

VULKEM® WF-SERIES

Vehicular Expansion Joint Systems



TREMCO
Commercial Sealants & Waterproofing

An **RPM** Company

3735 GREEN ROAD
BEACHWOOD, OH 44122
WWW.TREMCOSEALANTS.COM

Vulkem® WF Vehicular Expansion Joints

Product Description

The Tremco Vulkem® WF-Series of Vehicular Expansion Joints is a series of a preformed, traffic-bearing rubber Santoprene™ seals. This seal is heat-welded to insure watertight joints. This type of design provides a long-lasting, waterproof joint engineered to deal with a wide range of movement. The Vulkem WF-Series of Vehicular Expansion Joints are installed utilizing a specially designed series of epoxy-polyurethane elastomeric agents.

Basic Uses

The Vulkem WF-Series of Vehicular Expansion Joints is designed for use in primarily parking facilities, but can also be used on bridges, roadways and other areas which require a highly flexible, watertight, preformed rubber joint.

Applicable Standards

The Vulkem WF-Series of Vehicular Expansion Joints meets all the applicable ASTM tests/standards for preformed rubber expansion joints. In addition, Vulkem WF-225 through Vulkem WF-600 are pedestrian-friendly, meeting all requirements set forth in the ADA.

Sizing Chart

VULKEM WF PROFILE	MANAGEMENT RANGE	MIN. JOINT OPENING	MAX. JOINT OPENING
WF-125 "1V"*	1.25" (32 mm)	.625" (16 mm)	1.75" (44 mm)
WF-150 "2V"*	1.50" (38 mm)	.750" (19 mm)	2.12" (54 mm)
WF-200 "3V"*	2.00" (50 mm)	1.00" (25 mm)	3.00" (75 mm)
WF-225	1.25" (32 mm)	.75" (19 mm)	2.00" (50 mm)
WF-250	1.50" (38 mm)	1.00" (25 mm)	2.50" (64 mm)
WF-300	1.90" (48 mm)	1.10" (28 mm)	3.00" (75 mm)
WF-400	2.40" (60 mm)	1.60" (40 mm)	4.00" (100 mm)
WF-500	3.10" (78 mm)	1.95" (50 mm)	5.00" (125 mm)
WF-600	3.66" (92 mm)	2.75" (70 mm)	6.00" (152 mm)

*Not ADA-Compliant...Not available in U.S.

Installation

Installation is accomplished via one of two methods. This document is not meant as a complete set of application instructions. Please consult Tremco Technical Services, www.tremcosealants.com and/or your local Tremco sales Representative for complete installation details and instructions. Note: The Vulkem WF Expansion Joint System requires a minimum block-out 3/4" (19 mm) deep x 2 1/2" (64 mm) wide.

Option A Utilizing Cold-Curing Epoxies: Vulkem WF-2020 Adhesive Paste is mixed and spread evenly over block-out bottom. Yield is 20 ft (6 m) of expansion joint per kit. The Vulkem WF-2020 ensures a positive mechanical bond and accommodates substrate irregularities. The Vulkem WF seal is centered over the open joint and installed with the anchoring flaps embedded into the Vulkem WF-2020. The Vulkem WF-1600 Elastomeric Concrete Nosing material is mixed and poured into the block-out area and troweled into place. Yield is 12 ft (3.7 m) of joint per kit. (Please refer to installation guidelines).

Option B Utilizing a Hot-Rubberized Asphalt (Canada Only): Please consult Tremco Technical Services for specific details and instructions.

Maintenance

Damaged joints can be repaired. Please consult your local Tremco Sales Representative or Tremco Technical Services for specific instructions.

Warranty

Tremco warrants its sealants to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Tremco sealants. Tremco's sole obligation shall be, at its option, to replace, or refund the purchase of the quantity of Tremco sealant proven to be defective and Tremco shall not be liable for any loss or damage.

TYPICAL PHYSICAL PROPERTIES

Properties	ASTM Test Method	Test Result
Hardness	D2240	73A
Specific Gravity	D297	0.98
Tensile Strength	D412	1200 lbf/in ² (8.3 N/m ²)
Ultimate Elongation	D412	375%
Tear Strength	D624	159 lbf/in (27.8 kN/m)
		76 lbf/in (13.3 kN/m)
Tension Set	D412	14%
Compression Set	D395	24%
168 Hrs.		36%
Flex Fatigue		<3.4 (<3.4)
Brittle Point	D746	-81° F (-63° C)



Tremco Commercial Sealants & Waterproofing

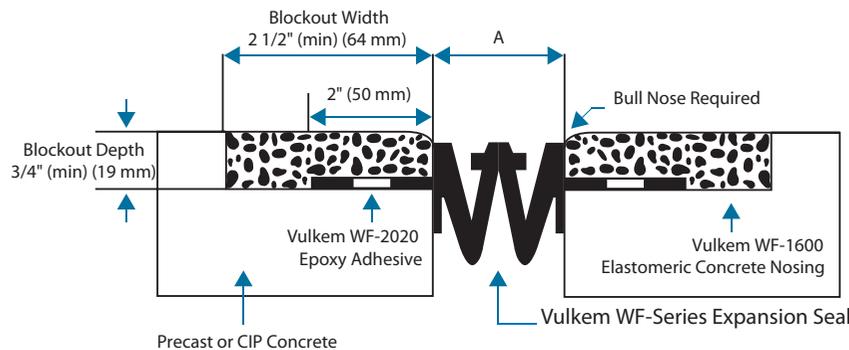
3735 Green Road, Beachwood, OH 44122 // Phone: 216.292.5000 // 800.321.7906
 220 Wicksteed Avenue, Toronto, ON M4H 1G7 // Phone: 416.421.3300 // 800.363.3213
 1451 Jacobson Avenue, Ashland OH 44805 // Phone: 419.289.2050 // 800.321.6357

Vulkem[®] WF Vehicular Expansion Joints

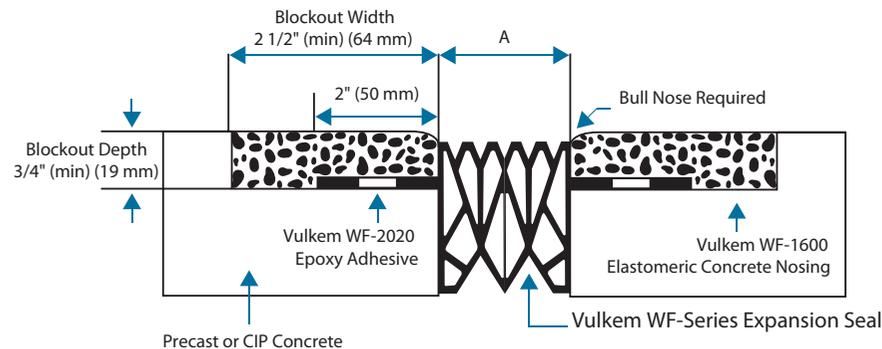
The Tremco Vulkem[®] WF-Series of Vehicular Expansion Joints is a series of a preformed, traffic-bearing rubber Santoprene™ seals designed for use in primarily parking facilities, but can also be used on bridges, roadways and other areas which require a highly flexible, watertight, preformed rubber joint. This Santoprene seal is heat-welded to insure watertight joints. This type of design provides a long-lasting, waterproof joint engineered to deal with a wide range of movement. The Vulkem WF-Series of Vehicular Expansion Joints are installed utilizing a specially designed series of epoxy-polyurethane elastomeric agents. Vulkem WF-225 through Vulkem WF-600 are pedestrian-friendly as well, meeting all requirements set forth in the ADA.

For all Vulkem WF applications the minimum blockout is .75" (19 mm) deep x 2.50" (64 mm) wide.

VULKEM WF PROFILE #	MOVEMENT RANGE	MIN. JOINT OPENING	MAX. JOINT OPENING	MID RANGE INSTALLATION
WF-125 "1V"	1.25" (32 mm)	.625" (16 mm)	1.75" (44 mm)	1.25" (32 mm)
WF-150 "2V"	1.50" (38 mm)	.750" (19 mm)	2.12" (54 mm)	1.50" (38 mm)
WF-200 "3V"	2.00" (50 mm)	1.00" (25 mm)	3.00" (75 mm)	2.00" (50 mm)



VULKEM WF PROFILE #	MOVEMENT RANGE	MIN. JOINT OPENING	MAX. JOINT OPENING	INSTALLATION MIN.	INSTALLATION MAX.
*WF-225	1.25" (32 mm)	.75" (19 mm)	2.00" (50 mm)	1.375" (35 mm)	2.00" (50 mm)
*WF-250	1.50" (38 mm)	1.00" (25 mm)	2.50" (64 mm)	1.75" (44 mm)	2.25" (57 mm)
*WF-300	1.90" (48 mm)	1.10" (28 mm)	3.00" (75 mm)	2.05" (52 mm)	2.75" (70 mm)
*WF-400	2.40" (60 mm)	1.60" (40 mm)	4.00" (100 mm)	2.80" (71 mm)	3.75" (95 mm)
*WF-500	3.10" (78 mm)	1.95" (50 mm)	5.00" (125 mm)	3.45" (88 mm)	4.75" (120 mm)
*WF-600	3.66" (92 mm)	2.75" (70 mm)	6.00" (152 mm)	4.25" (108 mm)	5.75" (145 mm)



INSTALLATION MINIMUM ASSUMED TO BE MEASURED @ 70° F (21° C)

NOTE: These charts are for easy reference only and your local Tremco representative should be consulted to determine the proper size for any application.

Vulkem[®] WF Vehicular Expansion Joint Technical Data

Vulkem WF-1600 Elastomeric Concrete Nosing

Test Performed	Result		
1. Tensile Strength & Ultimate Elongation (ASTM D638) - Crosshead speed @ 2"/min. (50mm/min.)		884 psi (6.1 MPa)	85%
2. Tensile Strength & Ultimate Elongation After Heat Aging (ASTM D638) - Crosshead speed @ 2"/min. (50mm/min.) - Aged 168h @ 70°C (168°F)		1795 psi (12.4 MPa)	42%
3. Hardness (ASTM D2240) - Shore "D" Scale		Instantaneous 15 second dwell	45 D 30 D
4. Hardness After Heat Aging (ASTM D2240) - Shore "D" Scale - Aged 168h @ 70°C (168°F)		Instantaneous 15 second dwell	56 D 45 D
5. Tear Strength (ASTM D624) - Crosshead speed @ 2"/min. (50mm/sec.)		77 ppi (13.5 $\frac{kN}{m}$)	
6. Tear Strength After Heat Aging (ASTM D624) - Crosshead speed @ 2"/min. (50mm/sec.) - Aged 168h @ 70°C (160°F)		123 ppi (21.5 $\frac{kN}{m}$)	
7. Compression Deflection (ASTM D695) - Crosshead speed @ 0.05"/min. (1.25mm/min.)	Instantaneous	<u>5%</u> 138 psi (0.95 MPa)	<u>10%</u> 297psi (2.0 MPa) <u>20%</u> 740 psi (5.1 MPa)
- Samples nominally 2" x 2" x 1" thick (50x50x25mm)	60 second dwell	93 psi (0.64 MPa)	221 psi (1.5 MPa) 579 psi (4.0 MPa)
8. Compression Deflection After heat Aging (ASTM D695) - Crosshead speed @ 0.05"/min. (1.25mm/min.)	Instantaneous	406 psi (2.8 MPa)	<u>5%</u> 796 psi (5.5 MPa) 1606 psi (11.1 MPa)
- Samples nominally 2"x2"x1" thick (50x50x25mm) Aged 168h @ 70°C (160°F)	60 second dwell	308 psi (2.1 MPa)	614psi (4.2 Mpa) 1269 psi (8.7 MPa)
9. Gardner Impact (ASTM D3029) - 1/2" (12.5mm) diameter tup and impact head.		80 $\frac{ft \cdot lb}{in}$ (minimum)	
- Samples nominally 0.2" (5mm) thick		(4270 J/m minimum)	

