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# Mechanically Fastened Roofing Specification Manual

## MANUFACTURER:

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## PART I - GENERAL

### 1.1 DESCRIPTION:

Furnish and install a mechanically attached Hypalon® roofing system in strict accordance with the specifications and detail drawings, as approved by Burke.

A. SCOPE: To attach to the roof deck a single-ply roofing membrane by means of screws, plates and other related items, as called for in the specifications and manufactured and/or approved by Burkeline Roofing Systems.

B. RELATED WORK SPECIFIED ELSEWHERE: Prior to start, the structural roof deck construction and/or areas to be repaired and are slated to receive the roof covering system must be confirmed. Those areas must then be assessed as to need in order to successfully complete the roofing installation. This includes all metal work, drains, curbs, and penetrations. A moisture survey of pre-existing roofing materials may be required. A study of all existing insulation boards (If they exist) and vapor barriers including insulation thickness and type with existing fastening patterns is required. In all cases the roof must be brought to standards which are acceptable and compatible with the Burke approved Burkeline Roofing System.

### 1.2 QUALITY ASSURANCE

A. Installation contractors shall be trained and approved by Burke as qualified to install Burkeline mechanically fastened systems.

B. All materials must be supplied or approved by Burke.

C. A Burke-approved inspection of the completed installation is required for job certification and issuance of the Burke Warranty.

D. Underwriters Laboratories Class A fire rated system, and/or Factory Mutual's Class 1 with 1-90 wind uplift rating are available, if specified.

E. All Burkeline roofing membrane are thoroughly inspected and certified to ASTM D 5012 specifications.

### 1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials provided by Burke shall be delivered with appropriate identification indicating storage conditions, lot numbers, usage instructions and handling precautions.

B. Material Safety Data Sheets are available for materials, including solvents and adhesives.

C. All materials should be stored in their unopened packaging or containers in a clean, dry, protected area until ready for use.

### 1.4 JOB CONDITIONS

A. Scheduling - Installation of the roofing system on new construction should begin after all possible work involving foot traffic on the roof deck has been completed. On re-roofing projects, the roof deck should be clean and dry with needed repairs completed prior to the installation of the new single-ply system.

B. Sequencing - Installation of roll goods generally begins at the lowest point of the roof, working up-slope. No more work should be attempted except what can be completed in one day including completed wall flashings, curbs and drains in a specific area.

C. Weather Conditions - The roof deck surface should be clean and dry; seaming should not be attempted on wet surfaces.

CAUTION: The Hypalon® membrane surface will be slippery when wet, care should be taken while walking on all wet surfaces.

If weather conditions indicate the roof surface will be subject to low ambient temperature, the surface temperature of the roofing membrane should be brought up to 60°F or higher prior to seaming. This may be accomplished with hot air heaters and/or tenting.

D. Power Requirements - Heat seaming equipment and handheld heat guns require an adequate source of 110/220-volt power.

E. Ventilation - Where cleaning solvents, solvent-based adhesives or welding solutions are used, good ventilation and air circulation must be available. Consult can, carton labels or the manufacturer for MSDS on products used.

### 1.5 WARRANTY

Ten and fifteen year system warranties, in addition to material only warranties, are available from Burke on new or re-roof installations, providing Burke specifications are met.

A. Installation contractor must be approved for the installation of the Burkeline Roofing System specified.

B. A complete Job Approval and Request for Warranty form must have been completed and submitted to Burkeline for approval by Burkeline Engineers.

C. New roof deck construction or repairs to an existing roof must have rendered the roof suitable for the installation of the Burkeline Roofing System.

D. A Burke representative must inspect the completed installation, and upon submittal of a completed and signed punch-list in addition to appropriate warranty fees (if applicable), the warranty will be issued by Burke.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

All materials shall be furnished, specified or approved by Burkeline Roofing Systems, a division of Burke Industries for use.

A. Roofing Membrane - The white /black reinforced Hypalon® membrane shall be 0.045 in. thick (M-358). Nominal sheet width is 61.0 in. The membrane is available as rolls of nominal 100 feet lengths. The white side of the sheet faces up to reflect heat. Around the perimeter of the roof, a minimum of two half width sheets is required in order increase fastener density in roof areas of high wind uplift.

B. Flashing - White/ black reinforced Hypalon® (M-358) field sheet can be cut to fit the majority of roof details, including parapet walls, curbs etc. For areas requiring a more flexible membrane, (around vent stacks, pipes, and corners, etc), a white 0.055 mil unsupported Hypalon® sheet shall be used. Pre-formed inside and outside corners of white unsupported Hypalon® are available, as well as preformed penetration fittings. Hypalon® clad metal for areas requiring bent metal is also available in 4'x8' sheets, 0.044 inches thick.

