System Specifications

100% Silicone Roof Coating System for Aged Modified Bitumen Membrane Systems

TABLE OF CONTENTS

Part 1 General

This specification is a guide for coating and restoration of existing non-ballasted Modified Bitumen Membrane systems utilizing the MuleHide 100% Silicone Roof Coating and accessory products.

1.1 Scope of Work

A. Contractor will provide all labor, equipment and MuleHide labeled materials necessary to install a 100% Silicone Roof Coating System.
B. MuleHide's most current Product Data Sheets and installation instructions shall be followed in conjunction with this specification.
C. Contractor is solely responsible for completing all necessary repairs to the existing roof system to restore it to a structurally sound, watertight condition using similar materials prior to installing the 100% Silicone Roof Coating System.

1.2 Related Sections

A. Related sections may or may not be applicable to this specification.
B. Section 07 62 00: Sheet Metal Flashing and Trim: Metal flashing and counterflashing installation and requirements.
C. Section 22 30 00: Plumbing: Roof drains, scuppers, gutters and downspout installation and requirements.

1.3 References

A. ASTM D6694 Standard Specification for Liquid-Applied Silicone Coating
B. NRCA Roofing and Waterproofing Manual
C. Underwriters Laboratories Building Materials Directory
D. CRRC (Cool Roof Ratings Council)

1.4 Submittals

A. Submit Product Data Sheets (PDS) confirming physical and performance properties of each product used in the system.
B. Submit Safety Data Sheets (SDS) for each product used in the system.
C. Submit a roof survey including roof type, measurements and descriptions of the condition of the seams, penetrations, drains, gutters, known leaks and a Moisture Survey with an indication of moisture content. Photographs of all conditions should be included in the submission.
D. Submit a sample copy of the requested warranty type.

1.5 Quality Assurance

A. Manufacturer Qualifications: Mule-Hide Products Co., Inc. shall provide a roofing system that meets or exceeds the criteria listed in this section.
B. When a project requires an NDL ("No Dollar Limit") System Warranty the MuleHide Roof Coating System shall be installed in compliance with MuleHide published Specifications and Details exclusively by an independent MuleHide Warranty Eligible Contractor.
C. Supplier shall retain batch samples of all coating products used in the system for a minimum of 5 years.
D. Prior to work commencing, the MuleHide Warranty Eligible Contractor shall submit a fully completed Silicone Roof Coating System Warranty Application to the MuleHide Technical Department. Included shall be an accurately dimensioned roof drawing plus photos of any unusual flashing details or roof conditions.
E. Contractor shall furnish all insurance, licenses, permits and certifications as required by local authorities and/or the property owner.

F. Contractor shall ensure that all work performed at the site shall be in accordance with National Roofing Contractors Association (NRCA) Low Slope Roofing Manual recommendations and all other pertinent guidelines issued by the NRCA in reference to other types of construction present at the job site.

1.6 Product Delivery, Storage and Handling

A. All products delivered to the job site shall be in their original unopened containers or wrappings and clearly labeled with the manufacturer's name, product identification and date of manufacture.
B. Store all materials in a dry, clean area protected from the elements and damage. Place all stored materials on pallets and cover with a tarpaulin. Keep out of direct contact with sunlight.
C. All liquid products and caulks shall be stored at temperatures between 60°F and 80°F. Materials exposed to lower temperatures affect the workability and performance of the product. Products shall be restored to the above temperature prior to use.
D. All flammable materials shall be stored in a cool, dry area away from open flames and sparks. Follow precautions outlined on containers or supplied by the material manufacturer/supplier.
E. All materials determined as being damaged (confirmed by MuleHide) due to improper storage on the job site are to be replaced with new materials.