Vulkem WF-2020 Adhesive Paste

Physical Properties	Part A	Part B	Part A + B
Colour:	White	Black	Light Grey
Viscosity:	Gel	Gel	Gel
Specific Gravity:	1.5	1.0	1.4

Bond Strength (ASTM C 882-91)

Age @ time of test	Bond Strength by Slant Shear, MPa	Description of Failure
24 hours	26.8 (3890 psi)	Failure in concrete, not in epoxy or bond
72 hours	27.1 (3930 psi)	Failure in concrete, not in epoxy or bond

Pot Life:	Minutes	Temperature
200 gram sample	30	15°C
	25	20°C
	20	25°C
	15	30°C

Cure Time:	@10°C	@20°C	@30°C
Gel:	4 hours	2 hours	1 hour
Hard:	24 hours	10 hours	4 hours
Full Cure:	2-3 days	1.5 days	1 day

Vulkem WF Vehicular Expansion Joint

Properties	ASTM Test Method	Test Result
Hardness	D2240	73A
Specific Gravity	D297	0.98
Tensile Strength	D412	1200 lbf/in ² (8.3 N/m ²)
Ultimate Elongation	D412	375%
Tear Strength	D624	159 lbf/in (27.8 kN/m)
		76 lbf/in (13.3 kN/m)
Tension Set	D412	14%
Compression Set	D395	24%
168 Hrs.		36%
Flex Fatigue		<3.4
		(<3.4)
Brittle Point	D746	-81° F
		(-63° C)

Application Procedures



The Vulkem WF Expansion Joint System requires a minimum blockout 3/4" (19 mm) deep x 2 1/2" (64 mm) wide.



The Vulkem WF-2020 Adhesive Paste is mixed and spread evenly over blockout bottom. The Vulkem WF-2020 ensures a positive mechanical bond and accommodates substrate irregularities.



The Vulkem WF Seal is centered over the open joint and installed with the anchoring flaps embedded into the Vulkem WF-2020.

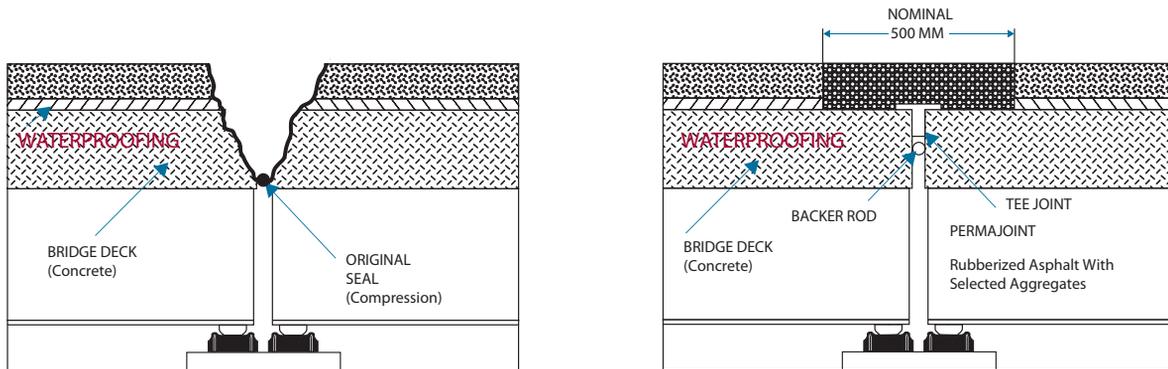


The Vulkem WF-1600 Elastomeric Concrete Nosing material is mixed and poured into the blockout area and troweled into place. (See installation guidelines)

Rubber/Bitumen Expansion Joint System

(Available in Canada only)

Vulkem® WF-6150 can be used with the Vulkem WF-Series as part of the Rubber/Bitumen Expansion Joint System (Canada Only). Vulkem WF-6150 is composed of high-grade rubber, asphalt and selected fillers. This blend produces a tough, resilient, high performance hot-applied expansion joint material. Vulkem WF-6150 is suitable for use in temperatures between -22°F to 140°F (-30°C to 60°C). It has excellent wear characteristics for high traffic areas and will accommodate movement up to 50% of the joint width.



Benefits

- Will not flow at temperatures up to 140°F (60°C).
- Stays flexible and will not debond at temperatures as low as -22°F (-30°C).
- When blended with selected aggregates allows for easy application and workability.
- Excellent wear characteristics in high traffic areas.
- Will accommodate thermal movement and total movement of up to 50% of the joint width. Not to be used for joints greater than (3") 75 mm in width, longitudinal joints can be installed up to 1000 mm in width.
- Resistant to most chemicals and alkalis and short term exposure to hydrocarbons.

Standard Test Method	Specifications	Typical Results
Cone Penetration ASTM D-1190		
@ 25°C, 0.1mm	40 Max	25 - 40
@ 50°C, 0.1mm	140 Max	110 - 130
Softening Point ASTM D-36-86		
R + B 0°C	85 - 100	90 - 95
Flow Resistance ASTM D - 1190		
@ 60°C mm	5 max	0 - 1
Specific Gravity 25/25°C	1.39 + 0.05	1.38 - 1.40
Recommend Application		
Temp. °C	1.7- - 190°C	
Safe heating temperature	205°C	
Flash Point. COC	250°C	255°C
Extension @ 0°C.	10% No cracking	15% No Cracking
@25°C.	50% No cracking	65% No Cracking
Mix Ratio: 75% aggregate - 25% Vulkem WF-6150		



Blockout



Surface Preparation



Vulkem WF-6150
Membrane and plate



Vulkem WF-6150 and aggregate

WF Expansion / Compression seal installation guidelines
Short form

Installation procedures for Tremco's WF Expansion/Compression Seals.

Inspection

- 1.) Inspect the blockout form for damage. Repair any damage, which could prevent the expansion joint from being installed correctly. Take a close look for cracks in the surrounding concrete and check to make sure they do not telegraph either through or under the blockout form. Sand or shot blasting may be necessary where concrete appears to be smooth, or not conducive for a proper bond to take place between our WF-2020 adhesive and the substrate. Make sure the gap is as specified. Measure the gap for proper conformity. The gap should be square and linear. Inspect all upturns or junctions where the expansion joint is to be welded. Any (T) or (X) gaps should be straight, not offset. Repair if necessary.

2.) Blockout forming

The installation of Tremco's WF expansion system to traffic decks will require a blockout form. The block out may be formed at the same time as the concrete is being cast. If rehab work to an existing blockout is specified, make sure to follow these simple guidelines. The blockout for WF-125/150/200/300 must be a minimum of 0.75" (20mm) deep and 2.5" (64mm) wide on both sides of the gap. Blockout's for WF-400/500/600 should be a minimum of 3" (75mm) wide. The gap must be straight and well formed. Any depth issues or gap irregularities may be repaired with Tremco's WF-1000 epoxy grout. Alternate repair materials may be submitted for approval.

Installation of the Expansion/Compression seal

- 3.) All welds should be made just prior to the installation of the expansion joint. Placement of the expansion joint is done by laying the gland at a 45° angle, then with a blunt trowel or other suitable means forced into the gap. Once installed lift the wings and make sure there are no voids between the sides of the expansion joint and the concrete substrate.

WF Expansion / Compression seal installation guidelines
Short form

Installation of the WF-2020 Adhesive component

- 4.) The application of the adhesive component is the first step in permanently bonding the expansion joint to the concrete substrate. Tape over the expansion joint and concrete sides in order to produce a uniform appearance and to keep the overage to a minimum. WF-2020 adhesive is a 2-component adhesive consisting of a 4-litre (1-gallon) part-A and 1-litre (1.2 quarts) part B. Mix these together for a minimum of 3-minutes – maximum of 5-minutes. The color should be uniform producing a gray color throughout the mix. Application must begin immediately after mixing, as there is a 20-minute pot life in warmer temperatures. Lift the wings of the expansion joint and trowel or caulk the adhesive into place. You must place the WF-2020 as close to the expansion joint as possible. If caulking is the preferred method, place a 5/8” to 3/4” bead under the wing. The goal here is to end up with approximately a 1/8” coat of the material under the wing and 1/16” or more 2020 material on top of the wing flanges in order to fully seal the flanges. The adhesive will telegraph through the holes stamped into the wings forming a button. Trowel the button smooth making sure the wings are almost completely covered. Use additional 2020 on top of the wing flanges if necessary to cover fully. Approximately 1 to 4 hours later the WF-1600 elastomeric blockout may be installed.

Installation of the WF-1600 Blockout filler component

- 5.) WF-1600 is a blockout filler consisting of 3-components. Each 5-gallon pail includes 1-each (4-litre (1-gallon) part A liquid) – (500ml (1-pint) part B liquid) – (2.8 gallons of part C aggregate). Before mixing, inspect the WF-2020 adhesive previously applied for tackiness. The idea is to apply the WF-1600 to the WF-2020 while the WF-2020 adhesive is still tacky (not fully cured). If for any reason the 2020 is left overnight to cure, a small propane quick trigger torch may be used to warm the 2020 in 5/ft increments before the 1600 elastomeric blockout filler is applied. To begin, open and mix for approximately 1-minute the part A & B liquid components. Then slowly add the part C aggregate to the mix and blend together. Mix for no more than 5-minutes. Trowel the WF-1600 mixture into the blockout forming a round or bullnose where material butts against the body of the expansion joint. The WF-1600 material should be approximately ¼” higher than the expansion joint and sloped away smooth to the concrete edge when finished. A minimum of 2 applicators should be utilized when applying this product, as the pot life is less than 30 minutes in warmer temperatures. Remove the tape applied to the edges of the concrete and on top of the expansion joint immediately after the 1600 has been installed.

WF Expansion / Compression seal installation guidelines
Short form

Tools for mixing, welding and installing Tremco's WF expansion system:

- WF-1600: The mixing drill shall be a heavy duty ¾" 400 – 600 rpm maximum with handle c/w with a paint style mixing blade or similar. Large paddle mixing blades are not conducive for proper mixing. A jiffy mixer c/w with a 1hp electric motor may be required for very large jobs.
- WF-2020: The drill may be a ½" heavy duty drill c/w with a medium paint style mixing blade.
- Extra pails are required. (5-gallon) plastic pails.
- Rags or towels for clean up.
- Heavy-duty utility knife for cutting the expansion joint.(consult with Tremco)
- 50 – 60 watt Pencil style soldering iron for weld finishing. Never use a soldering **GUN**.
- Flat head screwdrivers for welding
- Duct tape or similar. 3 X the length of the expansion joint. 2" wide minimum.
- Wire brushes.
- Tremco style welding plate utilized in the welding of the WF-expansion joint.
- Small propane style quick trigger pipe welder's torch. Map gas is recommended.
- Extension cords

Blockout Preparation

The WF-expansion/compression seal requires a blockout form as shown. Minimum requirements are 3/4"(19mm) depth X 2 1/2"(65mm) wide. Gap width to be determined. Note the edges of the gap are uniform allowing the seal to compress tight against the sidewalls.



Note the sloped upturn near the wall. This is usually done in cases where larger glands are used or if chipping a blockout in the wall is not possible due to rebar near the surface or other unusual conditions. This blockout shows that sandblasting was done in order to provide a superior bond between Vulkem WF-2020 adhesive and the substrate



Damage shown here must be repaired using a quick set epoxy mortar. This type of damage must always be repaired before any installation can begin. Nails or other protrusions into the blockout gap are to be removed.



In this photo you will note the upturn against the wall. A 90 degree welded upturn was required by specification. This can be accomplished when forming a new blackout or cut into the existing concrete.

