



LAURENCO  
WATERPROOFING

# **PMMA: Installation Guide**

FBC CHEMICAL CORPORATION

# LAURENCO PMMA Installation Guide

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# 1. General Notes:

**FBC-Laurengo PMMA Waterproofing** is a cold fluid-applied waterproofing material designed for use by itself or in conjunction with the Laurengo reinforced sheet RMA waterproofing assembly and PMMA-based roofing and waterproofing materials. Laurengo PMMA Resin is the main component in the reinforced Laurengo PMMA Waterproofing & Roofing Systems.

This Laurengo PMMA resin is a two-part, high-quality resin designed for use with the RMA Laurengo Waterproofing System or as a stand-alone waterproofing system. It is designed for use in **roofing and waterproofing applications** not subjected to vehicular traffic. It is a layered system made up of one coat of primer, as required and waterproofing base and topping layers of PMMA-based resin with fleece reinforcing sheet(s).

- A. Primer:** FBC-Laurengo Universal “BLUE”-Primer is a high performance PMMA resin, catalyzed with Laurengo Catalyst, results in a fast-curing PMMA universal primer. The product comes with a translucent bluish tint, making it easy to see and differentiate during application. It comes in 10-kg re-sealable cans with lock-rings.
- B. Resin:** Laurengo PMMA Resin is available in flashing and horizontal grades. Care should be taken to ensure that the correct grade is used for the application based on the existing conditions ambient temperature. While Flashing Resin can be used for horizontal applications, Horizontal Resin should never be used in vertical applications.
- C. Flashing Resin is available in 10-kg re-sealable cans with lock-rings. Horizontal Resin is available in both 10-kg and 20-kg pails with lock-rings.**

**Laurengo PMMA – All Season**, can be applied between the ambient temperature range of 20 Deg-F and 104 Deg-F (-6.66 Deg-C to 40 Deg-C) and substrate temperature range of 20 Deg-F to 122 Deg-F (-6.66 Deg-C to 50 Deg-C). Discontinue use when ambient or substrate temperature is outside the recommended range. Substrate temperature can be regulated by providing temporary shade or temporary heated enclosures, prior to and during application of Laurengo PMMA Resin

- D. Catalyst:** Laurengo PMMA Catalyst is a reactive agent used to induce curing of PMMA resins. Laurengo PMMA Catalyst is supplied as a white gel in pre-measured 2.3-ounce gel-pouches. Laurengo PMMA Catalyst is available in a specifically designed vented box. Each box contains 30 individual pouches.

- E. Reinforcement Fleece:** LaurencO Fleece is a non-woven, needle-punched polyester fabric reinforcement specially designed for compatibility with LaurencO PMMA resin products. LaurencO Fleece is used as fabric reinforcement in LaurencO PMMA Systems, LaurencO PMMA Roof Membrane Systems, LaurencO PMMA Waterproofing Systems. LaurencO Fleece is packaged in the PMMA Component Pack in a roll 12-inches x 300-feet/ 40-inches x 324 feet.
- F. PRR (Polyester Reinforced Resin):** LaurencO PRR is a high performance PMMA resin reinforced, with chopped polyester fibers, that when catalyzed with LaurencO PMMA catalyst, results in a highly viscous waterproof PMMA used as a paste or repair mortar.
- G. Packaging and Storage:** LaurencO PMMA Resins shall be stored indoors in a cool, dry area away from heat, ignition sources, or open flame. It is available in standard white and grey. Custom colors are available at special request and color approval but require a minimum bulk order to make.

**Flashing Resin is available in 10-kg re-sealable cans with lock-rings. Horizontal Resin is available in both 10-kg and 20-kg pails with lock-rings.**



Figure 1: LaurencO PMMA resin



Figure 2: LaurencO universal BLUE PMMA primer



Figure 3: LaurencO PMMA gel catalyst



Figure 4: LaurencO PMMA reinforcement fleece

## 2. Application: Equipment

### A. Installation Tools:

The following items, including but not limited to those listed, will be needed in installing the materials.

