siplast®

Teranap Plaza Deck

Installer's Guide

TABLE OF CONTENTS

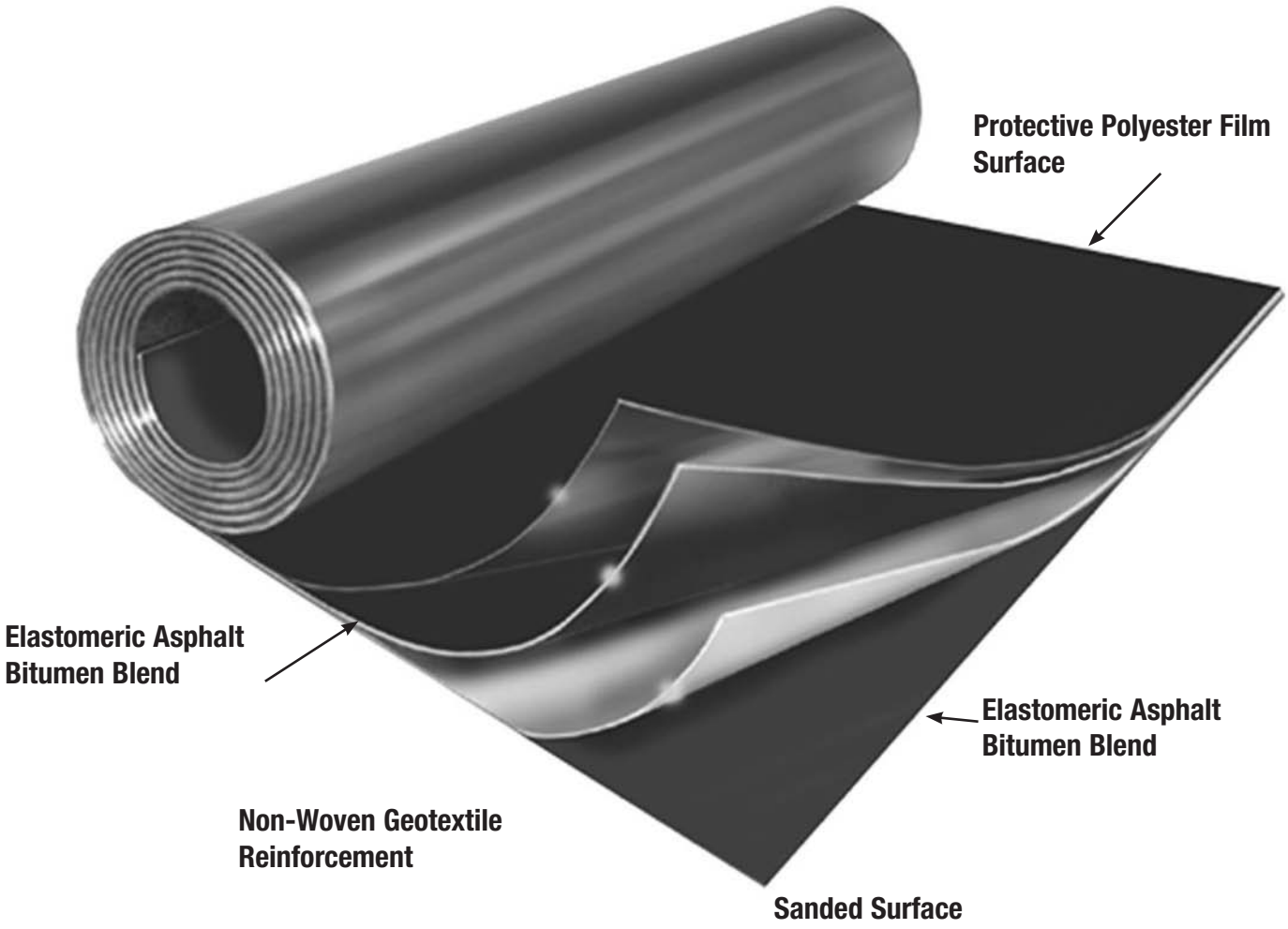
The information in this publication is offered as a guide to assist designers with their specifications. However, Siplast/Icopal assumes no liability in connection with the use of this information. The specifications in this publication are subject to change without notice.

For a copy of the Teranap Plaza Deck Waterproofing guide specification, contact your local Siplast/Icopal Representative.

I. Product Information

Product Description

Siplast Teranap is a high performance, puncture-resistant, reinforced, torch-applied elastomeric bitumen plaza deck membrane, lightly sanded on one side and covered with a root inhibiting polyester film on the other side.



Product Supply Specifications

The following describes typical roll dimensions for Teranap. Custom lengths are available upon request.

	Thickness		Width		Length		Coverage		Roll Weight	
Product Teranap	**mils**	**mm**	**ft**	**m**	**ft**	**m**	**ft²**	**m²**	**lb**	**kg**
Teranap-2m	160	4.0	6.56	2	65.6	20	400	37	418	190
Teranap-1m	160	4.0	3.28	1	26.2	7.9	75	6.9	85	37

Teranap 2M is wound onto a compressed paper tube. The rolls are placed upright in open-topped crates cushioned with cardboard and polystyrene. Each crate contains 9 rolls. Teranap 1M is manufactured in 1-meter wide rolls for applications where a smaller roll is more convenient.

Crated Teranap 2M Film.

Teranap 1M Film.

Product Information Reference Chart

Product	Description	Purpose	Application Method	Unit	Size	Coverage	Minimum Coverage Weight Per Square
Teranap 2M Film	Asphalt elastomer sheet, non-woven polyester geotextile reinforced. Surfaced with a puncture resistant, root inhibitor polyester film.	Surface ply in the multi layer Teranap plaza deck waterproofing system, lapped 6 inches side and end.	Torch	Roll	6.56 ft (2 m) x 65.6 ft (20 m)	4 sq	100 lb
Teranap 1M Film	Asphalt elastomer sheet, non-woven polyester geotextile reinforced. Surfaced with a puncture resistant, root inhibitor polyester film	Surface ply in the multi layer Teranap plaza deck waterproofing system, lapped 4 inches side and end.	Torch	Roll	3.28 ft (1 m) x 26.2 ft (7.9 m)	.75 sq	100 lb
Teranap 1M Sand	Asphalt elastomer sheet, non-woven polyester geotextile reinforced. Surfaced with sand for direct asphalt or cold adhesive application.	Surface ply in the multi layer Teranap plaza deck parking deck or cold adhesive application, lapped 4 inches side and end.	Torch/Cold	Roll	3.28 ft (1 m) x 26.2 ft (7.9 m)	.75 sq	100 lb
Terabase TG	Asphalt elastomer sheet, random glass mat-reinforced, thin layer of torching grade asphalt on bottom side.	First ply of the Teranap plaza deck system, lapped 3 inches side and end.	Torch	Roll	3.28 ft (1 m) x 33.5 ft (10.21m)	1 sq	75 lb
Terabase	Asphalt elastomer sheet, random glass mat-reinforced. Terabase can be applied in approved Type IV asphalt or Siplast PA-311 Adhesive.	First ply of Teranap plaza deck system composite, lapped 3 inches side and end.	Cold Adhesive or Hot Asphalt	Roll	3.28 ft (1 m) x 50 ft (15.24m)	1 sq	70 lb
Veral Aluminum	Aluminum-clad asphalt elastomer sheet, glass mat/glass scrim reinforced.	Flashing ply for exposed flashing for the Teranap plaza deck system.	Torch	Roll	3.28 ft (1 m) x 33.5 ft (10.21m)	1 sq	90 lb
Teranap Parking Deck	Asphalt elastomer sheet, non-woven polyester geotextile reinforced. Surfaced with sand for direct asphalt application.	Surface ply in the multi layer Teranap parking deck waterproofing system, lapped 6 inches side and end.	Torch	Roll	6.56 ft (2 m) x 65.6 ft (20 m)	4 sq	107 lb
PA-1021 Plastic Cement	Asphalt cutback reinforced with non-asbestos fibers meeting ASTM D 4586, Type II.	General purpose roof cement for use under all metal flanges.	Trowel	Pail	5-gallon	See data sheet	
PA-828 Flashing Cement	Asphalt cutback reinforced with non-asbestos fibers meeting ASTM D 4586, Type II.	Specially blended flashing cement that resists slump on sloped and vertical applications.	Trowel	Pail	5-gallon	See data sheet	
PA-1125 Asphalt Primer	Penetrating asphalt cutback meeting ASTM D 41.	Preparation of metal and masonry surfaces.	Brush, roller, or spray	Pail or drum	5-gallon or 55-gallon	See data sheet	
Teranap Drain	Two-part prefabricated soil sheet drain and protection board composed of a polystyrene core and covered on one side with a woven geo-textile.	Designed for horizontal applications requiring high compressive strength.	Loose laid	Roll	4 ft x 50 ft (1.22m x 15.24m)	200 sq ft	22 lb
Teranap Drain Extensive	Three-part prefabricated soil sheet drain designed specifically for extensive green roof applications.	Designed for extensive green roof applications where root penetration protection and water retention properties are required.	Loose laid	Roll	4 ft x 50 ft (1.22m x 15.24m)	200 sq ft	22 lb