1.7 Job Conditions

A. The roof must be structurally sound, clean, dry and free of areas of ponding water, ice, snow, rain or dew, oils, grease, particulate matter or other debris.
B. Roof must be inspected for the following existing conditions:
   1. Peeling and chalking of previous coatings
   2. Poorly attached vents or other projections
   3. Open seams and side laps
   4. Insufficient slope, damaged membrane or insulation
   5. Loose membrane on fully adhered roof systems
   6. Areas of ponding water – areas of dirt/debris accumulation
   7. Broken or improperly flashed pipes
   8. Broken or missing drain components
   9. Loose or damaged perimeter edge metal
   10. Deteriorated, damaged, or loose flashings
   11. Damaged or wet insulation or substrates
C. All deficiencies including all sources of leaks must be properly corrected prior to the installation of the new Silicone Roof Coating System.
D. The contractor shall follow and comply with all safety regulations as recommended by OSHA.
E. Any unusual or concealed condition discovered during the preparation of the existing roof surface or installation of the Silicone Roof Coating System is to be reported to the owner and MuleHide immediately in writing. Work is to be halted until the owner has responded with a solution to the problems.
F. All local building codes and requirements should be followed where applicable. It is the roofing contractor's sole responsibility to determine and ensure that the roofing system selected complies with all local codes and requirements.
G. All air intake ventilation equipment should be shut off and all ductwork openings should be temporarily sealed during product application.

1.8 Precautions

A. Coatings may require mixing immediately prior to application. If mixing is required, mix at low speed to avoid entraining air into the coating. Coatings shall be mixed no more than 1 (one) hour prior to use.
B. This product cures through absorption of moisture from the air. Avoid entraining air when mixing. Do not mix at high speeds.
C. Remixing of 100% Silicone Roof Coating is permitted as necessary.
D. No products with a “Flash Point” below 100°F shall be permitted due to associated fire hazard.

E. No products with chlorinated “Toxic Exempt” solvents including perchloroethylene, 111 trichloroethane or methylene chloride or isocyanates shall be utilized due to the associated health hazards to workers and building occupants.
F. No asphalt or vegetable based oils may be used in the production of any product included in this specification.
G. Materials should be maintained at a minimum temperature of 50°F for 24 hours prior to the application to ensure the optimal application qualities.
H. Do not apply coating when ambient temperature is within 5°F of the dew point.
I. Do not apply coatings during or just before rain, inclement weather or on frost covered or wet surfaces.
J. The roof surface must be a minimum of 35°F to ensure that frozen condensation is not present on the roof surface.
K. The roof surface should not exceed a maximum of 100°F to avoid blisters and pinholes.

1.9 Protection of Building and Adjacent Areas

A. It is the sole responsibility of the installing contractor to protect all surfaces adjacent to the surfaces to be coated including but not limited to, windows, doors, equipment and wall surfaces, either from overspray, brushing or rolling of the coatings being installed.
B. All roof top air intake equipment should be turned off and all openings should be sealed to prevent any fumes from entering the building.
C. When spraying, parking lots adjoining the building should be blocked off sufficiently to protect vehicles from wind borne overspray.

1.10 Warranties

MuleHide Roof Coating NDL System Warranties (“System Warranties”) are available for commercial projects when approved by MuleHide and installed in compliance with MuleHide’s published specifications and details. System warranties are only available when applied for and installed by MuleHide Warranty Eligible Contractor. System **Warranties are not available for residential projects.** (MuleHide defines a residential project as a single-family dwelling).

A. Roof Coatings Warranty Application forms must be fully completed and submitted to the MuleHide Technical Department prior to beginning the project. Issuance of a warranty will be dependent upon completion of the project to the satisfaction of MuleHide and payment of any required warranty fees. MuleHide reserves the right to decline to issue any warranties for projects completed before the submittal of the proper Warranty Application to MuleHide.

1. The following requirements are mandatory and must be submitted and approved prior to the installation of a project where an NDL system warranty is being requested:

a. Moisture Survey Report
A moisture survey report is required for all projects requesting a system warranty. For testing procedures, see Section 3.1A Refer to *Moisture Survey Technical Bulletin #2501* for specific criteria regarding this survey.

b. Adhesion Testing
Adhesion tests must be conducted during the roof suitability inspection. For testing procedures, see Section 3.1B or refer to the *Adhesion Test Technical Bulletin #2101*.

c. Roof Suitability Evaluation
A *Pre-project Evaluation Survey* must be and submitted and approved with the NDL Silicone Warranty application.