Preparing WF-2020 Adhesive



The next phase of the installation will require an adhesive mixture called WF-2020. WF-2020 adhesive consists of a 1-gallon (4-litre) part-(A) and 1.25-quart (1-litre) part (B) .



Mixing the WF-2020 adhesive is best accomplished with a 1/2" to 3/4" drill c/w with a paint style mixing blade or paddle. Mix WF-2020 for approximately 3 – 4 minutes until a solid grey paste is achieved.



The drill or mixer should have sufficient power as to not bog down when mixing high viscosity materials.

Placement of WF-2020 Adhesive



Notice the WF-2020 has been troweled to the edge of the blockout form. The area being troweled in this picture near the edge is a skim coat only 1mm or less. A coat of 1/8" (3mm) is placed directly under the wing and approximately 1/16" (1.6mm) on top of the wing.



WF is taped in order to keep epoxy lines straight and clean.

WF-2020 adhesive being trowel applied to the underside as well as on top of the expansion joint.

Taping of the joint

Tape is used to keep a sharp and neat appearance. The tape may be removed immediately after 10 to 15/ft of WF-1600 blockout material has been installed. To prevent from having to compress the wings into the 2020 numerous times, allow the 2020 to become tacky.



Upturns are also taped off and WF-2020 adhesive has been applied.

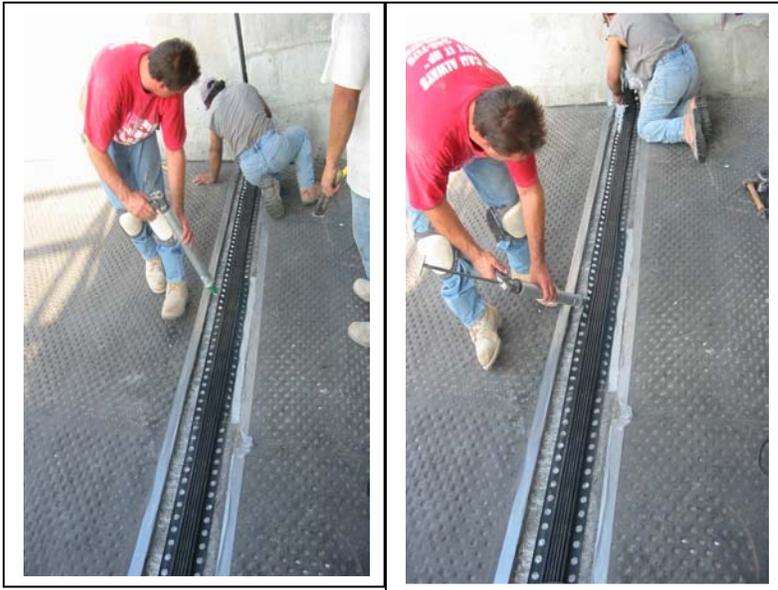


Note the WF-2020 adhesive completely covering the wings of the expansion/compression seal.

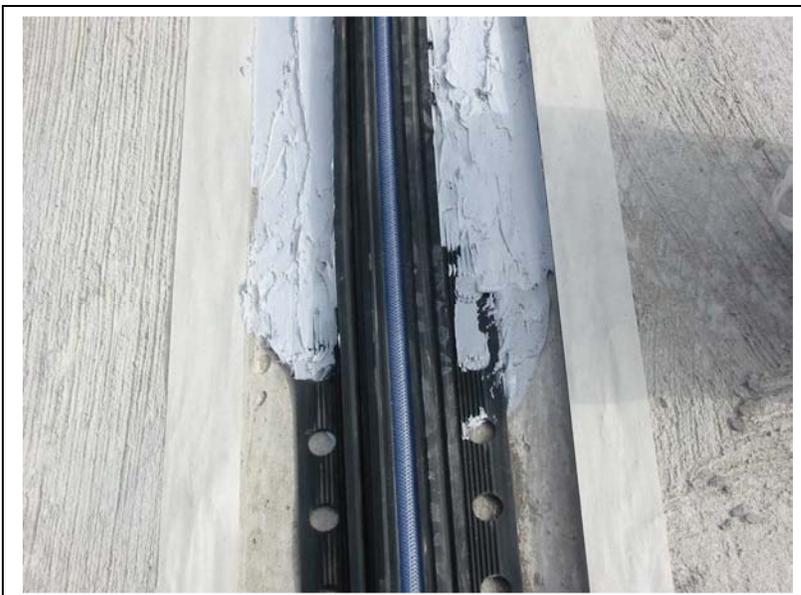
Optional placement of WF-2020

WF-2020 pot life is approximately 20 minutes at 70F.

Optional method of applying the WF-2020 adhesive component would be to use a bulk-caulking gun. This method would require you to use toluene or zylene (preferred) to clean the unit before and after each use to keep the bulk gun from freezing up due to the high viscosity of the WF-2020 adhesive.



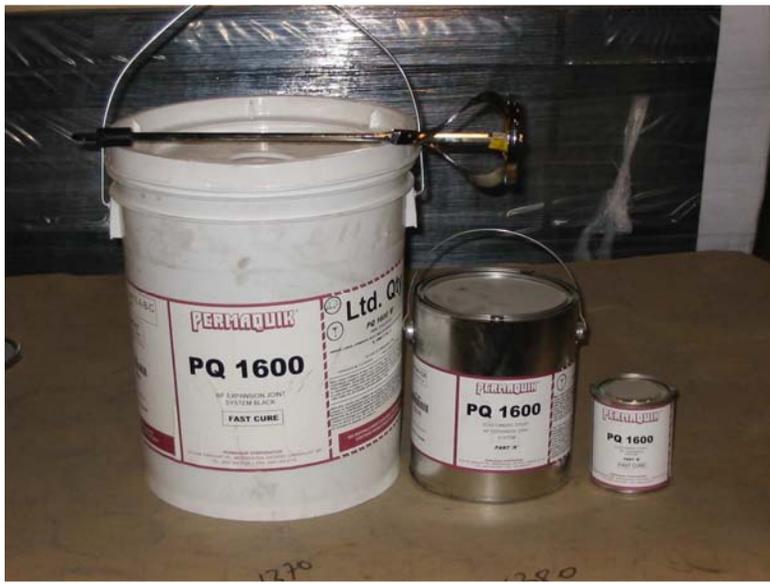
Bead size of the WF-2020 adhesive is generally around 5/8" (16mm) to 3/4" (19mm) under the wing and tight to the gland. This would be sufficient to trowel to a desired 1/8" (3mm) coat directly beneath the wing. Second option, heavy freezer or ZIP LOCK bags. Freezer bags are cheap. The WF-2020 is scooped into the freezer bag and caulked into place.



Note the tape used to keep the WF-2020 adhesive from bonding to the surrounding area.

Preparation of WF-1600

WF-1600 elastomeric blockout material is composed of a 1-gallon (4-litre) part (A) and 0.5 pint (250ml) part (B) c/w 2.5 gallons of mixed aggregate. This will be the final step in completing the installation of the WF-expansion joint system.



The liquid components of the WF-1600 material, parts (A) & (B) are first mixed together for approximately 30 to 45 seconds utilizing a $\frac{3}{4}$ " drill c/w with a paint style mixer blade.



Slowly blend the Part C aggregate into the liquid. Keep the mixing blade on the bottom of the pail for a minimum of 30 to 45 seconds to start the mix. Mix all components for 3 to 4 minutes.

Installation of the WF-1600

WF-1600 elastomeric blockout material is being applied on top of Vulkem WF-2020 adhesive. The gray WF-2020 is still tacky and has **not being allowed to fully cure!** WF-1600 is applied approximately 2-hours after the WF-2020 has had sufficient cure time. When you can push your finger into the 2020 and see a fingerprint without removing much or any 2020 adhesive, you are ready to begin the application of WF-1600 elastomeric blockout. Ambient temperatures govern the cure time of both WF-2020 & WF-1600.



Pot life of the WF-1600 elastomeric blockout material is approximately 20 mins at 70 degrees F.



A 5-gallon (20 litre) pail of WF-1600 will produce approximately 12 lineal feet of finished product on both sides of the gland. This will depend on the blockout size. WF-1600 yields 550 cubic inches.



WF-1600 has been troweled into place. A rounded edge or bullnose is produced with a $\frac{1}{4}$ " to $\frac{3}{8}$ " Bullnose Trowel. Notice the WF-1600 material is set higher than the expansion joint. Please pay special attention to this as it removes the possibility of wear due to vehicular traffic damage. Always build the 1600 until a 0.75" ($\frac{3}{4}$ ") profile has been achieved.



The trowel has been lightly wetted with zylene just prior to troweling the WF-1600 black elastomeric blockout material. Duct tape as shown to be more resilient when used to keep the area clean and sharp.



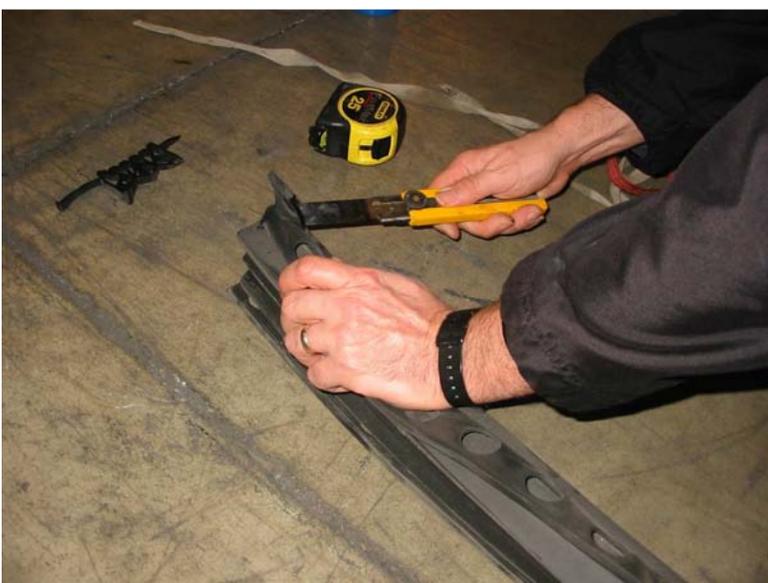
WF-1600 is troweled into place, then bull-nosed to form a rounded edge on the inside face at the expansion joint. Tape has been installed to prevent over troweling onto the surrounding concrete and to protect the gland.



The compression seal shown is being prepared for a 90D upturn welded onsite. This procedure requires some skill in correctly measuring and heat welding the gland. This gland shows to be 2" thick.



The thickness is measured on the top for a 90° upturn.



Note how the WF gland is placed on the floor before cutting a 45° upturn.



The knife is being heated prior to cutting the expansion joint. Heating the knife will ensure a straighter cut as well as being easier on the hands as little effort is used.



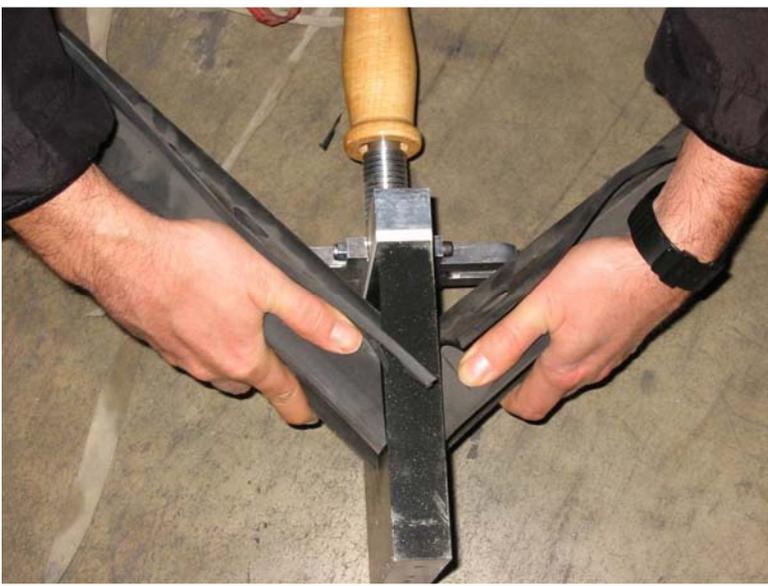
When forming a 90° upturn you would take the measurement of the thickness of any given expansion joint and mark the cut on top of the gland.