Material Properties

Property (as Manufactured)	Values/Units	Test Method
Thickness (minimum)	154 mils (3.9 mm)	ASTM D 5147 section 5
Thickness (average)	160 mils (4.0 mm)	ASTM D 5147 section 5
Peak Load @ 73°F (average)	60 lbf/inch (10.5 kN/m)	ASTM D 5147 section 6
Peak Load @ 0°F (average)	95 lbf/inch (16.6 kN/m)	ASTM D 5147 section 6
Elongation @ Peak Load, 73°F (average)	65%	ASTM D 5147 section 6
Elongation @ Peak Load, 0°F (average)	40%	ASTM D 5147 section 6
Elongation at 5% Peak Load @ 73°F (average)	100%	ASTM D 5147 section 6
Tear Strength (average)	100 lbf (0.45 kN)	ASTM D 5147 section 7
Water Absorption (maximum)	1%	ASTM D 5147 section 9
Dimensional Stability (maximum)	<1%	ASTM D 5147 section 10
Low Temperature Flexibility (maximum)	-13°F (-25°C)	ASTM D 5147 section 11
High Temperature Stability (minimum)	250°F (121°C)	ASTM D 5147 section 15

Teranap meets all requirements and is certified for potable water storage applications. Teranap has been tested by NSF (National Sanitation Foundation) and is listed in the current “NSF Listing” publication.

Siplast Teranap Chemical Resistance

	CONCENTRATION %	A	B	C
SODIUM ACETATE	25%	●		
ACETONE	10%		●	
ACETIC ACID	5-10%		●	
ASCORBIC ACID	100%	●		
BENZOIC ACID	100%	●		
HYDROCHLORIC ACID	37%			●
CHROMIC ACID	5%			●
CITRIC ACID	100%	●		
FORMIC ACID	5%		●	
LACTIC ACID	50%			●
MALEIC ACID				●
NITRIC ACID	10%		●	
OXALIC ACID	5%	●		
STEARIC ACID	100%			●
TANNIC ACID	25%	●		
TARTARIC ACID	25%	●		
ETHYL ALCOHOL	25%	●		
METHANOL	25-100%	●		
AMMONIUM HYDROXIDE	32%		●	
POTASSIUM BICARBONATE	25%	●		
SODIUM BICARBONATE	25%	●		
SODIUM BISULFATE	25%	●		
SODIUM BROMIDE	25%	●		
CAMPHOR	100%			●
POTASSIUM CARBONATE	25%	●		
CALCIUM HYDRATE	100%	●		
MAGNESIUM CHLORIDE	100%	●		
POTASSIUM CHLORIDE	100%	●		
SODIUM/CALCIUM CHLORIDE (SALT)	100%	●		
ZINC CHLORIDE	25%	●		
FERROUS AND FERRIC CHLORIDE	100%	●		
STANNIC CHLORIDE	100%	●		
LIQUID DETERGENT	33%		●	
SEAWATER		●		
HYDROGEN PEROXIDE	10%		●	
ETHYLENE GLYCOL	100%	●		
FORMALDEHYDE	25%	●		
GASOLINE	100%			●
GLYCERIN	100%	●		
POTASSIUM HYDROXIDE	10%	●		
SODIUM HYPOCHLORITE	12%		●	
SODIUM HYDROXIDE	10%	●		
METHYL ETHYL KETONE	100%			●
AMMONIUM NITRATE	25%	●		
POTASSIUM NITRATE	25%	●		
POTASSIUM PERMANGANATE	10%			●
LIQUID MANURE		●		
COPPER SULFATE	25%	●		
CALCIUM SULFATE	100%	●		
FERROUS SULFATE	25%	●		
TEEPOL	10%	●		
UREA	33%	●		

Code indicating results
A = No corrosion
B = Slight Surface Corrosion
C = Pronounced corrosion, product damaged, not recommended

Teranap is not recommended for storage of petroleum products. consult the Siplast Technical Department for solutions with a pH factor less than 2 or greater than 9.

II. General Specifications

Applications

Teranap is designed for use as an impervious barrier in plaza deck and other waterproofing applications, including:

- Pedestrian plaza decks.
- Garden and green roofing and waterproofing.
- Planters.
- Parking decks.

Please consult the Siplast/Icopal Technical Department for specific applications not listed above.

Storage and Handling

Siplast Teranap roll products must be stored on end on a clean, flat surface out of direct exposure to the elements. Care should be taken that rolls are not dropped on ends or edges and are not stored in a leaning position. Deformation resulting from these actions will make proper installation difficult. All material stored on the deck overnight should be placed on pallets. Care should be taken to ensure that stored materials do not overload the deck and building structure.

Materials such as solvents, adhesives, and asphalt cutback products should be stored upright, away from open flames, sparks, or excessive heat.

All materials should be protected with a breathable canvas cover. Polyethylene or other non-breathable plastic coverings are not appropriate. Further, all materials should be handled in such a manner as to ensure that they remain dry prior to and during installation.

Precipitation

Do not apply Teranap waterproofing materials during precipitation, or if there is a threat of precipitation during installation.

Torch Safety

Some substrates may present a fire hazard when waterproofing materials are applied with a torch. Always have approved fire-extinguishing equipment nearby when using a torch. Siplast/Icopal recommends a fire watch following any torching applications.

III. Membrane Products

Siplast Teranap Waterproofing Membrane Assembly

The Siplast Teranap Waterproofing assembly is a torch-applied SBS-modified bitumen system incorporating two membrane layers. The base ply, Terabase, is an elastomeric membrane engineered to retain its elasticity through the rigors of deck movement. The top ply, Teranap, consists of a nonwoven polyester mat impregnated and coated with SBS-modified bitumen. A root-resistant polyester film protects the surface of the sheet. The large-width Teranap top ply is fully adhered to the Terabase base ply.

Siplast Teranap Waterproofing Membrane Assembly Components

Ply	Thickness (avg)	Weight (per 100 sq ft)
Terabase base ply	98 mils (2.5 mm)	70 lb (3.1 kg/sq m)
Teranap finish ply	160 mils (4.0 mm)	100 lb (4.4 kg/sq m)

Exposed Flashing Membrane Assembly

Foil-faced, torch-applied Siplast Veral is used to treat exposed flashing conditions in Teranap Plaza Deck Systems. Veral utilizes the time-proven waterproofing characteristics of SBS-modified asphalt, the stability and strength of glass-scrim reinforcement, and the protective qualities of metal foil. This combination creates a flashing membrane that is tough, lightweight, long lasting, and weather-tight.

Metal and asphaltic materials expand at different rates, so special features have been engineered into Veral's design. Using a patented embossing system, small control channels are built into the metal facing. A thin layer of low-melt asphalt is factory applied beneath these channels, allowing the metal to expand and contract independently of the modified asphalt base.

Concealed Flashing Membrane Assembly

Teranap is used to treat concealed flashing conditions in Teranap Plaza Deck Systems.

IV. Accessory Products

Primer

When priming is required, Siplast PA-1125 Primer is used in Teranap applications. PA-1125 Primer is a high quality asphalt solvent blend for spray, brush, or roller application. Primed surfaces should be allowed to dry thoroughly prior to waterproofing or flashing application. PA-1125 meets or exceeds ASTM D 41 requirements.

Mastic

Siplast PA-1021 Plastic Cement is used as a base for setting metal flanges in Teranap applications. PA-1021 Plastic Cement is a general-purpose mastic produced from refined asphalt and petroleum solvents with non-asbestos fibers added for reinforcement. It is highly flexible, has a heavy mastic consistency, and can be applied with a trowel to dry, clean surfaces. PA-1021 meets or exceeds ASTM D 4586, Type II requirements.