1. cleaning tools, broom & dustpan
2. leaf blower
3. vacuum
4. grinder or wire wheel
5. sandpaper or abrasive cloth
6. solvent wipe
7. primer (proprietary and approved)
8. drop cloths.
9. variable speed drill gun w/mixing agitator
10. graduated mixing containers (metric)
11. digital scale
12. masking tape of different widths
13. trowel for detailing
14. brushes of various widths
15. rollers with handles and poles
16. field scissors
17. rubber or nitrile gloves
18. garbage bags
19. mixing sticks

### B. PPE: Personal Protection Equipment

Workers must wear long sleeve shirt, long pants, and work boots. Workers must use butyl rubber or nitrile gloves when mixing and applying this product. Safety goggles are required for eye protection.

Use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, becomes irritating, or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. Specific type of respirator will depend on airborne concentration. Dust masks and similar filter masks are not acceptable for use if the TLV filtering levels have been exceeded.

### 3. Substrate:

- A. Preparation:** Generally, substrates must be sound, free of excessive protrusions, depressions, and pitting, loose and unsound material, contaminants like dirt, oils, grease, residual coatings, ice, snow, water, and any condition that would compromise the adhesion of the PMMA primer and resin to the substrate. Specific surfaces may require scarification, shot-blasting or grinding to provide an acceptable substrate. Reference the following for specific surface preparations:
- B. Concrete Substrates:** Concrete surfaces should have a stiff broom finish or a profile like CSP 2 through CSP 4 as described by the International Concrete Repair Institute (ICRI). This can be accomplished through grinding, shot blasting, and scarification. Surface preparation should be immediately followed by assuring no concrete fines are remaining on the deck, followed by the application of primer to avoid any compromise or contamination of the surface from exposure to the elements. The concrete should have a minimum compressive strength of 2500 psi and provisions for underside venting and not exceed the maximum limit of 75% relative humidity and moisture content <5.5%. Generally, a stiff broom finish profile is acceptable. **FBC Chemical's Repelz MVS 2-Part Epoxy may be utilized in certain circumstances to mitigate moisture issues allowing the application of Laurenco PMMA over damp decks and new substrates seven (7) days after casting. Contact the Laurenco Technical Department for information on Repelz MVS.**
- a. **Existing Concrete:** Existing concrete should be assessed and analyzed for contaminants, carbonation, residuals from previous materials, and excessive moisture content so as not to negatively affect the adhesion of the PMMA assembly. Testing methods can include but are not limited to relative humidity testing, sample cores, x-ray, infrared, petrographic analysis, and alkalinity testing.
  - b. **New Concrete:** New concrete requires a hydration period of 28 days (minimum) according to the published guidelines of the American Concrete Institute (ACI). New concrete should also not be treated with curing agents, penetrating release agents, or waterproofing materials as these materials can compromise adhesion. Generally, a stiff broom finish profile is acceptable.
  - c. **Lightweight Insulating Concrete:** The incorporation of venting provisions should be provided for surfaces made of lightweight insulating concrete. Laurenco's technical department should be contacted for information on venting details.

- d. **Adhesion Tests:** Independent adhesion testing according to ASTM D4541 is required for the concrete surfaces receiving Laurenco PMMA to verify the adhesion on the prepared substrate. This should be performed at intervals selected by the entity performing quality assurance. Results should be evaluated by the designer of record.
2. **Wood/Plywood:** Plywood decks should be designed and fabricated in accordance with the recommendations of the APA – The Engineered Wood Association. Wood decks should be a minimum of 1-inch in thickness and constructed of dry, well-seasoned lumber, in a tongue and groove, and shiplap or splined configuration at side joints, and matched at end joints. The boards should bear on structural supports at each end and be nailed. Cracks and wood joints wider than 1/4-inch and knots in excess of one inch diameter should be covered with sheet metal. Wood joints and cracks lesser than ¼ inch should be filled with a urethane sealant.

Plywood panels should bear the proper APA trademark and meet the most current requirements the U.S. Product Standard PS-1 for Construction and Industrial Plywood. Plywood panels must be a minimum of 15/32-inch thick and meet or exceed a span rating of 32/16. They should meet or exceed the requirements of Exposure 1 Durability Classification. Rafter spacing should be 24 inches on center (max), and the panels should be installed at right angles to the rafters and continuous over two or more spans with either solid backing or with clips stiffening all joints between rafters.

Annular-threaded or spiral-threaded type screws should be used for all fastening. A fastener pullout test should be performed by the contractor on site to verify the pullout strength` of the fastener meets the applicable design criteria.