Gland is placed on side and a 45° cut is made. The same is done for the second gland, which will be welded.



Welding of the expansion joint is accomplished by heating the gland with a hot metal butt fusion welding plate, which is set from 400F to 440F. These electric welding plates may be purchased through Tremco.



Both 45° cuts are being heated until a wax like rubber bead is visually evident around the perimeter of all sides.



Join the two pieces together once they have been heated for approximately 1 to 1.5 minutes. Hold the pieces together for 45 seconds. The gland will cool rapidly. A pencil style soldering iron is utilized to seal the edges. In many cases a flat head screwdriver heated for 15 second intervals may also serve as a high quality soldering iron.



As shown, intricate welds such as cross welds or T-welds are better done on site. Measurements are more precise and reduce the opportunity for miscalculation compared to factory welds. In order to weld a cross as shown, two corner welds are being made. The corners are cut at an angle and welded together. Butt welds are then done to extend the lengths.



A 50 to 60 watt soldering iron is used to put the finishing touches to an onsite weld. 80 watt pencil irons may be used in very cold temperatures. Never use a gun type soldering iron.



The picture here shows a step weld being finished with a soldering iron.



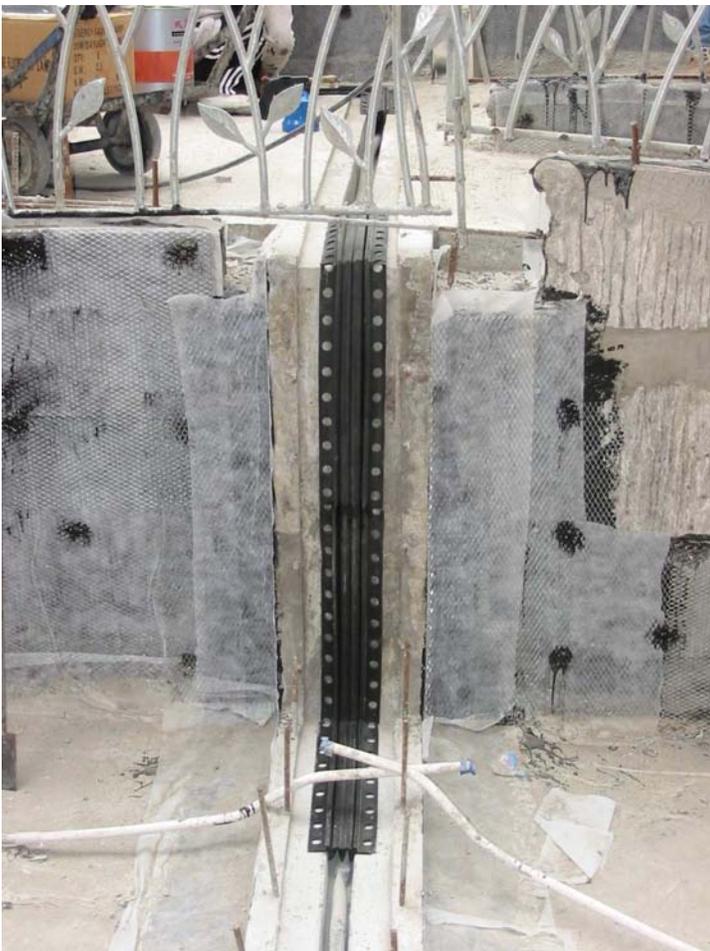
Welding Vulkem WF-expansion or compression seals may be accomplished with heated tools such as a soldering iron and a welding plate as shown. Special care should be taken to ensure the welds are leak proof.



These 90-degree turns were welded onsite to ensure a proper fit.



90° welded gland ready to be butt welded to the primary gland.



Intricate detailing of our WF Series expansion/compression seals may be accomplished onsite by pre-manufacturing on-site and welding into place.

This 5 ft upturn was pre-welded then set into place. A butt-weld will be done later. WF-2020 is then installed same as the horizontal. WF-1600(V) Vertical Grade is then installed. WF-1600(V) Vertical Grade is applied to 0.5" (12mm) thick maximum. In certain areas WF-1600(V) may be installed from 1/4" (6mm) to 0.375" (9.5mm) thick.



This picture shows the placement of the spliced joint.



Tools required for on-site welding.



Unit shown on the left is a small propane cylinder c/w a quick trigger. On the right is a butt fusion heating iron for welding the expansion joints.

VULKEM WF1600 NOSING PART A (AKA PQ1600 EXP.JT.PART(A))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/18/2007

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION
Product Information

Trade name : VULKEM WF1600 NOSING PART A (AKA PQ1600 EXP.JT.PART(A))
 Product code : 881A160801

Supplier : Tremco Canada division
 220 Wicksteed Avenue
 Toronto, ON M4H 1G7

Telephone : (416) 421-3300
 Emergency Phone: : (613) 996-6666

Preparation Information

Prepared by: : Sewnauth Raghunandan
 Date: : 07/18/2007
 Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION
Emergency Overview

Clear. Liquid. May cause slight irritation to the respiratory system. Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.

Acute Potential Health Effects/ Routes of Entry

Inhalation : May cause slight irritation to the respiratory system.
 Eyes : Slightly irritating.
 Ingestion : May cause gastrointestinal irritation, nausea, and vomiting.
 Skin : May cause sensitization.

Aggravated Medical Conditions

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

May cause sensitization by contact. Prolonged or repeated exposure to butyl benzyl phthalate may cause reduced body weights and adverse effects on the liver, kidney, spleen, pancreas, and reproductive organs. Prolonged or repeated exposure to epoxy resin can cause irritation to skin, eyes, skin sensitization, temporary eye injury. Certain epoxy resins are reported to be mutagenic in some laboratory tests. Fillers are encapsulated and not expected to be released from product under normal conditions of use.

Target Organs: Skin, Eye, Ingestion

SECTION 3 : HAZARDOUS INGREDIENTS

Chemical Name	CAS-No.	Weight % Range
Bisphenol A Polyglycidyl Ether Resin	25068-38-6	30.0 - 60.0
Butyl benzyl phthalate	85-68-7	15.0 - 40.0

The ingredients listed above are hazardous as defined in the controlled products regulation. (CPR).

VULKEM WF1600 NOSING PART A (AKA PQ1600 EXP.JT.PART(A))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/18/2007

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.

- Inhalation : Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.
- Eye contact : Flush with water for 15 minutes. If irritation persists, get medical attention.
- Skin contact : Wash with water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Do not induce vomiting unless advised by a physician. Call nearest Poison Control Center or Physician immediately.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : > 200 F, > 93 C
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : This product is not expected to burn under normal conditions of use.
- Hazardous combustion products : Smoke, fumes.
- Protective equipment for firefighters : Use accepted fire fighting techniques. Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA).
- Fire and explosion conditions : This product not expected to ignite under normal conditions of use.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Stop flow. Contain spill. Keep out of water courses. Absorb spill in sand, earth or other suitable material. Transfer to appropriate container for disposal.

SECTION 7 - HANDLING AND STORAGE

Prevent inhalation of vapor, ingestion, and contact with skin eyes and clothing. Keep container closed when not in use. Precautions also apply to emptied containers. Store in sealed containers in a dry, ventilated warehouse location above freezing.

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

- Personal protection equipment**
- Respiratory protection : Not required under normal conditions of use.
 - Hand protection : Use suitable impervious rubber or vinyl gloves and protective apparel to reduce exposure.
 - Eye protection : Wear appropriate eye protection.
 - Skin and body protection : Not required.

VULKEM WF1600 NOSING PART A (AKA PQ1600 EXP.JT.PART(A))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/18/2007

Protective measures : Use professional judgment in the selection, care, and use. Other equipment not normally required.

Engineering measures : General ventilation is sufficient.

Exposure Limits

Chemical Name	CAS Number	Regulation	Limit	Form
Butyl benzyl phthalate	85-68-7			

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State : Liquid
 Form : Liquid
 Color : Clear
 Odor : Epoxy
 pH : Not available.
 Vapour pressure : Not available.
 Vapor density : Heavier than air
 Melting point/range : Not available.
 Freezing point : Not available.
 Boiling point/range : Not available.
 Water solubility : Miscible
 Evaporation Rate: : Not available.
 Specific Gravity : 1.09
 % Volatile Weight : 1 %

SECTION 10 - REACTIVITY / STABILITY

Substances to avoid : Acids and bases. Amines. Epoxy curing agents.

SECTION 11 - TOXICOLOGICAL INFORMATION

Butyl benzyl phthalate, CAS-No.: 85-68-7
 Acute oral toxicity (LD-50 oral) 13,500 mg/kg (Rat)

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose as hazardous waste according to all local, state, federal and provincial regulations.



VULKEM WF1600 NOSING PART A (AKA PQ1600 EXP.JT.PART(A))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/18/2007

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:

NOT REGULATED

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

When appropriately mixed with the other part, product has a VOC less water and exempt solvent of: 6 g/l

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	1
Flammability	1
Reactivity	0
PPE	

0 = Minimum
 1 = Slight
 2 = Moderate
 3 = Serious
 4 = Severe

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Prepared by: Sewnauth Raghunandan

Legend

- ACGIH - American Conference of Governmental Hygienists
- DOT - Department of Transportation
- DSL - Domestic Substance List
- EPA - Environmental Protection Agency
- HMIS - Hazardous Materials Information System
- IARC - International Agency for Research on Cancer
- MSHA - Mine Safety Health Administration
- NDSL - Non-Domestic Substance List
- NIOSH - National Institute for Occupational Safety and Health
- NTP - National Toxicology Program
- OSHA - Occupational Safety and Health Administration
- PEL - Permissible Exposure Limit
- RCRA - Resource Conservation and Recovery Act
- STEL - Short Term Exposure Limit
- TLV - Threshold Limit Value
- TSCA - Toxic Substances Control Act
- TWA - Time Weighted Average
- V - Volume
- VOC - Volatile Organic Compound
- WHMIS - Workplace Hazardous Materials Information System

VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION
Product Information

Trade name : VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))
 Product code : 881B160017

Supplier : Tremco Canada division
 220 Wicksteed Avenue
 Toronto, ON M4H 1G7

Telephone : (416) 421-3300
 Emergency Phone: : (613) 996-6666

Product use : Curative

Preparation Information

Prepared by: : Sewnauth Raghunandan
 Date: : 07/13/2007
 Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION
Emergency Overview

Colorless. Liquid solution. May cause slight irritation to the respiratory system. Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.

Acute Potential Health Effects/ Routes of Entry

Inhalation : May cause slight irritation to the respiratory system.
 Eyes : Vapors or liquid may cause tearing, blurred vision, severe irritation, and possible chemical burns.
 Ingestion : May cause irritation to the mouth, throat and stomach. May cause chemical burns to stomach, mouth, nose, and throat.
 Skin : May cause moderate irritation. May cause sensitization resulting in irritation, itching and redness.

Aggravated Medical Conditions

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

Prolonged and repeated overexposure to amines may cause liver and kidney damage based on animal studies. Fillers are encapsulated and not expected to be released from product under normal conditions of use.

Target Organs: Skin, Eye, Lung

SECTION 3 : HAZARDOUS INGREDIENTS

Chemical Name	CAS-No.	Weight % Range
4,4'-diaminodicyclohexyl methane	1761-71-3	> 60.0

The ingredients listed above are hazardous as defined in the controlled products regulation. (CPR).

VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.