Sealant

In areas where a sealant is required, Siplast PS-304 Elastomeric Sealant is used. PS-304 Elastomeric Sealant is a moisture-curing, non-slump sealant designed for applications where resistance to dynamic joint movement, adhering to dissimilar materials, and excellent low temperature durability are required. PS-304 is formulated using ethicone technology, and therefore contains no volatile organic compounds (VOCs). Because it is composed of 100% solids, PS-304 will not shrink or lose volume in joint or surface applications. PS-304 contains no solvents, and will not damage expanded polystyrene or other solvent-sensitive construction materials. PS-304 has a mortar texture and is gray in color. Other colors are available on a special made-to-order basis.

Drainage Panel

Teranap Drainage Mat is designed for drainage applications requiring high compressive strength, high flow capacity, and the strength and filtration properties of a woven geotextile. It is a two-part prefabricated sheet drain and protection board consisting of a formed polystyrene core covered on one side with a woven polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles that could potentially block the core. The core allows water flow to designed outlets. Full coverage protection is provided to waterproofing materials.

High Density Extruded Polystyrene

Siplast Extruded Polystyrene Insulation (XEPS) is a continuous closed-cell, high compression strength polystyrene foam panel with drainage channels on the bottom surface. Siplast XEPS is designed for use in protected membrane assemblies, and offers high compressive strength, outstanding moisture resistancey and superior R-value.

Plaza Deck Pavers

Heavyweight, hydraulically pressed, concrete square-edged pavers manufactured for use in plaza deck applications are suitable for use as an overburden with Teranap Plaza Deck Systems. Pavers are available through Siplast/Icopal as part of a complete Teranap Plaza Deck System package. Pavers used with Teranap applications should conform to the following criteria:

- Minimum compressive strength of 6,500 psi (45 Mpa).
- Absorption not greater than 5%.
- No breakage, and maximum 1% mass loss when tested for freeze-thaw resistance.

Paver Supports

Standard high-density polyethylene paver support assemblies, including adjustable or stackable pedestals, shims, and spacer tabs for joint spacing of 1/8-inch (3 mm) are suitable for use with Teranap Plaza Deck applications with paver overburden. Support pedestals are available through Siplast/Icopal as part of a complete Teranap Plaza Deck System package.

Geotextile Filter Fabric

Where required, filter fabric comprised of a minimum 200 g/sq meter non-woven polyester or polypropylene fleece should be used with Teranap applications. Filter Fabric is available through Siplast/Icopal as part of a complete Teranap Plaza Deck System package.

V. Substrate Preparation

Acceptable Substrates

Teranap Plaza Deck Systems are only to be used in conjunction with structural concrete substrates/decks. Substrates other than structural concrete must be approved in advance by the Siplast/Icopal Technical Department.

Substrate Preparation

Structural concrete surfaces must be properly cured, clean, dry, and free from laitance. They must be smooth, without ridges, depressions, or exposed reinforcement fabric. All projections in the surface must be leveled. Depressions, holes, or cuts in the substrate must be patched with a quickset concrete repair compound, which must be allowed to cure thoroughly prior to application of the waterproofing system.

In retrofit applications, all reasonable means must be used to remove the old waterproofing system. In cases where some latent residue from the old waterproofing system cannot be removed, contact the Siplast/Icopal Technical Department for approval.

Primer Application

Prime the entire deck with a uniform coating of Siplast PA-1125 Primer and allow the primer to dry thoroughly. All metal flanges (jacks, edge metal, lead drains, flashings, etc.) must also be primed.

VI. Membrane Application

System Layout

Lap seams in the Terabase base ply should not coincide with lap seams in the Teranap finish ply. Stagger courses to achieve this. Apply all courses of both plies perpendicular to the slope of the deck.

Application

1. Fully heat bond the Terabase TG base ply to the prepared, primed structural concrete substrate. Lap sides and ends a minimum of three inches.

2. Terabase TG can be applied using an approved torching wagon with a minimum of seven burners.

3. Each sheet of Terabase TG base ply should be applied directly behind the torch applicator.

4. At end laps, a “dog ear” angle cut should be made on the overlapping selvage edge.

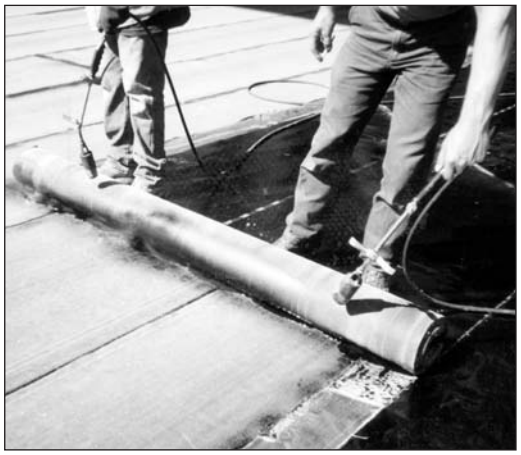
5. Concentrate the heat where the Terabase TG and the concrete substrate make contact. Torch uniformly, side-to-side, using an “L” motion to preheat the selvage of the previous sheet. Burn off the plastic film and soften the back coating until the grooves are no longer visible without causing the Terabase TG sand surface to become displaced. The membrane should be completely fused, with only a small bead of bleedout.

6. Prior to the installation of the Teranap finish ply, the roll should be unrolled and rolled back to the center from both ends. Unrolling, setting, and working from the middle of the roll assists in keeping the roll straight during installation.

7. Large Teranap rolls can be turned easily by setting the roll on a wooden block and rotating the roll.

8. Install the Teranap finish ply with the film side up. The film is a factory-applied root inhibitor/ protection layer. The sanded side of Teranap receives heat when torching the sheet to the Terabase TG.

9. After backrolling, fully torch the Teranap finish ply to the Terabase base ply in on direction. Lap sides and ends a minimum of 6 inches. Concentrate the heat where the Teranap finish ply and the Terabase TG make contact. Torch uniformly, side-to-side, using an “L” motion to preheat the selvage of the previous sheet. Each sheet should be applied directly behind the torch applicator.



10. Working in the other direction, fully torch the remaining Teranap finish ply to the Terabase base ply. Lap sides and ends a minimum of 6 inches.

VII. Flashing Application: Masonry

Flash masonry parapet walls and curbs using the reinforcing sheet and foil-faced Siplast Veral for exposed applications. Install the reinforcing sheet with minimum 3-inch laps, extending a minimum of 4 inches onto the Terabase base ply surface and 4 inches up the parapet. The 8-inch stripping ply should be installed without a cant strip, and should make a 90° transition. Pre-cut the Veral flashing into 3-foot lengths (cut from the end of the roll). Torch-apply the Veral flashing into place with the factory selvage edge at laps. Flashing pieces should extend a minimum of 6 inches beyond the wall onto the Teranap finish ply surface. Using a damp sponge, apply pressure to the Veral membrane to ensure that the Veral has made full contact with the substrate. Care should be taken not to deform the waffle pattern of the Veral. Nail the top edge of the flashing on 9-inch centers.

VIII. Water Cut-Off

At the end of the day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using Siplast PA-1021 Plastic Cement or pieces of the Teranap membrane. Cut-offs must be completely removed prior to the resumption of waterproofing with Teranap. Alternating stripping plies of torchable material to the concrete substrate is also an acceptable method of installing a water cut-off.

IX. System Interface with Related Components

Following are instructions for correct installation of components integrated into the Teranap membrane assembly. In all cases, unless otherwise approved by the Siplast/Icopal Technical Department, flanged components should be applied directly to the Terabase base ply and should be stripped in with terabase material prior to application of the Teranap finish ply. Incorporate flanged components into the membrane assembly between the application of the Terabase base ply and the Teranap finish ply. All flanges must be primed with a uniform coat of Siplast PA-1125 Primer, allowed to dry thoroughly, and set in Siplast PA-1021 Plastic Cement.

Lead Pipe Flashings

After the Terabase base ply has been applied, set the primed, dry flange in Siplast PA-1021 Plastic Cement and strip in the flange using Terabase. Extend the Terabase strip-in ply a minimum of 4 inches beyond the edge of the flange. Install the Teranap finish ply, terminating at the flange-sleeve juncture of the pipe flashing. Apply Siplast PS-304 Elastomeric Sealant at the base of the sleeve.

