Technical Services

Product: FiberTite® VBX™ Membrane
Issue Date: 1-24-2023

Installation Guidelines for Mechanically Attached VBX Membrane to Steel Roof Decking

Introduction

FiberTite VBX is a reinforced thermoplastic membrane designed for use on low-slope commercial/ industrial roofs as an air and vapor barrier.

Contents

Pre-application/ Preparation

Best Practice Recommendations

- During welding provide a dedicated person to move extension cord and act as spotter
- During welding provide a dedicated person for operating welder
- Staging, what to weld when
  - » Generally, start at low point(s) of the roof (i.e. walls or edges).
- Welder may fall into steel deck rib. Installer must take care after removing welder from weld to avoid welder putting tension on hot weld.
- Ensure automatic hot air welder remains aligned with the flanges of the steel deck, or sheet metal for end laps, for the continuous welding of seams, side and end laps.

Installation Details

For installation detail drawings please refer to **FiberTite VBX Construction Details** at **FiberTite.com** [link]

Substrate Preparation

All surfaces must be uniformly flat in plane with slope. Surfaces must be clean, sound, dry and free of loose materials or contaminants inclusing but not limited to water, frost, ice, oil and grease.

Pre-application/ Preparation (continued)

Roof Drainage

If VBX membrane is to be left exposed for an extended period of time prior to installing the balance of the roof assembly, it is the responsibility of others to ensure proper drainage to remove water from surface of the roof. The following items should be considered:

Internal roof drains may need to be coordinated to be installed at the elevation of the deck/VBX membrane.

Elevation of through-wall scuppers need to be open at the elevation of the deck and free of any obstructions.

Taper insulation may need to be sequenced with installation of VBX membrane to direct water to drainage location.

Preliminary Installation Requirements

Membrane Direction

VBX Membrane must run in direction parallel to the roof deck. Length of membrane must be positioned so edges of the membrane are supported by top flanges of the deck to allow for mechanical attachment to the top flange surface.

Membrane Installation

Prior to the start of work each day, determine the area for installation and the necessary number of roll widths to utilize in a single workday. Begin at the low point of roof deck and work up slope, start with half-width roll for securing up wall.

End Lap (cut ends of membrane rolls)

End laps edges must be supported by 12-inch wide 24-guage sheet metal to provide a flat surface for welding.

End laps of membrane rolls shall be aligned, and trimmed as necessary, to create a straight line for welding overlapping membrane at end lap locations. Sheet metal strip must be installed or in-place at end lap location prior to heat welding edges of membrane at side lap locations/seams.

End laps may occur at any perpendicular weld locations where partial membrane sheets or additional rolls may be required. Sheet metal strip(s) must be installed or in-place at these locations prior to welding of seams.

Hand Hot Air Welding:

Install minimum 6-inch wide 24-gauge flat sheet metal for hand welding applications.

Install adjacent sheets with a minimum continuous:

Side Lap: 8-inch Side-laps (or as required by steel deck flange spacing)
End Lap: 5-inch End-laps

Hand Welding Prep

Hand welding requires the user to conduct test welds in order to determine the optimal welding temperature and conditions to achieve a consistent 1.5-inch wide water-tight weld.

Project foreman shall initiate daily inspections of completed welds [see "Inspection"]

Pre-application/ Preparation (continued)

Installing Steel Strip at Head Lap Locations

For end-laps, walls, penetrations, terminations, etc - Install a 12-inch wide strip of 24-gauge flat sheet metal for robot welder. Place sheet metal perpendicular to the metal deck rib profiles to support the end of the membrane sheet. Place the flat sheet metal so the end of the membrane terminates onto the center of the strip or minimum 1-inch from the edge of the flat metal plate.

1. Determine location of steel strip.
    a. Assume 2.5-inch overlap of membrane at adjacent rolls.
2. Snap chalk line across deck at location.
3. Position sheet metal strip so membrane end provides a minimum of two inches from edge of sheet metal .
4. Install (set in-place) a 12-inch wide strip of 24-gauge flat sheet metal.
    a. If securing metal strip, use three #14 FiberTite Insulation Fasteners (1-¼"-4" fastener with full thread length)
        i. Install fasteners at each end and one in middle of metal strip.

Installation

Membrane Installation

1. It is suggested to begin at low end of roof by installing roll of membrane that will wrap up parapet wall or terminate over edge of building.
    a. Unroll a half-width roll of membrane.
    b. Position membrane to allow for termination on the wall above the finish insulation level .
        i. Membrane must be mechanically attached to deck flange or sheet metal strip within 15" of roof edge.
    c. Place dimensional lumber at intersection of wall and roof deck to hold membrane tight to corner while securing membrane to deck.
    d. Secure membrane by mechanically attachment in seam(s) using **FiberTite Magnum #14 1-1/4-inch full thread fasteners** and **FTR Magnum Plus Plate**, installed through the membrane into the flange of the steel roof decking at specified rate.
2. Unroll and position the next VBX Membrane straight and snug but not taut, aligning the edges of the membrane on top of the adjacent steel deck flange with a minimum 8-inch side lap, covering the fasteners and plates of the start roll.
3. Secure membrane by mechanically attachment using #14 1-¼-inch wide full thread fasteners and **FTR Magnum Plus Plate**, installed through the membrane into the flange of the steel roof decking at specified rate.
4. Hot air weld the 8-inch side lap with a 1-½-inch field weld.
5. Determine location of sheet metal strip (End laps or perpendicular weld locations) [see "Installing Sheet Metal Strip at End Lap Locations"]
6. Continue with subsequent membrane rolls following steps 2-5.

