section 06 16 00 "Sheathing" for wood-based, structural-use roof deck panels.
3. Section 07 62 00 "Sheet Metal Flashing and Trim" for sop and field formed metal roof flashings and counter flashings.
4. Section 07 71 00 "Roof Specialties" for premanufactured metal copings, roof edge fascia, gravel stops, reglets, roof edge flashings, and counter flashings.
5. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 REFERENCES

A. References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout this specification section.

1. ASTM: American Society for Testing and Materials
2. FM: Factory Mutual Engineering and Research
3. NRCA: National Roofing Contractors Association
4. OSHA: Occupational Safety and Health Administration
5. SMACNA: Sheet Metal and Air Conditioning Contractors National Association
6. UL: Underwriters Laboratories

1.4 PREINSTALLATION MEETINGS

A. Pre-installation Roofing Conference at Jobsite: Hold a meeting with the Owner, Construction Manager, Architect, Roofing Contractor, Roofing Manufacturer's Representative, and other applicable trades to discuss the means and methods related to roofing installation. The Roofing Contractor shall examine the substrate that will receive the specified roofing materials and confirm its suitability for attachment of the specified roofing system.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. Installer: Submit written confirmation that they have a minimum of 2 years of experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.
2. Manufacturer: Submit written confirmation that the manufacturer of the primary roofing products has been successfully producing the specified types of primary products for not less than 10 years with a consistent composition for a minimum of 5 years.

B. System Qualification:

1. Intent to Warrant Letter: Submit a signed letter on the roof membrane manufacturer’s letterhead, confirming that specified roofing system complies with the guarantee requirements indicated in Part 1.11 and the criteria indicated in Part 2.2 Roof Membrane Sheet Materials.
2. Cyclic Fatigue: Submit confirmation that the proposed roof system will pass 500 cycles of ASTM D5849 Resistance to Cyclic Joint Displacement (fatigue) at 14˚F (-10˚C), and 200 cycles after heat conditioning (performed in accordance with ASTM D5147), showing no signs of membrane cracking or interply delamination.
3. Sample Guarantee: Submit a sample copy of the manufacturer’s proposed Guarantee.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Submit the manufacturer’s care and maintenance guide.

B. Executed Guarantee: Provide the Owner with an executed version of the specified guarantee.

1.7 QUALITY ASSURANCE

A. Fire Rating: Submit evidence of exterior fire-test exposure by an approved third-party testing agency in accordance with ASTM E108 or UL 790 guidelines.

1. Class A

B. Hail Rating: Submit evidence by FM Global that the roof configuration has been tested to meet the following specified hail resistance design.

1. Class 1-SH (severe hail) exposure.

C. Wind Uplift Rating: Submit evidence by an approved third-party testing agency that the roof configuration has been tested to meet the following specified wind uplift design.

1. Minimum design wind load pressure of -82.5 psf, reference report FL10342-R21 System No. W-AM-9.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery: 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. Storage: Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing manufacturer.

1. Protect stored liquid material from direct sunlight, heat, open fire, ignition sources, oxidizing agents, strong acids, and strong alkalis.
2. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protection: Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Comply with the insulation manufacturer's written instructions for handling, storing, and protecting materials during installation.

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

1.9 FIELD CONDITIONS

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

B. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.

C. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

D. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

E. Torch Safety: Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractors Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

1.10 GUARANTEE

A. Manufacturer’s Guarantee: Provides that the Manufacturer will repair leaks through the covered roofing materials due to material or workmanship defects, subject to certain exclusions, during the specified time period. Refer to guarantee for complete coverage and restrictions.

1. The Guarantee shall provide coverage for the roofing membrane, base flashings, roof insulation, fasteners, insulation adhesive, and cover panel. The Guarantee shall be non-prorated and contain no deductibles or limitations on coverage amount.
2. Guarantee Period: 30 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing contractor’s warranty signed by the Installer, including all components of the roofing and insulation system for the following warranty period:

1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: A roof system by the following manufacturer is approved for application.

1. Siplast, Inc.

2.2 ROOFING MEMBRANE SHEET MATERIALS

3. Base Ply: An ASTM D6163, Type II, Grade S homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with SBS modified bitumen blend with a factory applied polymer modified asphalt self-adhesive on the back surface of the sheet to provide full adhesion to the total

surface area of the substrate. The back side of the base ply shall be surfaced with a removable film. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen. The base ply shall possess the following physical/mechanical properties.

1. Thickness (avg): 118 mils (3.0 mm) (ASTM D5147)
2. Thickness (min): 114 mils (2.9 mm) (ASTM D5147)
3. Weight (min per 100 ft² of coverage): 84 lb (4.1 kg/m²)
4. Peak filler content in elastomeric blend - 35% by weight
5. Low temperature flexibility @ -15ºF (-26ºC): PASS (ASTM D5147)
6. Peak Load (avg) @ 73ºF (23ºC): 80 lbf/inch (14.1 kN/m) (ASTM D5147)
7. Peak Load (avg) @ 0ºF (-18ºC): 150 lbf/inch (26.5 kN/m) (ASTM D5147)
8. Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D5147)
9. Compound Stability (max): 0.1% (ASTM D5147)
10. High Temperature Stability (min): 250ºF (121ºC) (ASTM D5147)

> Paradiene 20 EG SA by Siplast, Inc.