Lead Drain Flashings

After the Terabase base ply has been applied, set the primed, dry lead flashing sheet in Siplast PA-1021 Plastic Cement and form it by turning it down into the drain bowl. Ply-in the perimeter of the lead flashing with an additional layer of Terabase base ply material, overlapping the perimeter of the lead a minimum of 4 inches. Install the Teranap finish ply, extending the sheet beyond the clamping seal. Finish by installing the clamping ring, securing all clamps, bolts, etc.

X. Overburden Installation

Water Test
Prior to the installation of the overburden, a water test must be conducted for a minimum of 48 hours by plugging all drains and pumping water onto the finished assembly.

Membrane Protection
Care must be taken during application of the overburden to protect the finished waterproofing membrane. It is the waterproofing contractor's responsibility to ensure that the party responsible for installation of the overburden takes all necessary precautions to protect the waterproofing membrane during installation of the overburden.

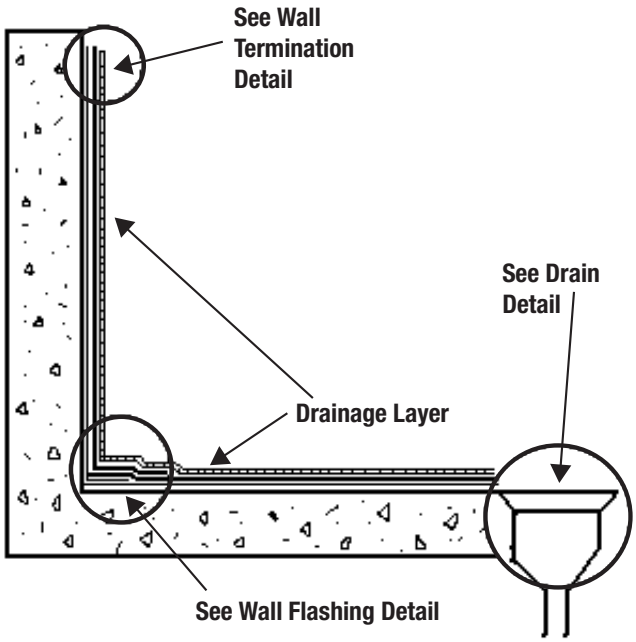
Overburden Options
The Teranap Waterproofing System can be specified with a wide variety of surfacings for plaza deck applications, including pedestals and pavers, poured concrete, mortar and pavers, and road asphalt. Green roofing applications can be specified with many landscape options, including both extensive green and intensive green assemblies. All of the components of the overburden must be approved by Siplast/Icopal, and must be applied per the manufacturer's published recommendations. Contact the Siplast/Icopal Technical Department for specific overburden information.

Overburden Installation Overview
Prior to application of any overburden, a final inspection of the Teranap Waterproofing System must be completed. Any debris, excess waterproofing materials, equipment, and other related items must be removed prior to overburden application.

XI. Details

Planters

Teranap can be used to line planters. The basic membrane application process outlined earlier in this guide can be followed. In planter applications, the strip-in ply of Terabase should extend to the top of the wall/planter. All planter applications require a drainage layer on the sides and bottom of the planter.

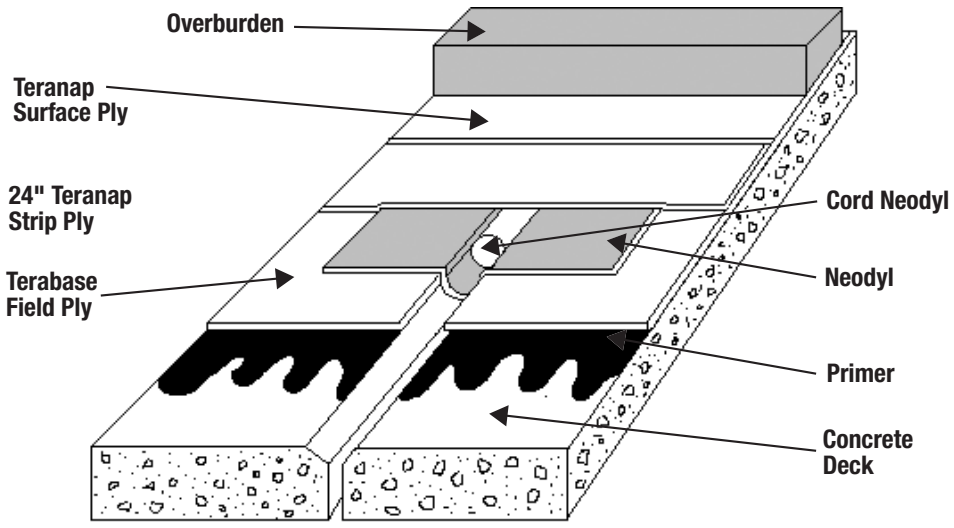


Flush Expansion Joint

Plaza deck applications can incorporate low profile or flush expansion joints. Siplast/Icopal recommends use of the Neodyl Expansion Joint System with Teranap Waterproofing Systems.

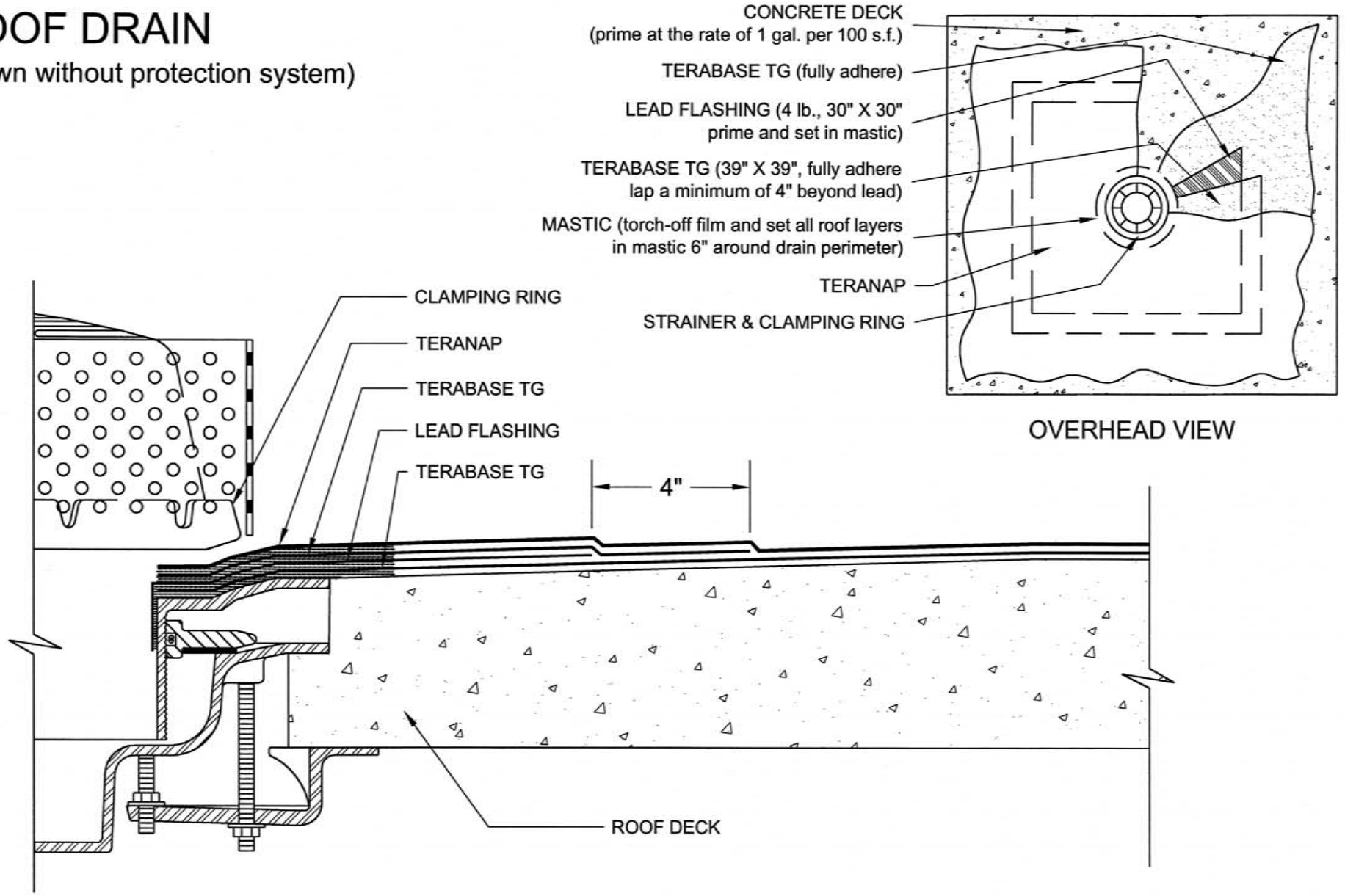
To install the Neodyl Expansion Joint System:

1. Prime the concrete deck with Siplast PA-1125 Primer.
2. Using a torch, heat-bond Terabase TG to the primed concrete surface. Cut the sheet and stop at the expansion joint opening.
3. Torch the Neodyl Expansion Joint to the Terabase TG, allowing the material to loop into the joint. Do not torch the looped portion of the Neodyl.
4. Install the Cord Neodyl loose-laid in the loop portion of the joint.
5. Torch-apply a 24-inch wide strip of Teranap centered over the joint area. Do not torch the area over the cord Neodyl.
6. Install the field ply of Teranap continuously over the joint area.
7. Install the overburden.



