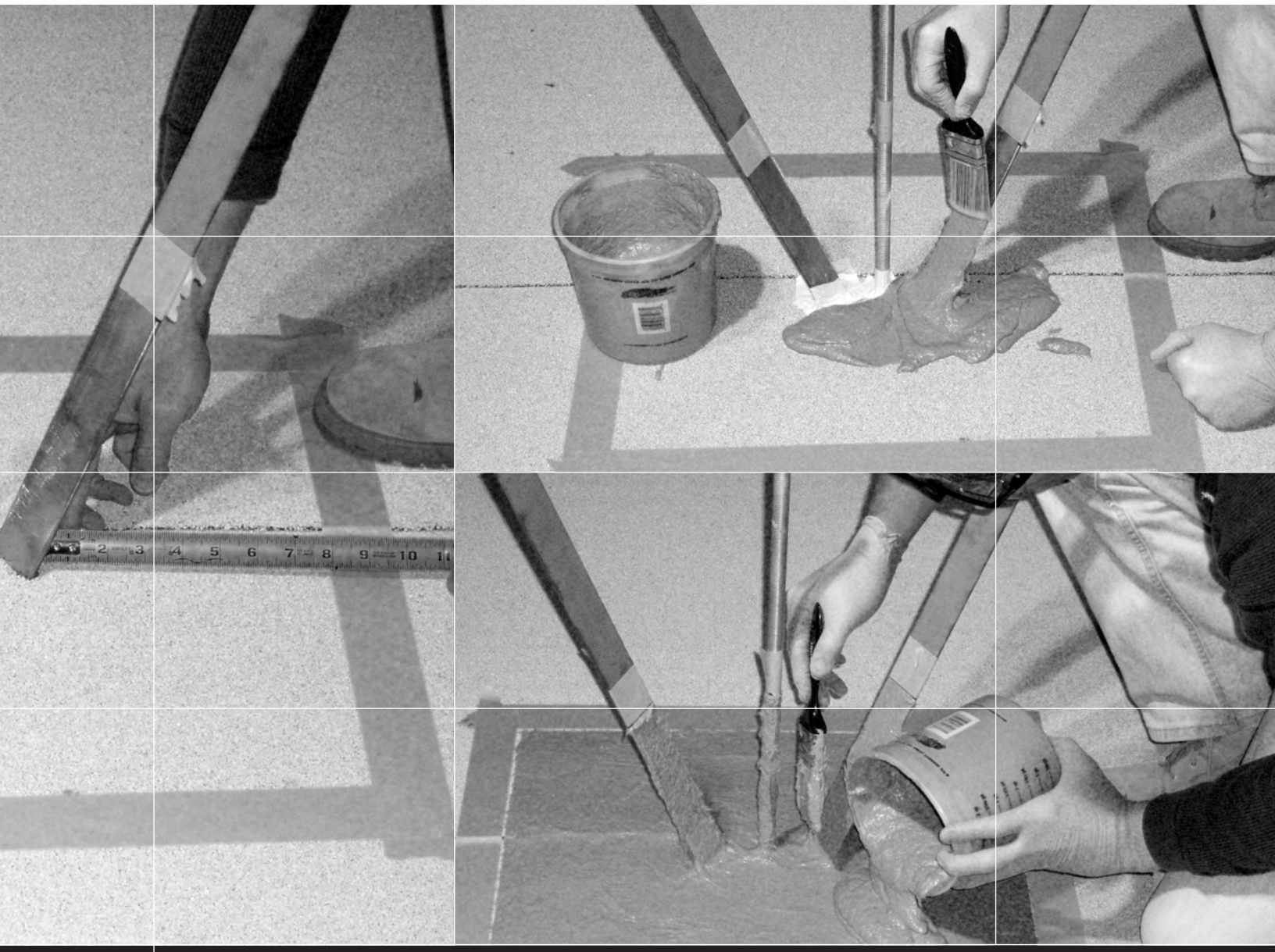
Pro Matrix

siplast®



Installer's Guide

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I. General

Siplast Pro Matrix Products
Pro Matrix Resin is a high performance, multi-component, fast curing, fibrated PMMA resin paste used for specialty flashing applications. Pro Matrix can be used over a variety of substrates where application of a standard fleece-reinforced flashing product is not practical.