B. Finish Ply: An ASTM D6163, Type I Grade G homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with the SBS modified bitumen blend and coated one side with a torch grade SBS bitumen blend adhesive layer with a grooved pattern to provide optimum burn off of the plastic film and to maximize application rates. The membrane shall have a coarse mineral-granule top surfacing. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen.

1. Thickness (avg): 138 mils (3.5 mm) (ASTM D5147)
2. Thickness at selvage (coating thickness) (avg): 118 mils (3.0 mm) (ASTM D5147)
3. Thickness at selvage (coating thickness) (min): 114 mils (2.9 mm) (ASTM D5147)
4. Weight (min per 100 ft² of coverage): 112 lb (5.4 kg/m²)
5. Maximum filler content in elastomeric blend: 35% by weight
6. Low temperature flexibility @ -15F (-26C): PASS (ASTM D5147)
7. Peak Load (avg) @ 73F (23C): 30 lbf/inch (5.3 kN/m) (ASTM D5147)
8. Peak Load (avg) @ 0F (-18C): 75 lbf/inch (13.2 kN/m) (ASTM D5147)
9. Ultimate Elongation (avg.) @ 73F (23C): 55% (ASTM D5147)
10. Dimensional Stability (max): 0.1% (ASTM D5147)
11. Compound Stability (min): 250F (121 C) (ASTM D5147)
12. Granule Embedment (max individual loss): 2.0 grams per sample (ASTM D5147)
13. Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
14. Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
15. Surfacing: ceramic granules

> Paradiene 30 FR TG by Siplast, Inc.

3.1 BASE FLASHING SHEET MATERIALS

A. Flashing Reinforcing Ply and Cant Backer: An ASTM D6163, Type I, Grade S homogenous membrane with a glass-fiber reinforcing mat impregnated/saturated and coated each side with SBS modified bitumen blend with a factory applied polymer modified asphalt self-adhesive on the back surface of the sheet to provide full adhesion to the total surface area of the substrate. The back side of the base ply shall be surfaced with a removable film.

1. Paradiene 20 SA by Siplast, Inc.

B. Granule-Surfaced Flashing Sheet: ASTM D6162, Type II Grade G homogenous membrane with a fiberglass scrim/polyester reinforcing mat composite impregnated/saturated and coated each side with the SBS modified bitumen blend and coated one side with a torch grade SBS bitumen blend adhesive layer with a grooved pattern to provide optimum burn off of the plastic film and to maximize application rates. The membrane shall have a coarse mineral-granule top surfacing. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen.

1. Parafor 30 TG by Siplast, Inc.

C. Liquid Flashing System: The specified liquid flashing system shall consist of a catalyzed PMMA-based membrane fully reinforced with a non-woven polyester fleece that is installed over a prepared substrate.

1. Parapro 123 Flashing by Siplast, Inc.

3.2 PRIMERS

A. Asphalt Primer: Primer shall meet ASTM D41 criteria.

1. PA-1125 Asphalt Primer by Siplast, Inc.

B. Low VOC Asphalt Primer: Primer shall meet ASTM D41 criteria and South Coast Air Quality District and Ozone Transport Commission requirements.

1. PA-917 Primer by Siplast, Inc.

C. Primer for Self-Adhesive Membranes: Primer for self-adhesive membranes shall be a single component, water-based resinous primer formulated to condition masonry, wood, plywood, concrete, asphaltic, and gypsum surfaces to facilitate adhesion of self-adhesive membranes.

1. TA-119 Primer by Siplast, Inc.

3.3 AUXILIARY ROOFING MATERIALS

A. Asphalt Roofing Cement: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D4586 Type II requirements.

1. PA-1021 Plastic Cement by Siplast, Inc.

B. Sealant: A moisture-curing, self-leveling elastomeric sealant designed for roofing applications.

1. PS-209 Elastomeric Sealant

C. Sealant: A moisture-curing, non-slumping elastomeric sealant designed for roofing applications.

1. PS-715 NS Elastomeric Sealant

D. Ceramic Granules: No. 11 grade specification ceramic granules of color scheme matching the granule surfacing of the finish ply.

E. Roof Coating:

1. See Spec Section 09 96 53 for Elastomeric Coating.

a. Paracoat HS by Siplast, Inc.

3.4 ROOF INSULATION

A. General: Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly. Install only as much insulation as can be made watertight during the same work day.