B. MuleHide’s Roof Coatings NDL System Warranties for Commercial Buildings
a. MuleHide offers a 10, 15 or 20-year Roof Coatings NDL System Warranties. The Roof Coatings NDL System Warranty is available through MuleHide Warranty Eligible Contractors only for

commercial projects. This warranty is not available for residential projects. This warranty covers leaks due to manufacturing defects, premature weathering and the contractor's workmanship of the installed product. This warranty does not cover leaks due to movement or deterioration of the existing roof surface to which the Silicone Roof Coating System has been applied, leaks caused by other substrate conditions, components not supplied by MuleHide and does not cover the appearance, cleanliness, discoloration or staining of the coating for any reason.

b. See the MuleHide Roof Coatings NDL System Warranty sample for specific terms and conditions. Please contact the MuleHide Technical Department for information and requirements regarding the MuleHide Roof Coatings System Warranty Program.

MuleHide Roof Coatings System warranties require the following minimum application rates:

Table 1

Warranty Type	Cleaner	Multibase SB Primer	Seam Treatments[1,2]	100% Silicone Roof Coating
10-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	When priming, use 1 coat of Multibase SB @ 1 gal/100 sf	1. To a sound substrate following required repairs a Liqui-Flash brush applied in a 4" wide band @ 1 gal/100 LF (40mils) centered over the seam edge, is an acceptable treatment. 2. Alternatively, a 3-course[2] application is acceptable: Apply Base coat @ 1.5 gal/100 sf (20 mils) of 100% Silicone Coating embed Reinforced Polyester Fabric, then apply a Top coat @ 1.5 gal/100 sf (20 mils) for a total of 40 mils minimum centered over the seam edge.	1 coat @ 1.5 gal/100 sf (24 wet mils, 22 dry mils)
15-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	When priming, use 1 coat of Multibase SB @ 1 gal/100 sf		1 coat @ 2.0 gal/100 sf (32 wet mils, 29 dry mils)
20-year	Clean with 115 Cleaner applied with low pressure sprayer then power washed.	When priming, use 1 coat of Multibase SB @ 1 gal/100 sf		1 coat @ 2.5 gal/100 sf or (40 wet mils, 36 dry mils)

Note:

[1] As Needed consult MuleHide Technical for appropriate treatment of Mechanical fastened Seams.
[2] Apply a three-course basecoat with a minimum thickness of 20 mils, embedding the fabric into the wet coating. After embedding, eliminate all air bubbles and allow the fabric to fully cure before applying the topcoat.

- Minimum application rates listed do not include thickness of primers or areas where additional coatings and reinforcement are required.
- All side-laps and end-laps of the roofing membrane that are in the low-sloped plane of the roof are to be inspected with a seam probe. Seams that are determined to be improperly installed or have lost their performance need to be repaired with like membrane and then treated with the required seam-sealer, flashing compound or silicone coating at the application rates listed above.
- When priming or coating granulated surfaces additional primer or coating may be required due to the surface roughness.
    - Dried color of the primer should be uniform in appearance over the entire surface. Dark areas may require additional primer

1.11 Regional Considerations

Contractors should factor in the typical climate that the project is located at, before selecting an appropriate coating that best suits the region.