The design of the deck to accommodate expected movement is the responsibility of the designer of record, and configurations that require additional detailing should be brought to the attention of the Laurenco technical department for review and comment.

3. **Steel and metal:** Steel surfaces should be dry, clean, and free of any contaminants and potential bond breakers, rust or oxidation. The surface should be abraded to a bright metal finish prior to any cleaning and priming.
4. **Cover-board:** Joints between panels and panel edges at all walls, perimeters, and penetrations shall be taped using gaffer's tape before priming or filled with urethane sealant or Laurenco PRR (Polyester Reinforced Resin).
5. **Masonry:** Prepare masonry walls in the same manner as concrete substrates. Do not apply Laurenco PMMA over soft or scaling brick or masonry, compromised mortar joints, or damaged and deteriorated masonry walls.



**C. Repair:** Damages and imperfections like cracks, joints, low spots and depressions should be filled with a Laurenco PRR or mortar for such substrate repairs. Joints or cracks subjected to movement shall be stripped in with Laurenco Resin and Fabric or Laurenco Butyl Tape prior to application of the main system.

**Field Conditions:** The FBC-Laurenco PMMA products should not be installed if there is the potential for precipitation or if there is condensation on the substrate, or the ambient temperature is within 5°F of the dew point, as it can affect the application of the PMMA products.



Figure 5: unacceptable substrate honeycombing



Figure 6: unacceptable substrate concrete protrusions



Figure 7: unacceptable bug holes and fins



Figure 8: acceptable grout filling and fin removal

## 4.Mixing:

- A. Mixing & Catalyzing:** When batch mixing, add the pre-measured catalyst to the resin, thoroughly mix-agitate for 2-3 minutes using mechanical means. Agitating by hand is not recommended and may cause improper dispersion of catalyst into the resin. **Catalyze only the amount of resin that can be used within the anticipated pot-life.** The amount of catalyst needed is directly related to the weight of the resin used and varies with the ambient temperature as shown in the “Laurenco PMMA Catalyst Mixing Chart”.

Laurenco PMMA Catalyst Mixing Chart:

<b>Temperature Range 4%-5% @ 20°F – 35°F</b>			
<b>Resin Quantity</b>	<b>g</b>	<b>kg</b>	
1.0 kg (0.72 liter)	40-50	0.04-0.05	
5.0 kg (3.6 liters)	200-250	0.2-0.25	
10 kg (7.2 liters)	400-500	0.4-0.5	<i>Or approximately 8-gel pouches/10kg @ 35°F</i>

<b>Temperature Range 3% @ 35°F – 50°F</b>			
<b>Resin Quantity</b>	<b>g</b>	<b>kg</b>	
1.0 kg (0.72 liter)	30	0.03	
5.0 kg (3.6 liters)	150	0.15	
10 kg (7.2 liters)	300	0.3	<i>Or approximately 6-gel pouches/10kg @ 50°F</i>

<b>Temperature Range 3% @ 50°F – 70°F</b>			
<b>Resin Quantity</b>	<b>g</b>	<b>kg</b>	
1.0 kg (0.72 liter)	30	0.03	
5.0 kg (3.6 liters)	150	0.15	
10 kg (7.2 liters)	300	0.3	<i>Or approximately 4-gel pouches/10kg @ 70°F</i>

<b>Temperature Range 1.5%-2% @ 70°F – 100°F</b>			
<b>Resin Quantity</b>	<b>g</b>	<b>kg</b>	
1.0 kg (0.72 liter)	15-20	.015-.02	
5.0 kg (3.6 liters)	75-100	0.075-0.1	

10 kg (7.2 liters)	150-200	0.15-0.20	<i>Or approximately 2-gel pouches/10kg @100°F</i>
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## B. Coverage Rates:

Quantities and coverage will vary depending on substrate conditions such as roughness and absorbency.

### Smooth Surfaces:

- Minimum total consumption: 31 kg/100 sf (3.3 kg/m<sup>2</sup>)
- Base Coat (minimum consumption): 19 kg/100 sf (2.0 kg/m<sup>2</sup>)
- Top Coat (minimum consumption): 12 kg/100 sf (1.3 kg/m<sup>2</sup>)

ROT (Rule Of Thumb): as a rule of thumb, a 10-kg container will yield approximately 32-Sq. Ft. of coverage.