Weather Restrictions
Do not apply Pro Matrix products if there is a threat of precipitation or condensation on the roof surface. Ambient and substrate temperatures affect the application of Pro Matrix materials. Ambient and substrate temperature guidelines and restrictions are noted in the product sections of this guide.

Pro Matrix Use Over SBS-Modified Bitumen Roof Membrane Systems
Pro Matrix can be applied directly over SBS-modified bitumen roof systems that are applied by torch, or Type IV asphalt. Refer to the application instructions beginning on page 9 of this guide for step-by-step installation procedures.

Pro Matrix should not be used in conjunction with SBS - modified bitumen roof systems applied with solvent based adhesives.

Contact the Siplast Technical Department at 1-800-922-8800 for information.

II. Personal Protection

Safety and Protection
Refer to the Material Safety Data Sheet (MSDS) for each Parapro product for specific personal protection equipment information. Parapro Resins are flammable, and are harmful if inhaled, swallowed, or absorbed through the skin. They can cause skin, eye, and respiratory irritation, and may cause skin and respiratory sensitization.

Do not smoke around Parapro products. Keep the products away from open flame, fire, or any ignition source. Avoid breathing Parapro Resin vapor and Pro Catalyst dust. Use the products with adequate ventilation or respirator protection as needed to keep exposure below Threshold Limit Values (TLV). Do not ingest the products, and avoid contact with eyes, skin, and clothing. Wear suitable gloves and eye/face protection. Wash thoroughly after handling the products. Keep the products out of reach of children.

First aid information is available on Pro Matrix product MSDS documents and product containers.

III. Storage

Storage

Store Pro Matrix products indoors in closed containers in a well-ventilated, cool, dry area away from heat, open fire, any ignition source, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Pro Matrix products may autopolymerize at temperatures greater than 140°F (60°C). Resin product shelf life is approximately 6 months from ship date. The shelf life of resin products will be reduced if the products are stored at temperatures above 77°F (25°C). Pro Catalyst is extremely heat sensitive. Proper storage is important to help ensure handling safety and that product quality is not compromised. To maintain product quality, the storage temperature of Pro Catalyst should not exceed 77°F (25°C). The reactivity/effectiveness of Pro Catalyst will decrease progressively when stored under high temperature conditions. Exposure to a temperature of 122°F (50°C) or higher can result in self-accelerating decomposition of Pro Catalyst. Self-accelerating decomposition is signaled by the presence of bright white smoke, and can create temperatures in excess of 500°F (260°C), depending on the environmental conditions and quantity of catalyst present. Such temperatures can be hazardous in the presence of flammable materials. Therefore, Pro Catalyst should never be subjected to conditions that can result in self-accelerating decomposition.

Materials stored on the job site during application should be kept on a pallet in a shaded, well-ventilated area. In unshaded areas, materials should be covered with a white, reflective tarp in a manner that allows air circulation beneath the tarp.

IV. Installation Materials, Tools, and Equipment

Substrate Preparation

- Blower, vacuum, & broom
- Hand grinder with carbide disk, diamond cup, or other appropriate abrasive wheel
- Sandpaper
- Pro Prep

Mixing

- Plastic tarps or sheeting
- Variable speed drill with ½-inch chuck
- Mixing stir sticks
- 1-tablespoon measure
- Plastic mixing buckets (2 or 3-liter with volume graduation marks in liters)

Application

- Tape (masking and duct tape)
- Bristle paint brushes - 2-3"
- Stiff foam brushes - 2-3"
- Pro Prep
- Disposable butyl rubber or nitrile gloves
- Pro Matrix Resin

Miscellaneous

- Clean cotton rags
- Plastic garbage bags
- Box or razor knife
- Tape measure
- Chalk line

V. Substrates and Substrate Preparation

General Substrate Preparation

In applications where adhesion to a substrate not listed in the chart is required, please contact the Siplast Technical Department at 1-800-922-8800 for information on testing such substrates for adhesion with a field bond test.

