



VERSAROOF INSTALLATION GUIDE

REV. 0520

VERSAFLEX

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VERSAROOF INSTALLATION GUIDE

INTRODUCTION

The VersaFlex VersaRoof™ Systems Application Guidelines” are intended to offer guidance to authorized VersaRoof™ installers and design professionals. The Guideline provides instructions and details for the installation of VersaRoof™ roofing membranes, coatings, and ancillary accessories. Refer to applicable building codes, standards, and industry publications for additional requirements and best-practices guidelines. Refer to current VersaRoof™ technical data sheets and safety data sheets for specific product information and product related requirements. For additional information refer to www.versaflex.com or contact us at 913.321.9000.

DISCLAIMER

This guideline is intended for use by VersaRoof™ authorized installers and design professionals to provide instructions and details for the application of VersaRoof™ roofing systems when a VersaFlex VersaRoof™ warranty will be requested upon project completion. The contents of this manual are consistent with good roofing practices but are not specific to any particular project’s needs and are not a substitute for professional design services. VersaFlex will not be held responsible for any liability, including damages, costs or expenses related to the evaluation, design or installation of any particular project or system.

PART 1 - GENERAL

1.1 Installer Qualifications

- A. A VersaRoof™ installer shall be approved by the manufacturer.
- B. The Installer shall be an established firm, regularly engaged in satisfactory installations of similar materials on projects of similar nature and complexity.
- C. The Installer shall employ competent personnel, which have been trained in the installation of the materials on projects of similar nature and complexity.
- D. The Installer shall employ a Quality Manager with the primary role of quality oversight to be on the job site at all times to oversee the installation of each portion of the roofing membrane system and to perform and evaluate the results of the required testing. The Quality Manager shall be a competent person that has exhibited an understanding of the surface preparation means and methods, evaluation, product installation, and testing equipment and procedure.

PART 2 - EVALUATION

2.1 General

- A. VersaRoof™ membranes, coatings, and ancillary products are suitable for a variety of roofing substrates and applications. Refer to Product Selections Guides for an outline of available products and their recommended uses and limitations.
- B. Comply with all federal, state, local, and project related health, safety, and environmental rules, regulations, and requirements.
- C. Comply with all Personal Protective Equipment (PPE) rules, regulations, and requirements when handling, and applying VersaRoof™ materials. Refer to product Safety Data Sheet (“SDS”) for information on health, safety, handling, and related hazards.
- D. Follow all Technical Data Sheet (“TDS”) recommendations for material storage, handling, and processing.

2.2 Project and Site Evaluation

A. General Evaluation

- 1. Before beginning work, evaluate site conditions to ensure the intended installation is appropriate for VersaRoof™ materials.
- 2. Ensure the VersaRoof™ materials are appropriate for all the roofing substrate, building, occupancy, site, environment, and weather conditions.
- 3. Ensure all roof flashings, accessories, terminations, and substrates, are well bonded and sound prior to applying VersaRoof™ materials.
- 4. Review project conditions and determine when and where conditions are appropriate to utilize the selected or specified VersaRoof™ materials. When conditions are determined to be unsafe or undesirable, to proceed, take all necessary measures to prevent or eliminate the unsafe or undesirable exposures and conditions.

B. Substrate Evaluation

- 1. Any roofing project may have a variety of substrates. Determine a plan for repair, surface preparation, and installation for each substrate. All roofing substrates should have positive slope and adequate roof drainage. *Ponding water is defined herein as isolated water accumulations that dissipate within 48 hours of precipitation.*
- 2. Identify all tie-ins and the manner of treatment, including the replacement of existing roofing material and overlaps.

3. Identify all penetrations, anchors, and other structures which may interrupt the monolithic and waterproofing ability of the VersaRoof™ System. Determine the best method of treatment.
4. For new and replacement roofs where the VersaRoof™ System will be directly installed on a structural element not originally intended as a roofing layer base the substrate evaluation on the repair and surface preparation sections of this document.
5. For re-roofs where the VersaRoof™ System will be installed over an existing roofing layer additional evaluation is required to verify the appropriateness of the VersaRoof™ System for each project.
 - a. Moisture Investigation
 - i. Survey the entire roof area to be coated to determine a complete moisture map of the area including wet or moisture damaged substrates, ponding water, or inadequate roof drainage or slope.
 - ii. The moisture inspection may include a visual examination, test cuts, infrared cameras, capacitance meters, probes, and/or other means as necessary to identify and replace all wet or water damaged materials.
 - iii. Ensure all wet, or water damaged materials have been replaced with appropriate dry materials before installing new coating materials
 - b. Adhesion
 - i. Ensure the VersaRoof™ roofing material will, as required, adhere to all existing substrates.
 - ii. Select a minimum of three (3) areas to test. Additional tests may be required for additional substrates or assemblies.
 - iii. Clean and prepare the substrate(s) as specified and indicated in **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 - iv. Apply the intended primer based on substrate and site conditions and VersaRoof™ membrane as determined using the product selection guide. For adhesion testing, VersaRoof™ HM-F may be used. Allow to fully dry.

- v. Perform, evaluate, and report the adhesion tests as per ASTM D7234 for concrete surface, and ASTM D4541 for metal surfaces. If testing adhesion over substrates other than concrete or metal, follow ASTM D7234.

C. Project Coordination

1. Coordinate all work with the General Contractor or building owner's representative.
2. Examine the impact of material installation on the occupants, the general public, and other trades.
3. Examine all building conditions and configurations that may impact the application.
4. Examine all building equipment and rooftop equipment that may have an impact on the application such as HVAC equipment, intake and exhaust vents, electrical, and other penetrations.
5. Examine all building equipment that discharges water, condensation, steam, and other effluent onto the work area.

D. Material Delivery and Storage

1. Refer to each material Technical Data Sheet (TDS) for specific environmental requirements, material storage and handling, and application requirements. Adjust material storage, handling, and installation as necessary.
2. Deliver products in original containers labeled with Manufacturer's name, product brand name, and batch/lot numbers.
 - a. VersaRoof™ is part of the VersaFlex family of companies.
3. Store materials as required by Manufacturer in a clean, dry, protected location and within temperature range required by Manufacturer. Protect stored materials from direct sunlight.
4. Composite panels must be covered and protected from the weather until ready for installation and must remain dry prior to and during installation.
5. Replace product damaged by shipment, weather, or job conditions.
6. Condition and process all materials as per Manufacturer's recommendations.

PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION

3.1 General

- A. Many roofing assemblies will have multiple substrates requiring different surface preparation methods. Consider all substrates, the required surface preparation objectives, and the available means of achieving those standards when developing a surface preparation plan. Some methods may not be appropriate for all substrates or may even be detrimental.
- B. Substrate moisture requirements are determined by the roofing assembly and the product selection. Never coat over standing water, or trap water in the substrate.
- C. Prepare each identified substrate to the standards established in this section. Contact a VersaRoof™ representative for additional recommendations or guidance.
- D. All substrates shall be sound, clean, and free of any dirt, dust, debris, or deleterious material.
- E. Follow industry standards and the original roofing membrane manufacturer's recommendations and written instructions as they relate to repairs, exposures, and surface preparation.
- F. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. If necessary, remove or cut back the existing roofing membrane to access the substrate. When possible, terminations should be protected by flashing or caps. Terminations should never be exposed to running, flowing, or standing water. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS**, standard drawings, and contract documents.
- G. *Note: As with all coating system “You’re only as good as what you are sticking to.” Even if positive adhesion can be determined to existing roofing membranes and systems, if the existing system is not well bonded the VersaRoof™ will not be well bonded either.*

3.2 Concrete and Masonry

- A. Repairs
 - 1. Ensure all areas to be waterproofed are sound.
 - 2. Replace all damaged and deteriorated concrete, masonry, or cementitious substrate using manufacturer approved repair materials.
 - 3. Missing or damaged grout should be re-pointed or caulked.
- B. Pre-Treatment

1. Remove any fins or form splatter which may interfere with the ability of the VersaRoof™ membrane to form a monolithic waterproofing layer.
2. Honeycombs, bug holes, irregular cold joints, or other voids in vertical concrete, masonry, and cementitious substrates should be parged using approved manufactures parging material.
 - a. *Note: many voids may not be noticeable until surface preparation is performed. Parging materials may require additional surface preparation. To expedite the project, it often advised that the vertical surfaces be prepared first, repairs and parging performed, and then a final general surface preparation completed.*
 - b. *Note: some polymer based parging compounds may not require additional surface preparation. Consult a VersaRoof™ representative for evaluation of proposed parging compound selection and procedure recommendations. The VersaProof™ EWB can be combined with Cemental to form a parging compound for decking. Refer to the VersaProof™ EWB TDS for additional information.*
3. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
4. Route cracks as necessary per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.
 - a. In general, all cracks greater than 1/8” should be routed out using a concrete cutting blade, maintaining a uniform width and depth. Ensure the depth of cut is at least two times greater than the width. Ensure the cut is perpendicular to the surface. If the crack formerly ran through a repaired area, continue the routing to connect the existing cracks. Prior to installing a joint filler, ensure the crack is clean, dry, and free of any dirt, dust, debris, or deleterious material.
5. Prepare any construction or control joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.
 - a. In general, all control or construction joints should have the edges ground clean out using a concrete cutting blade, maintaining a uniform width and depth. Ensure the depth is at least two times greater than the width. Ensure the joint faces are perpendicular to the surface. If the joint formerly ran through a repaired area, re-create the joint maintaining a uniform width and depth. Prior to installing a joint filler, ensure the crack is clean, dry, and free of any dirt, dust, debris, or deleterious material.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.
6. Cut in a ¼" x ¼" keyway into the substrate. If applying to CMU or other Masonry substrates, the keyway should be cut into the grout.