B. Polyisocyanurate Board Insulation (organic paper facer): A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber reinforced organic facers, and meeting the criteria established by ASTM C1289, Type II, Class 1, Grade 2. Two layers of panels each having a nominal thickness of 2 inches. Acceptable types are as follows:

1. Paratherm by Siplast, Inc.

3.5 INSULATION COVER PANEL

A. Substrate Board: A non-structural gypsum panel composed of fiber reinforced synthetic gypsum. Provide panels having a nominal thickness of 1/2 inch. Acceptable types are as follows:

   1. Securock Gypsum Fiber Roof Panel by United States Gypsum Corporation

3.6 INSULATION ACCESSORIES

A. Insulation Fasteners: The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging.

B. Insulation Fasteners - Wood/Plywood Decks: Insulation mechanical fasteners shall be a fluorocarbon coated screw type roofing fastener having a minimum 0.220 inch thread diameter. Plates used in conjunction with the fastener shall be a metal type having a minimum 3 inch diameter, as supplied by the fastener manufacturer.. The fastener shall conform meet or exceed Factory Mutual Standard 4470 and when subjected to 30 Kesternich cycles, show less than 15% red rust. Acceptable insulation fastener types for wood/plywood decks are listed below.

   1. Parafast Fastener by Siplast, Inc.

C. Insulation Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders, meeting ASTM C728 criteria. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

D. Tapered Edge Strips: A tapered panel composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The panels shall have a dimension sufficient to provide for a smooth transition and provide proper support for the membrane layer or subsequent layer of insulation when there are transitions of 1/4 inch or greater.

3.7 WALKWAYS

A. Walktread: A granule-surfaced polymer modified bitumen sheet material reinforced with a prefabricated, puncture resistant polyester core, having a thickness of 0.217 in (5.5 mm) and a width of 30 inches (76.2 cm).

   1. Paratread by Siplast, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrate Qualification: The installing contractor shall examine all substrates where the specified roofing and flashing system will be applied and confirm their suitability to receive the specified roofing materials.

3.2 PREPARATION

A. Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.

B. Remove all of the following existing conditions:

1. Surface gravel
2. Roof membrane
3. Insulation
4. Base flashings
5. Edge metal
6. Flanged metal flashings
7. Cants
8. Walkways
9. Nonfunctional penetrations/curbs
10. Drain assemblies
11. Vapor retarder
12. Metal trim, counter flashing

C. Primer for Self-Adhesive Flashing Reinforcing Ply: Apply the specified tacky primer by roller or spray in an even film. Refer to the manufacturer’s literature for the approved rate of application over various substrate types. Allow the primer to dry until it leaves a slightly sticky surface without transfer when touched. Cutting or alteration of the primer is not permitted.

D. Asphaltic Primer: Prime metal and concrete and masonry surfaces with a uniform coating of the specified asphalt primer according to the manufacturer’s published application rate. Cutting or alteration of the primer is not permitted.

3.3 INSTALLATION OF ROOFING, GENERAL GUIDLEINES

A. General Appearance: Ensure that the finished roofing application has an aesthetically pleasing overall appearance and is acceptable to the Owner.

3.4 INSTALLATION OF INSULATION AND COVERBOARD

A. Install insulation panels with end joints offset with edges in moderate contact in accordance with the insulation manufacturer's requirements. Where insulation is

installed in two or more layers, stagger joints between layers. Install only as much insulation as can be made watertight within the same work day.

B. Crickets: Construct crickets of tapered insulation panels in a layout as indicated on the roof plan.

C. Tapered Edge at Transitions: Field-cut, shape and install tapered edge strip at transitions of 1/4 inch or greater between substrate components to provide a smooth transition and proper support for the subsequent insulation layer or membrane/flashing system components.

D. Insulation - multiple layer: Mechanically attach all layers simultaneously to the substrate, using the specified fasteners, at a rate of 1 fastener per 1.3 square foot of panel area (24 fasteners per 4-foot by 8-foot panel). Stagger the panel joints between insulation layers.

3.5 APPLICATION OF BITUMINOUS ROOFING MEMBRANE

A. Apply all layers of roofing with side laps running perpendicular to the direction of the slope. Exert sufficient pressure on the roll during application to ensure prevention of air pockets, wrinkles, creases or fishmouths. Refer to the manufacturer's guidelines for maximum sheet lengths and special fastening of the head laps where the roof deck slope exceeds 1/2 inch per foot.

B. Unroll the base ply, and set the roll into place utilizing minimum 3 inch side and end laps. Fold one end of the roll back onto itself by 24 inches. Peel the release film off of the back of the 24 inch end section of the sheet and lay into place, pressing the 24 inch end section of the sheet firmly into place over the substrate. Pull the release film free from the underside of the remainder of the sheet while pressing the material into place with a follow tool as the film is being removed, leaving the end laps unadhered. Prior to adhering the end laps, cut a dog ear angle at each end lap on overlapping selvage edges. Torch seal or heat weld end laps, ensuring that the self-adhesive blend on the underside of the overlapping sheet and the top surface of the underlying sheet flow into a layer of continuously bonded or fused modified bitumen. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet. Laps of the base ply shall not be left exposed overnight. The base ply application shall be immediately followed by the application of the finish ply. A phased application between the base and finish plies is not approved. In cases where rapid onset of inclement weather occurs, seal exposed lap edges with a torch or hot-air welder and trowel.

C. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage

edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.