C. Pre-activator Solvent/ Cleaner - A xylene pre-activator solvent and cleaner (M-100), must be used to prepare Hypalon® in all areas which will be seamed using either hot air and or white welding solution in addition to heat.

D. Welding Solution - A white high-solids solution of Hypalon® compound may be used for all Hypalon® to Hypalon® seams. The welding solution (M-734) must be used in all areas where the unsupported membrane is used. In addition all cut edges of membrane where polyester scrim is left exposed shall be flood coated. Heat seaming equipment (Leister Variant or approved equal) is required for all Hypalon® to Hypalon® seaming.

E. Contact Adhesive - A solvent-based, contact-type bonding adhesive shall be used to bond Hypalon® to other substrates; i.e. wood, metal, concrete, etc., Burke M-700 shall be used.

F. Other Component Materials - All materials used with the Burkeline Roofing System, and not supplied by Burke, shall be approved for use with the Burkeline system by Burke, and shall be installed according to the manufacturer's recommendations. Other components include, but are not limited to, the following:

1. Caulks - Burke supplied SIKA Flex one part urethane caulk shall be used on all Burkeline warranted projects for sealing termination bars, around units and for topping pitch pockets.
2. Insulation - Burke sells its own isocyanurate insulation which may be used on all warranted projects. Other insulation boards may be used upon approval from Burkeline engineers. Most Factory Mutual or U.L. tested insulation boards are approved to be included in the Burkeline system.
3. Mechanical Fasteners - Screw, concrete fasteners and plates manufactured to Burkeline specifications and provided and labeled by Burkeline must be used on all warranted Burkeline projects.

4. Overnight Seal - At the end of each day, over night seal must be used in order to keep exposed insulation or substrate free from moisture.

5. Wood Nailers and Cant Strips - pressure treated 2"x4" (Wolmanized or equal) shall be used as nailer in all areas requiring wood nailer. Cant strips are not required for use with the Burkeline Roofing System for warranty.

6. Foam Buffer/ Separator - Foam backer rod may be used at expansion joints, reglets or roof hatches.

7. Metal Fascia, Continuous Clip, Gravel Stop and all other metal provided from sources other than Burkeline, must be corrosion resistant (i.e. galvanized, stainless, aluminum, etc.) and approved by Burke prior to warranty.

### 2.2 FABRICATION

Factory fabrication of large panels to minimize field seaming is available on a custom basis. Allowance is made for a fastening tab flap on the bottom side of the panel to accommodate fasteners.

## PART 3 - EXECUTION

### 3.1 INSPECTION

Certain criteria must be examined prior to selection and installation of a Burkeline mechanically fastened roofing system. Each of the following must be studied to determine its effect on the function of the roofing system:

1. Height, type and location of the structure.
2. Type of deck and its present condition.
3. Type of thickness of insulation requirements.
4. Fire and wind uplift ratings from UL and FM. Building code requirements for local, state and/or regional approvals.
5. Type of business housed by structure.
6. Rooftop penetrations.
7. Rooftop traffic.
8. Aesthetic requirements.
9. Slope and drainage.

### 3.2 PREPARATION

Prior to installation start-up, a thorough inspection of the roof deck is necessary. An infra-red or nuclear scan along with core samples should be taken on all retrofit projects. This is necessary to locate any areas of moisture saturation that may be present in the existing deck. The Burkeline mechanically fastened roofing system should not be installed over any partially or fully saturated deck. Therefore, it is necessary to remove and replace all areas of deck or insulation saturation. Any and all existing roof system emission contaminants must be located and identified; their compatibility with the Burkeline membrane must be determined prior to installation start-up. If incompatible particulates or emissions exist, the job will not be warranted. Prior to any work, the roofing contractor shall complete the "Application for Job Acceptance and Roof Diagram" form and submit it to Burke. All necessary information, unusual specifications requiring Burkeline engineering

be warranted. Prior to any work, the roofing contractor shall complete the "Application for Job Acceptance and Roof Diagram" form and submit it to Burke. All necessary information, unusual specifications requiring Burkeline engineering approval or other special considerations for the roofing project should be included in this form. No warranty will be issued on completion of the project without a Burkeline Job Approval number issued upon receipt of the Burke job approval form.

### 3.3 INSTALLATION

The installation contractor shall install the Burkeline Roofing System in accordance with the specifications and Burke Detail Drawings, including recommendations of the manufacturer's of components other than those provided by Burke.