Part 2 Products

2.1 General

A. The components of the MuleHide Silicone Roof Coating System shall be products manufactured or supplied by MuleHide Products Co., Inc.
B. Components other than those supplied or manufactured by MuleHide may be submitted for review and acceptance by MuleHide's Technical Department. Any product requested for review and acceptance must be submitted prior to the job start. MuleHide's acceptance of any other product is based solely on chemical compatibility and published performance data provided by the component manufacturer. Other components may be considered on a job-by-job basis and must be approved in writing by MuleHide's Technical Department. MuleHide offers no warranty or guarantee for the performance or suitability of any component not supplied or manufactured by MuleHide. purposed

2.2 Products

The following MuleHide materials must be used to install MuleHide Silicone Roof Coating Systems. MuleHide will not warrant any application where another manufacturer's product is substituted for a MuleHide product. All products listed below are physically and chemically compatible with each other.

A. **115 Cleaner** – a biodegradable detergent wash suitable for cleaning and preparing metal and aged roof surfaces (including but not limited to smooth BUR, modified bitumen, EPDM, TPO, Hypalon (CSPE) and PVC roof systems).
B. **A-125 Metal Roof Primer** - a modified acrylic, high solids, zinc rich primer which totally encapsulates existing rust and inhibits the development of new rust. A-125 provides excellent adhesion for subsequent coats on metal substrates.
C. **Multibase SB** – a one-component acrylic coating used as primer for granulated and smooth modified surfaces. The application rate is 1.5 gal/100 sf for smooth and granulated surfaces.
D. **100% Silicone Sealant** – a high solids non-shrinking, moisture cure silicone sealant intended for sealing joints in masonry, architectural metal, metal roof seams and fasteners and miscellaneous repairs prior to coating.
E. **100% Silicone Roof Coating** - This product is a 100% silicone based, single-component roof coating that creates a barrier that is resistant to normal weathering, is durable, breathable and weatherproof. This product meets or exceeds the requirements of ASTM D6694. Refer to the MuleHide Product Data Sheets for physical properties and additional information.
F. **MP Liquid Sealant** – a single component, non-shrink, polyurethane sealant used for filling/topping pitch pans.
G. **ShapeShift Pitch Pans** – high-strength polymer straight and outside corner sections that snap-lock together to create custom sized pitch pans to seal around various roof penetrations.
H. **Walkway Granules** – MuleHide Walkways granules are colored EPDM granules available in gray or safety yellow used with the 100% Silicone Roof Coating to provide a non-slip surface over a MuleHide 100% Silicone Roof Coating in areas of foot traffic or service areas.
I. **Reinforced Polyester Fabric** – a stitch-bonded polyester product that offers high-strength properties with good elongation for excellent thermal stress force accommodations. Tietex 325 Poly Fabric is a soft polyester that will readily conform to surface irregularities and is easy to handle.

J. **Seal-Fast Liqui-Flash -** is a single component, non-shrink, advanced technology polyurethane sealant designed for filling and sealing pitch pockets and pans, metal roof seams & fasteners, inlaid gutters, polyurethane foam, aged smooth asphalt and modified bitumen and aged PVC and EPDM roofs.

2.3 Equipment

A. Spray Equipment (optional) – MuleHide recommends the Graco GH 933ES Hi-Flo Big Rig sprayer with a Monarch 5:1 pump, 3/4" material hose (7,250 psi) up to 250 ft., 1/2" whip, XHF spray gun (7,250 psi) with a XDF 7,250 psi tip (.029 - .035). The recommended pressure at the gun should be 3,000 psi while spraying (Note: Pump lower must be set to maximum lower-ball travel). Please contact MuleHide Technical Department for more detailed information.
Note: Use of the Monarch pump requires the use of an air compressor capable of delivering 20CFM @ 90 psi.
B. Miscellaneous equipment includes 3/4” to 1-1/4” nap, lint free, 9” roller covers and rollers, 6’ handles, 4” double wide chip brushes, roofers’ trowels, scissors for cutting fabric and a 1/2” power drill with mixing attachment.
C. Miscellaneous hand and power tools may be required to complete any repairs to the existing roof.
D. Contractor needs to have testing tools to check throughout the application of the Silicone roof system.
    a. Wet Mill Gage
    b. Fish scale

Part 3 Execution

3.1 Examination

A. **Pre-Inspection Requirements**
- Prior to bidding, a **pre-inspection** must be conducted with the **Warranty Eligible Contractor**. This inspection is to evaluate the existing roof conditions and determine suitability for the application of a **MuleHide Silicone Roof Coating System**.
- Recording the conditions observed on the Pre-Project Evaluation form.