3.6 APPLICATION OF FLASHING AND STRIPPING

A. Modified Bitumen Flashing System: Apply the specified base flashing materials in accordance with the manufacturer's standard details. Notify the design team immediately of any flashing heights below 8 inches. For torch applied base flashings, apply a 12-inch self-adhesive cant backing sheet extending 6 inches onto the field of the roof area and a minimum of 6 inches up the vertical surface utilizing minimum 3 inch laps. Set the non-combustible cant into place dry prior to installation of the roof membrane base ply and subsequent flashing system. Flash walls and curbs using the reinforcing sheet and flashing membrane. Exert pressure using a neoprene roller on the flashing sheet during application to ensure complete contact with the vertical/horizontal surfaces, preventing air pockets. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See the manufacturer's schematic for visual interpretation).

B. Liquid Flashing System: Install the specified liquid-applied flashing system in accordance with the membrane system manufacturer's printed installer's guidelines and other applicable written recommendations as provided by the manufacturer.

3.7 APPLICATION OF SEALANT

A. Apply a smooth continuous bead of the specified sealant at the exposed finish ply edge transition to metal flashings incorporated into the roof system.

3.8 APPLICATION OF ROOF COATING

A. See Spec Section 09 96 53 for Elastomeric Coating.

3.9 APPLICATION OF WALKTREAD

A. Cut the specified walktread into maximum 5 foot lengths and allow to relax until flat. Adhere the sheet using the specified plastic cement. Apply the specified cement in a 3/8 inch thickness to the back of the product in 5 inch by 5 inch spots in accordance with the pattern as supplied by the walktread manufacturer. Walk-in each sheet after application to ensure proper adhesion. Use a minimum spacing of 2 inches between sheets to allow for proper drainage.

3.10 FIELD QUALITY CONTROL

A. Notify the manufacturer of job completion in order to schedule a final inspection date. Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the manufacturer's representative. Complete, sign, and send the punch list form to the manufacturer's headquarters.

B. Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.

C. Complete all post installation procedures and meet the manufacturer's requirements for issuance of the specified guarantee.

END OF SECTION 07 52 16

SECTION 07 52 16

STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Work shall include, but is not limited to, the following:
   1. Preparation of existing wood] roof deck, and all flashing substrates.
   2. SBS-modified bitumen base ply, self-adhesive
   3. SBS-modified bitumen cap sheet, heat-welded.
   4. SBS-modified bitumen membrane flashings.
   5. Liquid-applied, reinforced flashings.
   6. Refer to related Sections for Insulation, Coverboard and Roof Edge Systems
   7. All related materials and labor required to complete specified roofing necessary to receive specified manufacturer's warranty.

1.02 RELATED SECTIONS

A. Division 010000 – General Requirements
B. Division 011000 – Summary of Work
C. Division 072200 – Roof Insulation
D. Division 076200 – Sheet Metal Flashing and Trim

1.03 DEFINITIONS

A. ASTM D 1079-Definitions of Term Relating to Roofing and Waterproofing.
B. The National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, Fifth Edition Glossary.

1.04 REFERENCES

A. AMERICAN SOCIETY OF CIVIL ENGINEERS - Reference Document ASCE 7, Minimum Design Loads for Buildings and Other Structures.
B. AMERICAN STANDARD OF TESTING METHODS (ASTM):
C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
D. COOL ROOF RATING COUNCIL (CRRC)
E. FACTORY MUTUAL (FM):
F. NATIONAL ROOFING CONTRACTORS' ASSOCIATION (NRCA).

1.05 ACTION SUBMITTALS

A. Product Data Sheets: Submit manufacturer's product data sheets, installation instructions and/or general requirements for each component.
B. Safety Data Sheets: Submit manufacturer's Safety Data Sheets (SDS) for each component.
C. Sample warranty from the manufacturer and contractor.

D. Provide roof plan and representative detail drawings.

1.06 INFORMATIONAL SUBMITTALS

A. Submit a letter from the roofing manufacturer indicating the contractor is an authorized applicator.

1.07 CLOSEOUT SUBMITTALS

A. Warranty: Provide manufacturers and contractor’s warranties upon project completion.

1.08 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS:
1. Manufacturer shall have 20 years of manufacturing experience.
2. Manufacturer shall have trained technical service representatives employed by the manufacturer, independent of sales.
3. Manufacturer shall provide site visit reports in a timely manner.

DELIVERY, STORAGE AND HANDLING

B. Refer to each product data sheet or other published literature for specific requirements.
C. Deliver materials and store them in their unopened, original packaging, bearing the manufacturer's name, related standards, and any other specification or reference accepted as standard.
D. Protect and store materials in a dry, well-vented, and weatherproof location. Only materials to be used the same day shall be removed from this location. During cold weather, store materials in a heated location, removed only as needed for immediate use.
E. When materials are to be stored outdoors, store away from standing water, stacked on raised pallets or dunnage, at least 4 in or more above ground level. Carefully cover storage with “breathable” tarpaulins to protect materials from precipitation and to prevent exposure to condensation.
F. Carefully store roof membrane materials delivered in rolls on-end with selvage edges up. Store and protect roll storage to prevent damage.
G. Properly dispose of all product wrappers, pallets, cardboard tubes, scrap, waste, and debris. All damaged materials shall be removed from job site and replaced with new, suitable materials.