ROOF DRAIN

(shown without protection system)



NOTES: 1. PA-1021 PLASTIC CEMENT AND PA-1125 PRIMER ARE REQUIRED WHERE MASTIC AND PRIMER ARE INDICATED.
2. ROOF DRAIN COMPONENTS AND INSTALLATION GUIDELINES ARE SUPPLIED BY THE DRAIN MANUFACTURER.
3. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
4. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

N.T.S.

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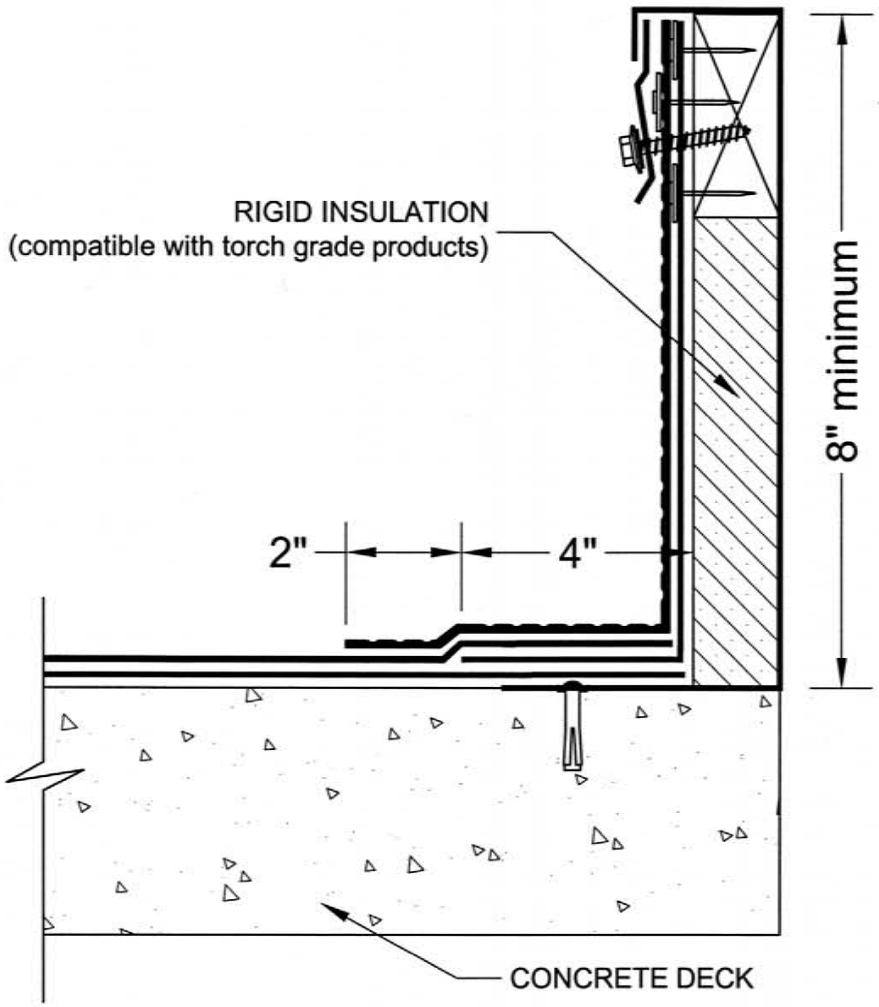
(800) 922-8800 FAX: (469) 995-2206 www.siplast.com

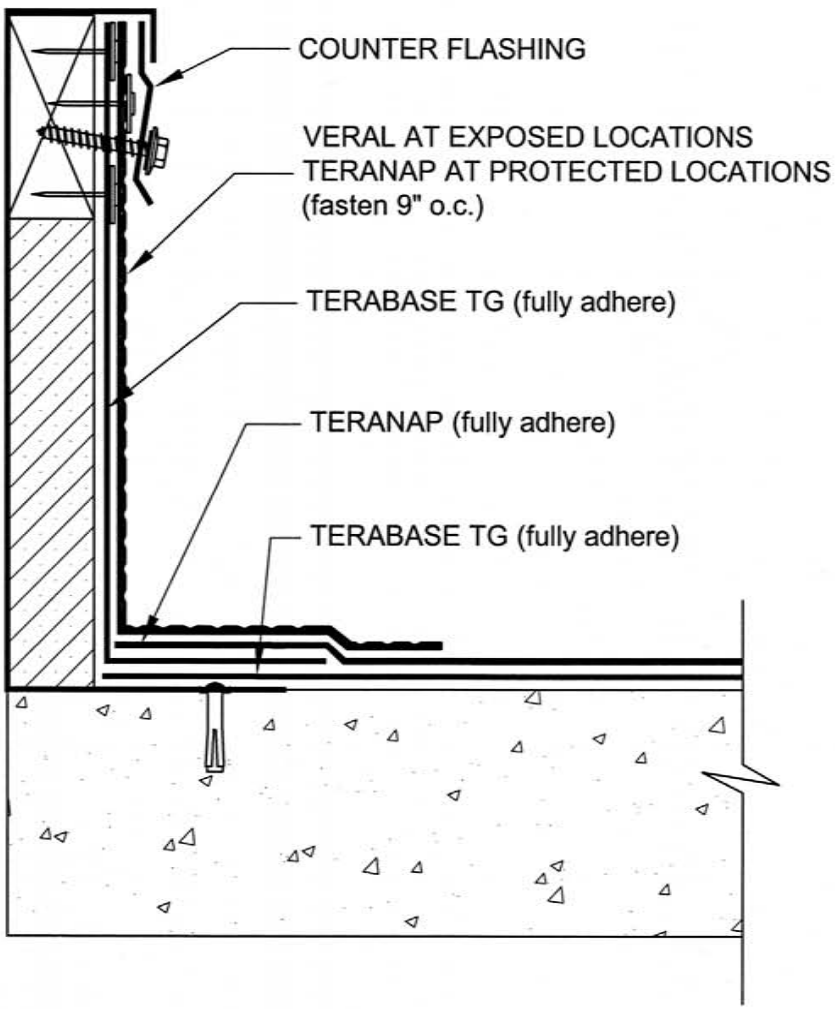
Ref. #: TN-D1

Date: 12/18/2000

HVAC CURB

(shown without protection system)





NOTES: 1. THE CURB UNIT, COMPONENTS AND INSTALLATION GUIDELINES ARE SUPPLIED BY THE CURB MANUFACTURER.
2. DISSIMILAR METAL TYPES SUBJECT TO ELECTROLYTIC REACTION SHOULD BE PHYSICALLY SEPARATED.
2. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
3. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