Installation (continued)

Welding

1. **General:**
    a. Field seams exceeding 10 ft (3048 mm) in length shall be welded with an approved automatic welder.
    b. Seams must be clean, dry and free of contaminants prior to initiating any field welding.
        i. Contaminated areas within a seam will inhibit proper welding and will require a membrane patch or cover strip.
    c. Remove foreign materials from the seams (dirt, oils, etc.) with **FiberTite Seam Cleaner** or Acetone.
        i. Use clean white cotton clothes and allow approximately five minutes for solvents to dissipate before initiating the automatic welder.
        ii. Do not use denim or synthetic rags for cleaning. Dyes and synthetic chemicals may contaminate the seam,
    d. Welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.

2. **Hot Air Hand Welding:**
    a. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place.
    b. The back, interior edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
    c. The nozzle of the handheld hot air welder shall be inserted into the lap at a 45-degree angle to the lap.
        i. Once the polymer on the material begins to flow, a hand roller shall be used to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.
    d. Smaller nozzles may be used for corners, and other field detailing, maintaining a minimum 1-½ inch (25 mm) weld.

3. **Automatic Hot Air Machine Welding:**
    a. Follow all manufacturers' instructions for the safe operation of the automatic welder.
        i. Starting point for automatic welder calibration - 680° F at 8.2 feet per minute. Adjust settings based on trial welding results.
        ii. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.
        iii. Automatic welders should be use a minimumof 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, minimum of 1.5 inch (38 mm) in width.
    b. Follow local code requirements for electric supply, grounding and surge protection.

Installation (continued)

T-Joint Cover Installation

1. **Install T-Joint Covers on VBX Membrane Systems as necessary:**
   a. To maintain installation quality and/or establish watertight seal at T-joint locations.
   b. As determined by designer of record, and/or roof design consultant.
2. **Install T-Joint Covers, centered and aligned so edges are parallel to roof system seams.**
3. **The T-Joint Cover shall be 100 percent welded.**

Flashing

1. **Adhesives**
   a. When using adhesives outside ambient air temperature shall be above 40° F (4.4° C) and rising. Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration.
   b. Humidity can affect the drying time of solvent borne adhesives or cause condensation to form on the newly applied adhesive.
   c. No moisture or debris may be present on the adhesives prior to mating or application of membranes.
2. **Clean vents, pipes, conduits, tubes, walls, and stacks to bare metal.**
   a. Protrusions must be properly secured to roof deck with approved fasteners. Remove and discard lead pipes and drain flashing. Flash penetrations according to approved details.
3. **Remove loose or deteriorated cant strips and flashings, if applicable.**
4. **Flash curbs, parapets and interior walls in strict accordance with FiberTite VBX Construction Details.**
   a. All flashing shall be adhered to properly prepared, approved substrates with FTR-190e Bonding Adhesive, to ensure total adhesion.
   b. The base flange of all membrane flashing shall extend out on to the surface of the deck, beyond the wood nailers to a maximum width of 8 inches (203 mm).
   c. Vertical flashing shall be terminated no less than 8 inches (203 mm) above the surface of the deck. Refer back to FiberTite VBX construction details for details.
   d. Complete all inside and outside corner flashing details with FiberTite preformed corners or an approved field fabrication detail.
5. **Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.**
6. **Roof Drains:**
   a. It is the responsibility of others to ensure proper drainage to remove water from surface of the roof.
      i. This includes the slope of the roof deck and/or the need for taper insulation between roof drains if VBX is to be left exposed for an extended duration of time..
   b. Ensure all drains and scuppers are free of debris and obstruction.
7. **Expansion Joints:**
   a. Flash all expansion joints in accordance with VBX details.

Inspection

Daily Quality Control:

1. The project foreman or supervisor shall initiate daily inspections of completed work (aka Daily Quality Control), which shall include, but is not limited to the probing of field welding with a dull pointed instrument to assure the quality of the application and ensure that any equipment or operator deficiencies are immediately resolved.

   Examples of items requiring repair are as follows:

   a. Welding burn marks
   b. Underdriven/overdriven fasteners
   c. Debris present under membrane (e.g., fasteners and sharp objects)
   d. Damage to membrane
   e. Seam and/or welding voids
   f. Incomplete welds (as applicable for Induction Weld systems)
   g. Fastener spacing and/or placement
   h. Construction debris, tools, and equipment left on surface of roof time.

2. Ensure all aspects of installation (sheet layout, attachment, welding, flashing details, etc.) are in strict accordance with the most current FiberTite Membrane Roofing System Specifications and relevant Installation Details.
3. It is the responsibility of the Applicator, project foreman, supervisor, or quality control personnel to perform a final self-inspection on all seams.