1.09 SITE CONDITIONS

A. SAFETY:
1. The contractor shall be responsible for complying with all project-related safety and environmental requirements.
2. Heat-welding shall include heating the specified membrane ply using propane roof torches or electric hot-air welding equipment. The contractor shall determine when and where conditions are appropriate to utilize heat-welding equipment. When conditions are determined by the contractor to be unsafe to proceed, equivalent SBS-modified bitumen

materials and methods shall be utilized to accommodate requirements and conditions.

3. Refer to NRCA CERTA recommendations, local codes and building owner's requirements for hot work operations.
4. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified liquid-applied, or semi-solid roofing materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
5. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified hot asphalt-applied materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
6. The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

B. ENVIRONMENTAL CONDITIONS:

1. Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
2. Precipitation and dew point: Monitor weather to ensure the project environment is dry before, and will remain dry, during the application of roofing materials. Ensure all roofing materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.
3. Mopping asphalt application: Primer, where used, shall be fully dry before applying hot asphalt. Take all necessary measures and monitor all conditions, to ensure the specified asphalt temperature is no less than 400°F (204°C) at the point of contact with the specified membrane as it is unrolled into the hot asphalt.
4. Cold adhesive application: Primer, where used, shall be fully dry before proceeding. During cold weather, store the specified membrane adhesives, flashing cements and mastics in heated storage areas. Take all necessary measures and monitor application conditions, to ensure the adhesive and cement materials are no less than 70°F (21°C) at the point of contact with the membrane.
5. Self-adhesive membrane application: During cold weather, store the specified self-adhesive membrane and primer materials in heated storage areas to ensure materials remain no less than 70°F (21°C) during application. Ensure conditions allow primer to remain tacky, but not wet so that primer will not transfer to finger when touched. Self-adhesive

primer shall not fully dry and lose tack before applying the self-adhesive membrane. Ensure conditions remain satisfactory to achieve membrane adhesion as specified.

6. Heat-Welding Application: Take all necessary precautions and measures to monitor conditions to ensure all environmental conditions are safe to use roof torches and hot-air welding equipment. Combustibles, flammable liquids, and solvent vapors that represent a hazard shall be eliminated. Flammable primers and cleaners shall be fully dry before proceeding with heat-welding operations. Prevent or protect wood, paper, plastics, and other such combustible materials from direct exposure to open flames from roof torches. Refer to NRCA CERTA recommendations.

1.10 PERFORMANCE REQUIREMENTS

A. WIND UPLIFT RESISTANCE:
   1. Please refer to UL Test report TGFU.R11436 assembly 81. Deck C-15/32 - Class A
B. FIRE CLASSIFICATION:
   1. Performance testing shall be in accordance with UL
      a. Meets requirements of UL Class A
C. IMPACT RESISTANCE:
   1. Performance testing for impact resistance shall be in accordance with FM
      a. Meets requirements for FM-SH (Severe Hail)
D. CYCLIC FATIGUE:
   1. The roof system shall pass ASTM D5849 Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement). Passing results shall show no signs of cracking, splitting, or tearing over the joint.
      a. Roof system shall pass Test Condition 4, tested at 14°F (-10°C) in accordance with ASTM D5849. (SOPREMA ELASTOPHENE glass fiber reinforced membranes).
      b. Roof system shall pass Test Condition 5, tested at -4°F (-20°C) in accordance with ASTM D5849. (SOPREMA SOPRALENE polyester reinforced membranes).

1.11 WARRANTY

A. Manufacturer's No Dollar Limit (NDL) Warranty. The manufacturer shall provide the owner with the manufacturer’s warranty providing labor and materials for **30**-years from the date the warranty is issued.
B. The contractor shall guarantee the workmanship and shall provide the owner with the contractor’s warranty covering workmanship for a period of 2-years from completion date.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. SINGLE SOURCE MANUFACTURER: All SBS modified bitumen membrane and flashing sheets shall be manufactured by a single supplier with 20 years or more manufacturing history in the US.

1. Comply with the Manufacturer's requirements as necessary to provide the specified warranty.

B. PRODUCT QUALITY ASSURANCE PROGRAM: Manufacturer shall be an ISO 9001 registered company. A 'Quality Compliance Certificate (QCC) for reporting/confirming the tested values of the SBS-Modified Bitumen Membrane Materials will be supplied upon request.

C. ACCEPTABLE MANUFACTURER:
1. SOPREMA, located at: 310 Quadral Dr.; Wadsworth, OH 44281; Tel: 800-356-3521; Tel: 330-334-0066; Website: www.soprema.us.
2. Or equal.

2.02 ROOFING SYSTEM

A. ROOFING SYSTEM BASIS OF DESIGN: SOPREMA
1. The roof membrane assembly shall consist of a multi-ply, prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, secured to a prepared substrate. Reinforcement mats shall be impregnated (saturated) and coated with a high quality SBS modified bitumen blend. The cross section of the sheet material shall contain no oxidized or non-SBS modified bitumen.