### Granule Surfaces:

- Minimum total consumption: 40 kg/100 sf (4.3 kg/m<sup>2</sup>)
- Base Coat (minimum consumption): 28 kg/100 sf (2.0 kg/m<sup>2</sup>)
- Top Coat (minimum consumption): 12 kg/100 sf (1.3 kg/m<sup>2</sup>)

Coverage rates will vary based upon the smoothness and porosity of the surface. Contact a LaurencO representative for information on unique or specific applications.

# 5. Installation:

## A. Reinforced PMMA Flashing Installation:

1. Ensure surrounding substrate is clean, dry, and free of depressions, voids and fins.
2. Ensure surface of projection to be flashed (vent pipe, column, support, curb) is clean, dry, and free of contaminants.
3. Metal: Metal surfaces should be free of any laitance or coating, and ground to a bright metal surface. Prep metal surfaces with proprietary solvent wipe; allow 25 minutes of dry time.
4. PVC penetrations shall be scarified with a rough grit sand paper or wire wheel creating an abraded surface to enhance the adhesion of the PMMA Resin.
5. Other Surfaces: Use FBC-Laurenco Universal-Blue-Primer to prime surfaces. (Refer to Universal Blue Primer application product guidelines.)
6. Use masking tape to mask off a termination an 8-inch height (or the amount designated by the Design Professional) on the vertical surface to be flashed and an 8-inch termination out onto the horizontal.
7. Cut and dry fit the reinforcement fleece to accommodate field condition to be flashed accordingly before mixing. (Refer typical details for guidelines.)
8. Cut reinforcement to terminate ¼-inch from the inside edge of the masking tape so as not to extend the reinforcing fleece beyond the liquid resin.
9. Mix FBC-Laurenco PMMA resin and catalyst according to the desired quantity and coverage. (Refer to the product mixing guidelines.)
10. Apply base a coat (45mils) of the catalyzed PMMA resin to the prepared surfaces.
11. Embed the pre-cut reinforcement fleece into the freshly applied catalyzed PMMA resin. Laps between separate pieces of fleece for flashing are to be 2-inches. Avoid trapped air bubbles under the reinforcement fleece.
12. Apply second coat of catalyzed resin (45mils) on the newly applied fleece reinforcement and saturate the fleece 15-20 minutes after application of first coat of PMMA. The final thickness should be minimum 90mils.
13. Remove masking tape and allow material to dry. Protect the installation temporarily as necessary.
14. Refer to following graphics depicting the typical installation of reinforced PMMA for both flashing and horizontal applications.



Figure 9: gather required materials and tools as required.



Figure 10: Pre-cut and dry fit reinforcing fleece.



Figure 11: mix-agitate PMMA resin.



Figure 12: use and catalyze what is needed for the installation.



Figure 13: add PMMA catalyst as required to PMMA resin.



Figure 14: thoroughly mix and evenly disperse catalyst into resin.



Figure 15: apply to prepped and primed substrate with roller.



Figure 16: verify first resin application is 45 mils wet thickness (min)



Figure 17: install fleece reinforcement.



Figure 18: set fleece reinforcement into fresh PMMA resin.



Figure 19: cut leading edge of fleece 1/4-inch from edge of resin.



Figure 20: saturate fleece reinforcement with 2<sup>nd</sup> PMMA coat.



Figure 21: overlap 2-inches on existing PMMA as required.



Figure 22: verify 2<sup>nd</sup> PMMA resin coat is minimum wet 45mils thick.

## B. Reinforced PMMA Field Installation:

1. Ensure surrounding substrate is clean, dry, and free of depressions, voids and fins.
2. Ensure surface to be waterproofed is clean, dry, and free of contaminants.
3. Metal: Metal surfaces should be free of any laitance or coating, and grinded to a bright metal surface. Prep metal surfaces with proprietary solvent wipe; allow 25 minutes of dry time.
4. Other Surfaces: Use FBC-Laurenco Universal Blue Primer to prime surfaces. (Refer to Uni-Primer application product guidelines.)
5. Use tape to mask off selected vertical and horizontal surfaces as required.
6. Cut the field reinforcement fleece to accommodate conditions to be waterproofed accordingly before mixing. (Refer typical details for guidelines.)
7. Cut reinforcement to terminate ¼-inch from the inside edge of the masking tape so as not to extend the reinforcing fleece beyond the liquid resin or do not extend fleece beyond the application of the catalyzed resin.
8. Mix FBC-Laurenco PMMA resin and catalyst according to the desired quantity and coverage. (Refer to the product mixing guidelines.)
9. Apply base a coat (45mils) of the catalyzed PMMA resin to the prepared surfaces.
10. Embed the pre-cut reinforcement fleece into the freshly applied catalyzed PMMA resin. Laps between separate field sheets of fleece for the field are to be 4-inches. Avoid trapped air bubbles under the reinforcement fleece.
11. Apply second coat of catalyzed resin (45mils) on the newly applied fleece reinforcement and saturate the fleece in 15-20 minutes and saturate fleece with PMMA. The final thickness should be 90mils.
12. Remove masking tape and allow material to dry. Protect the installation temporarily as necessary.
13. Refer to attached graphics depicting installation:

### **C. Cure Times:**

Based on an ambient temperature of 68-degF (20-degC) the minimum cure times noted below are approximate and may vary. The information provided herein is based on laboratory conditions, and is intended for use as a guideline only. Actual cure times should be established in the field, based on actual field conditions, including but not limited to, ambient temperature, substrate temperature, humidity, and exposure to direct sunlight.

Resistant to rain at 68-degF (20-degC): Approx. 30 minutes.

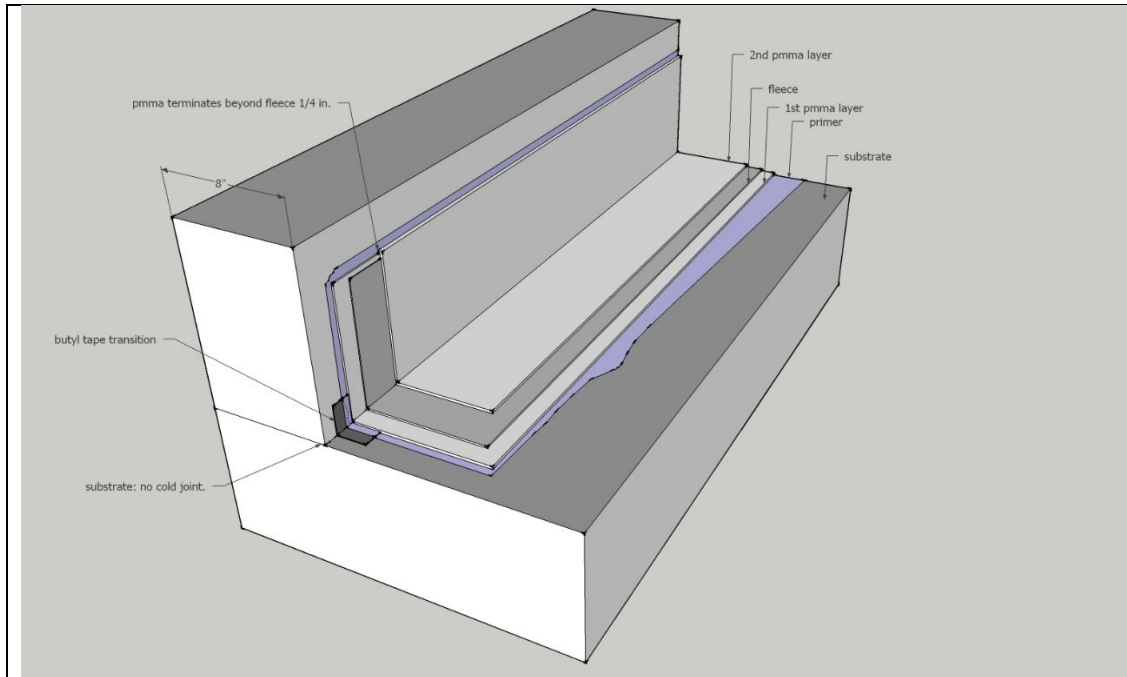
Ready for 2nd coat at 68-degF (20-degC): Approx. 15-20 minutes.

Stress Resistant at 68-degF (20-degC): Approx. 2.0 hours.