D. Cleaning and Surface Preparation

1. Remove any existing roofing or waterproofing membrane.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
2. Prepare the substrate in accordance with SSPC-SP13/NACE No. 6 Surface Preparation of Concrete.
3. Achieve a minimum surface profile of CSP 3 when measured using the ICRI comparator coupons.
4. Grinding may be used when necessary based on access or site conditions. When grinding avoid polishing the substrate and achieve a minimum surface profile of CSP 2 when measured using the ICRI compactor coupons.
5. Surface preparation may expose areas of compromised substrate that may require repair or replacement.
6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.
7. Additional guidelines for the acceptance of a prepared substrate can be found in SSPC-SP13/NACE No. 6 Surface Preparation of Concrete for concrete substrates. For reference, a selection of recommended acceptance guidelines based on Table 1 of SSPC-SP13/NACE No. 6

Property	Test Method	Result
Surface Tensile Strength	ASTM D7234 ¹	300 psi ²
Surface Profile	Visual Comparison	Course Abrasive Paper or CSP 3 or Greater ³
Surface Cleanliness	Visible Dust	No Significant Dust
Residual Contamination	Water Drop	0° Contact Angle
Moisture Content	ASTM D4263	No Visible Moisture

3.3 Steel

A. Repairs

1. Ensure all areas to be waterproofed are sound.
2. Replace all damaged and deteriorated steel substrate.

B. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane such as weld splatter, burrs, and sharp edges. Refer to Appendix A.5 SURFACE IMPERFECTIONS of SSPC-SP 10/NACE No. 2 Near White Metal Blast Cleaning for more information.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.

¹ Modified to exclude the 3 mm core into the substrate, and to allow 20 mm dollies. Failure shall be at least 50% in the substrate.

² For coatings on concrete surfaces, substrate failure is the preferred mode of failure. Low values in this failure mode indicate a deficiency in the concrete. For additional commentary, see ASTM D7234, Appendix X1.

³ CSP reference added

4. Terminations should never be exposed to running, flowing, or standing water.
 5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.
 6. If a parallel termination is necessary, ensure the edge of VersaRoof™ is straight, and cut back at a 45° from the substrate.
- D. Cleaning and Surface Preparation
1. Remove any existing roofing or waterproofing membrane.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
 2. Clean the substrate per SSPC-SP1 Solvent Cleaning.
 3. Prepare the substrate in accordance with SSPC-SP10/NACE No. 2 Near White Metal Blasting.
 4. Achieve a minimum angular surface profile of 3-5 mils.
 5. For small areas a Bristle Blaster is preferable. Grinding may be used when necessary based on access or site conditions. When grinding avoid polishing the substrate. Follow SSPC-SP11 Power Tool Cleaning to Bare Metal.
 6. Surface preparation may expose areas of compromised substrate that may require repair or replacement.
 7. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.
 8. Additional guidelines for the acceptance of a prepared substrate can be found in SSPC-SP10/NACE No. 2 Near White Metal Blast Cleaning for ferrous metal substrates.

3.4 Cement Cover Board

- A. Repairs
1. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Replace all damaged and deteriorated cement boards.
 2. Replace all missing, stripped, or deteriorated fasteners using new, properly sized, corrosion resistant fasteners with EPDM-backed washers. New fasteners and washers should be sized larger than the old existing fasteners where appropriate. Ensure replaced fasteners and fastener orientation meet relevant building codes.

3. Ensure all cement cover boards are flush with one another and provide positive slope towards roof edges or drains.

B. Pre-Treatment

1. Fill all non-uniform gaps between the cement cover boards caused by improper placement, or chipped or damaged edges with a manufacturer approved cementitious repair grout or urethane caulk.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Additional information of the treatment of the butt joints between panels, and the horizontal/vertical interface can be found in **PART 6 – CRACK AND JOINT TREATMENT**, detail drawings, and contract documents.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. For cement board assemblies this is typically a parapet wall.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

D. Cleaning and Surface Preparation

1. Remove any existing roofing or waterproofing membrane. Ensure the method used for removal does not damage the cement cover board.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
2. New Cement Cover boards may not require any cleaning or surface preparation.
3. For existing roofing systems, use compressed air or a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminants. Ensure pressure and water does not damage the roofing substrate.

4. If necessary, based on oil contamination testing, apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease. Remove all residual cleaner using clean water.
5. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.5 Plywood Cover Boards and Decking

A. Repairs

1. *Note: This section covers plywood cover boards and decking, “decking” please contact VersaRoof™ for directions on lumber decking.*
2. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Damage includes, bowed, twisted, cupped, and otherwise warped decking. DONOT “force down” decking with screws. Replace all damaged and deteriorated plywood decking.
3. Only use kiln dried or aged plywood.
4. Remove and repair all splinters, recessed knots, surface checks, waness, end splits or other unsounding decking with a manufacturer’s approved epoxy material.
 - a. *Note: The VersaProof™ EWB may be combined with Cemental to form a parging compound for decking. Refer to the VersaProof™ EWB TDS for additional information.*
5. Replace all missing, stripped, or deteriorated fasteners using new, properly sized, corrosion resistant fasteners with EPDM-backed washers. New fasteners and washers should be sized larger than the old existing fasteners where appropriate. Ensure replaced fasteners and fastener orientation meet relevant building codes.
6. Ensure all decking is flush with one another and provide positive slope towards roof edges or drains.

B. Pre-Treatment

1. Fill all non-uniform gaps between the cement cover boards caused by improper placement, or chipped or damaged edges with a manufacturer approved cementitious repair grout or urethane caulk.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.

3. Additional information of the treatment of the butt joints between panels, and the horizontal/vertical interface can be found in **PART 6 – CRACK AND JOINT TREATMENT**, detail drawings, and contract documents.
- C. Tie-Ins and Terminations
1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. For plywood decking assemblies this is typically a parapet wall.
 2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
 3. When possible, terminations should be protected by flashing or caps.
 4. Terminations should never be exposed to running, flowing, or standing water.
 5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.
- D. Cleaning and Surface Preparation
1. Remove any existing roofing or waterproofing membrane. Ensure the method used for removal does not damage the plywood decking.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
 2. New plywood decking may not require any cleaning or surface preparation. Particular care should be taken to ensure new or pressure treated plywood as completely dried out and the chemical preservatives have ceased to leach out.
 3. For existing roofing systems, use compressed air or a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminates. Ensure pressure and water does not damage the roofing substrate.
 4. If necessary, based on oil contamination testing, apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease. Remove all residual cleaner using clean water.
 5. As necessary, sand the substrate using 40 grit sandpaper. Sanding pads on angle grinders, belt sanders, rotary floor grinders, or planetary grinders may be used.
 6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.6 Foam Board

A. Repairs

1. *Note: This section covers manufactured foam boards such as “ISO Board,” “Pink Board,” and “Blue Board” which are typically cut to create slope and provide insulation. Typical installations include a wood or cement board cover board. VersaRoof™ Systems will bond to foam boards, though will not provide protection from impact.*
2. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Damage includes, bowed, twisted, cupped, and otherwise warped boards. **DONOT** “force down” boards with screws. Replace all damaged and deteriorated boards.
3. Replace all missing, stripped, or deteriorated fasteners using new, properly sized, corrosion resistant fasteners with EPDM-backed washers. New fasteners and washers should be sized larger than the old existing fasteners where appropriate. Ensure replaced fasteners and fastener orientation meet relevant building codes.
4. Ensure all decking is flush with one another and provide positive slope towards roof edges or drains.

B. Pre-Treatment

1. Fill all non-uniform gaps between the cement cover boards caused by improper placement, or chipped or damaged edges with a manufacturer approved foam filler.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Additional information of the treatment of the butt joints between boards, and the horizontal/vertical interface can be found in **PART 6 – CRACK AND JOINT TREATMENT**, detail drawings, and contract documents.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. For foam board assemblies this is typically a parapet wall.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.

4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

D. Cleaning and Surface Preparation

1. For foam board decks the existing waterproofing or roofing systems may remain since removal will damage the foam boards. Ensure positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.
2. New foam boards may not require any cleaning or surface preparation.
3. For existing roofing systems, use compressed air or a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminates. Ensure pressure and water does not damage the roofing substrate.
4. If necessary, based on oil contamination testing, apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease. Remove all residual cleaner using clean water.
5. As necessary, sand the substrate using 40 grit sandpaper.
6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.7 Standing Seam and Lap Seam Metal Roofs

- A. Pre-Inspection: Prior to beginning, confirm the VersaRoof™ System will adhere to the metal panel roof per **Part 2 – EVALUATIONS**, particularly the Adhesion portion of Substrate Evaluation section.
- B. Repairs
 1. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Damage includes, bent, bowed, twisted, cupped, and otherwise warped panels. **DONOT** “force down” panels with screws. Replace all damaged and deteriorated panels.
 2. Replace all missing, stripped, or deteriorated fasteners using new, properly sized, corrosion resistant fasteners with EPDM-backed washers. New fasteners and washers should be sized larger than the old existing fasteners where appropriate.
 3. Ensure all panels are flush with one another and provide positive slope towards roof edges or drains.
 4. Ensure existing coating or galvanization is sound and well bonded.

C. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane such as weld splatter, burrs, and sharp edges.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

D. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. For metal panel roof assemblies this is typically a parapet wall, or at the drip edge of the roof.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

E. Cleaning and Surface Preparation

1. Remove any existing roofing or waterproofing membrane.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
2. Clean the substrate per SSPC-SP1 Solvent Cleaning.
3. SSPC-SP16: Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals Achieve a minimum angular surface profile of 0.5-1.0 mils.
4. For small areas use a sandpaper or sanding pads. DONOT use metal tools such as wire wheels on galvanization.
5. Surface preparation may expose areas of compromised substrate that may require repair or replacement.

6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.
7. For galvanized and most painted panels, a solvent wipe with acetone or MEK using clean, lint free rags or mops is required. For painted panels test a small area first to ensure the existing paint isn't damaged.

3.8 Polyurethane Spray Foam (SPF)

A. Repairs

1. For existing SPF roof assemblies, comply with the original material manufacturers published repair and/or installation guidelines.
2. Ensure the existing SPF is sound and undamaged. Replace all damaged and deteriorated foam substrate with manufactures approved repair material.
3. Shave smooth and peaks which may cause ponding.

B. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane such as overspray, rolls, are excessive peaks.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry. For SPF roof assemblies this is typically a parapet wall, or at the drip edge of the roof.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in the **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

D. Cleaning and Surface Preparation

1. Remove any existing roofing or waterproofing membrane.
 - a. *Note: Some existing systems may remain if positive adhesion can be established, and the existing membrane is well bonded to the substrate. Consult a VersaRoof™ Representative for further guidance.*
2. New SPF roof assemblies may not require any cleaning or surface preparation so long as the installed SPF has not oxidized and begun to chalk. Stage the project so the SPF is overcoated as soon as possible.
3. For existing roofing systems;
 - a. Use a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminants. Ensure pressure and water does not damage the roofing substrate.
 - b. If necessary, based on oil contamination testing, apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease.
 - c. Remove all residual cleaner using clean water.
4. Ensure all oxidization and chalking has been removed.
5. As necessary, sand the substrate using 40 grit sandpaper.
6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.9 Modified Bitumen, Butyl Rubber, and Built-Up Roofs

A. Pre-Inspection:

1. Modified bitumen, butyl rubber and built-up roofs use asphalt-based membranes. Successful installations depend on the age of the system, it's exposure, the level of oxidation and "drying-out," and the aggregate coverage.
2. Past success with similar type systems is not guarantee of current success.
3. Prior to beginning, a thorough evaluation as outlined in **Part 2 – EVALUATIONS** shall be performed.

B. Repairs

1. Comply with the original material manufacturers published repair and/or installation guidelines.
2. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Replace all damaged and deteriorated areas.

3. Seal all open and partially open flaps and seams.

C. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

D. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

E. Cleaning and Surface Preparation

1. Use a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminants. Ensure pressure and water does not damage the roofing substrate.
2. Apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease.
3. Remove all residual cleaner using clean water.
4. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.10 TPO, PVC, and other Extruded Plastic Single-Ply Roofing

A. Pre-Inspection:

1. TPO, PVC, and other Extruded Plastic Single-Ply Roofing Membranes are created from thermoset plastics. Successful installations depend on the

thermoset plastic and additives used, the age of the system, it's exposure, the level of oxidation and "drying-out."

2. Past success with similar type systems is not a guarantee of current success.
3. Prior to beginning, a thorough evaluation as outlined in **Part 2 – EVALUATIONS** shall be performed.

B. Repairs

1. Comply with the original material manufacturers published repair and/or installation guidelines.
2. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Replace all damaged and deteriorated areas.
3. Seal all open and partially open flaps and seams.

C. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

D. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.
4. Terminations should never be exposed to running, flowing, or standing water.
5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.

E. Cleaning and Surface Preparation

1. Use a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminants. Ensure pressure and water does not damage the roofing substrate.
2. Apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease.
3. Remove all residual cleaner using clean water.
4. Abrade the substrate using mechanical means such as wire wheels, or sanding pads.
5. Wipe, or mop the prepared area with MEK or acetone using clean, lint free rags or mops to remove residual dust.
6. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

3.11 Existing VersaRoof™ Membrane

A. Repairs

1. Comply with the repair and/or installation guidelines herein.
2. Ensure all areas to be waterproofed are sound and have not been damaged or deteriorated. Replace all damaged and deteriorated areas.

B. Pre-Treatment

1. Remove any surface imperfections which may interfere with the ability of the VersaRoof™ membrane to remain well bonded or form a monolithic membrane.
2. Where applicable, based on contract documents and detail drawings, smooth anchors, penetrations, pipe clamps, or any structure which may interfere with the ability of the VersaRoof™ membrane to achieve a monolithic waterproofing.
3. Prepare any joints per **PART 6 – CRACK AND JOINT TREATMENT**, standard drawings, and contract documents.

C. Tie-Ins and Terminations

1. The VersaRoof™ System should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
2. If necessary, remove or cut back the existing roofing membrane to access the substrate.
3. When possible, terminations should be protected by flashing or caps.

4. Terminations should never be exposed to running, flowing, or standing water.
 5. Additional information can be found in **PART 7 – TIE-INS AND TERMINATIONS** standard drawings, and contract documents.
- D. Cleaning and Surface Preparation
1. Use compressed air, or a low-pressure washer (less than 2,000 psi) to remove loose granules, dirt, biologic growth, and other contaminants. Ensure pressure and water does not damage the roofing substrate.
 - a. If necessary, based on oil contamination testing, apply Manufacturer approved de-greaser with a stiff bristle broom or brush to remove petroleum-based contaminants, oils, and grease.
 - b. Remove all residual cleaner using clean water.
 2. Abrade the substrate using mechanical means such as abrasive blasting, wire wheels, or 40 grit sandpaper. Sanding pads on angle grinders, belt sanders, rotary floor grinders, or planetary grinders may be used.
 3. Wipe, or mop the prepared area with MEK or acetone using clean, lint free rags or mops to remove residual dust.
 4. Ensure the substrate is clean, dry, sound, free of oil, dirt, dust, debris, or deleterious material.

PART 4 - PRODUCTS

4.1 General

- A. VersaRoof™ products are intended as a system.
- B. Follow all technical data sheets, written instructions, detail drawings, and contract documents.
- C. Refer to the product selection guides to determine the best product based on use, location, substrate, environmental conditions, and site conditions.
- D. For all products, more detailed material mixing, processing, and application instructions can be found in the TDS.

4.2 Primers

	<i>VersaProof Primer S</i>	<i>Thinning Rate (Acetone)</i>	<i>VersaProof Primer F</i>	<i>DO NOT THIN</i>	<i>VersaProof Primer E</i>	<i>Thinning Rate (Acetone)</i>	<i>VersaProof Primer EWB</i>	<i>Thinning Rate (Water)</i>	<i>VersaProof Primer RC</i>	<i>Thinning Rate (MEX)</i>
Concrete	R	0-33%	R		R	50%	R	50%	NR	
Masonry & CMU	R	0-33%	R		R	50%	R	50%	NR	
Cement Cover Board	R	0-33%	R		R	50%	R	50%	NR	
Steel	R	50%	NR		NR		NR		NR	
Galvanized Metal	RL	50%	NR		NR		NR		NR	
Painted Metal	R	50%	NR		NR		NR		NR	
Spray Foam	R	0%	NR		NR		RL	50%	NR	
Foam Board	R	0%	NR		NR		RL	50%	NR	
Built-Up	R	0%	NR		NR		RL	50%	NR	
Granularized Sheet	R	0%	NR		NR		RL	50%	NR	
TPO, PVC, etc.	RL	50%	NR		NR		NR		RL	66%
VersaRoof Membrane	RL	50%	NR		NR		NR		R	66%
Plywood	R	0-33%	RL		R	50%	R	50%	NR	

R Recommended
 RL Recommended with Limitation
 NR Not Recommended

	<i>VersaProof Primer S</i>	<i>VersaProof Primer F</i>	<i>VersaRoof Primer E</i>	<i>VersaRoof Primer EWB</i>	<i>VersaRoof Primer RC</i>
Chemistry	PU	PU	Epoxy	Epoxy	NA
Lower Temperature	0°F	-20°F	50°F	50°F	20°F
SSD	NR	NR	R	R	NR
"Green" Substrate	NR	NR	R	R	NR
Min. Recoat	4 hr	1 hr	6 hr	6 hr	15 min
Max. Recoat	48 hr	24 hr	48 hr	48 hr	1 hr