2.03 SBS-MODIFIED BITUMEN MEMBRANES

A. BASE PLY:
1. BASE PLY, SELF-ADHESIVE:
a. **SOPREMA SOPRALENE FLAM STICK:** SBS-modified bitumen, self-adhesive membrane with release film on the bottom surface and a plastic burn-off film top surface. Non-woven polyester reinforced. Meets or exceeds ASTM D6164, Type I, Grade S, per ASTM D5147 test methods:
i Thickness: 106 mils (2.7 mm)
ii Width: 39.4 in (1 m)
iii Length: 32.8 ft (10 m)
iv Roll weight: 76 lb (34.5 kg)
v Net mass per unit area, lb/100 sq ft (g/sq m): 54 lb (2636 g)
vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 110 lbf/in (19.3 kN/m), XMD 85 lbf/in (14.9 kN/m)
vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 35%, XMD 40%
viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 55%, XMD 60%
x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 60%, XMD 65%
xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
xiii Dimensional stability, %: MD/XMD: Less than 0.5%

xiv Compound stability, °F (°C): MD/XMD: 240°F (116°C)

B. CAP SHEET:

1. CAP SHEET, HEAT-WELDED:

a. **SOPREMA ELASTOPHENE FLAM FR+GR**: SBS-modified bitumen membrane Cap Sheet with a burn-off film bottom surface and mineral granule top surface. Glass fiber reinforced. UL Class A for specified roof slope requirements. Meets or exceeds ASTM D6163, Type I, Grade G, per ASTM D5147 test methods:

i Thickness: 138 mils (3.5 mm)
ii Width: 39.4 in (1 m)
iii Length: 32.8 ft (10 m)
iv Roll weight: 97 lb (44 kg)
v Net mass per unit area, lb/100 sq ft (g/sq m): 90 lb (4380 g)
vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 110 lbf/in (19.3 kN/m), XMD 95 lbf/in (16.6 kN/m)
vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 4%, XMD 4%
viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 50 lbf/in (8.8 kN/m), XMD 40 lbf/in (7.0 kN/m)
ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 5%, XMD 4%
x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 50%, XMD 50%
xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 60 lbf (267N), XMD 60 lbf (267N)
xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
xiii Dimensional stability, %: MD/XMD: Less than 0.1%
xiv Compound stability, °F (°C): MD/XMD: 250°F (120°C)
xv Granule Surfacing:
a) White mineral granules.

2.04 ACCESSORIES

A. PRIMERS:

1. **SOPREMA ELASTOCOL 350** Primer: Polymer emulsion primer, meeting low VOC requirements for the preparation of membrane substrates for hot asphalt, torch and SOPREMA COLPLY adhesive and flashing cement applications.
2. **SOPREMA ELASTOCOL STICK ZERO** Primer: 0 g/L VOC solvent, self-adhesive membrane primer. Low VOC, solvent-based primer for the preparation of membrane substrates for self-adhered SBS membrane and self-adhesive SBS flashing applications.
3. **SOPREMA ALSAN RS METAL PRIMER**: Solvent-based primer used to improve the adhesion of PMMA/PMA membranes to metal substrates.
a. VOC content: 550 g/L
b. Color: Off White

B. GENERAL PURPOSE ROOFING CEMENT AND MASTIC:

1. **SOPREMA SOPRAMASTIC**: SBS Mastic. Fiber-reinforced, roofing cement, packaged in 5-gallon pails. General purpose roofing cement for

low-slope roofing used for sealing membrane T-joints and membrane edges along terminations, transitions and at roof penetrations.
a. VOC Content: 190 g/L or less.
b. Meets or exceeds ASTM D4586, Type I, Class II.

C. GENERAL PURPOSE SEALANT
1. **SOPREMA SOPRAMASTIC SP1**: General purpose, paintable, gun-grade, elastomeric, polyether moisture curing sealant for sealing SBS membrane terminations, Kynar 500 PVDF, horizontal and vertical construction joints.
a. VOC Content: 20 g/L or less.
b. Meets or exceeds ASTM C920, Type S, Grade NS, Class 50.
c. Standard color

D. LIQUID-APPLIED REINFORCED FLASHING SYSTEM:
1. **SOPREMA ALSAN RS 230 FLASH**: Rapid curing, polymethyl methacrylate (PMMA) liquid resin with an embedded polyester reinforcement fabric used for monolithic waterproofing flashing membranes. Not for use over SBS cap sheets adhered with solvent based SOPREMA COLPLY adhesive or flashing cement.
a. VOC content: 4.2 g/L
b. **SOPREMA ALSAN RS CATALYST POWDER**: Reactive agent added to the PMMA liquid resin to induce curing.
c. **SOPREMA ALSAN RS FLEECE**: Polyester reinforcement fabric.
d. Color: White

B. 2.02 ACRYLIC ROOF COATING
FIELD GRADE:
VOC compliant, high quality, single component, water-based, acrylic elastomeric roof coating, and protective barrier for a variety of low slope roof surfaces and substrates, designed specifically for the rigors of professional roofing.
1. a. **SOPREMA ALSAN COATING AC 401**

E. MINERAL GRANULES:
1. SOPREMA Granules: No. 11, mineral coated colored granules, color to match cap sheet, supplied by membrane cap sheet manufacturer.