Substrate	Preparatory Guidelines	Pro Primer W Required	Pro Primer T Required
Aluminum	1,2,3		
Paint/Coating	6		
Mopping Asphalt/ Smooth-Surfaced SBS-Modified Bitumen	1		
Concrete	1,4		•
Polymer concrete	1,7		•
Lead	1,2,3		
Stainless Steel	1,2,3		
Clay or Ceramic Tiles	1,5	•	
Plywood	1	•	
Mortar	1,4	•	
Steel	1,2,3		

Key to Preparatory Guidelines:

1. Substrate must be clean, dry, and free from gross irregularities, loose material, unsound materials, or any foreign material (such as dirt, ice, snow, water, grease, oil, release agents, lacquers, paint coverings), or any other condition that would be detrimental to the adhesion of the catalyzed primer and /or resin to the substrate.
2. Remove rust or other oxidation layers.
3. Lightly abrade surface prior to cleaning with Pro Prep.
4. Prepare cement-based substrates by shot blasting, scarifying, or grinding, ensuring laitance is completely removed. New cement-based substrates must be at least 28 days old and meet moisture content guidelines.
5. Grind surface to remove glaze. Tiles must be on a sound bed without cavitation. No moisture should be present beneath tiles.
6. All paint coverings and coatings must be removed.
7. Refer to polymer concrete manufacturer's requirements for suitability as a substrate for waterproofing materials. Prepare by shot-blasting, scarifying, or grinding.

Substrates and Substrate Preparation

Cracks, Joints, and Small Indentations

Before application of Pro Matrix (and after priming if required), all joints, cracks, voids, fractures, depressions, and small indentations in the substrate must be filled. Siplast recommends the use of the appropriate Pro Primer (if applicable) and Pro Paste for all such substrate repairs. Pro Matrix may be applied immediately after the Pro Paste sets. PS-304 Elastomeric Sealant may be substituted for Pro Paste when filling voids where membranes terminate at penetrations. Allow PS-304 Elastomeric Sealant to fully cure before application of the Pro Matrix.

Concrete & Masonry

New concrete must be cured a minimum of 28 days in accordance with ACI-308 (or as recommended by the concrete manufacturer) and meet moisture content guidelines before the application of the appropriate Pro Primer. New or existing concrete must be prepared to provide a sound substrate free from laitance and should be free from materials that may inhibit adhesion of the Pro Matrix. All spalls and voids must be repaired and allowed to cure a minimum of 28 days in accordance with ACI-308 (or as recommended by the concrete manufacturer). Small spalls and voids may be primed with the appropriate Pro Primer and repaired with Pro Paste prior to application of the Pro Matrix.

Masonry walls should be prepared in the same manner as concrete substrates. Pro Matrix materials must not be applied over soft or scaling brick or masonry, faulty mortar joints, or walls with broken, damaged, or leaking coping. Masonry wall surfaces above the termination of the Pro Matrix materials should be appropriately treated against moisture intrusion, and/or a properly sealed, reglet-anchored counterflashing should be considered.

Metal & Rigid Plastic

Lightly abrade and clean metal and rigid plastic substrates. Extend the preparation area a minimum of ¼-inch (7 mm) beyond the termination of the Pro Matrix materials.

Granule-Surfaced SBS or Asphalt Membranes

All loose granules, dust, and organic debris must be completely removed from the surface of the roof membrane by brooming, and/or power vacuuming, low-pressure wash, or other suitable method prior to application of the Pro Matrix. If a low-pressure wash is used, the substrate must be allowed to dry completely prior to application of the Pro Matrix.

Treatment of Horizontal to Vertical Transitions or Junctions Between Dissimilar Materials

Transitions must be treated with duct tape (2-inch width) prior to application of Pro Matrix. The duct tape will serve as a bond-breaker to facilitate crack bridging. See Siplast standard details and the photos at the back of this guide for additional information.

Siplast Primers

Contact Siplast for more information regarding Pro Primer W and Pro Primer T.

VI. Measuring and Mixing Pro Matrix Resins

General Guidelines

Pro Matrix is fast setting and should only be catalyzed as needed. Depending on the application, the amount of resin needed will vary.