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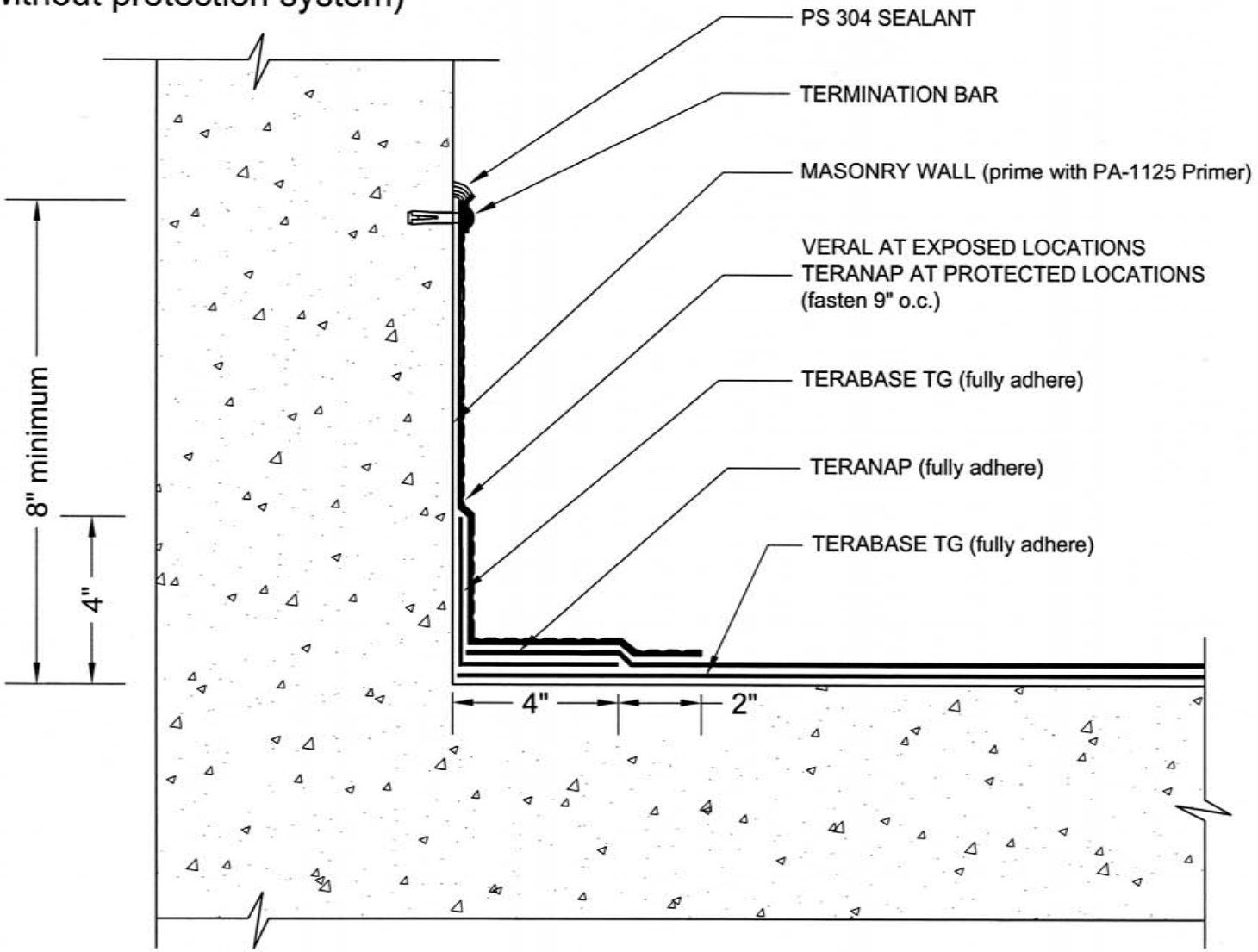
Ref. #: TN-C2

Date: 12/16/2000

PARAPET WALL w/termination bar

(shown without protection system)



NOTES: 1. ALL METAL COMPONENTS SHOULD BE FABRICATED ACCORDING TO THE CURRENT RECOMMENDATIONS OF THE NRCA, SMACNA AND FACTORY MUTUAL.
2. DISSIMILAR METAL TYPES SUBJECT TO ELECTROLYTIC REACTION SHOULD BE PHYSICALLY SEPARATED.
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N.T.S.

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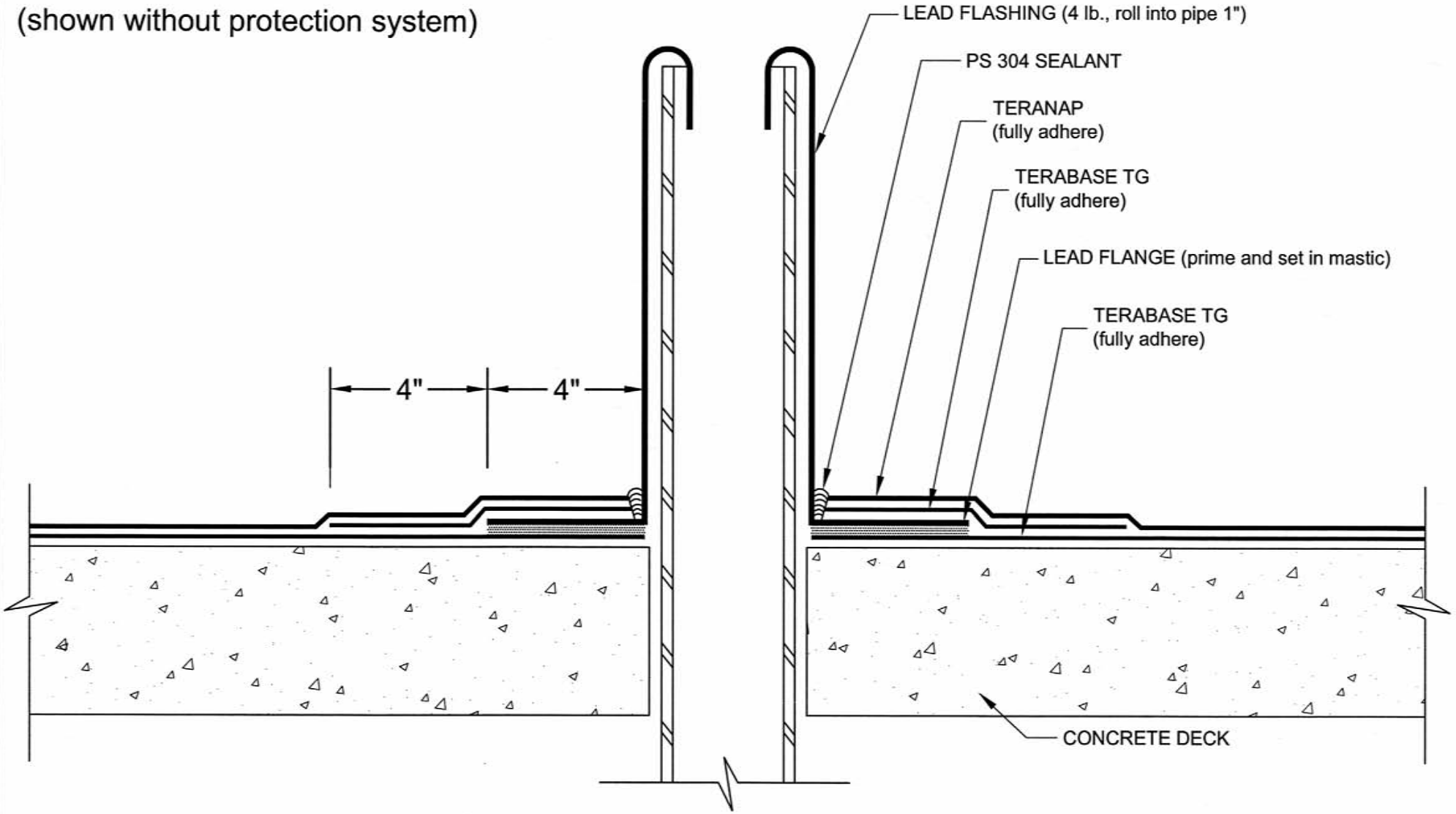
Ref. #: TN-W8

Date: 12/16/2000

WASTE STACK

(shown without protection system)



NOTES: 1. PA-1021 PLASTIC CEMENT AND PA-1125 PRIMER ARE REQUIRED WHERE MASTIC AND PRIMER ARE INDICATED.
2. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
3. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