B. **Moisture Tests**
- A **moisture report survey** of the entire roof is required and must be submitted using **MuleHide’s Moisture Scan Report**.
    - Suitability of the Modified Bitumen Membrane roof system must be established using either:
        - A moisture scan
            - Infrared (IR) Scan
            - Nuclear Survey
            - Capacitance Survey
            - Core Sampling

When Core sampling is the survey choice, MuleHide requires the results of the core cuts to be provided on the attached reporting form. Minimum sampling requirements are outlined below:

- On projects under 10,000 sq ft a min of 3 core test per roof area.
    - 10,000-30,000 sq ft a min of 3-5 cores tests.
    - 30,000-50,000 sq ft a min of 5-7 cores tests.
- **On projects greater than 50,000 sq ft contact MuleHide Technical for number of tests required**.

- In the instance that a full IR scan of the roof is provided, contact MuleHide Technical for number of core cut tests required.
- A minimum of 2 core tests per roof section or level on a project.
- Additional core samples should be taken in the most moisture-prone areas of the roof, such as near drains, scuppers, and in areas that show evidence of ponding water, as well as areas of known leaks (existing or historical).

Record the conditions observed on the reporting form on **MuleHide Technical Bulletin 2501.**

C. **Adhesion Tests**

- **Adhesion tests** must be conducted every **4,000 sq. ft** or needed, with at least **one test on each distinct roof condition present.**
  - These include
    - Patched or Repaired Areas
    - Coated Areas
    - Areas of different exposure
    - On projects 50,000 sq ft or greater, contact MuleHide Technical for number of tests required
    - Different levels of the roof
      - These can be different materials used per level
- While no official ASTM method exists for field adhesion testing of roof coatings, many manufacturers reference **ASTM D903** or **ASTM D3359**. MuleHide follows **ASTM D903** and **ASTM D6083**, with specific modifications noted in **Technical Bulletin 2101.**
- Each adhesion test submission must include a **corresponding photograph** to qualify for an **NDL Warranty**.

Recommended steps to perform an adhesion test

- Prepare the surface you are going to apply the test to as you would for a final top coat.
- Clean, dry, prime if needed
- Pre-cut fabric strips (1 in. wide by 12 in. long) one for each test.
- Apply approximately 16 wet mils (1 gallon per square) of coating (Silicone, or Acrylic) onto the clean dry substrate area should be approximately 6” x 12”.
- Immediately, embed 8” of the pre-cut fabric strip into the wet coating.
  - Allow a minimum of 4 inches of the fabric to extend past the wet coating.
  - Brush the fabric lightly to ensure no air pockets, voids, or wrinkles.
  - Apply 16 wet mils (1 gallon per square) over the top of the embedded fabric making sure it is completely covered and sandwiched between the two applied coats.
  - Leave a minimum of 4 inches of the fabric strip uncoated.

1. Allow the test areas to cure for minimum 48hrs before conducting test.
   - Adhesion and curing time frame depend on climate conditions (temperature, humidity, etc.).
   - Test the adhesion with a fish scale. Tie a knot in the fabric that was left out of the coating and hook the fish scale into the knot.
   - Using the fish scale, pull the fabric strip at a 90-degree angle.
   - A minimum of two lbs. of “pull strength” must be observed or registered on the fish scale for the coating adhesion to be considered acceptable. (2lbs per 1 inch of fabric minimum, ideal pull is 2-5lbs per 1 inch of fabric per National Roofing Contractors Association)
   - A photo or a short video of the observed “pull strength” of the fish scale is required.
   - If the fabric separates from the coating, leaving the coating still adhered to the roof membrane, the test is a “pass”.
   - If the coating separates from the roof surface, the test is a “fail”.