Mixing All Pro Matrix Resin

Thoroughly mix the entire drum of uncatalyzed Pro Matrix Resin for 2-3 minutes before each use if pouring off into a second container when batch mixing. This will redistribute liquids/solids that may have separated during storage. Catalyze only the amount of resin that can be used within the approximate pot life. Add premeasured Pro Catalyst Powder to the resin component, and stir for 2 minutes using a slow-speed mechanical agitator. If a mixing stick is used, stir for one minute, allow powder to dissolve for one minute, and stir again for one minute before applying to the substrate.

Measuring Resins and Catalyst

Liquid Measure of Resins

The amount of Pro Catalyst that should be used is based on the weight of the uncatalyzed Pro Matrix Resin. When a scale is not available, the following approximate liquid measure may be used for Pro Matrix Resin:

Resin Type	Density	Liquid Measure Per kg
Pro Matrix Resin	1.24 kg/liter	0.8 liter/kg

Pro Catalyst is available in 0.1 kg (100 gram) premeasured bags to simplify the catalyzing and mixing of Pro Matrix Resin. Whenever possible, pre-measured Pro Catalyst should be used for mixing. When this is not available, or small quantities of resin are required, Pro Catalyst may be field measured using the following methods:

Batch Weighing

The most accurate means for field measuring resin or Pro Catalyst is with a portable, battery-operated scale.

The Tablespoon Method

If a portable, battery-operated scale is not available, a level 1-tablespoon culinary-type measuring spoon can be used to measure Pro Catalyst. A standard level tablespoon equals approximately 0.01 kg (10 grams) of Pro Catalyst powder.

The following table can be used for calculating catalyst quantifies per kg of resin.

Catalyst Tablespoon Measurements (per kg resin)	
% Catalyst	Tablespoons (per kg resin)
2%	2
4%	4
6%	6

Pro Catalyst Mixing Ratios & Measurements

The amount of Pro Catalyst added to Pro Matrix Resin is based on the weight and associated volume of the resin used and the ambient temperature. The amount of Pro Catalyst added to Pro Matrix Resin should not be less than 2%. If resin mixed with the minimum required catalyst of 2% does not have sufficient pot life, the ambient or resin temperature may be too high.

Pro Matrix Resin												
The amount of Pro Catalyst used with Pro Matrix Resin varies from a minimum of 2% to 6% maximum by weight, depending upon the ambient temperatures as indicated in the following table:												
Resin Quantity	**2% Catalyst 77°F to 95°F (25°C to 35°C)**				**4% Catalyst 41°F to 77°F (5°C to 25°C)**				**6% Catalyst 32°F to 41°F (0°C to 5°C)**			
	g	**kg**	**Tblsp.**	**0.1 kg Bags**	**g**	**kg**	**Tblsp.**	**0.1 kg Bags**	**g**	**kg**	**Tblsp.**	**0.1 kg Bags**
1.0 kg (0.8 liter)	20	.02	2	n/a	40	.04	4	n/a	60	.06	6	n/a
5.0 kg (4.0 liter)	100	0.1	10	1	200	0.2	20	2	300	0.3	30	3
10.0 kg (8.1 liter)	200	0.2	20	2	400	0.4	40	4	600	0.6	60	6

VII. Pro Matrix Application

General Application Guidelines
Pro Matrix Resin, when catalyzed, forms a monolithic, reinforced flashing membrane used for flashing details and repairs.

Pro Matrix Resin may be applied when the ambient temperature is between 32°F (0°C) and 95°F (35°C) and the substrate temperature is between 32°F (0°C) and 122°F (50°C). In warm temperatures, the substrate should be shaded for up to one hour immediately prior to and during application, as necessary, to maintain the substrate at temperatures below 122°F (50°C).

Pro Matrix is applied in a two-coat process. An even, generous base coat of catalyzed Pro Matrix Resin is applied to the substrate with a roller or brush and allowed to cure. A stiff foam brush can be used to smooth the resin surface for improved aesthetics. An even, generous top coat of catalyzed Pro Matrix Resin is then applied to ensure full coverage.