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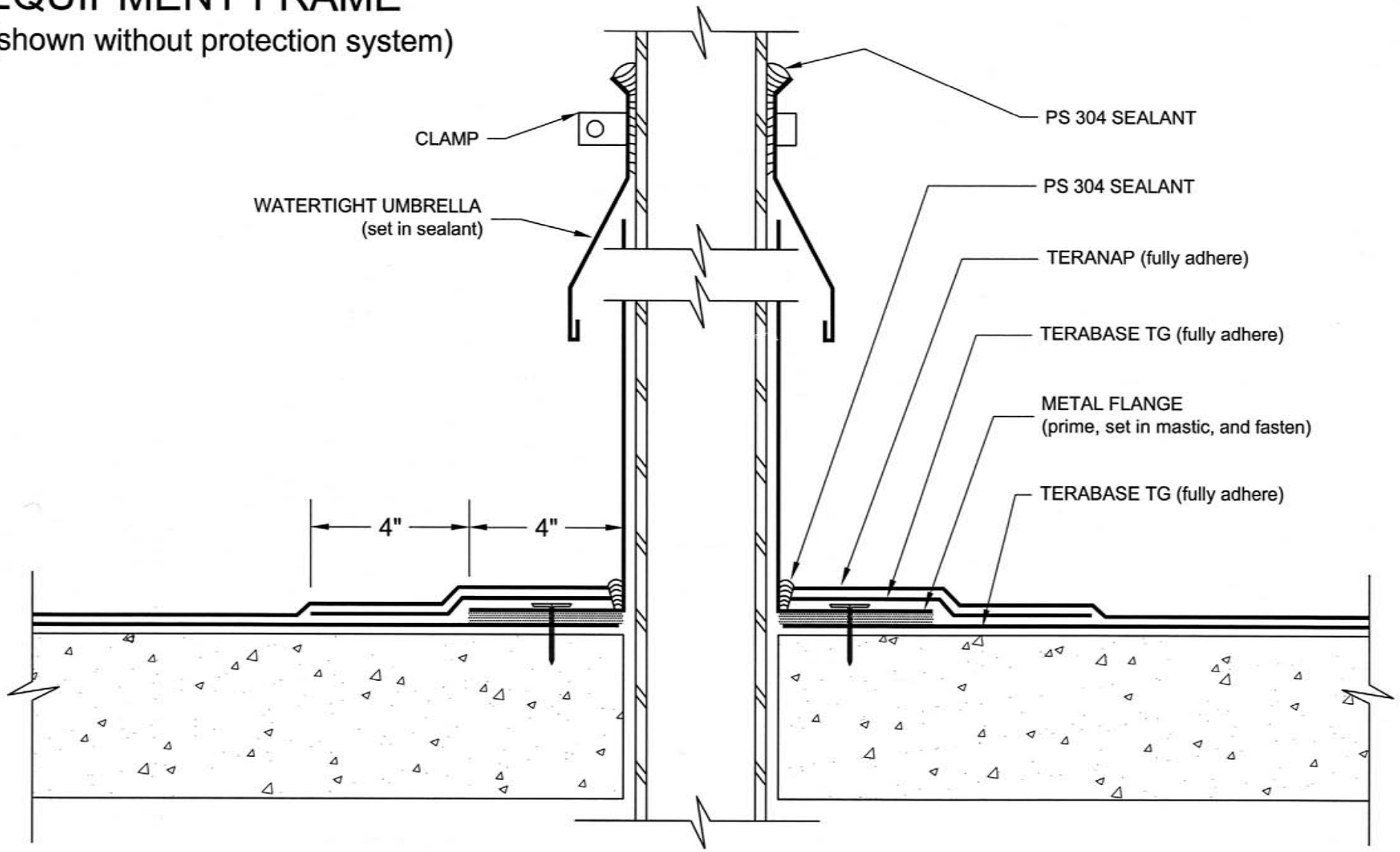
Ref. #: TN-P1

Date: 12/16/2000

EQUIPMENT FRAME

(shown without protection system)



NOTES:
1. PA-1021 PLASTIC CEMENT AND PA-1125 PRIMER ARE REQUIRED WHERE MASTIC AND PRIMER ARE INDICATED.
2. ALL METAL COMPONENTS SHOULD BE FABRICATED ACCORDING TO THE CURRENT RECOMMENDATIONS OF THE NRCA AND SMACNA.
3. ALL METAL COMPONENTS MUST BE FULLY FLANGED AND SOLDERED.
4. DISSIMILAR METAL TYPES SUBJECT TO ELECTROLYTIC REACTION SHOULD BY PHYSICALLY SEPARATED.
5. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
6. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

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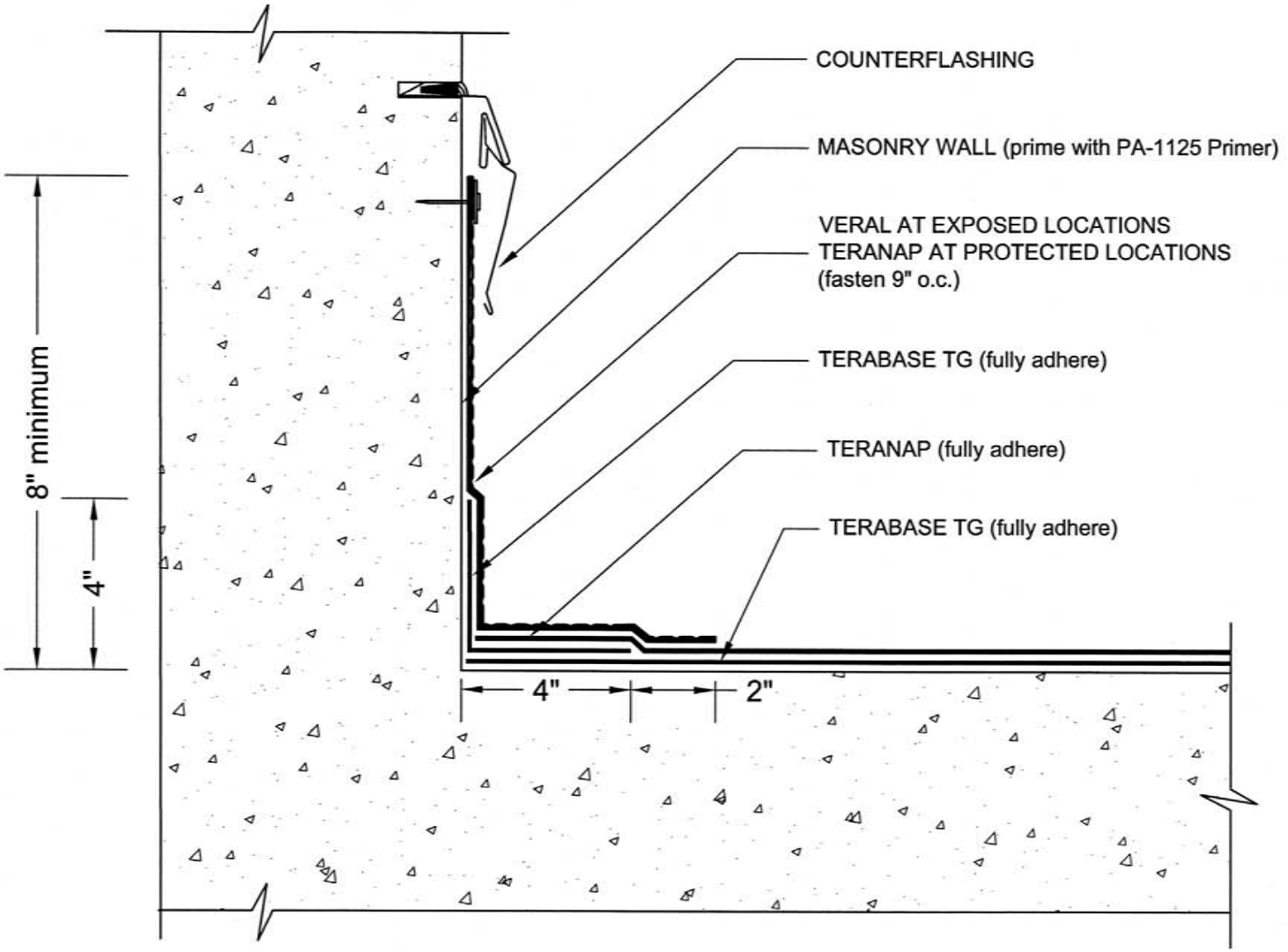
Ref. #: TN-P2

Date: 12/19/2000

PARAPET WALL w/counterflashing

(shown without protection system)



NOTES: 1. ALL METAL COMPONENTS SHOULD BE FABRICATED ACCORDING TO THE CURRENT RECOMMENDATIONS OF THE NRCA, SMACNA AND FACTORY MUTUAL.
2. DISSIMILAR METAL TYPES SUBJECT TO ELECTROLYTIC REACTION SHOULD BE PHYSICALLY SEPARATED.
3. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
4. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