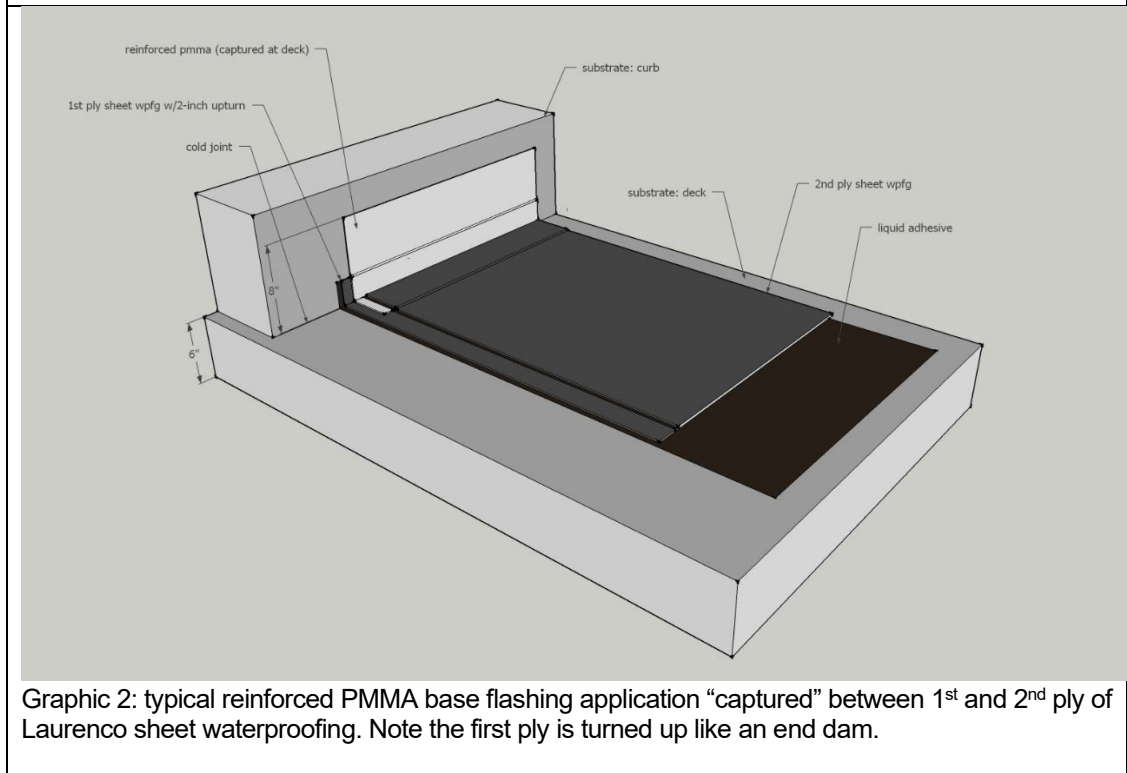
### **D. Typical Details:**

Please refer to attached graphics and the FBC-Laurenco's typical guideline detail drawings in the product documents section of the Laurenco Waterproofing website at [www.laurencowaterproofing.com](http://www.laurencowaterproofing.com).