If work is interrupted for more than 12 hours prior to application of the top coat, or the surface of the catalyzed Pro Matrix Resin becomes dirty or contaminated from exposure to the elements, thoroughly clean the overlap area with Pro Prep. Pro Prep should be allowed a minimum of 20 minutes evaporation time after application before continuing work. Following the drying time, the next application process should be completed within 1 hour.

Coverage Requirements
- A minimum 8-inch (200 mm) overlap onto the surface of the finish ply is required when Pro Matrix is applied over an approved finished roof membrane.
- The Pro Matrix should terminate a minimum of 6 inches (150 mm) above the horizontal plane when applied in vertical applications.

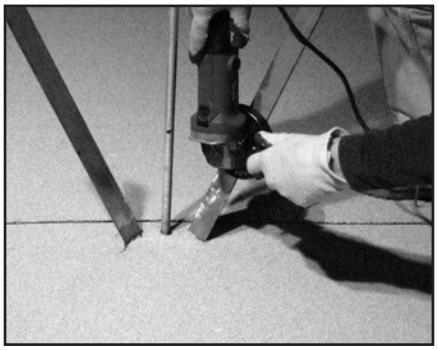
Pro Matrix Resin Pot Life
Pro Matrix Resin pot life is approximately 15 minutes at 68°F (20°C). Because pot life is in part dependent on ambient temperature, which constantly changes, actual pot life must be determined in the field. Pot life will be reduced at high temperatures.

Pro Matrix Resin Coverage Rate
Granule Surfaces
Minimum Total Consumption:
0.425 kg/sf - 0.35 liter/sf (4.5 kg/m^2)
Base Coat Minimum Consumption:
0.285 kg/sf - 0.23 liter/sf (3 kg/m^2)
Top Coat Minimum Consumption:
0.14 kg/sf - 0.12 liter/sf (1.5 kg/m^2)

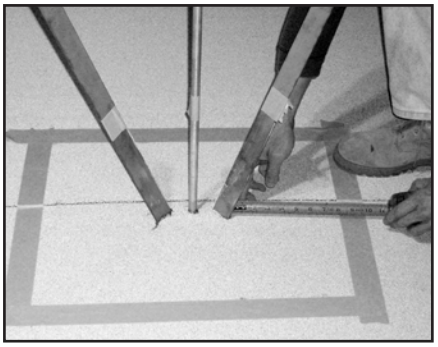
Pro Matrix Resin Coverage Rate
Smooth Surfaces
Minimum Total Consumption:
0.33 kg/sf - 0.265 liter/sf (3.5 kg/m^2)
Base Coat Minimum Consumption:
0.19 kg/sf - 0.15 liter/sf (2 kg/m^2)
Top Coat Minimum Consumption:
0.14 kg/sf - 0.115 liter/sf (1.5 kg/m^2)

Pro Matrix Resin Set Times
Minimum set times noted below are approximate, and may vary. The information provided is based on laboratory conditions, and is intended for use as a guideline only. Actual set times and cure times should be established in the field, based on actual field conditions.
Rain Proof at 68°F (20°C): 30 minutes
Ready for Next Coat at 68°F (20°C): 45 minutes
Stress Resistant at 68°F (20°C): 2 hours

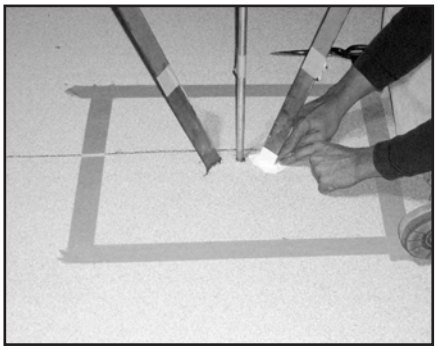
Flashing a Penetration: Application over the finish ply of an SBS-modified bitumen roof.