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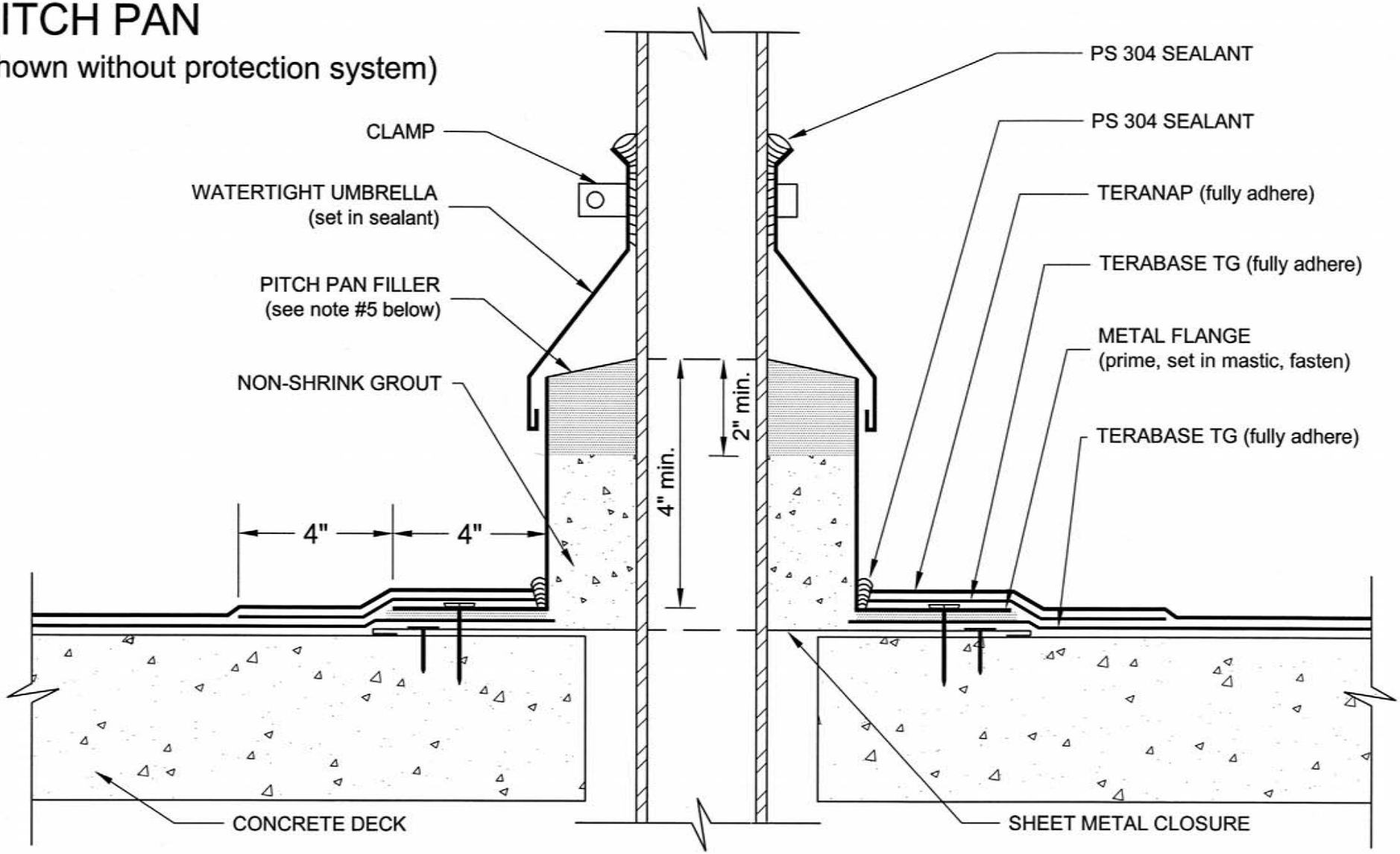
Ref. #: TN-W1

Date: 12/16/2000

PITCH PAN

(shown without protection system)



NOTES:
1. PA-1021 PLASTIC CEMENT AND PA-1125 PRIMER ARE REQUIRED WHERE MASTIC AND PRIMER ARE INDICATED.
2. ALL METAL COMPONENTS SHOULD BE FABRICATED ACCORDING TO THE CURRENT RECOMMENDATIONS OF THE NRCA AND SMACNA.
3. ALL METAL COMPONENTS MUST BE FULLY FLANGED AND SOLDERED.
4. DISSIMILAR METAL TYPES SUBJECT TO ELECTROLYTIC REACTION SHOULD BY PHYSICALLY SEPARATED.
5. PITCH PAN FILLER SHOULD BE A SELF-LEVELING SEALANT RECOMMENDED FOR USE AS SHOWN ABOVE.
6. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
7. PITCH PAN FILLER IS A MAINTENANCE ITEM WHICH MUST BE PERIODICALLY INSPECTED AND MAINTAINED BY THE OWNER.
8. CONSULT TERANAP SPECIFICATION PLATES FOR OVERBURDEN/PROTECTION SYSTEM OPTIONS.

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Ref. #: TN-P3

Date: 12/9/2000

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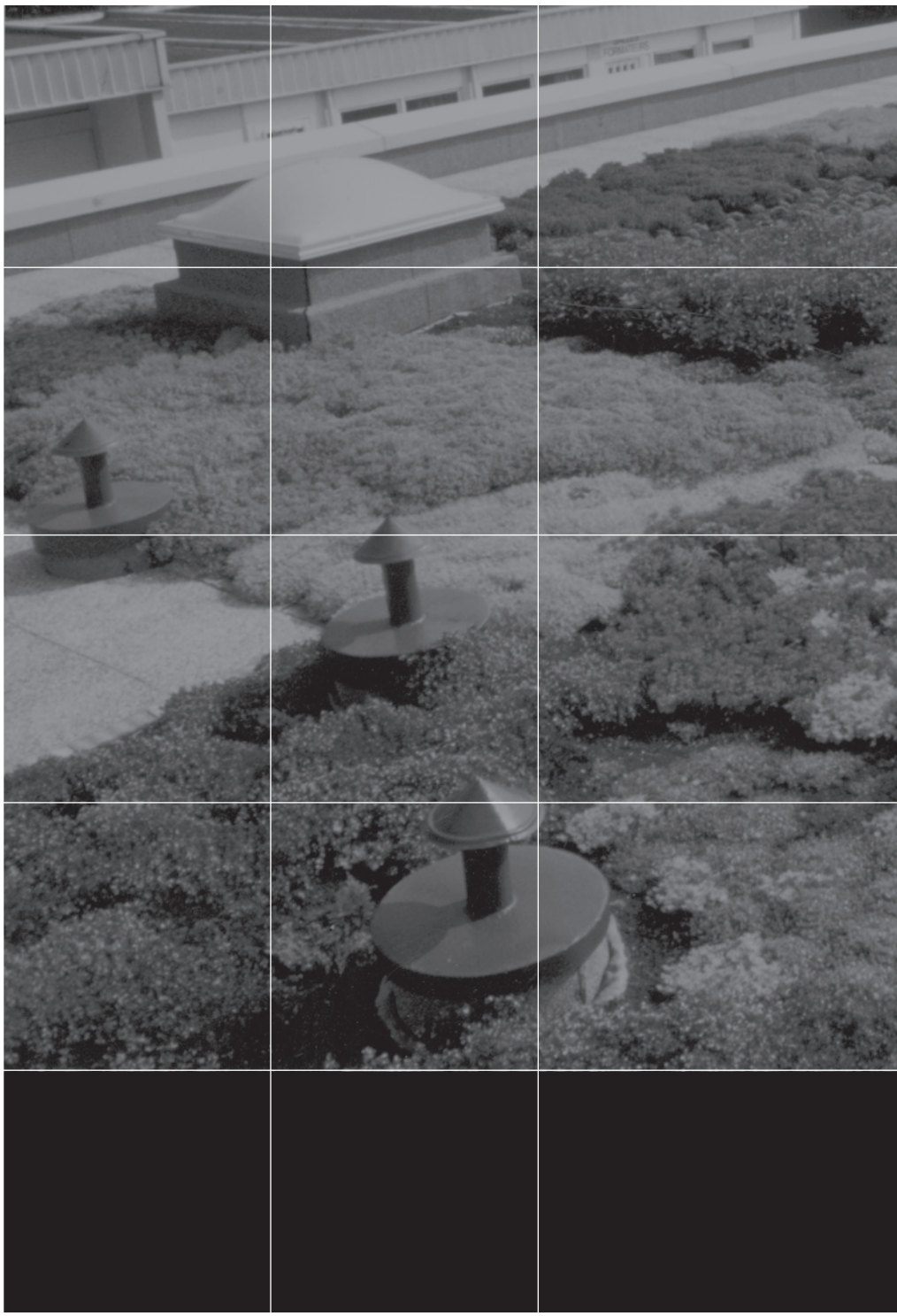

October 2008