- A. VersaProof™ Primer S is a 2K, 100% solids urethane-based primer that may be cut with dry acetone based on the substrate. VersaProof™ Primer S is intended as a multi-purpose primer intended for most substrates.
1. VersaProof™ Primer S has a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
 2. VersaProof™ Primer S is a urethane-based primer and will react with moisture. Foamed areas should be removed and cleaned.
 3. Variation in substrate porosity may affect coverage rates.
 4. Do not leave primed substrates exposed during periods of precipitation, or other inclement weather.
 5. VersaProof™ Primer S is ready to be overcoated when material is dry to touch without leaving a residue or mark. VersaProof™ Primer S may still feel slightly tacky, typically, 4 hrs. Other conditions such as sun, cloud cover, wind, and shade may impact the cure times, overcoat, and maximum re-coat.
 6. VersaProof™ Primer S should be re-coated in less than 48 hrs. If re-coat windows have been exceeded, or other conditions such as sun, cloud cover, wind, and shade may impact the maximum re-coat, additional preparation may be required.
 - a. Abrade, lightly shot blast, or brush blast the substrate.
 - b. Remove all dirt, dust, debris or contamination.
 - c. Re-apply a thin coat of VersaProof™ Primer S reduced by 50% with acetone at a rate of 600-800 ft² per gallon.
 7. Environmental Conditions
 - a. Only install VersaProof™ Primer S over dry substrates.
 - b. Install system when air and substrate temperature is above 32°F and substrate temperature is 5°F above the dew point and rising. The VersaProof™ Primer F may be applied down to 0°F. When air and/or substrate temperature are below 32°F, perform additional testing as outlined in the **Testing Concrete Moisture Content – Cold Temperature Applications** document. If installing the membrane when ambient or substrate temperatures are below freezing the Installer and Quality Representative shall agree on if, and how to proceed.
 - c. Substrate moisture content shall be 5.0% or less. Test concrete moisture content with a non-destructive concrete moisture meter

such as Tramex Concrete Moisture Encounter or CMEX II. After precipitation, remove all standing water and allow the substrate to dry naturally.

- d. Take steps to ensure other porous substrates are dry.
- e. During installation ensure the ambient and substrate temperatures remain above 0°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
- f. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.

8. Mixing

- a. VersaProof™ Primer S is supplied as a 100% solids, 1:1 primer.
- b. Always pre-measure the A & B components using metered mixing buckets.
- c. Combine 1part A with 1 part B and drill mix at low speeds for 3 minutes.
- d. After mixing, thin using clean, dry, virgin acetone. Refer to product selection guide or TDS for more detailed thinning recommendations.
 - i. Foams, and asphalt-based roofing systems: DO NOT THIN
 - ii. Concrete, masonry, cement board, and wood: Thin by 33%
 - iii. TPO, PVC, plastics, steel, metal, and coated substrates: Thin by 50%

9. Application Methods

- a. Mass effect reduces the pot life. Mix small batches or remove from mixing bucket to extend working time.
- b. Hand tool installation
 - i. Vertical surfaces can be installed by brush or roller.
 - ii. For horizontal surfaces a broom, roller, or squeegee work best.
- c. Spraying
 - i. Only spray VersaProof™ Primer S in a thinned mix.

- ii. If spraying, a back roll or broom is still required to ensure even application.
- B. VersaProof™ Primer F is a 2K, solvent borne urethane-based primer. VersaProof™ Primer F is intended for concrete, masonry, and cementitious substrates.
 1. VersaProof™ Primer F has a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
 2. VersaProof™ Primer F is a urethane-based primer and will react with moisture. Foamed areas should be removed and cleaned.
 3. Variation in substrate porosity may affect coverage rates.
 4. Do not leave primed substrates exposed during periods of precipitation, or other inclement weather.
 5. VersaProof™ Primer F is ready to be overcoated when material is hard to touch. typically, 1 hr. Other conditions such as sun, cloud cover, wind, and shade may impact the cure times, overcoat, and maximum re-coat.
 6. VersaProof™ Primer F should be re-coated in less than 24 hrs. If re-coat windows have been exceeded, or other conditions such as sun, cloud cover, wind, and shade may impact the maximum re-coat, additional preparation may be required.
 - a. Abrade, lightly shot blast, or brush blast the substrate.
 - b. Remove all dirt, dust, debris or contamination.
 - c. Re-apply a thin coat of VersaProof™ Primer F at a rate of 600-800 ft² per gallon.
 7. Environmental Conditions
 - a. Only install VersaProof™ Primer F over dry substrates.
 - b. Install system when air and substrate temperature is above 32°F and substrate temperature is 5°F above the dew point and rising. The VersaProof™ Primer F may be applied down to -20°F. When air and/or substrate temperature are below 32°F, perform additional testing as outlined in the **Testing Concrete Moisture Content – Cold Temperature Applications** document. If installing the membrane when ambient or substrate temperatures are below freezing the Installer and Quality Representative shall agree on if, and how to proceed.

- c. Substrate moisture content shall be 5.0% or less. Test concrete moisture content with a non-destructive concrete moisture meter such as Tramex Concrete Moisture Encounter or CMEX II. After precipitation, remove all standing water and allow the substrate to dry naturally.
- d. Take steps to ensure other porous substrates are dry.
- e. During installation ensure the ambient and substrate temperatures remain above -20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
- f. Monitor environmental conditions during application included substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.

8. Mixing

- a. VersaProof™ Primer F is supplied as a solvent borne, 1:1 primer.
- b. Always pre-measure the A & B components using metered mixing buckets.
- c. Combine 1part A with 1 par B and mix for 1 minute.

9. Application Methods

- a. Mass effect reduces the pot life. Mix small batches or remove from mixing bucket to extend working time.
- b. Hand tool installation
 - i. Vertical surfaces can be installed by brush or roller.
 - ii. For horizontal surfaces a broom, roller, or squeegee work best.
- c. Spraying
 - i. Spray using a plural component, direct impingement mix
 - ii. If spraying, a back roll or broom is still required to ensure even application.

- C. VersaProof™ Primer EWB is a 2K, zero VOC, epoxy primer that is intended to be diluted with water. VersaProof™ Primer EWB is intended for concrete, masonry, and cementitious substrates, as well as wood, and other porous substrates. VersaProof™ Primer EWB is intended for concrete substrates that cannot be reasonably dried and green concrete.

1. VersaProof™ Primer EWB has a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
2. Variation in substrate porosity may affect coverage rates.
3. Do not leave primed substrates exposed during periods of precipitation, or other inclement weather.
4. VersaProof™ Primer EWB is ready to be overcoated when material is hard to touch. typically, 6 hr. Other conditions such as sun, cloud cover, wind, and shade may impact the cure times, overcoat, and maximum re-coat.
5. VersaProof™ Primer EWB should be re-coated in less than 48 hrs. If re-coat windows have been exceeded, or other conditions such as sun, cloud cover, wind, and shade may impact the maximum re-coat, additional preparation may be required.
 - a. Abrade, lightly shot blast, or brush blast the substrate.
 - b. Remove all dirt, dust, debris or contamination.
 - c. Re-apply a thin coat of VersaProof™ Primer F at a rate of 600-800 ft² per gallon.
6. Environmental Conditions
 - a. VersaProof™ Primer EWB may installed over Saturated Surface Dry Concrete. Never install over standing, ponding, or actively flowing water.
 - b. VersaProof™ Primer EWB is intended for substrates which cannot be reasonably dried. Take care not to trap moisture by installing the VersaProof™ Primer EWB or the VersaRoof™ System over roof assemblies where moisture does not have a reasonable eventual means of egress, such as constructions with stay in place forms or split slab applications.
 - c. Install system when air and substrate temperature is above 50°F and substrate temperature is 5°F above the dew point and rising. The
 - d. During installation ensure the ambient and substrate temperatures remain above 50°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 - e. Monitor environmental conditions during application included substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.

7. Mixing
 - a. VersaProof™ Primer EWB is supplied as 100% solids, 1:1 primer.
 - b. Always pre-measure the A & B components using metered mixing buckets.
 - c. After mixing, thin using clean, water by 50%.
 8. Application Methods
 - a. Mass effect reduces the pot life. Mix small batches or remove from mixing bucket to extend working time.
 - b. Two coats are required to ensure proper penetration. The second coat can be applied once the first coat has absorbed into the substrate.
 - c. Hand tool installation
 - i. Vertical surfaces can be installed by brush or roller.
 - ii. For horizontal surfaces a broom, roller, or squeegee work best.
 - d. Spraying
 - i. Spray using an airless sprayer.
 - ii. If spraying, a back roll or broom is still required to ensure even application.
- D. VersaProof™ Primer E is a 2K, 100% solid, epoxy primer that is intended to be diluted with acetone. VersaProof™ Primer E is intended for concrete, masonry, and cementitious substrates, as well as wood, and other porous substrates not effected by acetone. VersaProof™ Primer E is intended for concrete substrates that cannot be reasonably dried and green concrete.
1. VersaProof™ Primer E has a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
 2. Variation in substrate porosity may affect coverage rates.
 3. Do not leave primed substrates exposed during periods of precipitation, or other inclement weather.

4. VersaProof™ Primer E is ready to be overcoated when material is hard to touch, typically, 6 hr. Other conditions such as sun, cloud cover, wind, and shade may impact the cure times, overcoat, and maximum re-coat.
5. VersaProof™ Primer E should be re-coated in less than 48 hrs. If re-coat windows have been exceeded, or other conditions such as sun, cloud cover, wind, and shade may impact the maximum re-coat, additional preparation may be required.
 - a. Abrade, lightly shot blast, or brush blast the substrate.
 - b. Remove all dirt, dust, debris or contamination.
 - c. Re-apply a thin coat of VersaProof™ Primer F at a rate of 600-800 ft² per gallon.
6. Environmental Conditions
 - a. VersaProof™ Primer E may installed over Saturated Surface Dry Concrete. Never install over standing, ponding, or actively flowing water.
 - b. VersaProof™ Primer E is intended for substrates which cannot be reasonably dried. Take care not to trap moisture by installing the VersaProof™ Primer E or the VersaRoof™ System over roof assemblies where moisture does not have a reasonable eventual means of egress, such as constructions with stay in place forms or split slab applications.
 - c. Install system when air and substrate temperature is above 50°F and substrate temperature is 5°F above the dew point and rising. The
 - d. During installation ensure the ambient and substrate temperatures remain above 50°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 - e. Monitor environmental conditions during application included substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
7. Mixing
 - a. VersaProof™ Primer E is supplied as a solvent borne, 1:1 primer.
 - b. Always pre-measure the A & B components using metered mixing buckets.
 - c. After mixing, thin using clean, dry, virgin acetone by 50%.

8. Application Methods
 - a. Mass effect reduces the pot life. Mix small batches or remove from mixing bucket to extend working time.
 - b. Two coats are required to ensure proper penetration. The second coat can be applied once the first coat has absorbed into the substrate.
 - c. Hand tool installation
 - i. Vertical surfaces can be installed by brush or roller.
 - ii. For horizontal surfaces a broom, roller, or squeegee work best.
 - d. Spraying
 - i. Spray using an airless sprayer.
 - ii. If spraying, a back roll or broom is still required to ensure even application.
- E. VersaProof™ Primer RC is a 1K, 100% solid primer that is intended to improve the adhesion of VersaRoof™ membranes when installed over PVC, TPO, thermoset and thermoplastic membranes and VersaRoof™ membranes. It is intended to be diluted with MEK.
 1. VersaProof™ Primer RC has a shelf life of six months from date of shipment when stored between 70°F - 80°F in original, unopened factory containers, under cover.
 2. Do not leave primed substrates exposed during periods of precipitation, or other inclement weather.
 3. VersaProof™ Primer RC is ready to be overcoated when material is dry but still tacky.
 4. VersaProof™ Primer RC should be re-coated in less than 1 hr. If re-coat windows have been exceeded, or other conditions such as sun, cloud cover, wind, and shade may impact the maximum re-coat, additional preparation may be required.
 - a. Abrade, lightly shot blast, or brush blast the substrate.
 - b. Remove all dirt, dust, debris or contamination.
 - c. Re-apply a thin coat of VersaProof™ Primer F at a rate of 600-800 ft² per gallon.

5. Environmental Conditions
 - a. VersaProof™ Primer RC should be installed over dry substrates.
 - b. Install system when air and substrate temperature is above 20°F and substrate temperature is 5°F above the dew point and rising.
 - c. During installation ensure the ambient and substrate temperatures remain above 20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 - d. Monitor environmental conditions during application included substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
6. Mixing
 - a. VersaProof™ Primer RC is supplied as a single component
 - b. Thin using, clean, dry, virgin MEK by 66%.
7. Application Methods
 - a. Hand tool installation
 - i. Vertical surfaces can be installed by rag or roller.
 - ii. For horizontal surfaces a mop, rag, or roller work best.

4.3 Membranes

A. General

1. Follow all technical data sheets, written instructions, detail drawings, and contract documents.
2. Refer to the product selection guides to determine the best product based on use, location, substrate, environmental conditions, and site conditions.
3. For all products, more detailed material mixing, processing, and application instructions can be found in the TDS.
4. Never install any VersaRoof™ membrane over wet or damp substrates.
5. VersaRoof™ membranes have a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.

6. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
 7. Variation in substrate profile may affect coverage rates.
 8. Application Techniques
 - a. Always stripe-coat details, penetrations, cracks, joints, tie-ins and other difficult to reach areas first. A lower output module is recommended for stripe-coating and detail work.
 - b. Apply in a uniform and methodical manner to ensure uniform coverage.
 - c. VersaRoof™ membranes can typically be installed in a single coat, though porous substrates and low tensile strength or unbonded substrates may require multiple lighter coats.
- B. *VersaRoof™ S* is a 100% solids, low shrinkage, polyurea designed specifically for weak or unbonded substrates where substrate cohesion is of concern.
1. VersaRoof™ S is primarily intended for low tensile strength or unbonded substrates such as geotextile, cement cover board, plywood decking, foam board, polyurethane spray foam, modified bitumen, butyl rubber, built-up roofs, and single ply roofing sheets. VersaRoof™ S will bond well to concrete, metal, and seamed roofing panels, though consider using VersaRoof™ HP if the primary if these are the primary substrates.
 2. During installation ensure the ambient and substrate temperatures remain above -20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 3. Variation in substrate profile may affect coverage rates.
 4. Refer to technical data sheets for more information.
 5. Mixing: VersaRoof™ S **MUST** be applied using plural component, direct impingement mix. See Equipment Chart, Technical Data Sheet or Material Processing and Handling documents for more information on equipment selection. The equipment must be able to maintain:
 - a. **DO NOT** reduce VersaRoof™ HP. Pre-mix component B using a stacked blade mixer at least 1/3 the diameter of the storage vessel for a minimum of 30 minutes prior to processing the material.
 - b. Separate heat control for the A & B components.
 - c. Material temperatures of 160°F while spraying.

- d. Material temperatures of 160°F in the hose while spraying
 - e. Processing pressures for A & B components of a minimum of 2000 psi while spraying.
 - f. Monitor material temperature and application equipment during installation to ensure processing parameters are maintained.
- C. *VersaRoof™ HP* is a 100% solids, low shrinkage, polyurea designed for higher cohesive strength substrates such as concrete, masonry, and metal.
- 1. *VersaRoof™ HP* is primarily intended high tensile strength substrates such as concrete, masonry, metal, and metal panel roofs. If the primary substrate of low tensile strength or unbonded such as geotextile, cement cover board, plywood decking, foam board, polyurethane spray foam, modified bitumen, butyl rubber, built-up roofs, and single ply roofing sheets *VersaRoof™ HP* will bond well, but application techniques may need to be modified or consider using *VersaRoof™ S*.
 - 2. During installation ensure the ambient and substrate temperatures remain above -20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 - 3. Refer to technical data sheets for more information.
 - 4. Mixing: *VersaRoof™ HP* **MUST** be applied using plural component, direct impingement mix. See Equipment Chart, Technical Data Sheet or Material Processing and Handling documents for more information on equipment selection. The equipment must be able to maintain:
 - a. **DO NOT** reduce *VersaRoof™ HP*. Pre-mix component B using a stacked blade mixer at least 1/3 the diameter of the storage vessel for a minimum of 30 minutes prior to processing the material.
 - b. Separate heat control for the A & B components.
 - c. Material temperatures of 160°F while spraying.
 - d. Material temperatures of 160°F in the hose while spraying
 - e. Processing pressures for A & B components of a minimum of 2000 psi while spraying.
 - f. Monitor material temperature and application equipment during installation to ensure processing parameters are maintained.
- D. *VersaRoof™ FR* is a 100% solids, UL790/ASTM E108 Class A Fire Rated membrane, specially designed for roofing application which require Class A certification.

1. VersaRoof™ FR may be installed over a variety of substrates. Application techniques may need to be modified for some unbonded substrates.
 2. During installation ensure the ambient and substrate temperatures remain above -20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 3. Refer to technical data sheets for more information.
 4. Mixing: VersaRoof™ FR **MUST** be applied using plural component, direct impingement mix. See Equipment Chart, Technical Data Sheet or Material Processing and Handling documents for more information on equipment selection. The equipment must be able to maintain:
 - a. **DO NOT** reduce VersaRoof™ FR. Pre-mix component B using a stacked blade mixer at least 1/3 the diameter of the storage vessel for a minimum of 30 minutes prior to processing the material.
 - b. Separate heat control for the A & B components.
 - c. Material temperatures of 160°F while spraying.
 - d. Material temperatures of 160°F in the hose while spraying
 - e. Processing pressures for A & B components of a minimum of 2000 psi while spraying.
 - f. Monitor material temperature and application equipment during installation to ensure processing parameters are maintained.
- E. *VersaRoof™ HM* is a 100% solids, plural component, hand or static mix elastomer ideal for repairs, touch-ups, difficult to access areas, or small applications.
1. VersaRoof™ HM has a shelf life of six months from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
 2. During installation ensure the ambient and substrate temperatures remain above 40°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 3. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
 4. Monitor material temperature application equipment during application to ensure operations remain acceptable.
 5. Variation in substrate profile may affect coverage rates.

6. VersaRoof™ HM may be installed over a variety of substrates.
7. Refer to technical data sheets for more information.
8. Mixing: VersaRoof™ HM may be applied by hand mixing in small batches, through a plural component, static mix cartridge set-up, or by gear driven, plural component static mix pump. See Equipment Chart, Technical Data Sheet or Material Processing and Handling documents for more information on equipment selection. Mix ratio is 1 part A to 1 part B.
9. **DO NOT** reduce VersaRoof™ HM. Pre-mix component B.
10. For vertical applications VersaRoof™ HM should be installed in 20 mil lifts to build to the required mil thickness.

4.4 Ancillary Products

- A. *VersaRoof™ AC* is a 100% solids polyurea with an extended gel time intended to receive broadcast aggregate.
 1. VersaRoof™ AC is intended as an intermediary coat intended to go over a VersaRoof™ membrane, though may be installed over a variety of substrates. Application techniques may need to be modified for some unbonded substrates.
 2. During installation ensure the ambient and substrate temperatures remain above -20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 3. Refer to technical data sheets for more information.
 4. Mixing: VersaRoof™ AC **MUST** be applied using plural component, direct impingement mix. See Equipment Chart, Technical Data Sheet or Material Processing and Handling documents for more information on equipment selection. The equipment must be able to maintain:
 - a. **DO NOT** reduce VersaRoof™ AC. Pre-mix component B using a stacked blade mixer at least ⅓ the diameter of the storage vessel for a minimum of 30 minutes prior to processing the material.
 - b. Separate heat control for the A & B components.
 - c. Material temperatures of 160°F while spraying.
 - d. Material temperatures of 160°F in the hose while spraying
 - e. Processing pressures for A & B components of a minimum of 2000 psi while spraying.

- f. Monitor material temperature and application equipment during installation to ensure processing parameters are maintained.
- B. *VersaRoof™ Top Coat* is a 75% solid UV and color stable thin film top coat designed as a color stable finish coat or as a lock coat for aggregated systems where the membrane will experience high levels of traffic.
1. *VersaRoof™ Top Coat* is intended as final coat over a *VersaRoof™ Membrane* though will bond well to many substrates such as concrete, masonry, metal, metal panel roofs, concrete cover board, and wood. Do not use over foam, asphalt-based roofing membranes, or singly ply roofing membranes. While *VersaRoof™ Top Coat* will bond it is not intended as a stand along roofing or waterproofing membrane.
 2. *VersaRoof™ Top Coat* has a shelf life of one year from date of shipment when stored between 60°F - 95°F in original, unopened factory containers, under cover.
 3. During installation ensure the ambient and substrate temperatures remain above 20°F and the substrate temperature remains 5°F above the dewpoint until the material has cured.
 4. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
 5. Monitor material temperature application equipment during application to ensure operations remain acceptable.
 6. Variation in substrate profile may affect coverage rates.
 7. Refer to technical data sheets for more information.
 8. Mixing
 - a. *VersaRoof™ Top Coat* is supplied as a solvent borne, 1:1 coating. **DO NOT** reduce *VersaRoof™ Top Coat*
 - b. Premix component B using a mechanical mixer at low speeds until the material is uniform and streak free.
 - c. Always pre-measure the A & B components using metered mixing buckets.
 - d. Combine 1part A with 1 par B and mix for 3 minute.
 9. Application Methods

- a. Mass effect reduces the pot life. Mix small batches or remove from mixing bucket to extend working time.
- b. Hand tool installation
 - i. Vertical surfaces can be installed by brush or roller.
 - ii. For horizontal surfaces a broom, roller, or squeegee work best.
- c. Spraying
 - i. Spray using a plural component, direct impingement mix
 - ii. If spraying over a rough or aggregated substrate, a back roll is required to ensure a uniform and complete coverage.

PART 5 - INSTALLATION

5.1 General

- A. Prior to installation of each coat, the installer's quality manager shall inspect the job site and ensure all repairs, pre-treatments, tie-ins, terminations, and surface preparation have been properly executed as per **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**, **PART 6 – CRACK AND JOINT TREATMENT** and **PART 7 – TIE-INS AND TERMINATIONS**, and the substrate(s) are suitable for installation of the VersaRoof™ system.
- B. Adjacent areas and structures not to be coated shall be protected. Apply or erect, masking, curtains, and partitions as necessary to prevent overspray.
- C. Prior to installation of each coat, ensure the application is within, and will remain within, the prior coats re-coat window.
- D. Do not begin membrane installation until all materials and equipment necessary to perform the installation are at the job site and all required repairs have been completed.
- E. Installer shall maintain spray and other installation equipment in proper operating condition throughout installation. Installer shall provide reserve equipment as required.

5.2 Priming

	Coverage Rate (sq. ft. per gal.) & Thinning Recommendations									
	<i>VersaProof Primer S</i>	Thinning Rate (Acetone)	<i>VersaProof Primer F</i>	DO NOT THIN	<i>VersaProof Primer E</i>	Thinning Rate (Acetone)	<i>VersaProof Primer EWB</i>	Thinning Rate (Water)	<i>VersaProof Primer RC</i>	Thinning Rate (MEX)
Concrete	150 - 200	0-33%	150 - 200	150 - 200	50%	150 - 200	50%	NR		
Masonry & CMU	150 - 200	0-33%	150 - 200	150 - 200	50%	150 - 200	50%	NR		
Cement Cover Board	150 - 200	0-33%	150 - 200	150 - 200	50%	150 - 200	50%	NR		
Steel	400 - 600	50%	NR		NR			NR		NR
Galvanized Metal	600 - 800	50%	NR		NR			NR		NR
Painted Metal	600 - 800	50%	NR		NR			NR		NR
Spray Foam	150 - 300	0%	NR		NR		150 - 300	50%		NR
Foam Board	200 - 300	0%	NR		NR		200-300	50%		NR
Built-Up	150 - 300	0%	NR		NR		150-300	50%		NR
Granulized Sheet	150 - 300	0%	NR		NR		150-300	50%		NR
TPO, PVC, etc.	600 - 800	50%	NR		NR		NR		800 - 1600	66%
VersaRoof Membrane	600 - 800	50%	NR		NR		NR		800 - 1600	66%
Plywood	150 - 300	0-33%	150 - 300	150 - 300	50%	150 - 300	50%			NR

R Recommended
 RL Recommended with Limitation
 NR Not Recommended

- A. Primer shall be mixed, processed and installed in accordance with the TDS and written manufacturer's instructions.
- B. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
- C. Monitor material temperature and application equipment during application to ensure operations remain acceptable.
- D. Install the primer at a rate appropriate for the substrate and site conditions.
- E. Additional coats may be required base on environmental conditions, and substrate conditions, roughness, and porosity.

5.3 Membrane

- A. Ensure the primer is properly cured.
- B. Never install VersaRoof™ membranes over wet or damp surfaces.
- C. Membrane shall be mixed, processed and installed in accordance with the TDS and written manufacturer's instructions.
- D. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.

- E. Monitor material temperature and application equipment during application to ensure operations remain acceptable.
- F. Always stripe-coat details, penetrations, cracks, joints, tie-ins and other difficult to reach areas first. A lower output module is recommended for stripe-coating and detail work. Refer to **PART 6 – CRACK AND JOINT TREATMENT** and **PART 7 – TIE-INS AND TERMINATIONS** Sections of this document for more information.
- G. Install the membrane at a minimum thickness of 80 mils, (20 ft² per gallon). Spray additional coats as required to achieve the specified thickness. Apply in a uniform and methodical manner to ensure uniform coverage.
- H. Additional coats may be required base on environmental conditions, and substrate conditions, roughness, and porosity.
- I. VersaRoof™ membranes can typically be installed in a single coat, though porous substrates and low tensile strength or unbonded substrates may require multiple lighter coats.

5.4 Ancillary Products and Systems

A. General

1. Never install VersaRoof™ coatings over wet or damp surfaces.
2. Coatings shall be mixed, processed and installed in accordance with the TDS and written manufacturer's instructions.
3. Monitor environmental conditions during application including substrate temperature, ambient temperature, humidity, dew point, and wind speed to ensure conditions remain acceptable.
4. Monitor material temperature application and equipment during application to ensure operations remain acceptable.
5. VersaRoof™ coatings and ancillary products are intended to be applied over VersaRoof™ membranes to form a complete system.

B. Color Stable Finish Coat

1. Install the VersaProof™ Primer and VeraRoof™ membrane as outlined in **Part 5 – INSTALLATION** based on the substrate and site and environmental conditions.
2. Areas not being left exposed do not require a finish coat. If only partially installing the VersaRoof™ Top Coat due to eventual cover or overburden, clearly delineate the intended areas using tape and masking.

3. Install the VersaRoof™ Top Coat over the VersaRoof™ membrane at a thickness of 12-20 mils (80-133 ft² per gallon).

C. Anti-Skid Coating System

1. Install the VersaProof™ Primer and VeraRoof™ membrane as outlined in **Part 5 – INSTALLATION** based on the substrate and site and environmental conditions.
2. Not all areas may require an anti-skid coat. If only partially installing the VersaRoof™ Anti-Skid Coating System clearly delineate the intended areas using tape and masking.
3. Install the VersaRoof™ Top Coat over the VersaRoof™ membrane at a thickness of 12-20 mils (80-133 ft² per gallon).
4. Immediately broadcast an angular aggregate with a Mohs hardness of 6 or greater such as 20 x 40 granite or basalt into the “wet” membrane at 0.4 – 0.5 lbs per ft² to achieve a minimum coverage of 90%. Avoid broadcasting to refusal. Broadcasting to refusal will require additional cleaning.
 - a. *Note: Aggregate selection (such as bauxite) and size may impact required coating thickness and broadcast rate.*
5. Install the VersaRoof™ Top Coat over the VersaRoof™ membrane at a thickness of 12-20 mils (80-133 ft² per gallon), ensuring complete coverage of the broadcast aggregate.
 - a. *Note: Aggregate selection and size may impact required coating thickness.*

D. Traffic Coating System

1. Install the VersaProof™ Primer and VeraRoof™ membrane as outlined in **Part 5 – INSTALLATION** based on the substrate and site and environmental conditions.
2. Install the VersaRoof™ AC at a minimum thickness of 30-40 mils, (40-53 ft² per gallon).
3. Immediately broadcast an angular aggregate with a Mohs hardness of 6 or greater such as 10 x 30 granite or basalt into the “wet” membrane at 0.4 – 0.5 lbs per ft² to achieve a minimum coverage of 90%. Avoid broadcasting to refusal. Broadcasting to refusal will require additional cleaning.

- a. *Note: Aggregate selection (such as bauxite) and size may impact required broadcast rate.*
4. Remove any loose or partially adhered aggregate.
5. Install the VersaRoof™ Top Coat over the VersaRoof™ membrane at a thickness of 12-20 mils (80-133 ft² per gallon), ensuring complete coverage of the broadcast aggregate.
 - a. *Note: Aggregate selection and size may impact required coating thickness.*

PART 6 - CRACK AND JOINT TREATMENT

6.1 General

- A. The purpose of treating cracks and joints is to reinforce the membrane over an area of potential movement, and to expand the area of movement over a greater area to utilize the characteristics of the VersaRoof™ System.
- B. There are two main methods of achieving this;
 1. Widening the gap and filling it with a joint filler, an/or
 2. Taping over the joint with a fiber reinforced tape.
 3. When in doubt about the most appropriate treatment of a crack or joint, err on the side of caution and incorporate the most stringent crack or joint treatment.
- C. Install all primers, membranes, and coatings per **PART 5 - INSTALLATION**

6.2 Concrete and Masonry

- A. Cracks greater than 1/16" but less than 3/8"
 1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 2. Prior to begin crack repair, ensure all areas to be treated are sound. Concrete deck repairs shall be done prior to crack treatment.
 3. Route the crack to a minimum 1/8" but not greater than 3/8" using a concrete cutting blade, maintaining a uniform width and depth. Ensure the depth of cut is at least two times greater than the width. Ensure the cut is perpendicular to the surface. If the crack formerly ran through a repaired area, continue the routing to connect the existing cracks.
 4. Clean the routed crack, ensuring the area is clean, dry, and free of any dirt, dust, debris, or deleterious material.

5. Install an appropriately sized backer rod into the routed crack, ensuring the depth of fill is one half the width of the joint.
 6. Install the VersaRoof™ HM-F into the prepared crack and allow to cure.
 7. Install the VersaRoof™ System as specified over the treated crack.
- B. Cracks greater than 3/8"
1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 2. Prior to begin crack repair, ensure all areas to be treated are sound. Concrete deck repairs shall be done prior to crack treatment.
 3. Route the crack to a minimum 3/8" using a concrete cutting blade, maintaining a uniform width and depth. Ensure the depth of cut is at least two times greater than the width. Ensure the cut is perpendicular to the surface. If the crack formerly ran through a repaired area, continue the routing to connect the existing cracks.
 4. Clean the routed crack, ensuring the area is clean, dry, and free of any dirt, dust, debris, or deleterious material.
 5. Install an appropriately sized backer rod into the routed crack, ensuring the depth of fill is one half the width of the joint.
 6. Install the VersaRoof™ HM-F into the prepared crack and allow to cure.
 7. Install the specified VersaProof™ Primer per installation instructions.
 8. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
 9. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
 10. Install the VersaRoof™ System as specified over the taped and treated crack.
- C. Cold Joints
1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 2. Install the specified VersaProof™ Primer per installation instructions.
 3. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
 4. Install the VersaRoof™ System as specified over the taped joint.
- D. Cold Joints at Vertical/Horizontal Interfaces

1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 2. Install the specified VersaProof™ Primer per installation instructions.
 3. Install a coving or non-sag caulking material in the corner of the vertical/horizontal Interface. Allow to cure per manufacturer's instruction of overcoating.
 4. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
 5. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
 6. Install the VersaRoof™ System as specified over the taped joint.
- E. Construction or Control Joints
1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 2. Clean the joint, ensuring the area is clean, dry, and free of any dirt, dust, debris, or deleterious material.
 3. Install an appropriately sized backer rod into the routed crack, ensuring the depth of fill is one half the width of the joint.
 4. Install the specified joint filler per manufacturer's written instructions.
 5. If no other joint filler is specified, install the VersaRoof™ HM-F into the prepared crack and allow to cure per manufacturer's instructions.
 6. Install the specified VersaProof™ Primer per installation instructions.
 7. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
 8. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
 9. Install the VersaRoof™ System as specified over the taped and treated crack.
- F. Precast Concrete Butt Joints or Grouted Joints Between Box Beams
1. It is always preferable that precast sections be pinned together, or be joined in some other way, such as an integrated rebar and grout closure pour.
 2. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE**

PREPARATION Install the specified VersaProof™ Primer per installation instructions.

3. Install the VersaRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
4. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
5. Install the VersaRoof™ System as specified over the taped joint.

6.3 Metal

A. Welded or Bolted Plates on a Girder

1. When there is a gap between two metal plates and both plates are fixed to the girder or other structural support below, it is not required, but is recommended the trough created be filled prior to installation of the VersaRoof™ System. The trough offers a low point for the collection of water and makes verification of a monolithic membrane difficult.
2. Fill the trough with a low shrink cementitious grout, or polymer concrete. Follow the manufacturer's written instructions for surface preparation and installation. Allow to cure prior to the installation of the VersaRoof™ System.
 - a. *Note: It is recommended that any filling be done prior to other surface preparation.*

B. Butt Joints Between Two Plates

1. It is always preferable to fully weld or bolt together using a splice plate, any plates creating a roofing structure.
2. For Butt Joints less than 1/8"
 - a. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 - b. Install the specified VersaProof™ Primer per installation instructions.
 - c. Install the specified VersaRoof™ Membrane over the seam at a minimum thickness of 60 mils.
 - d. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the seam.
 - e. Install the VersaRoof™ System as specified over the taped joint.
3. For Butt Joints greater than 1/8"

- a. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
- b. Install the specified joint filler per manufacturer's written instructions.
 - i. Install the specified VersaProof™ Primer per installation instructions.
 - ii. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
 - iii. Install a fiber reinforced tape over the installed VersaProof™ Membrane, keeping the tape centered over the treated crack.
 - iv. Install the VersaRoof™ System as specified over the taped and treated crack.

6.4 Cement Board, Wood, and Foam Roofing Sub-Bases, etc.

- A. Butt Joints for Cement Board, Wood, and Foam Roofing Sub-Bases, etc.
 - 1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
 - 2. Install the specified VersaProof™ Primer per installation instructions.
 - 3. Install a fiber reinforced tape, keeping the tape centered over the treated joint.
 - 4. Install the VersaRoof™ System as specified over the taped joint.
- B. Vertical/Horizontal Interfaces
 - 1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION.**
 - 2. Install the specified VersaProof™ Primer per installation instructions.
 - 3. Install a coving or non-sag caulking material in the corner of the vertical/horizontal Interface. Allow to cure per manufacturer's instruction of overcoating.
 - 4. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
 - 5. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
 - 6. Install the VersaRoof™ System as specified over the taped joint.

C. Vertical/Horizontal Interfaces

1. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION.**
2. Install the specified VersaProof™ Primer per installation instructions.
3. Install a coving or non-sag caulking material in the corner of the vertical/horizontal Interface. Allow to cure per manufacturer's instruction of overcoating.
4. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
5. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the treated crack.
6. Install the VersaRoof™ System as specified over the taped joint.

D. Metal Panel Roofs

1. Seams for Metal Panel Roofs

- a. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION.**
- b. Install the specified VersaProof™ Primer per installation instructions.
- c. Install the specified VersaRoof™ Membrane over the seAm at a minimum thickness of 60 mils.
- d. Install a fiber reinforced tape over the installed VersaRoof™ Membrane, keeping the tape centered over the seam.
- e. Install the VersaRoof™ System as specified over the taped joint.

2. Vertical/Horizontal Interfaces

- a. Install flashing. Fill the void space created by flashing the vertical/horizontal interface with expandable foam. Shave clean any foam which extrudes out.
- b. Prepare the substrate in accordance with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION.**
- c. Install the specified VersaProof™ Primer per installation instructions.
- d. Install a coving or non-sag caulking material in the corner of the vertical/horizontal Interface. Allow to cure per manufacturer's instruction of overcoating.

- e. Install the VeraRoof Roofing Membrane over the prepared crack at a minimum thickness of 80 mils.
- f. Install the VersaRoof™ System as specified over the taped joint.

PART 7 - TIE-INS AND TERMINATIONS

7.1 General

- A. The information in this recommendation is based on the final substrate of termination. The VersaRoof™ system should always terminate onto a sound, structural substrate, such as steel, concrete, or masonry.
- B. For other non-structural roofing assemblies remove or cut back the existing roofing membrane to access the substrate.
- C. If a structural substrate can not be accessed, contact a VersaRoof™ representative for project specific recommendations.
- D. Reference the standard detail drawings and contract documents for examples of proper terminations and tie-ins.
- E. When possible, terminations should be protected by flashing or caps.
- F. Terminations should never be exposed to running, flowing, or standing water.
- G. Install all primers, membranes, and coatings per **PART 5 - INSTALLATION**

7.2 Concrete, Masonry, and Cementitious Substrates

- A. Ensure the substrate to terminate onto is clean, dry, sound, free of oil, dirt, dust debris, and deleterious material.
- B. Ensure a minimum of 6" of properly prepared substrate is exposed before overlapping old, or existing roofing material. Follow recommendations in with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION** For clean terminations:
 - 1. Cut in a minimum ¼" x ¼" keyway into the substrate. If applying to CMU or other masonry substrates, the keyway should be cut into the grout.
 - 2. Prior to installing the waterproofing membrane, mask the substrate not to be waterproofed and provide a clean delineation of the waterproofing at the tie-in.
- C. For terminations where the VersaRoof™ membrane will be tied into existing waterproofing or roofing membrane:
 - 1. Ensure the existing membrane is sound, and well bonded to the substrate.
 - 2. Cut through the existing membrane and into the substrate a minimum ¼" x ¼" keyway into the substrate. If applying to CMU or other masonry substrates, the keyway should be cut into the grout.

3. Follow the surface preparation guidelines in the with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION** for the substrate.
4. Install the selected or specified VersaRoof™ membrane, carrying the membrane a minimum 6” onto the existing membrane.
5. When tying into existing membranes such as TPO, PVC, Butyl Rubber, Built-Up and Granulated Sheet membranes, a tie-back is recommended. Install a hand applied repair mastic as recommended by the original roofing system manufacturer bridging the tie-in a minimum of 18.”

7.3 Steel, Galvanized, and Metal Roofs

- A. Ensure the substrate to terminate onto is clean, dry, sound, free of oil, dirt, dust debris, and deleterious material.
- B. Ensure a minimum of 6” of properly prepared substrate is exposed before overlapping old, or existing roofing material. Follow recommendations with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION**
- C. For clean terminations:
 1. Prior to installing the waterproofing membrane, mask the substrate not to be waterproofed and provide a clean delineation of the waterproofing at the tie-in.
 2. Unless in cases of pipes, penetrations, equipment supports, and parapet walls, avoid applying membrane to only a portion of the metal substrate. It is best practice to fully coat any metal component.
 3. If a parallel termination is necessary, ensure the edge of VersaRoof™ is strait, and cut back at a 45° from the substrate.
 4. Surface preparation of the metal substrate will extend beyond the limits of the VersaRoof™ Membrane, and additional paints or coatings may be required to prevent corrosion of the steel.
- D. For terminations where the VersaRoof™ membrane will be tied into existing waterproofing or roofing membrane:
 1. Ensure the existing membrane is sound, and well bonded to the substrate.
 2. Cut through the existing membrane and into the substrate.
 3. Follow the surface preparation guidelines in the with **PART 3 - REPAIRS, PRE-TREATMENTS, TIE-INS, TERMINATIONS, AND SURFACE PREPARATION** for the substrate.
 4. Install the selected or specified VersaRoof™ membrane, carrying the membrane a minimum 6” onto the existing membrane.

5. When tying into existing membranes such as TPO, PVC, Butyl Rubber, Built-Up and Granulated Sheet membranes, a tie-back is recommended. Install a hand applied repair mastic as recommended by the original roofing system manufacturer bridging the tie-in a minimum of 18.”

PART 8 - INSPECTION AND TESTING

8.1 General

- A. Testing and documentation should be performed by the Quality Manager.
- B. Daily reports should be generated and maintained and be made available to the owner, owner’s representative, engineer, or manufacturer upon request.
- C. Photographic records of progress through all steps of inspections, preparation, and installation should be generated and maintained and be made available to the owner, owner’s representative, engineer, or manufacturer upon request.
- D. All testing equipment used shall be well maintained and calibrated by the original manufacturer annually unless otherwise specified.
- E. Where applicable refer to industry standards in documentation and reporting.

8.2 Site Evaluation

- A. Document the findings of the initial moisture investigation including:
 - B. Wet or moisture damaged substrates, ponding water, and/or inadequate roof drainage or slope.
 - C. Test methods, and/or test equipment used.
 - D. Document the results of all adhesion tests performed, including;
 1. Test methods and/or test equipment used.
 2. Substrates tested, failure mode, and psi at break.
 - E. Document the site conditions

8.3 Repairs, Pre-Treatment, Tie-Ins, and Surface Preparation

- A. Repairs
 1. Document the size, location, and substrate of all repairs performed.
 2. Document the repair materials used, including, but not limited to;
 - a. The product name(s).
 - b. The product lot numbers.

- c. Surface preparation and installation notes as necessary.
 - d. Additional documentation may be required based on the repair material installed.
 - 3. As necessary, periodically record the environmental conditions during the repairs and immediately after.
- B. Pre-Treatments and Tie-Ins
 - 1. Documents the size, location, method and substrate of all pre-treatments and tie-ins performed.
 - 2. As necessary, note:
 - a. The product name(s).
 - b. The product lot numbers.
 - c. Surface preparation and installation notes as necessary.
 - d. Additional documentation may be required based on the repair material installed.
 - 3. As necessary, periodically record the environmental conditions during the repairs and immediately after.
- C. Cleaning and Surface Preparation
 - 1. Document the size, location, and substrate of all areas prepared.
 - 2. Document the means and methods of preparation used.
 - 3. Record the results of the surface preparation. When applicable use industry standards of evaluation.
 - 4. Record all tests results done to evaluate the substrate including, but not limited to;
 - a. CSP Profile Evaluation
 - b. SSPC Surface Preparation Standards
 - c. Blast profile testing
 - d. Chemical contamination testing
 - e. As necessary, periodically record the environmental conditions during the surface preparation and immediately after.

8.4 Primer Installation

- A. Document each primer installed, including;
 - 1. The size, location, and substrate of all areas primed
 - 2. The product name and lot number
 - 3. The material storage conditions
 - 4. The material temperature
 - 5. The material mixing, including any reducing, mixing ratios, and size of batches
 - 6. The application equipment used
 - 7. The quantity of material used
 - 8. Periodically record the environmental conditions during the repairs and immediately after.
 - 9. Perform, evaluate, and report the adhesion tests as per ASTM D7234 for concrete surface, and ASTM D4541 for metal surfaces. If testing adhesion over substrates other than concrete or metal, follow ASTM D7234.

- B. Membrane and Coating Installation
 - 1. Document all treatments and reinforcements at seams, laps, flashings, penetration, fasteners, terminations, and all other areas that require special attention.
 - 2. Document each membrane installed, including;
 - a. The size, location, and substrate of all areas coated
 - b. The product name and lot number
 - c. The material storage conditions
 - d. The material temperature
 - e. The material mixing
 - f. The application equipment used, and when applicable:
 - g. The material inlet pressures and temperatures at the proportioner
 - i. The set, static, and processing temperatures of the A & B components and the heated hose

- ii. The static and processing pressures of the A & B components
 - iii. The spray gun chamber and tip configuration
 - iv. The quantity of material used
- 3. Periodically record the environmental conditions during the repairs and immediately after.
- 4. Perform dry film thickness testing of base membrane in accordance with SSPC-PA2, SSPC-PA9, or ASTM D1005. Stroke per gallon method is also a suitable method of thickness assurance on most projects.
 - a. If using non-destructive magnetic test equipment, testing shall be performed in accordance with SSPC-PA2 Measurement of Dry Coating Thickness with Magnetic Gages.
 - b. If using destructive test equipment, testing shall be performed in accordance with this section:
 - i. Remove a sample of membrane from the substrate by cutting or use of a hollow punch.
 - ii. Remove any excess substrate residue from the backside of the sample.
 - iii. Measure thickness of the sample at the thinnest point using a handheld micrometer or dial caliper.
 - iv. Spray equipment is calibrated and tested to a stroke count per gallon of material sprayed.
 - v. Perform visual inspections throughout installation process. Holidays or other defects in the waterproofing system shall be marked and repaired.
 - vi. Perform, evaluate, and report the adhesion tests as per ASTM D7234 for concrete surface, and ASTM D4541 for metal surfaces. If testing adhesion over substrates other than concrete or metal, follow ASTM D7234.