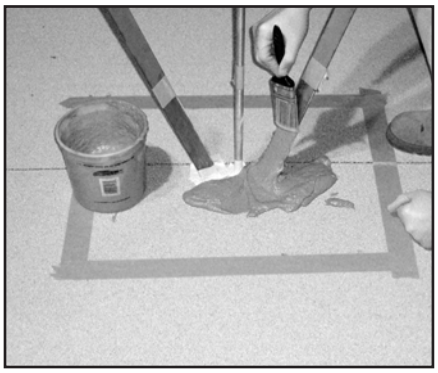
1. Remove all foreign materials from the penetration, such as dirt, rust, asphalt, coatings, paint, or other substances by grinding. Using Pro Prep and a clean shop rag, wipe the area of the penetration to be flashed. Allow the Pro Prep a minimum of 20 minutes drying time after application and before continuing with Pro Matrix application.



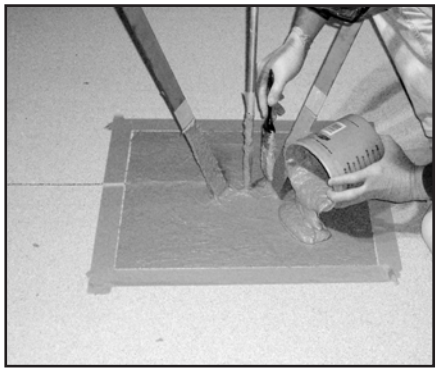
2. Using tape, mask off the termination of the flashing 6 inches high on the penetration, and extending 8 inches onto the finished roof membrane in all directions.



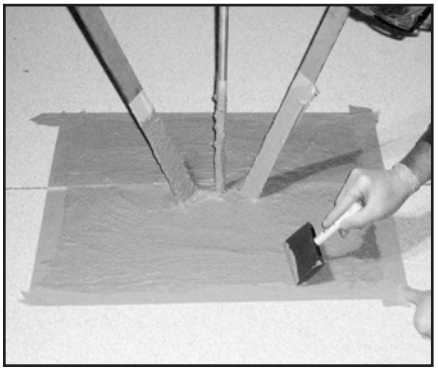
3. Cover all horizontal to vertical/diagonal transition points with duct tape. The duct tape will serve as a bond breaker to facilitate crack bridging.



4. Pro Matrix is applied in a two-coat process. Using a brush, apply an even, generous base coat of catalyzed Pro Matrix Resin first to the vertical/diagonal penetration surfaces, then to the horizontal surfaces. See page 8 for consumption rates. Allow the resin to cure.