A. Installation Prior to Membrane Placement-The installation contractor must determine the type and thickness of the insulation required. This must be a Burke supplied or approved rigid insulation board. Minimum thickness shall meet job specifications and code approval requirements including those specifications approved by Burke, as well as by U.L. and F.M. if specified in the contract documents. The insulation must be installed in accordance with requirements of the manufacturer's specifications. The insulation must be attached to the deck at specified intervals with Burkeline approved plates and fasteners. (Consult Burkeline Detail Drawings). Burkeline minimum specifications do not supersede any requirements made by insulation manufacturers or code requirement. All insulation must fit tightly to nailers and roof penetrations. Nailers must be properly treated and installed around the perimeter and elsewhere as specified. Construction of expansion joints and installation of all penetrations shall be completed before placement of the roofing membrane. The Contractor (In many cases this is the specified responsibility of the general contractor) shall be responsible for a smooth, suitably prepared roof deck surface to accommodate the Burkeline roofing membrane. The roof deck shall be swept clean of loose foreign debris, and be free of sharp edges, cracks, oil and grease. When re-roofing over an existing roof, the existing surface shall be sound, dry and free of blisters. Areas that are uneven, buckled or sagging from ponded water must be repaired, and positive drainage reestablished throughout the roof deck. It may not be necessary to remove all ballast, providing that weight specifications, including the re-roofing materials, are not exceeded.

B. Membrane Installation - The rolls of Burkeline Roofing Membrane shall be positioned according to the specification and layout drawings submitted to Burke by the installing contractor. Burkeline plates and screws shall be installed on specified centers to mechanically fasten the membrane to the roof deck. Consult Burkeline Detail Drawings for proper spacing. The fasteners shall be covered by the lap of the adjacent roofing membrane strip. If desired Burke-supplied fastener covers where overlapping seams are not utilized. Consult Burkeline Detail Drawings for the correct overlap.

C. Placement of Rolls and Attachment - Unroll Burkeline perimeter half sheets along perimeter of roof edge. Extend the first half sheet 2" over the edge for attachment to the outside perimeter. (Consult Burkeline Detail Drawings for perimeter attachment.) Install the plates and fasteners on the specified centers along the outside edge of the first half sheet, positioned 1/2" inside the leading edge. Run the fastener in as tight as possible without distorting the plate or the membrane. Do not under drive fasteners nor allow fastener assemblies to be loose. Position and unroll the second half sheet overlapping the previous sheet by 4 1/2" (+ or - 1/2"). Be sure to cover the installed fastener assemblies by a minimum of 2 1/2" - Consult Burkeline Detail Drawings. Fasten second half sheet as described above. When half sheet requirements have been installed, (In many Factory Mutual driven specifications this means more than 2 half sheets) position and unroll the first full sheet, overlapping the half sheets as described above. Fasten the full width sheet according to the wind uplift requirements. (Consult Burkeline Detail Drawings.) Position subsequent full sheets as described above. Field sheets shall be installed perpendicular to the layout of the insulation boards if possible. Unroll only those sheets that can be completed that day including all seaming and details. Use appropriate night seals to terminate the day's installation. (Consult Burkeline Detail Drawings.)

D.1. Membrane Seaming/Heat Seaming - Begin seaming procedure by folding the edge of the overlapping sheet back exposing the bottom of the top sheet. Use separate open-top pails of Burkeline pre-activator (M-100) for the white top side and for the black bottom side. Apply the appropriate pre-activator with a solvent-resistant brush to both surfaces to be seamed. Make sure that 100% coverage is achieved over a minimum of 2" width of both mating surfaces. This procedure should not take place more than 15 minutes prior to heat seaming. Allow pre-activator to flash-off. When surfaces are dry, and both sides of the Burkeline membrane have a slightly dull appearance, fold the edge of the overlapping sheet back onto the bottom sheet. Set a Leister Variant, or equivalent heat seaming tool, onto the top sheet with the pressure roller edge extending 1/16" beyond the seam lap. Set the temperature of the Leister at its highest setting. Set the speed control of the large dial on setting #5. Allow ten minutes warm-up time, then lift the leading edge of the top sheet slightly, and insert the heat nozzle. Immediately engage the speed release and begin seaming. Evaluate the initial seam area. Should the material show small blistering, it may be receiving too much heat and may have been scorched. If the seam has not achieved a film tearing bond after cooling, it has received too little heat. To correct seaming problems, adjust the speed control. To raise heat dwell time, lower the speed setting. Inversely, to lower the heat dwell time, increase the speed setting. Inspect each seam thoroughly. Use a probe with a well rounded point to inspect the entire seam length along the lap edge. Should there be any suspect areas, repairs must be made to the affected area. Frequent inspections should be made throughout the day should be made to ensure seams are still be made to specifications. Because the weather is likely to change during the