- Inhalation : Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.
- Eye contact : Flush with water for 15 minutes. If irritation persists, get medical attention.
- Skin contact : Wash area of contact thoroughly with hand cleaner followed by soap and water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Do not induce vomiting unless advised by a physician. Call nearest Poison Control Center or Physician immediately.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : > 100 °C, > 212 °F
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : If water fog is ineffective, use carbon dioxide, dry chemical or foam.
- Hazardous combustion products : Carbon monoxide, carbon dioxide, and nitrogen oxides.
- Protective equipment for firefighters : Use accepted fire fighting techniques. Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA).
- Fire and explosion conditions : Product may ignite if heated in excess of its flash point.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Stop flow. Contain spill. Keep out of water courses. Absorb spill in sand, earth or other suitable material. Transfer to appropriate container for disposal.

SECTION 7 - HANDLING AND STORAGE

Store under normal warehouse conditions in sealed containers. Keep container closed when not in use. Vapor may migrate to sources of ignition. Do not smoke, weld, generate sparks, or use flame near container. Change soiled work clothes frequently. Clean hands thoroughly after handling. Prevent inhalation of vapor, ingestion, and contact with skin eyes and clothing. Keep container closed when not in use. Precautions also apply to emptied containers. Handle in compliance with common hygienic practices. Clean hands thoroughly after handling.

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection equipment

VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

- Respiratory protection : Use full engineering controls before relying on personal protective equipment. Wear NIOSH/MSHA approved vapor respirator with appropriate cartridge when the vapor concentration is expected to exceed exposure limits indicated on the MSDS. Follow manufacturer's directions for respirator use.
- Hand protection : Protect hands with impervious gloves.
- Eye protection : Wear chemical safety goggles and/or face shield to prevent eye contact. Do not wear contact lenses. Do not touch eyes with contaminated body parts or materials. Have eye washing facilities readily available.
- Protective measures : Use professional judgment in the selection, care, and use.
- Engineering measures** : Use local exhaust when the general ventilation is inadequate.

Exposure Limits

No known components with exposure limits.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- Physical State : Liquid
- Form : Liquid solution
- Color : Colorless
- Odor : Ammonia
- pH : Not available.
- Vapour pressure : Not available.
- Vapor density : Not available.
- Melting point/range : Not available.
- Freezing point : Not available.
- Boiling point/range : Not available.
- Water solubility : Not available.
- Evaporation Rate: : Not available.
- Specific Gravity : 0.96
- % Volatile Weight : 0 %

SECTION 10 - REACTIVITY / STABILITY

- Substances to avoid : Acids.
- Stability : Stable under normal conditions. Avoid welding arcs, flames or other high temperature sources.
- Hazardous polymerization : Will not occur under normal conditions.

SECTION 11 - TOXICOLOGICAL INFORMATION

No Data Available

VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose as hazardous waste according to all local, state, federal and provincial regulations.

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:

AMINES, LIQUID, CORROSIVE, N.O.S. (Contains Modified polyamine), 8, UN2735, PG II, LIMITED QUANTITY

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : D2B, E

This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

When appropriately mixed with the other part, product has a VOC less water and exempt solvent of: 6 g/l

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	3
Flammability	1
Reactivity	1
PPE	

0 = Minimum
 1 = Slight
 2 = Moderate
 3 = Serious
 4 = Severe

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.



VULKEM WF1600 NOSING PART B (AKA PQ1600 FAST CURE PT(B))

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

Prepared by: Sewnauth Raghunandan

Legend

- | | |
|---|--|
| ACGIH - American Conference of Governmental Hygienists | OSHA - Occupational Safety and Health Administration |
| DOT - Department of Transportation | PEL - Permissible Exposure Limit |
| DSL - Domestic Substance List | RCRA - Resource Conservation and Recovery Act |
| EPA - Environmental Protection Agency | STEL - Short Term Exposure Limit |
| HMIS - Hazardous Materials Information System | TLV - Threshold Limit Value |
| IARC - International Agency for Research on Cancer | TSCA - Toxic Substances Control Act |
| MSHA - Mine Safety Health Administration | TWA - Time Weighted Average |
| NDSL - Non-Domestic Substance List | V - Volume |
| NIOSH - National Institute for Occupational Safety and Health | VOC - Volatile Organic Compound |
| NTP - National Toxicology Program | WHMIS - Workplace Hazardous Materials Information System |



VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION

Product Information

Trade name : VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)
 Product code : 881C160807

Supplier : Tremco Canada division
 220 Wicksteed Avenue
 Toronto, ON M4H 1G7

Telephone : (416) 421-3300
 Emergency Phone: : (613) 996-6666

Preparation Information

Prepared by: : Sewnauth Raghunandan
 Date: : 07/13/2007
 Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION

Emergency Overview

Black. Powder. May cause coughing and wheezing. Dust may irritate respiratory tract. Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.

Acute Potential Health Effects/ Routes of Entry

Inhalation : May cause coughing and wheezing. Dust may irritate respiratory tract.
 Eyes : Dust may cause eye irritation. May cause mechanical irritation or abrasion. Direct contact may cause temporary redness and discomfort.
 Ingestion : May cause gastrointestinal irritation, nausea, and vomiting.
 Skin : May cause mild irritation.

Aggravated Medical Conditions

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

Inhalation of crystalline silica (quartz) can cause cancer based on animal data, and IARC concludes sufficient evidence in humans (Group 1). Prolonged and repeated overexposure to free crystalline silica dust above the TLV level may cause scarring of the lungs with cough and shortness of breath. A delayed lung injury, silicosis may result from breathing free silica.

SECTION 3 : HAZARDOUS INGREDIENTS

Chemical Name	CAS-No.	Weight % Range
Crystalline Silica (Quartz)/ Silica Sand	14808-60-7	> 60.0
Iron oxide	1309-37-1	0.5 - 1.5

The ingredients listed above are hazardous as defined in the controlled products regulation. (CPR).

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.

VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

- Inhalation : Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.
- Eye contact : Flush with water for 15 minutes. If irritation persists, get medical attention.
- Skin contact : Clean area of contact thoroughly using soap and water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Do not induce vomiting unless advised by a physician. Call nearest Poison Control Center or Physician immediately.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : Not available.
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : This product is not expected to burn under normal conditions of use. Use that which is appropriate to the surroundings.
- Hazardous combustion products : Not available.
- Protective equipment for firefighters : Not applicable. Product is not expected to burn.
- Fire and explosion conditions : This product not expected to ignite under normal conditions of use.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Use appropriate protective equipment. Avoid contact with material. Dampen material with water to control dusting. Scoop up and transfer to appropriate container for disposal. Flush spill area with water.

SECTION 7 - HANDLING AND STORAGE

Store under normal warehouse conditions in sealed containers. Handle in compliance with common hygienic practices. Clean hands thoroughly after handling.

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection equipment

- Respiratory protection : Wear appropriate, properly fitted NIOSH/MSHA approved dust respirator where airborne concentrations are expected to exceed exposure limits indicated on the MSDS. Follow manufacturer's directions for respirator use.
- Hand protection : Use suitable impervious rubber or vinyl gloves and protective apparel to reduce exposure.
- Eye protection : Wear appropriate eye protection.
- Skin and body protection : Prevent contact with shoes and clothing. Use rubber apron and overshoes.
- Protective measures : Use professional judgment in the selection, care, and use.

VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

Engineering measures : Use only in well ventilated areas. Provide maximum ventilation in enclosed areas. Use local exhaust when the general ventilation is inadequate.

Exposure Limits

Chemical Name	CAS Number	Regulation	Limit	Form
Crystalline Silica (Quartz)/ Silica Sand	14808-60-7	Ontario TWA:	0.10 mg/m3	Respirable fraction.
		ACGIH TWA:	0.025 mg/m3	Respirable fraction.
Iron oxide	1309-37-1	Ontario TWA:	10 mg/m3	Total dust.
		Ontario TWA:	5 mg/m3	Dust and fume.as Fe
		Ontario TWA:	5 mg/m3	Dust and fume.as Fe
		ACGIH TWA:	5 mg/m3	Respirable fraction.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State : Solid
 Form : Powder
 Color : Black
 Odor : None
 pH : Not available.
 Vapour pressure : Not available.
 Vapor density : Not available.
 Melting point/range : Not available.
 Freezing point : Not available.
 Boiling point/range : Not available.
 Water solubility : Not available.
 Evaporation Rate: : Not available.
 Specific Gravity : 2.66
 % Volatile Weight : 0 %

SECTION 10 - REACTIVITY / STABILITY

Substances to avoid : Not Applicable.
 Stability : Material is stable under normal storage, handling, and use.
 Hazardous polymerization : Will not occur under normal conditions.

SECTION 11 - TOXICOLOGICAL INFORMATION

No Data Available



VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose in suitable container as non-hazardous waste according to all applicable regulations.

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:
NOT REGULATED

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : D2A

This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

Regulatory VOC (less water and exempt solvent) : 0 g/l

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	1
Flammability	0
Reactivity	0
PPE	

0 = Minimum
1 = Slight
2 = Moderate
3 = Serious
4 = Severe

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Prepared by: **Sewnauth Raghunandan**



VULKEM WF1600 NOSING PART C (AKA PQ1600 EXP.JT.BLK.PT C)

Version 1.

Print Date 04/08/2008

REVISION DATE: 07/13/2007

Legend

- | | |
|---|--|
| ACGIH - American Conference of Governmental Hygienists | OSHA - Occupational Safety and Health Administration |
| DOT - Department of Transportation | PEL - Permissible Exposure Limit |
| DSL - Domestic Substance List | RCRA - Resource Conservation and Recovery Act |
| EPA - Environmental Protection Agency | STEL - Short Term Exposure Limit |
| HMIS - Hazardous Materials Information System | TLV - Threshold Limit Value |
| IARC - International Agency for Research on Cancer | TSCA - Toxic Substances Control Act |
| MSHA - Mine Safety Health Administration | TWA - Time Weighted Average |
| NDSL - Non-Domestic Substance List | V - Volume |
| NIOSH - National Institute for Occupational Safety and Health | VOC - Volatile Organic Compound |
| NTP - National Toxicology Program | WHMIS - Workplace Hazardous Materials Information System |



VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION

Product Information

Trade name : VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))
 Product code : 881A202518

Supplier : Tremco Canada division
 220 Wicksteed Avenue
 Toronto, ON M4H 1G7

Telephone : (416) 421-3300
 Emergency Phone: : (613) 996-6666

Preparation Information

Prepared by: : Sewnauth Raghunandan
 Date: : 07/17/2007
 Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION

Emergency Overview

White. Liquid solution. Vapor may irritate respiratory tract. May cause nausea, headaches, and dizziness. Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.

Acute Potential Health Effects/ Routes of Entry

Inhalation : Vapor may irritate respiratory tract. May cause nausea, headaches, and dizziness.
 Eyes : Direct contact may cause mild irritation. May cause temporary injury.
 Ingestion : May cause gastrointestinal irritation, nausea, and vomiting.
 Skin : May cause sensitization resulting in irritation, itching and redness.

Aggravated Medical Conditions

Pre-existing eye, skin, liver, kidney, and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

Prolonged or repeated exposure to epoxy resin can cause irritation to skin, eyes, skin sensitization, temporary eye injury. Certain epoxy resins are reported to be mutagenic in some laboratory tests. Fillers are encapsulated and not expected to be released from product under normal conditions of use.

Target Organs: Skin, Eye, Ingestion, Lung

SECTION 3 : HAZARDOUS INGREDIENTS

Chemical Name	CAS-No.	Weight % Range
Bisphenol A Polyglycidyl Ether Resin	25068-38-6	30.0 - 60.0
Titanium dioxide	13463-67-7	1.0 - 5.0

The ingredients listed above are hazardous as defined in the controlled products regulation. (CPR).

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.



VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

- Inhalation : Leave area to breathe fresh air. Avoid further overexposure. If symptoms persist, get medical attention.
- Eye contact : Flush with water for 15 minutes. If irritation persists, get medical attention.
- Skin contact : Wash area of contact thoroughly with hand cleaner followed by soap and water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Do not induce vomiting unless advised by a physician. Call nearest Poison Control Center or Physician immediately.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : 249 °C, 480 °F
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : If water fog is ineffective, use carbon dioxide, dry chemical or foam.
- Hazardous combustion products : Smoke, fumes. Carbon monoxide and carbon dioxide can form.
- Protective equipment for firefighters : Water may be used to cool containers to minimize pressure build-up. Use accepted fire fighting techniques. Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA).
- Fire and explosion conditions : Closed container, may burst when exposed to extreme heat. Empty containers may contain ignitable vapors. Vapor concentrations in enclosed areas may ignite explosively. Vapors may travel to sources of ignition and flashback.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Use appropriate protective equipment. Avoid contact with material. Remove sources of ignition immediately. Stop flow of material if safe to do so. Contain spill and keep out of water courses. Ventilate area.

SECTION 7 - HANDLING AND STORAGE

Store under dry warehouse conditions away from heat and all ignition sources. Store in a cool, well ventilated area. Prevent inhalation of vapor, ingestion, and contact with skin eyes and clothing. Keep container closed when not in use. Precautions also apply to emptied containers. Do not smoke, weld, generate sparks, or use flame near container. Change soiled work clothes frequently. Clean hands thoroughly after handling.

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection equipment

- Respiratory protection : Wear appropriate, properly fitted NIOSH/MSHA approved organic vapor or supplied air respirator when airborne contaminant level(s) are expected to exceed exposure limits indicated on the MSDS. Follow manufacturer's directions for respirator use.
- Hand protection : Use suitable impervious nitrile or neoprene gloves and protective apparel to

VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

- reduce exposure.
- Eye protection : Chemical splash goggles.
- Protective measures : Use professional judgment in the selection, care, and use.
- Engineering measures** : Use only in well ventilated areas. Provide maximum ventilation in enclosed areas. Use general ventilation and/ or local exhaust to reduce the airborne contaminant concentration below the exposure limit listed in the MSDS

Exposure Limits

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Regulation</u>	<u>Limit</u>	<u>Form</u>
Titanium dioxide	13463-67-7	Ontario TWA: ACGIH TWA:	10 mg/m3 10 mg/m3	Total dust.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- Physical State : Liquid
- Form : Liquid solution
- Color : White
- Odor : Solvent
- pH : Not available.
- Vapour pressure : Not available.
- Vapor density : Heavier than air
- Melting point/range : Not available.
- Freezing point : Not available.
- Boiling point/range : Not available.
- Water solubility : Negligible
- Evaporation Rate: : Not available.
- Specific Gravity : 1.5
- % Volatile Weight : 0 %

SECTION 10 - REACTIVITY / STABILITY

- Substances to avoid : Epoxy curing agents. Amines and oxidizing agents.
- Stability : Material is stable under normal storage, handling, and use.
- Hazardous polymerization : Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

No Data Available



VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))

Version 1.1
 REVISION DATE: 07/17/2007

Print Date 04/08/2008

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose as hazardous waste according to all local, state, federal and provincial regulations.

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:
 NOT REGULATED

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

When appropriately mixed with the other part, product has a VOC less water and exempt solvent of:
 0.0000 g/l

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	1
Flammability	1
Reactivity	0
PPE	

- 0 = Minimum
- 1 = Slight
- 2 = Moderate
- 3 = Serious
- 4 = Severe

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Prepared by: Sewnauth Raghunandan



VULKEM WF2020 ADH EPOXY PT (AKA PQ-2020 ADHESIVE PART(A))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

Legend

- | | |
|---|--|
| ACGIH - American Conference of Governmental Hygienists | OSHA - Occupational Safety and Health Administration |
| DOT - Department of Transportation | PEL - Permissible Exposure Limit |
| DSL - Domestic Substance List | RCRA - Resource Conservation and Recovery Act |
| EPA - Environmental Protection Agency | STEL - Short Term Exposure Limit |
| HMIS - Hazardous Materials Information System | TLV - Threshold Limit Value |
| IARC - International Agency for Research on Cancer | TSCA - Toxic Substances Control Act |
| MSHA - Mine Safety Health Administration | TWA - Time Weighted Average |
| NDSL - Non-Domestic Substance List | V - Volume |
| NIOSH - National Institute for Occupational Safety and Health | VOC - Volatile Organic Compound |
| NTP - National Toxicology Program | WHMIS - Workplace Hazardous Materials Information System |



VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION

Product Information

Trade name : VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))
 Product code : 881B202020

Supplier : Tremco Canada division
 220 Wicksteed Avenue
 Toronto, ON M4H 1G7

Telephone : (416) 421-3300
 Emergency Phone: : (613) 996-6666

Product use : Curative

Preparation Information

Prepared by: : Sewnauth Raghunandan
 Date: : 07/17/2007
 Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION

Emergency Overview

Black. Liquid. May cause slight irritation to the respiratory system. Move to fresh air. If required, artificial respiration or administration of oxygen can be performed by trained personnel. Remove to fresh air. Get immediate medical attention.

Acute Potential Health Effects/ Routes of Entry

Inhalation : May cause slight irritation to the respiratory system.
 Eyes : Vapors or liquid may cause tearing, blurred vision, severe irritation, and possible chemical burns.
 Ingestion : May cause gastrointestinal irritation, nausea, and vomiting. May cause chemical burns to stomach, mouth, nose, and throat.
 Skin : May cause itching, reddening, inflammation. May cause severe burns, blistering and skin damage. May cause sensitization resulting in irritation, itching and redness. May cause a rash.

Aggravated Medical Conditions

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

May cause sensitization by contact. Prolonged skin contact may cause irritation, burns or dermatitis. Repeated overexposure to vapors and/or material may injure the liver, kidneys and respiratory system unless suitable engineering controls and/or personal protective equipment are used. May aggravate persons sensitized to amines. Polymeric amido amine may cause chemical eye burn with irreversible damage. Sensitizer. May cause allergic skin and respiratory reaction. Fillers are encapsulated and not expected to be released from product under normal conditions of use.

SECTION 3 : HAZARDOUS INGREDIENTS

Chemical Name	CAS-No.	Weight % Range
---------------	---------	----------------

VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

Triethylenetetramine

112-24-3

15.0 - 40.0

The ingredients listed above are hazardous as defined in the controlled products regulation. (CPR).

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.

- Inhalation : Move to fresh air. If required, artificial respiration or administration of oxygen can be performed by trained personnel. Remove to fresh air. Get immediate medical attention.
- Eye contact : Flush with water for at least 15 minutes while holding eye lids apart. Get medical attention immediately.
- Skin contact : Clean area of contact thoroughly using soap and water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Do not induce vomiting unless advised by a physician. Call nearest Poison Control Center or Physician immediately.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : 118 °C, 244 °F
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : If water fog is ineffective, use carbon dioxide, dry chemical or foam.
- Hazardous combustion products : Carbon monoxide and carbon dioxide can form. Smoke, fumes. Nitrogen oxides can form.
- Protective equipment for firefighters : Use accepted fire fighting techniques. Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA).
- Fire and explosion conditions : Product may ignite if heated in excess of its flash point. Vapors may travel to sources of ignition and flashback. Vapor concentrations in enclosed areas may ignite explosively. Empty containers may contain ignitable vapors.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Use appropriate protective equipment. Avoid contact with material. Remove sources of ignition immediately. Stop flow of material if safe to do so. Contain spill and keep out of water courses. Ventilate area.

SECTION 7 - HANDLING AND STORAGE

Prevent inhalation of vapor, ingestion, and contact with skin eyes and clothing. Keep container closed when not in use. Precautions also apply to emptied containers. Do not smoke, weld, generate sparks, or use flame near container. Do not use in confined or poorly ventilated areas. Personal protective equipment must be worn during maintenance or repair of contaminated mixer, reactor, or other equipment. Store under dry warehouse conditions away from heat and all ignition sources.



VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection equipment

- Respiratory protection : Wear NIOSH/MSHA approved vapor respirator with appropriate cartridge when the vapor concentration is expected to exceed exposure limits indicated on the MSDS. Follow manufacturer's directions for respirator use.
- Hand protection : Use suitable impervious nitrile or neoprene gloves and protective apparel to reduce exposure.
- Eye protection : Wear chemical safety goggles and/or face shield to prevent eye contact. Do not wear contact lenses. Do not touch eyes with contaminated body parts or materials. Have eye washing facilities readily available.
- Skin and body protection : Prevent contact with shoes and clothing. Use rubber apron and overshoes.
- Protective measures : Inspect and replace equipment at regular intervals. Use professional judgment in the selection, care, and use.
- Engineering measures** : Use only in well ventilated areas. Provide maximum ventilation in enclosed areas. Use local exhaust when the general ventilation is inadequate.

Exposure Limits

No known components with exposure limits.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- Physical State : Liquid
- Form : Liquid
- Color : Black
- Odor : Amine
- pH : Not available.
- Vapour pressure : Not available.
- Vapor density : Heavier than air
- Melting point/range : Not available.
- Freezing point : Not available.
- Boiling point/range : Not available.
- Water solubility : Negligible
- Evaporation Rate: : Not available.
- Specific Gravity : 1.54
- % Volatile Weight : 0 %

SECTION 10 - REACTIVITY / STABILITY

- Substances to avoid : Oxidizing agents. Epoxies. Isocyanates. Acids.
- Stability : Material is stable under normal storage, handling, and use.
- Hazardous polymerization : Will not occur under normal conditions.



VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))

Version 1.1
REVISION DATE: 07/17/2007

Print Date 04/08/2008

SECTION 11 - TOXICOLOGICAL INFORMATION

No Data Available

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose as hazardous waste according to all local, state, federal and provincial regulations.

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:

CORROSIVE LIQUID, N.O.S. (Contains Triethylene tetramine), 8, UN1760, PG II, LIMITED QUANTITY

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : D2A, D2B, E

This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

When appropriately mixed with the other part, product has a VOC less water and exempt solvent of: 0.0000 g/l

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	3
Flammability	1
Reactivity	1
PPE	

0 = Minimum
1 = Slight
2 = Moderate
3 = Serious
4 = Severe



VULKEM WF2020 ADH EPOXY PT B (AKA PQ-2020 ADHESIVE PART (B))

Version 1.1

Print Date 04/08/2008

REVISION DATE: 07/17/2007

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Prepared by: Sewnauth Raghunandan

Legend

- | | |
|---|--|
| ACGIH - American Conference of Governmental Hygienists | OSHA - Occupational Safety and Health Administration |
| DOT - Department of Transportation | PEL - Permissible Exposure Limit |
| DSL - Domestic Substance List | RCRA - Resource Conservation and Recovery Act |
| EPA - Environmental Protection Agency | STEL - Short Term Exposure Limit |
| HMIS - Hazardous Materials Information System | TLV - Threshold Limit Value |
| IARC - International Agency for Research on Cancer | TSCA - Toxic Substances Control Act |
| MSHA - Mine Safety Health Administration | TWA - Time Weighted Average |
| NDSL - Non-Domestic Substance List | V - Volume |
| NIOSH - National Institute for Occupational Safety and Health | VOC - Volatile Organic Compound |
| NTP - National Toxicology Program | WHMIS - Workplace Hazardous Materials Information System |



VULKEM WF-250 EXPANSION SEAL (AKA WF-250 EXPANSION SEAL)

Version 1.