F. WALKWAY PROTECTION:
1. **SOPREMA SOPRAWALK**: Polyester reinforced SBS modified bitumen walkway protection with a granule surface and sanded underside.
a. Thickness: 200 mils (5.0 mm)
b. Width: 39.4 in (1 m)
c. Roll Length: 26 ft (7.9 m)
d. Granule Surfacing:
i Color: Grey

PART 3 EXECUTION

3.01 EXAMINATION

A. Examination includes visual observations, qualitative analysis, and quantitative testing measures as necessary to ensure conditions remain satisfactory throughout the project.

B. The contractor shall examine all roofing substrates including, but not limited to insulation materials, roof decks, walls, curbs, rooftop equipment, fixtures, and

wood blocking.

C. The applicator shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to receive specified roofing materials.

D. During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified roofing system.

3.02 PREPARATION

A. Before commencing work each day, the contractor shall prepare all roofing substrates to ensure conditions are satisfactory to proceed with the installation of specified roofing materials. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.

B. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate contractor's acceptance of conditions.

3.03 PRIMER APPLICATION

A. Examine all substrates, and conduct adhesion peel tests as necessary, to ensure satisfactory adhesion is achieved.

B. Apply the appropriate specified primer to dry, compatible substrates as required to enhance adhesion of new specified roofing materials.

C. Apply primer using brush, roller, or sprayer at the rate published on the product data sheet. Lightly prime for uniform coverage, do not apply heavy or thick coats of primer.

D. Self-Adhesive Membrane Primer: Apply SOPREMA ELASTOCOL STICK ZERO to dry, compatible substrates as required to enhance adhesion of self-adhesive membrane plies. Ensure self-adhered membrane primer is tacky to-the-touch, but not wet. Primer should not transfer to the fingertips when touched.

E. Project conditions vary throughout the day. Monitor changing conditions, monitor the drying time of primers, and monitor the adhesion of the membrane plies. Adjust primer and membrane application methods as necessary to achieve the desired results.

3.04 HEAT WELDING

A. The Contractor is responsible for project safety. Where conditions are deemed unsafe to use open flames, manufacturer's alternate membrane application methods shall be used to install SBS modified bitumen membrane and flashings. Acceptable alternate installation methods include hot asphalt, cold adhesive-applied, self-adhered membranes and mechanically fastened plies. Hot-air welding equipment may be used in lieu of roof torches to seal membrane side and end laps where heat welding the laps is necessary. Refer to NRCA CERTA, local codes and building owner's requirements for hot work operations.

B. Single or multi-nozzle, hand-held propane roof torches shall be used to install heat-welded membrane and flashing plies. Multi-nozzle carts (dragon wagons) may also be utilized to install membrane plies. Seven (7) nozzle carts are recommended for more uniform heat application in lieu of five (5) nozzle carts.

3.05 SBS MASTIC AND GENERAL-PURPOSE ROOFING CEMENT APPLICATION

A. Apply SOPREMA SOPRAMASTIC general purpose SBS mastic and roofing cement to seal drain leads, metal flanges, seal along membrane edge at terminations, and where specified and required in detail drawings.
B. Do not use general purpose SBS mastics and roofing cement where flashing cement applications are required. Do not use SBS mastics and roofing cement beneath SBS-modified bitumen membrane and flashing plies.
C. Apply general purpose SBS mastic and elastic roofing cement using caulk gun, or notched trowel at 2.0 – 2.5 gallons per square on each surface. Application rates vary based on substrate porosity and roughness. Tool-in as necessary to seal laps.
D. Embed matching granules into wet cement where exposed.

3.06 HEAT-WELDED, FULLY ADHERED MEMBRANE APPLICATION

A. Follow material product data sheets and published general requirements for installation instructions.
B. Ensure environmental conditions are safe and satisfactory, and will remain safe and satisfactory, during the application of the heat-welded membrane and flashings.
C. Ensure all primers are fully dry before beginning heat-welding operations.
D. Unroll membrane onto the roof surface and allow time to relax prior to heat welding.
E. Starting at the low point of the roof, lay out the membrane to ensure the plies are installed perpendicular to the roof slope, shingled to prevent back-water laps.
F. Ensure all roofing and flashing substrates are prepared and acceptable to receive the heat-welded membrane.
G. Cut membrane to working lengths and widths to conform to rooftop conditions and lay out to always work to a selvage edge.
H. Ensure specified side-laps and end-laps are maintained. End-laps should be staggered 3 ft apart.
I. Direct roof torch on the roll as necessary to prevent overheating and damaging the membrane and substrates.
J. As the membrane is unrolled, apply heat to the underside of the membrane until the plastic burn-off film melts away. Continuously move the torch side-to-side across the underside of the roll to melt the bitumen on the underside of the sheet, while continuously unrolling membrane.
K. While unrolling and heating the sheet, ensure approximately ¼ to 1/2 in of hot bitumen flows ahead of the roll as it is unrolled, and there is 1/8 to 1/4 in bleed out at all laps.
L. Adjust the application of heat to the underside of the membrane and to substrate as required for varying substrates and environmental conditions.
M. At the 6 in end-laps, melt the plastic burn-off film from the top surface or embed granules and remove surfacing, where present, using a torch or hot-air welder.
N. At end-laps where T-Joints exist, cut a 45-degree dog-ear away from the selvage edge.
O. Each day, physically inspect all side and end-laps, and ensure the membrane is sealed watertight. Where necessary, use a torch or hot-air welder and a clean trowel to ensure all laps are fully sealed.
P. Inspect the installation each day to ensure the plies are fully adhered. Repair all