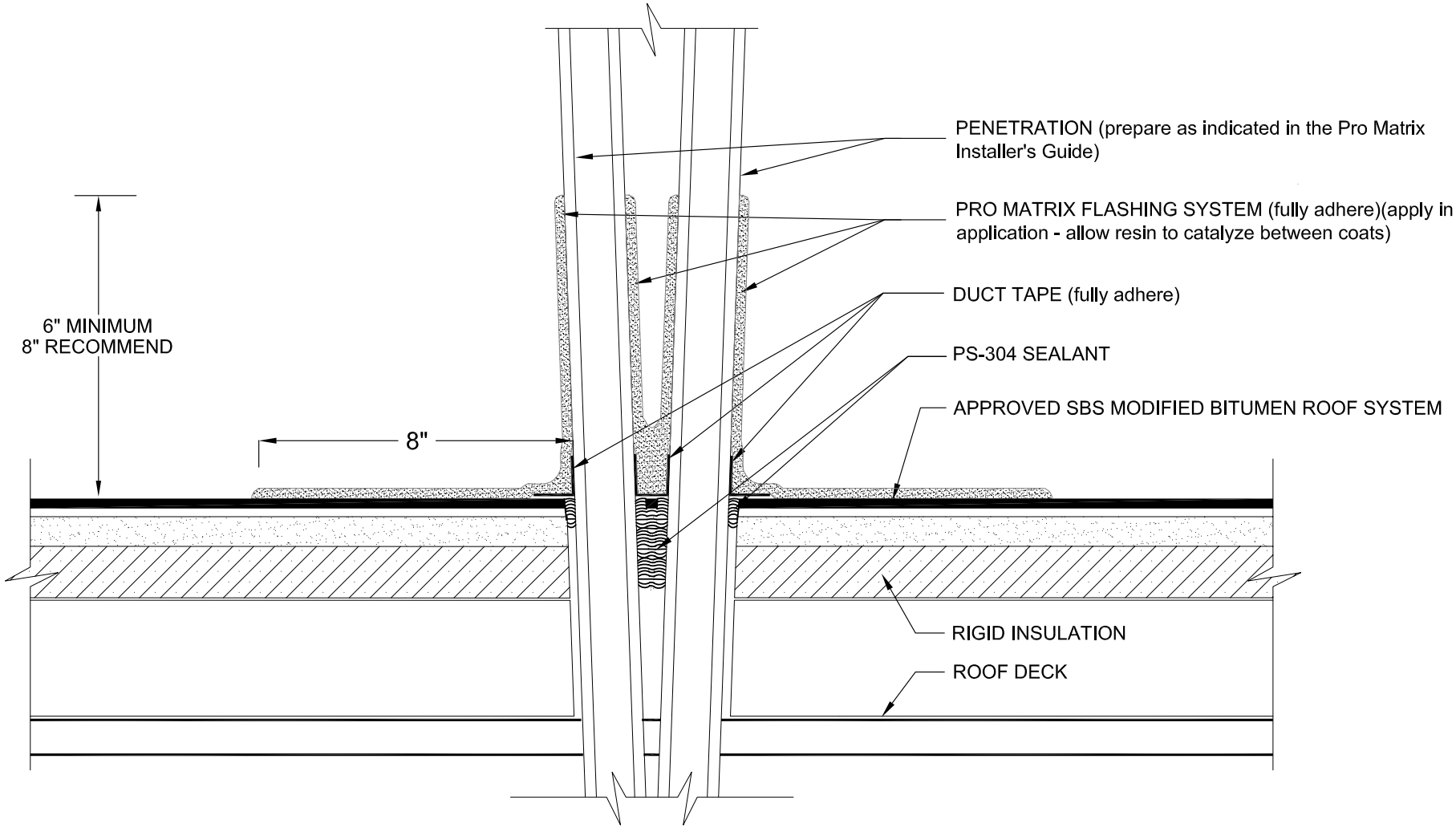
5. Apply an even, generous top coat of catalyzed Pro Matrix Resin first to the vertical/diagonal penetration surfaces, then to the horizontal surfaces. See page 8 for consumption rates.



6. A stiff foam brush can be used to smooth the resin surface for improved aesthetics. If work is interrupted for more than 12 hours prior to application of the top coat, or the surface of the catalyzed Pro Matrix Resin becomes dirty, thoroughly clean the area with Pro Prep and allow the Pro Prep a minimum of 20 minutes drying time before proceeding. Remove the masking tape before the resin sets completely.

PRO MATRIX FLASHING SYSTEM

typical penetration "gang" condition



NOTES:
1. PRO MATRIX IS RECOMMENDED ONLY WHEN THE USE OF THE PARAPRO 123 FLASHING SYSTEM IS NOT FEASIBLE.
2. BEFORE APPLICATION OF PRO MATRIX, PRO PASTE OR AN APPROVED ELASTOMERIC SEALANT SHOULD BE USED TO FILL VOIDS WHERE ROOFING MEMBRANES TERMINATE AT THE BASE OF PENETRATIONS.
3. PRO MATRIX SHOULD NOT BE APPLIED OVER MEMBRANES OR OTHER MATERIALS APPLIED IN, OR CONTAINING, UNCURED SOLVENT-BASED MATERIALS.
4. REFER TO THE PRO MATRIX INSTALLER'S GUIDE FOR A LIST OF APPROVED SUBSTRATES AND PREPARATION REQUIREMENTS. REQUIREMENTS DETAILED IN SIPLAST SPECIFICATIONS AND THE PRO MATRIX INSTALLER'S GUIDE SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.

N.T.S.

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Siplast - 1000 East Rochelle Boulevard - Irving, Texas - 75062-3940
(800) 922-8800 FAX: (469) 995-2206 www.siplast.com

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siplast®

Siplast
1000 E. Rochelle Blvd.,
Irving, Texas 75062
469-995-2200
Facsimile: 469-995-2205

In Canada:
601 W. Broadway #400
Vancouver, BC, Canada V5Z 4C2
604-420-7677

Customer Service in North America:
Toll Free 1-800-922-8800

www.siplast.com
www.siplastgreen.com

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