2. All adhesion tests should be documented with photos of the **cleaned substrate**, **the “wet” coating and fabric embedded**, and **the face or display of the fish scale showing the resistance observed** in the test.

If the project is requesting a system warranty it is strongly recommended that all tests be performed in the presence of a Mule-Hide Representative. Forward results and photographs of all test area results to the Mule-Hide Technical Department for review using the attached form.

3.2 Existing Conditions and Remedies

A. Prior to the commencement of work, the roof shall be re-inspected and any conditions not included in the roof survey shall be added and noted. All new information must be communicated to MuleHide prior to starting work.

B. The existing Modified Bitumen Membrane roof assembly must be structurally sound, watertight and free of shrinkage, buckling, unacceptable ponding conditions, encapsulated moisture, open seams, open or damaged flashings, loose terminations or other serious defects. Do not install the Silicone Roof Coating System over saturated substrates or insulation.

C. Defects and leaks shall be remediated prior to the installation of the Silicone Roof Coating System. Follow original manufacturers repair methods, refer to the NRCA Repair Manual for Low-Slope Membrane Roof Systems for individual condition repairs of defects or contact MuleHide Technical Department for recommendations.

D. Areas of ponding must evaporate within 48 hours, as defined by NRCA. Any area where ponding remains beyond 48 hours shall require remediation or repair with one of the following options.
    a. Install additional drainage to promote positive drainage of the roof surface. If installing drains is not feasible, proceed with one of the alternative methods below.
        i. Eliminate ponding areas by applying MuleHide SL Base prior to installing the Silicone Roof Coating System.
        ii. Apply at an increased rate of 100% Silicone Coating of at least one additional gallon per 100 square feet in areas of ponding and waterways.
            1. For areas that an additional gallon of 100% Silicone coating is not sufficient, the use of the 3-course method is required to remedy the ponding issue.

E. Existing system shall be inspected for insulation damage, membrane damage, cold welds, or fastener back out. Should any of these conditions exist, make appropriate repairs or contact MuleHide Technical Department to determine a proper repair procedure.

F. As determined by the moisture survey, any wet components must be removed and replaced with similar new components, installed in the same manner as the existing roof system. MuleHide recommends following NRCA published guidelines for completing repairs and replacement of any area containing damaged or wet components. Depending on the extent of wet components, a complete replacement of the existing roof system may be required.

G. Existing flashings shall be properly terminated according to NRCA guidelines or the original membrane manufacturer's specifications. Defective terminations shall be remedied. Damaged flashings shall be repaired prior to installation of the Silicone Roof Coating System.

H. Curbs and penetrations must not interrupt the flow of water off the roof. If these conditions are present, install crickets or SL Base to divert water around the penetrations.

I. All existing field seams shall be inspected and repaired as necessary prior to the application of silicone products and accessories.

J. The existing roof system must be returned to a sound, watertight condition prior to installation of the Silicone Roof Coating System.

K. The contractor should contact the MuleHide Technical Department for recommendations for repairs to the existing Modified Bitumen Membrane membrane prior to the start of the installation of the Silicone Roof Coating System.