voids, wrinkles, open laps, and all other deficiencies.

Q. Offset cap sheet side and end-laps away from the base ply laps so that cap sheet laps are not located within 18 in of base ply laps.

3.07 SELF-ADHESIVE MEMBRANE APPLICATION

A. Follow material product data sheets and published general requirements for installation instructions.

B. Ensure environmental conditions are satisfactory, and will remain satisfactory, during the application of the self-adhesive membrane.

C. Unroll membrane onto the roof surface and allow time to relax prior to installing the membrane.

D. Starting at the low point of the roof, lay out the membrane to ensure the plies are installed perpendicular to the roof slope, shingled to prevent back-water laps.

E. Ensure all roofing and flashing substrates are prepared and acceptable to receive the self-adhesive membrane.

F. Ensure primer is tacky to-the-touch, but not wet. Primer should not transfer to the fingertips when touched. Do not proceed if primer is wet or becomes fully dry and dirty. If primer becomes fully dry, dirty and loses all tack, re-prime the substrate as necessary to achieve membrane adhesion.

G. Cut rolls to working lengths and widths to conform to rooftop conditions and lay out to always work to a selvage edge.

H. Ensure membrane side-laps and end-laps are maintained.

I. Peel the release film from the underside of the membrane. Press and adhere the leading edge of the membrane to the substrate but leaving the 6 in end-lap un-adhered to heat weld the end-lap.

J. As the release film is peeled away, use a weighted roller to firmly set the sheet in place. Ensure full contact is made between the ply and the substrate for full adhesion. Use a hand-roller to roll-in vertical flashings and confined areas to firmly apply pressure.

K. At the 6 in end-laps, use a torch or hot-air welded to melt plastic burn-off film from the top surface where present. Embed granules or otherwise remove surfacing where present using a torch or hot-air welder. For sanded membrane, specified cold adhesive may be used to adhered end-laps. Adhere all base ply and Cap Sheet end-laps using torch or hot-air welder or adhere using specified cold adhesive.

L. At 6 in end-laps, cut a 45-degree dog-ear away from the 3 in selvage edge. Apply a bead of SOPRAMASTIC SBS ELASTIC CEMENT to the angled cut of ULTRA-STICK base plies.

M. Offset self-adhered end-laps 3 ft.

N. Do not leave ULTRA-STICK base plies exposed; cover all exposed film during the same day.

O. Each day, physically inspect all side and end-laps, and ensure the membrane is watertight. Where necessary, use a torch or hot-air welder and a clean trowel to ensure all laps are fully sealed.

P. Inspect the installation each day to ensure the plies are fully adhered. Repair all un-adhered voids, wrinkles, open laps, and all other deficiencies.

Q. Offset cap sheet side and end-laps away from the base ply laps so that cap sheet laps are not located within 18 in of base ply laps.

3.08 LIQUID-APPLIED, PMMA MEMBRANE AND FLASHING SYSTEM APPLICATION

ALSAN RS

A. Refer to manufacturer's details drawings, product data sheets and published general requirements for application rates and specific installation instructions.
B. Pre-cut SOPREMA ALSAN RS FLEECE polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.
C. Apply the base coat of catalyzed SOPREMA ALSAN RS resin onto the substrate using a brush or roller, working the material into the surface for complete coverage and full adhesion.
D. Immediately apply the SOPREMA ALSAN RS FLEECE reinforcing into the wet base coat of resin. Using a brush or roller, work the SOPREMA ALSAN FLEECE reinforcing fabric into the wet resin while applying the second coat of catalyzed SOPREMA ALSAN RS resin to completely encapsulate the fleece.
E. Refer to reinforced, polymethyl-methacrylate (PMMA) specification section and application instructions, details drawings, product data sheets and published general requirements for installation instructions.

3.09 WALKWAYS

A. At areas outlined on the drawings, and around the perimeter of all rooftop equipment and at all door and stair landings, install walkway protection.
B. Cut walkway from end of rolls. No piece shall be less than 24 in and no more than 60 in.
C. Remove foil/film or embed granules where present on cap sheet.
D. Provide a 4 in space between sheets for drainage.
E. Locate walkway membranes a minimum of 2 in from side-laps, end-laps and flashing membranes.
F. Fully adhere walkway protection by heat welding or adhering the field with cold adhesive and heat welding a 3 in perimeter.

3.10 CLEAN-UP

A. Clean-up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION