

Royston Bridge Deck Membrane Installation Guide

This document contains general instructions and recommended practices for the application of Royston Bridge Deck Membranes. This guide will cover the recommended tools, materials, deck preparation and basic installation procedures. For assistance in membrane selection, surface preparation, application or inspection, please contact a Chase representative.

Recommended Tools for Installation:

1. Lamb's wool roller, squeegee or airless spray equipment
2. Utility knife, screw driver, hammer, 1" trowel
3. Chalk line, tape measure
4. 6-foot broom handle or equivalent
5. Propane torch with rosebud tip
6. Jiffy Mixer Blade
7. ½ inch (12.7mm) drill
8. Gloves, rags and clean-up solvents
9. Moisture Meter: Manufacturer-Tramex #CRH or CME4.

Other tools may be required based on individual job requirements and preferences.

Royston Materials Required:

1. Royston Bridge Deck Membrane
2. Royston Primer
3. Royston Flex-Flo Adhesive Sealant (FFAS) or 104CM (Caulkable Mastic)

Packaging and Storage

Royston membranes are packaged in a reflective, high optical density material that provides protection from ultra-violet light during outdoor storage. It is necessary that the product be stored in a cool, dry place away from direct sunlight. Exposure to direct sunlight for extended periods of time will cause the membrane compound to become tacky. Prolonged exposure to ultra violet light will cause compound to become dry and brittle. If ambient temperatures fall below 55°F (12.8°C) during the installation process, the membranes should be stored in a temperature controlled environment (above 55° F) or placed in a sunny location prior to use in order to improve the flexibility and workability of the compound.

Royston Primers and Adhesives must be stored in a cool dry place until used.

Royston Flex-Flo Adhesive Sealant (FFAS) and 104CM must be stored in areas with temperatures of 55° F (12.8° C) or above at all times before use.

Deck Types

Royston membranes can be placed over many different deck types including new/old concrete, asphalt, wood, or steel.

1. **New concrete decks**
 - A. The concrete surface must be allowed to properly cure for a minimum of seven (7) days, unless the agency specification differs, then the agency specification takes precedence.
 - B. The concrete surface must be that of a smooth broom finish; or equivalent to an ICRI concrete surface profile #3.

2. **Existing concrete decks**
 - A. The concrete surface must be structurally sound.
 - B. All concrete repairs shall be done in accordance with agency specification and with approved materials and procedures.
 - C. Concrete surface must not have any irregularities greater than ¼ inch (6.35mm) depth.
 - D. The old membrane must be completely removed such that the new membrane can properly bond with the substrate.
 - E. Any grooves in the deck (as a result of milling operation) shall not exceed ¼ inch (6.35mm) in depth.
3. **Asphalt bridge decks**
 - A. Asphalt bridge decks must be structurally sound.
 - B. All asphalt repairs shall be done in accordance with agency specification and with approved materials and procedures.
 - C. Irregularities as a result of the milling process shall not exceed ¼" (6.35mm) depth.
4. **Wooden decks**
 - A. An asphalt leveling/scratch course must be prepared on the wood deck to provide a smooth surface.
5. **Steel bridge decks**
 - A. Guidelines for steel deck installations shall be in accordance with agency specifications.
6. **Box Culverts (new construction)**
 - A. Membrane installation procedures for concrete decks should be followed.
 - B. The vertical face of the culvert shall have a 6 inch (152.4mm) turn-down of the membrane.
 - C. The 6 inch (152.4mm) termination edge must be sealed with either FFAS or 104CM.

Deck Preparation Procedures

The deck shall be clean, dry, and free of all loose debris and moisture. Newly paved asphalt surfaces (less than 12 months old) and/or leveling scratch courses do not require the application of Royston Primer.

Deck Moisture Content

Moisture content shall be monitored prior to and during the application to aid in a successful installation. In the event that rain or other precipitation occurs, moisture in the deck must be checked to avoid potential membrane blistering or other installation issues. Use of a moisture meter or the plastic sheet method is required. The maximum moisture content must not exceed 4%.

Asphalt Overlay Temperature

Temperature of the asphalt overlay is critical. The asphalt temperature must be above 290°F (coming out of the paver.) If the temperature of the overlay is not high enough, the bituminous component of the membrane system will not soften to create a bond with the substrate. See **Membrane Application** Item #6 on page 4 of this document for additional asphalt overlay instructions.

Royston Primer and Adhesive Installation

1. Royston offers several primer options.
 - A. **713A** is a general purpose adhesive.
 - B. **713B** is a low VOC adhesive to be used where there are agency restrictions on VOC content.
 - C. **740** is a highly tacky adhesive for application in low ambient temperatures below 45°F (7.2°C).
 - D. **750** is a sprayable adhesive.

2. Refer to the product TDS and SDS for further information on various primers and adhesives.
3. Thoroughly mix the primer using a ½ inch (12.7mm) drill with a jiffy mixer to ensure a homogeneous mixture.
4. Application rates per gallon should be as follows for each adhesive as follows:

713A&713B	200 to 300 sq. ft. (18.58m ² to 27.87m ²)
740	150 to 200 sq. ft. (13.94m ² to 18.58m ²)
750	250 to 300 sq. ft. (22.23m ² to 27.87m ²)
5. The primer must be dry to the touch prior to the placement of the membrane. This is normally achieved in approximately 30 minutes on a 70 °F (21.1 °C) degree day. If primer is not allowed to dry completely, there is risk of blistering under the membrane due to solvent entrapment. The resulting effect could be incomplete adherence of the membrane to the substrate. Only apply the primer to the deck area which will be covered **within 24 hours**.

713A, 713B, and 740 are applied using a roller, brush, or squeegee. **750** is spray applied using a plural component sprayer capable of metering products up to a 30:1 ratio.

Care should be taken to eliminate all puddling – There should be no puddling or ponding of primer. The primer shall uniformly cover the surface to ensure proper adhesion to the substrate.

Adhesive Sealant Application

Apply Royston Flex-Flo Adhesive Sealant (FFAS) or 104CM to all perimeter areas where the membrane will terminate such as curbs, parapet walls, abutments, joints and drains. Refer to **Deck Preparation Procedure** listed above. (Note: **104CM is used for terminations only and is not to be used underneath membrane**).

1. Apply a 4" wide band of material, 60 mils thick, where the vertical face of the curb meets the deck.
2. For scuppers and drains: apply a 4" wide band of material, 60 mils thick, around and into the scupper or drain.
3. See curb and drain detail drawings and procedures on pages 6 & 7 of this document for further instruction.

Membrane Application

1. Application of the membrane shall begin once the Royston Primer and Adhesive are dry. On crowned deck surfaces, place membrane sheets in a "shingle" fashion working from the curbside to the center crown. On flat deck surfaces, start at one curb and proceed across to the other. Measure the width of the deck in at least three places and divide the widest number by 44-½" (110.3mm) for the number of sheets it will take to cover the deck width.
2. Start the roll with the **Zip Strip** away from the curb.
3. Roll out the membrane with the release liner side facing down. Remove the release liner from the bottom by pulling the liner at a 45° angle. This helps to keep tension on the membrane as it is placed, minimizing wrinkles and air pockets. Once the roll is down, apply pressure to the membrane making certain it is in good contact with the deck (use a push broom or hand roller.) Make sure the edge at the curb is embedded in the FFAS or terminated with a ½" bead of 104CM.

- A. All additional rolls of membrane are to be overlapped in a shingle fashion utilizing the 3-1/2" (88.9mm) zip strip as a guide for sufficient coverage.
- B. With the installation of each section of membrane, apply pressure to the membrane ensuring it is in good contact with the deck. Use a push broom or hand roller to eliminate wrinkles and air pockets.
- C. Once the membrane has been placed, the final step is to pull the zip strip release liner from the roll. When reaching the crown of the bridge ensure there is clean and dry membrane to terminate with a 3-1/2" (88.9mm) overlap.
- D. When terminating the membrane at the crown, ensure that there is an overlap of the adjoining membrane with a minimum of 3-1/2". (88.9mm)
- E. All longitudinal sections of membrane terminations shall be staggered and heat sealed with a 6" (152.4mm) overlap.
- F. Should heat sealing not be an option, then the use of either FFAS or 104CM shall be used at all longitudinal and transverse joints.

Heat Sealing is the process of using a propane torch to seal the termination of a sheet of membrane either to another section of membrane or to the substrate. This is done by waving the propane torch over the section of membrane as an indirect heat source. Visually inspect the top of the membrane for signs of the bituminous compound melting. Caution needs to be taken to ensure a direct flame is not applied to the membrane which could result in burning the bituminous compound or burning through the membrane. Some smaller, hand-held types propane torches will not effectively heat seal the membrane. A 20 lb. (9.07kg) propane bottle will do an sufficient job of heat sealing the edges.

- A. The actual flame from the torch **MUST NOT** contact the membrane directly, it is just used to heat up the surface.
 - B. All edges that are overlapped without a Zip Strip must be heat sealed or sealed with FFAS or 104CM
 - C. Follow safety precautions when operation a propane torch
4. **Patches:** If a stone or other debris becomes trapped under the membrane, it must be removed so as not to puncture the membrane when the asphalt is placed. Remove the stone by making a "C" shaped cut around the stone. Peel back the membrane, remove the stone or debris and then push the membrane back into place. Cut a 6" (152.4mm) by 6" (152.4mm) patch of new membrane to cover the cut. Place the patch over the cut and heat seal the patch in place. Similarly, any cuts, nicks, gouges, rips, tears, etc., can be repaired using the same procedure.
 5. **Curb Strips:** If required by specification, curb strips are positioned so the edge is 1/2" below the top of the proposed wearing surface. Royston Primer and Adhesive are to be applied on the vertical curb surface, to the termination of the curb strip. Establish a reference by striking a chalk line. (For example: If 6" (152mm) wide curb strips and the wearing surface 2-1/2" (63.5mm) deep are specified, strike a chalk line on the deck 4" (101mm) from the curb. Align the edge of the 6" (152mm) wide strip with the chalk line, smooth and press the strip toward the curb, and tightly into the corner, then up the vertical curb for 2" (50mm) to the pre-established height of 1/2" (12.7mm) below the final pavement). Curb strips can be installed before or after the deck membrane is installed; this does not change the curb detail involving the Flex-Flo Adhesive Sealant. Heat sealing the curb strip to the deck membrane and to the curb is required. Use a small trowel to press the vertical edge against the curb as you are heating it. Again, make sure you are not over heating the membrane.
 6. **The Asphalt Overlay** temperature needs to be **above 290°F** (coming out of the paver) to ensure proper bonding occurs between the membrane and the substrate. Asphalt temperatures below 290°F will **NOT** soften the bituminous layer of the membrane and can cause adhesion or slippage to occur between the asphalt overlay and the substrate. The overlay should be applied immediately following the membrane installation to avoid damage to the membrane. Do not allow general traffic to drive on the membrane before paving. Minimize equipment turning on the membrane which can cause damage. If for any reason the equipment picks up the membrane or the membrane tears, then a repair patch must be applied. See **Patching Procedure**.

Patching Procedures for Royston Membranes After Application of Overlay:

- 1) Remove all paved asphalt surrounding the damaged membrane.
- 2) Trim and remove all loose membrane around the damaged area.
- 3) Saw cut approximately 6" of asphalt around the parameter of the damaged area without penetrating or tearing the membrane.
- 4) Carefully remove asphalt.
- 5) Ensure the exposed surface is dry. If area is damp, dry before continuing. (This includes the exposed concrete and membrane.) The area may be heated with a poor burning yellow flame torch. Take caution to ensure the flame does NOT come in contact with the membrane itself.
- 6) Prime the exposed concrete and allowed to dry.
- 7) FFAS (Flex Flo Adhesive Sealant) is then applied to the perimeter of the area to be patched and the membrane patch is then applied to the deck surface and embedded into the FFAS sealant.
- 8) FFAS is then applied to the perimeter of the adhered membrane.
- 9) The area may now be paved and opened to traffic under same paving conditions noted above in membrane application.

Curb Detail

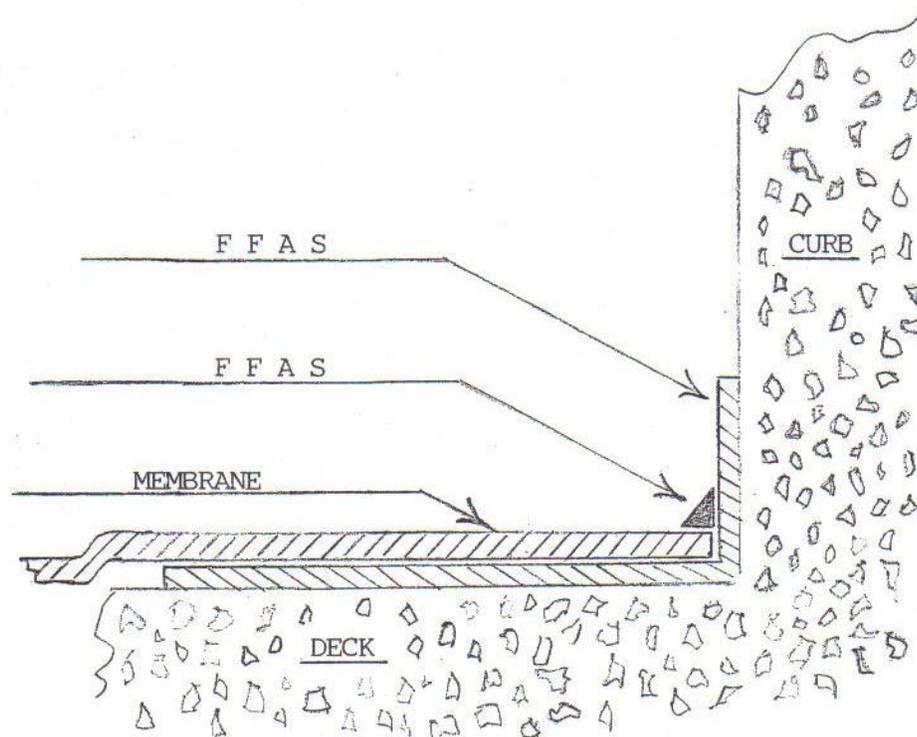
This document provides general instructions and recommended practices when applying Royston Bridge Deck Membranes on bridge decks where a curb or other vertical surface, such as a parapet wall, meets the deck surface.

Step 1 – As part of the deck preparation, make sure the entire area is clean and dry.

Step 2 – Using Royston Flex-Flo Adhesive Sealant (FFAS), apply a 4" wide band, 60 mils thick, starting from the curb face, and extending onto the deck. Coat the curb face up to a point that is level with the finished asphalt overlay. This height is usually 1-1/2" to 2-1/2" on the curb. A metal trowel works well in placing the FFAS. On uneven decks which require a leveling course of asphalt prior to placing the membrane, the FFAS will be applied after the leveling course. On decks that do not require a leveling course, the FFAS will be applied before the Royston Primer is applied to the deck.

Step 3 – Place the membrane on the deck with the edge of the membrane butting into the corner where the curb face starts. Press the membrane edge into the FFAS making sure a complete bond is achieved, this will assist in preventing water from getting under the membrane.

Step 4 – Once the membrane is placed, install a final top bead of FFAS in the corner where the membrane terminates, sealing the membrane edge into the corner. This will assist in preventing water or contaminants from getting under the membrane.



Drain Detail

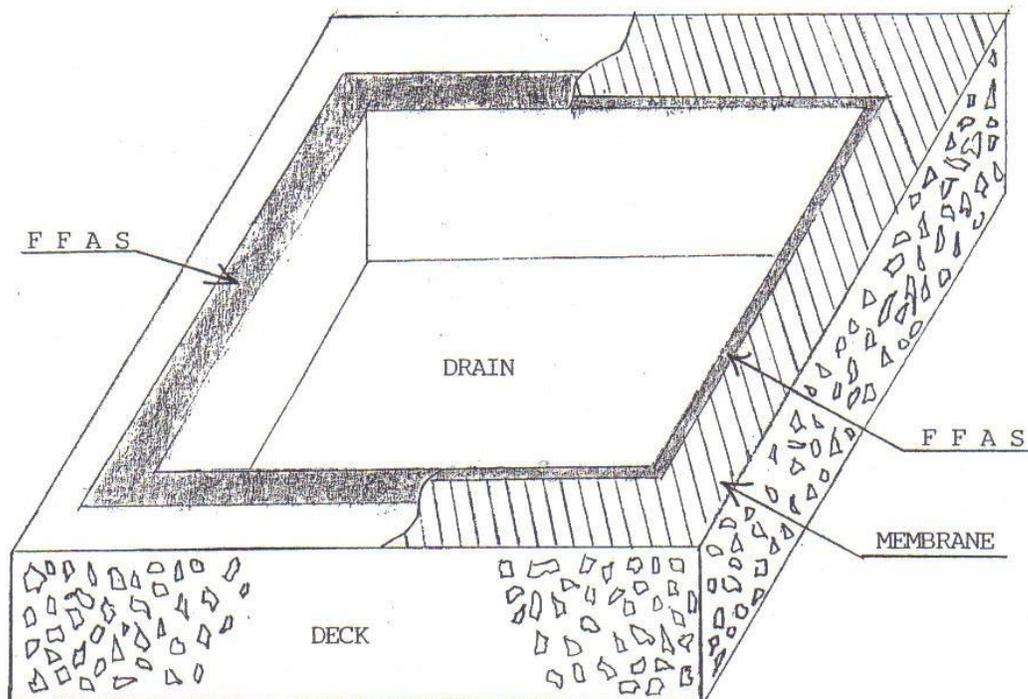
This document provides general instructions and recommended practices when applying Royston Bridge Deck Membranes to any utilities or penetrations that exist in the bridge deck surface.

Step 1 – As a part of deck preparation, make sure the entire area is clean and dry.

Step 2 – Using Royston Flex-Flo Adhesive Sealant (FFAS), apply a 4" wide band, 60 mils thick, around the drain opening on the deck surface. On uneven decks which require a leveling course of asphalt prior to placing the membrane, the FFAS will be applied after the leveling course. On decks that do not require a leveling course the FFAS will be applied before the Royston Primer is applied to the deck.

Step 3 – Place the membrane around the drain opening, terminating the membrane at the drain edge. Press the membrane edge into the FFAS making sure a complete bond is achieved, this will assist in preventing water from getting under the membrane.

Step 4 – Once the membrane is in place, apply a final top bead of FFAS onto the edge of the membrane where it terminates at the drain opening. This will assist in preventing water or contaminants from getting under the membrane.



Contact Chase Construction Products

Global Operations Center

295 University Avenue
Westwood, MA 02090
USA

www.chasecorp.com

Toll Free (US only): 800-323-4182

Tel: 781-332-0700

Fax: 781-332-0701

Email: info@chasecorp.com

Warranty & Limitation of Seller's Liability

The information contained herein is provided for product selection only, and is not to be considered as a specification or performance data. Chase Construction Products (a division of Chase Corporation) warrants the product for a period of one (1) year from the date of initial shipment to the initial purchaser, that the products meet the parameters listed on the applicable Technical Data Sheet. Chase makes no warranty of any kind, expressed or implied, including that of merchantability, other than that products conform to Chase's current quality control standards at time of manufacture. If breach of warranty is established, the buyer's exclusive remedy shall be repayment of purchase price of the non-conforming product to replace the non-conforming product. The buyer expressly waives any claim to additional damages, including without limitation, incidental or consequential damages. Specific conditions of sale and Chase's limited warranty are set out in detail in Chase Corporation Terms and Conditions of Sale.