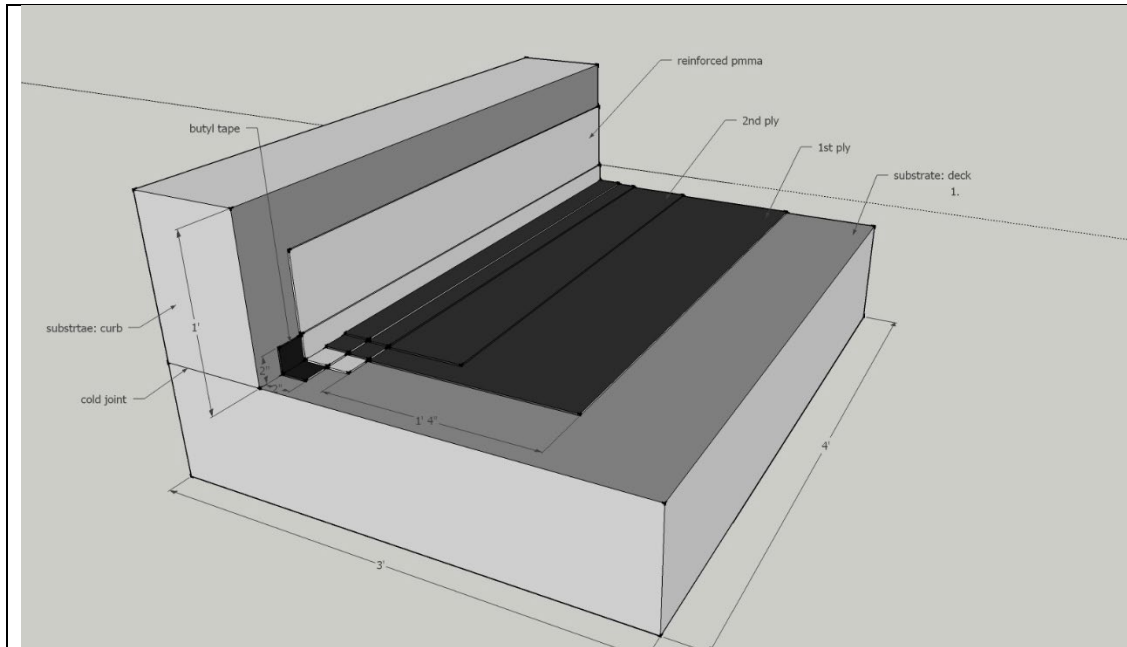




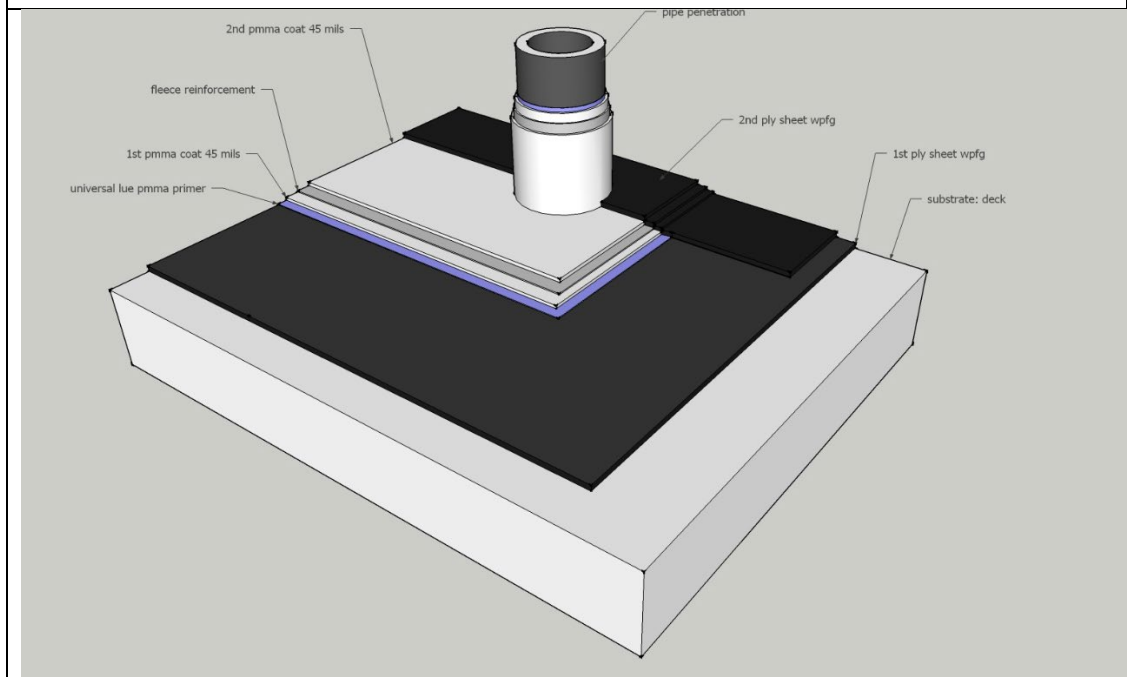
**Graphic 1:** typical reinforced pmma application on a vertical and horizontal application. Note use of butyl tape in liquid at inside corner to transition over cold joint in concrete.



**Graphic 2:** typical reinforced PMMA base flashing application “captured” between 1<sup>st</sup> and 2<sup>nd</sup> ply of Laurenco sheet waterproofing. Note the first ply is turned up like an end dam.



Graphic 3: typical reinforced base flashing with 2-layer Laurenco sheet waterproofing terminating on horizontal in corner transition. Note: butyl tape in liquid detailed at inside corner cold joint.



Graphic 4: typical reinforced PMMA flashing at pipe penetration. Note: PMMA flashing is captured under second layer of Laurenco sheet waterproofing.