course of a given day, it is important to note welding speed and temperature often. Probing and repairs should be part of the daily work schedule. (See Patching procedure described later.) Any exposed scrim (fabric) along the cut edges of the Burkeline roofing membrane must be flood-coated (painted) with the Burkeline Welding Solution. This procedure prevents moisture from entering the sheet along the scrim (fabric) edge.

D.2. Membrane Seaming / Burkeline Welding Solution (M-734) Frequently, low temperature conditions, or other factors may require the use of white welding solutions in addition to hot air. Burke requires the use of white welding solutions when welding all details including but not limited to pipes, drains, scuppers and corners. First apply Burkeline pre-activator as described under heat seaming instructions above ( Spec. D.1.). Using an open-top pail of Burkeline White Welding Solution (M-734), and a solvent-resistant brush, apply welding solution to both membrane surfaces liberally with a circular motion. Apply to an area 2" wide by length. Immediately after applying Burkeline Welding Solution, and before any surface skinning or drying has occurred, overlap the surfaces and stitch by rolling with a hard faced roller perpendicular to the seam. While rolling, apply heat from a hand held hot air gun, (Leister Triac or equal). The hot air may be directed at the seam from above or from between the surfaces as described in Spec. D.1. A small amount of the welding solution forced out of the seam edge is desirable, and indicates that sufficient welding solution has been applied. All seams must be inspected at the end of each working day. Use a probe with a well-rounded point to inspect the entire length of the seam lap. Should there be any suspect areas, repairs must be made to the affected area. (See Patching procedures described later.) Any exposed scrim (fabric) along the cut edges of the Burkeline roofing membrane must be flood-coated (painted) with the Burkeline Welding Solution. This procedure prevents moisture from entering the sheet along the scrim (fabric) edge.

E. Membrane Patching - Areas to be patched such as fish-mouths, wrinkles, punctures or voids in the seam area are to be covered with the Burkeline membrane roofing material M-358. The patch must extend 6" in all directions from the affected area, with rounded corners. Patches may be applied with either a hand-held heat gun, or with Burkeline Welding Solution, using the seaming procedures described earlier. Both the patch and the affected area must be cleaned with Burkeline pre-activator, as described in the seaming procedure. Any exposed scrim (fabric) along the cut edges of the Burkeline roofing membrane must be flood-coated (painted) with the Burkeline Welding Solution. This procedure prevents moisture from entering the sheet along the scrim (fabric) edge.

F. Flashing and Other Details - Burke Detail Drawings on Termination, Penetrations, Roof Deck Details, and Fastening Patterns provide for the attachment of the roofing membrane and flashing to other substrates, and for overnight

seals. (Consult Burkeline Detail Drawings.) Any necessary supporting specifications or special details not provided in the Detail Drawing section should be submitted with the Roof Diagram form for approval prior to installation.

### 3.4 FIELD QUALITY CONTROL

The installation contractor shall inspect and test all seams to assure that Burke quality requirements are maintained throughout the installation. Each field seam shall be 100% inspected to insure integrity, and all defects shall be repaired or cap-stripped. A Burke representative shall perform a final inspection of the finished installation and a written report shall be prepared. Any deficiencies noted during inspection shall be corrected by the installer prior to final acceptance and submission of the application for the Burke Warranty. The appropriate Warranty for the specific installation will be issued to the roofing contractor to then be forwarded to the building owner upon receipt of the following:

1. Burke Application for Acceptance and Job Approval Form
2. Complete inspection by Burke Factory Technical Rep.
3. Completed signed punch-list by the roofing contractor or pre-approved memorandum of understanding.
4. Warranty Fee.

### 3.5 CLEAN-UP

The installation contractor shall be responsible for the cleanup of the completed roofing installation. All extra materials shall be resealed in their containers, if necessary, and removed. All trash, scraps, and tools shall be removed. Protection for the finished roof membrane surface should be provided, if further work or traffic is anticipated on the completed installation.

**All statements, technical information and recommendations made in this document are, to Burke's knowledge, true and accurate and are based on our own research and the research of others. This document should not be construed as amplifying, modifying, or superseding Burke's warranties on any products or services supplied by Burke, and Burke assumes no liability in connection with any use of this information.**