3.3 Surface Preparation

A. Mechanically remove all loose coatings and/or patching material if present. Wire brush to remove any areas of scaly rust on any metal surfaces to be coated. Remove all debris, dirt and other loose contaminants from the roof surface prior to cleaning.
B. The roof surface shall be cleaned with MuleHide 115 Cleaner in accordance with MuleHide's most current Product Data Sheet.
C. Do not dilute the 115 Cleaner. Apply directly to the roof with a mop, pump sprayer or other suitable low-pressure sprayer at a rate of .25 to .5 gallon per 100 square feet. Avoid contact with painted surfaces or vinyl siding. Ensure membrane remains wet for 15mins apply additional cleaner if needed. Agitate roof surface with stiff bristle broom or orbital scrubber. Heavily contaminated areas may require multiple cleanings with scrubbing to obtain a clean membrane.
D. Avoid contact with painted surfaces or vinyl siding.
E. Rinse the roof surface with clean water and a minimum 2,000 psi power washer until no 115 Cleaner residue remains. Allow roof to dry completely prior to system installation. Spot check the dried membrane with a clean rag by wiping the surface of the membrane to determine if any residue remains. If the cloth shows signs of residue (dirt or chalk) then repeat the rinsing of the membrane. A second cleaning application may be required.
F. Care must be taken not to damage the existing membrane or inject water into the system while cleaning. The use of the wide tip or pressure washer surface cleaner is strongly recommended.
G. Check local building ordinances for acceptable disposal of the rinse water. Many areas do not permit discharge into sewer systems or water containment areas. Compliance with local building codes and ordinances is the sole responsibility of the contractor.
H. All substrates must be clean and dry prior to priming or coating.
I. Application of coating system should begin as soon as practical and weather conditions allow. The substrate must be checked to ensure it has not become contaminated prior to the installation of silicone coating. Any contamination of the roof surface will require additional cleaning.
J. Modified Bitumen Membrane membranes may be primed using Multibase SB Primer. Surfaces must be clean and dry. Apply Multibase SB Primer using a short nap (1/2" or less) or brush at the rate of 1 gallon per 100 square feet. Application will be thin at this rate, allow primer to completely dry before installation of coatings or sealants over primed areas. Do not over apply the primer as it will not dry evenly and will negatively affect the adhesion of the silicone coating to the primer.

3.4 Application

A. Seams
    1. Field seams
        a. When priming, apply the Multibase SB Primer at the rate of 100 square feet per gallon. Apply the primer over the seam area extending at least 4 inches on each side of the seam edge.
        b. Fully intact seams in good condition shall be coated with Liqui-Flash. The Liqui-Flash shall be applied in a strip 4" wide centering over the seam edge at an application rate of 1 gal/100 linear feet (40 wet mils). Allow to dry until the next day (minimum of 24 hours for Liqui-Flash) before coating the roof surface with the 100% Silicone Roof Coating.
        c. The seam repairs above are used as the basis for all other stripping and flashing applications, if not specified, the overlaps and minimum reinforcements from this section should be used.
B. Flashings and Penetrations
    1. When priming allow the primer to dry a minimum of 6 hours prior to application. All Modified Bitumen Membrane surfaces are to be primed with the Multibase SB Primer prior to application of either the 100% Silicone Roof Coating,100% Silicone Sealant or Liqui-Flash.
    2. Corners of all Modified Bitumen Membrane flashed curbs and walls shall have all flashing edges and seams (vertical and horizontal) addressed in the same manner as the field seams using the 100% Silicone Sealant or Liqui-Flash.
    3. Scuppers are flashed using 100% Silicone Sealant or Liqui-Flash installed a minimum of 2" into the throat of the scupper, 3" minimum onto the wall or deck surrounding the scupper opening and approximately 1/8" thick.
    4. Pipes are flashed using 100% Silicone Sealant, or Liqui-Flash. If priming, allow primer to dry a minimum of 6 hours prior to application of the 100% Silicone Sealant or Liqui-Flash.

a. If the pipe flashings are in sound condition, 100% Silicone Sealant or Liqui-Flash may be applied with a brush or trowel approximately 1/8" thick around the pipe base extending from the base of the pipe out approximately 3". The sealant shall also be applied vertically a minimum 8" (where possible) encapsulating the existing flashing to the point of termination.
b. When flashing Pipe Boots, treat the top and bottom of the boot with approximately 1/8" thick 100% Silicone Sealant or Liqui-Flash at the seam.
c. For Split pipe boots or field wrap, treat the vertical seam with additional 1/8" thick 100% Silicone Sealant or Liqui-Flash.

5. Sealant pockets must be in sound condition and must be encapsulated fully. The entire top of the pocket and penetrations and flash minimum 1" onto the vertical of the penetration(s) with 100% Silicone Sealant or Liqui-Flash.
6. Drains shall have a bead of 100% Silicone Sealant applied and feathered to provide a smooth transition at the outside edge of the clamp drain ring. Installation of the 100% Silicone Roof Coating shall be installed onto the feathered sealant.
   a. When using the 100% Silicone Sealant, allow the sealant to cure until the next day (minimum of 12 hours) prior to application of the 100% Silicone Roof Coating.

E. Waterways, Valleys
1. In identified areas after being primed as necessary, fabric should be "wetted-in" at the rate of 1.0 gallon per 100 sf then with an additional 1.0 gallon per 100 sf of 100% Silicone Roof Coating applied in addition to the minimum application rate required for the specified warranty duration.

F. Silicone Roof Coating Application
1. Make sure all roof surfaces to receive the roof coating are clean, free of any contamination or debris, and are dry. Make sure all prep work is completed and cured prior to starting the application of the 100% Silicone Roof Coating to the substrate.
2. MuleHide requires mechanically stirring all containers of 100% Silicone Roof Coating prior to application. Do not thin this product. This product cures through absorption of moisture from the air, avoid mixing at high speeds which can introduce air when mixing. Cure time will accelerate in humid conditions. **Do not apply this product over damp or wet surfaces.**
3. Previously opened and partially full containers will skin over quickly. If this occurs, remove skin and continue using the remaining product. MuleHide recommends applying the 100% Silicone Roof Coating in one coat either spraying or rolling.
   Prior to application MuleHide recommends gridding out the substrate into 10' by 10' areas (one square) apply the number of gallons per square required. Use a wet film thickness gauge during installation to confirm application rates.
4. Apply 100% Silicone Roof Coating at the application rate as determined by the 10,15,20-year system and coverage requirements. Refer to Section 1.10 for required warranty application rates.
5. **If rolling:** do not distribute excessive amounts onto the substrate prior to rolling. Do not over roll as a textured finish may result. Allow coating to cure, typical curing time in 60 - 70°F temperatures range from 2 to 4 hours depending on the mil-thickness of the application.
6. **If spraying:** protect unintended surfaces from overspray, it is not recommended to use a spray application if any wind is occurring. Use a single-pass technique, special effort should be made to have pass lines overlap on membrane seams as to provide additional coating thickness on the seams.
7. **If using a notched squeegee:** Pour out product and spread with a 3/16" notched squeegee and immediately back roll for a smooth even finish.

G. Walkway Areas
1. Walkways may be constructed over newly installed silicone roof coatings with the use of the MuleHide Walkway granules and additional silicone coating.
2. Create outlines for the walkways by taping these areas off with masking or painters tape.
3. Apply a fresh coat of 100% Silicone Roof Coating at a rate of 2 gal/sq. (32 wet mils, 29 dry mils).
4. As soon as the silicone is applied immediately broadcast the granules into the wet coating at a minimum rate of 15 lbs per 100 square feet. Make sure the granules completely cover the new coating.
5. As soon as the granules are broadcast, remove the tape. Do not wait for the silicone to dry.
6. Do not let the silicone skin over before applying the granules as the granules will not adhere to the silicone. The silicone must be wet.

7. Allow the coating to dry until the next day. Once dry, vacuum the loose granules to prevent the excess from going into drains or gutters.
8. Over time, walkway surfaces may wear, but can easily be repaired or resurfaced by applying additional 100% Silicone Roof Coating and new granules.

Note: Walkways are maintenance items not covered by MuleHide warranties. Additional coating and granules and their application are the responsibility of the building owner.

3.5 Protection

Always follow OSHA guidelines for proper safety clothing and equipment when spraying products.

3.6 Clean-Up

Remove all containers, equipment, and debris from the rooftop and project site upon project completion. Refer to each individual Product Data Sheet for clean-up of each individual product.

Note: When estimating materials necessary to complete a Silicone Roof Coating System it is the Contractor's responsibility to include material calculations for waste.

END OF SECTION