Print Date 05/07/2008

REVISION DATE: 01/25/2008

SECTION 1 - PRODUCT IDENTIFICATION / PREPARATION INFORMATION

Product Information

Trade name : VULKEM WF-250 EXPANSION SEAL (AKA WF-250 EXPANSION SEAL)
Product code : 881WF250501

Supplier : Tremco Canada division
220 Wicksteed Avenue
Toronto, ON M4H 1G7

Telephone : (416) 421-3300
Emergency Phone: : (613) 996-6666

Product use : Tape

Preparation Information

Prepared by: : Sewnauth Raghunandan
Date: : 01/25/2008
Telephone : (416) 421-3300

SECTION 2 - HAZARDS IDENTIFICATION

Emergency Overview

Black. Solid. No serious effects anticipated under normal conditions of use. Generally not required under normal conditions of use.

Acute Potential Health Effects/ Routes of Entry

Inhalation : No serious effects anticipated under normal conditions of use.
Eyes : Not applicable under normal conditions of use. Direct contact may cause temporary redness and discomfort.
Ingestion : No known adverse effects.
Skin : No effects anticipated.

Aggravated Medical Conditions

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure.

Chronic Health Effects

Fillers are encapsulated and not expected to be released from product under normal conditions of use.

SECTION 3 : HAZARDOUS INGREDIENTS

This is not a controlled product as defined in the Canadian Workplace Hazardous Materials Information System (WHMIS).

SECTION 4 - FIRST AID MEASURES

Get immediate medical attention for any significant overexposure.

Inhalation : Generally not required under normal conditions of use.
Eye contact : Generally not required under normal conditions of use.



VULKEM WF-250 EXPANSION SEAL (AKA WF-250 EXPANSION SEAL)

Version 1.

Print Date 05/07/2008

REVISION DATE: 01/25/2008

- Skin contact : Wash area of contact thoroughly with hand cleaner followed by soap and water. If irritation, rash or other disorders develop, get medical attention immediately.
- Ingestion : Get medical attention. Do not induce vomiting.

SECTION 5: FIRE / EXPLOSION HAZARDS

- Flash point : Not available.
- Method : Not available.
- Lower explosion limit : Not available.
- Upper explosion limit : Not available.
- Autoignition temperature : Not available.
- Extinguishing media : If water fog is ineffective, use carbon dioxide, dry chemical or foam.
- Hazardous combustion products : Smoke, fumes. Carbon monoxide and carbon dioxide can form.
- Protective equipment for firefighters : Use accepted fire fighting techniques. Wear full firefighting protective clothing, including self-contained breathing apparatus (SCBA).
- Fire and explosion conditions : This product not expected to ignite under normal conditions of use.

SECTION 6 - SPILLS / LEAKS / ACCIDENTAL RELEASE MEASURES

Transfer to appropriate container for disposal.

SECTION 7 - HANDLING AND STORAGE

Handle in compliance with common hygienic practices. Clean hands thoroughly after handling. Store under dry warehouse conditions away from heat and all ignition sources.

SECTION 8 - PREVENTIVE MEASURES/EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection equipment

- Respiratory protection : Not required under normal conditions of use.
- Hand protection : Protect hands with impervious gloves.
- Eye protection : Generally not required under normal conditions of use. Use safety glasses if eye contact is likely.
- Skin and body protection : Not required.
- Protective measures : Other equipment not normally required. Use professional judgment in the selection, care, and use.
- Engineering measures : Not required under normal conditions of use. Use only in well ventilated areas. Provide maximum ventilation in enclosed areas.

Exposure Limits

No known components with exposure limits.

VULKEM WF-250 EXPANSION SEAL (AKA WF-250 EXPANSION SEAL)

Version 1.

Print Date 05/07/2008

REVISION DATE: 01/25/2008

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State	: Solid
Form	: Solid
Color	: Black
Odor	: Negligible
pH	: Not available.
Vapour pressure	: Not available.
Vapor density	: Heavier than air
Melting point/range	: Not available.
Freezing point	: Not available.
Boiling point/range	: Not available.
Water solubility	: Insoluble
Evaporation Rate:	: Not available.
Specific Gravity	: Not available.
% Volatile Weight	: 0 %

SECTION 10 - REACTIVITY / STABILITY

Substances to avoid	: Oxidizing agents.
Stability	: Material is stable under normal storage, handling, and use.
Hazardous polymerization	: Will not occur under normal conditions.

SECTION 11 - TOXICOLOGICAL INFORMATION

No Data Available

SECTION 12 - ECOLOGICAL INFORMATION

No Data Available

SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Disposal Method : Dispose in suitable container as non-hazardous waste according to all applicable regulations.

SECTION 14 - TRANSPORTATION / SHIPPING DATA

TDG / DOT Shipping Description:
NOT REGULATED



VULKEM WF-250 EXPANSION SEAL (AKA WF-250 EXPANSION SEAL)

Version 1.

Print Date 05/07/2008

REVISION DATE: 01/25/2008

SECTION 15 - REGULATORY INFORMATION

North American Inventories:

All components are listed or exempt from the TSCA inventory.

This product or its components are listed on, or exempt from the Canadian Domestic Substances List.

Canadian Regulations:

WHMIS Classification : Not Controlled

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Other Regulations:

Regulatory VOC (less water and exempt solvent) : Not available.

SECTION 16 - OTHER INFORMATION

HMIS Rating :

Health	0
Flammability	0
Reactivity	0
PPE	

0 = Minimum
 1 = Slight
 2 = Moderate
 3 = Serious
 4 = Severe

Further information:

For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Prepared by: Sewnauth Raghunandan

Legend

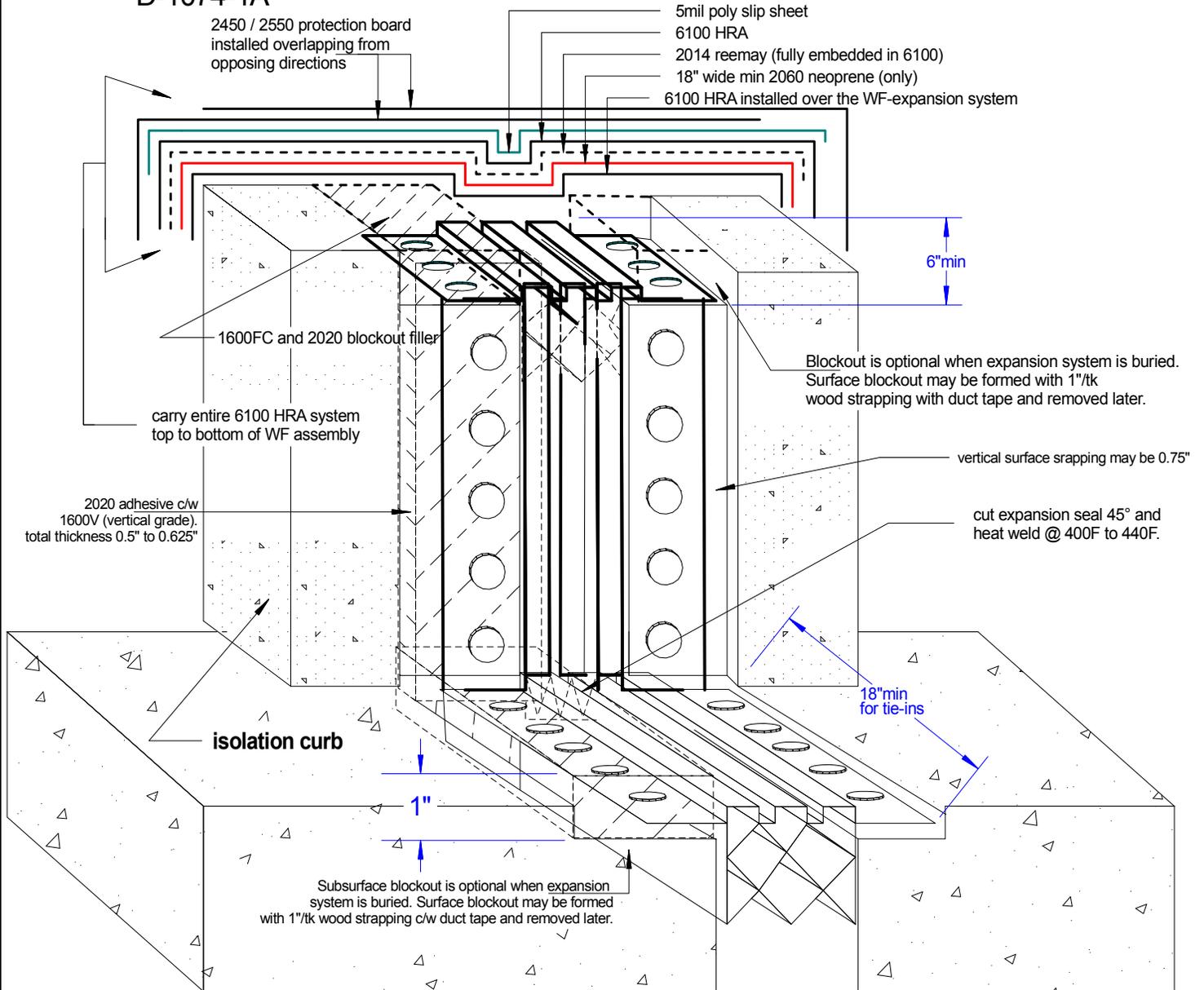
- ACGIH - American Conference of Governmental Hygienists
- DOT - Department of Transportation
- DSL - Domestic Substance List
- EPA - Environmental Protection Agency
- HMIS - Hazardous Materials Information System
- IARC - International Agency for Research on Cancer
- MSHA - Mine Safety Health Administration
- NDSL - Non-Domestic Substance List
- NIOSH - National Institute for Occupational Safety and Health
- NTP - National Toxicology Program
- OSHA - Occupational Safety and Health Administration
- PEL - Permissible Exposure Limit
- RCRA - Resource Conservation and Recovery Act
- STEL - Short Term Exposure Limit
- TLV - Threshold Limit Value
- TSCA - Toxic Substances Control Act
- TWA - Time Weighted Average
- V - Volume
- VOC - Volatile Organic Compound
- WHMIS - Workplace Hazardous Materials Information System



Isolation Curb Detail

Buried WF-Expansion system C/W 6100 HRA
fully reinforced installed directly to expansion seal.

D-1074-1A



Note:

Its very important to cover the expansion wing to 90% with the 2020 adhesive.

Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date: Aug-16-2008

Drawing No. D-1074-1A

Drawn by: G.M.
Approved: <>

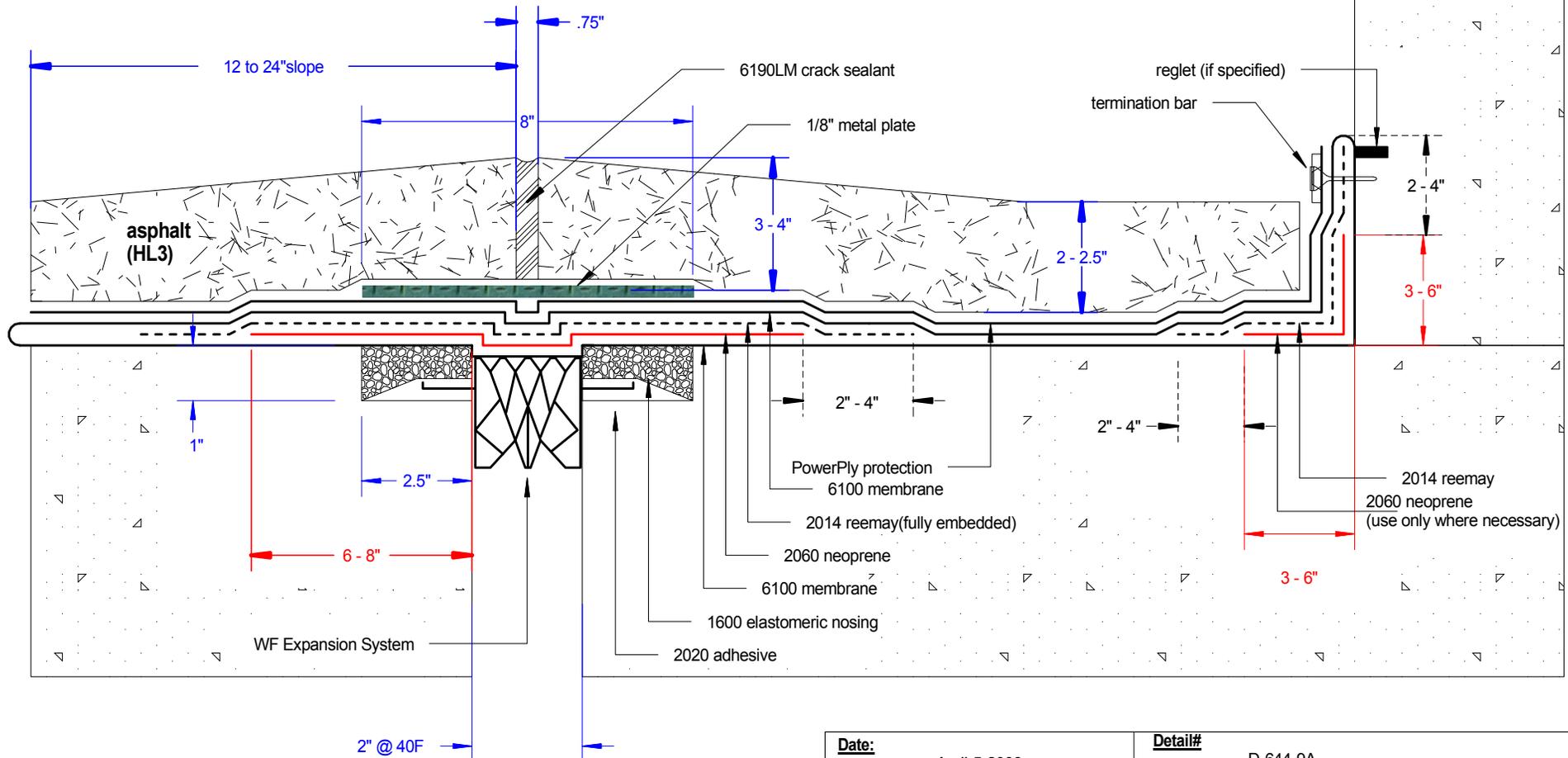
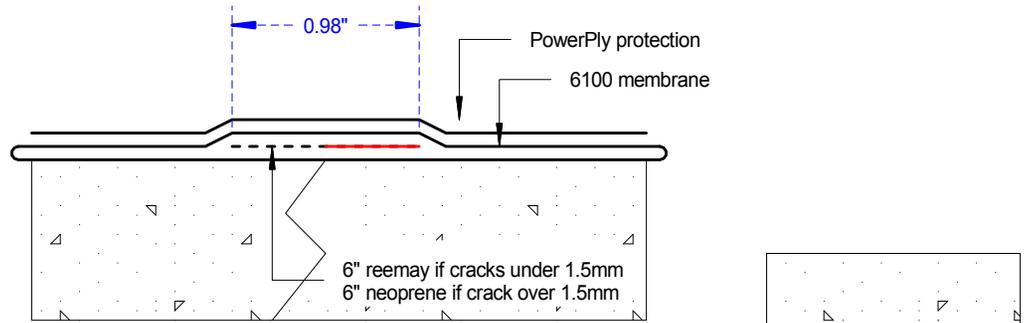
Scale:

Project:



Permaphalt system
shown: 6145 HRA / expansion / cracks / upturn

draft# D-644-9A

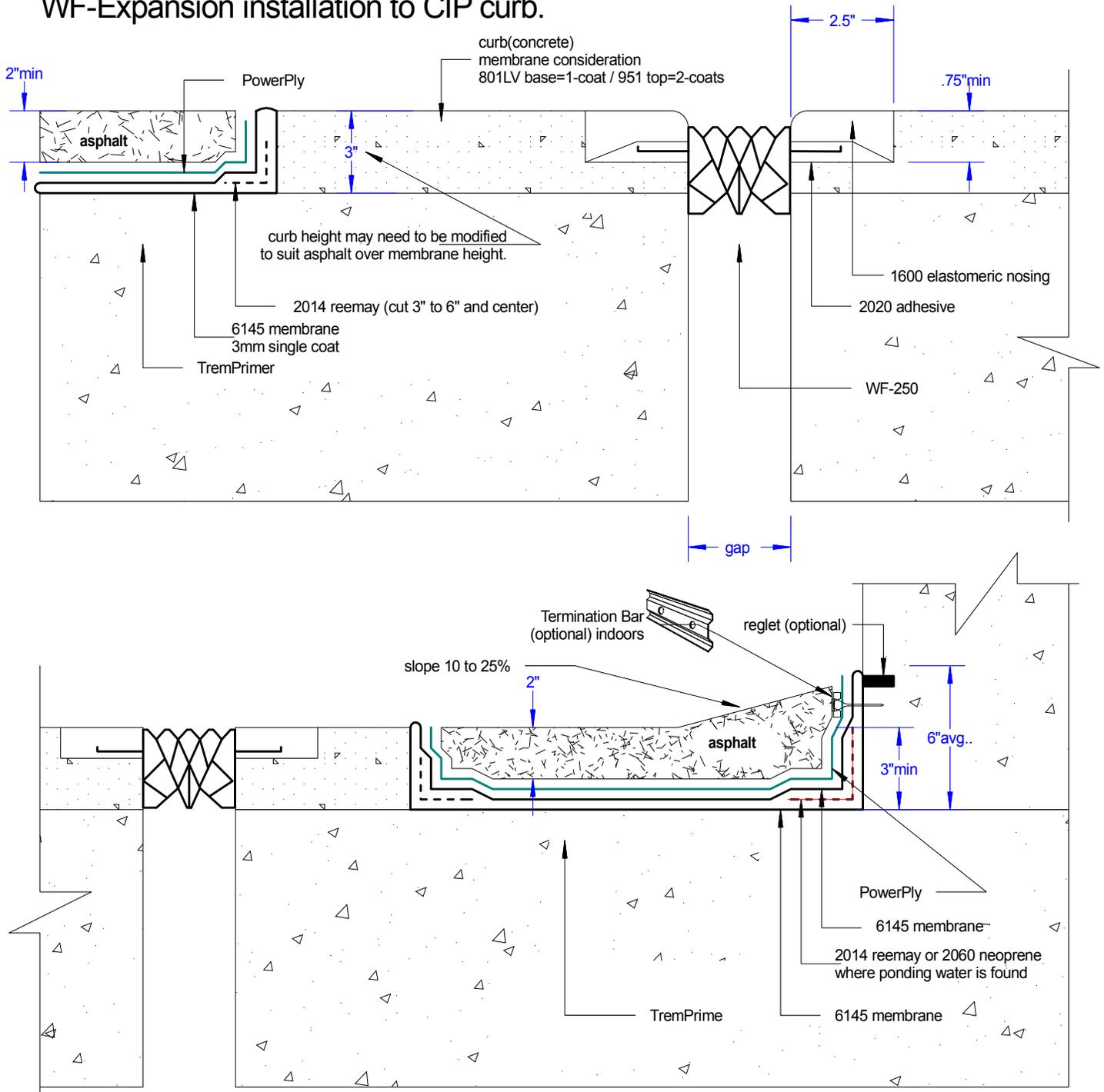


Date:	April-5-2008	Detail#	D-644-9A
Drawing:	G.M.	Project:	typical



Permaphalt II System c/w
WF-Expansion installation to CIP curb.

Detail #: D-645-1A-r1



Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date: Jul-13-2008

Drawing No. D-645-1A-r1

Drawn by: G.M.

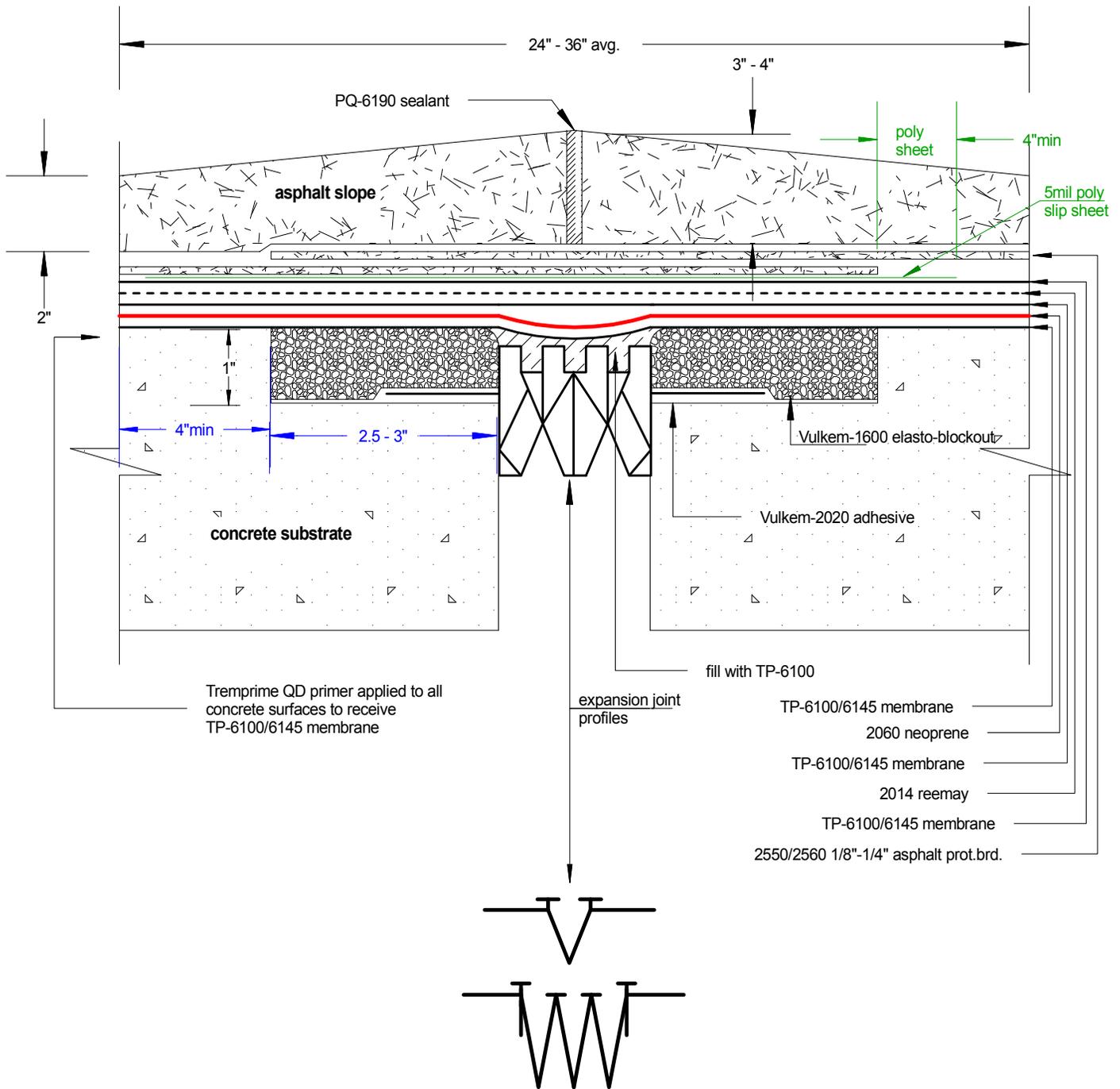
Approved: <>

Scale:

Project:



TP-6100 or Permaphalt (II) or (III)-R non-exposed asphalt overlay expansion system



Tremco Canada
 6178 Netherhart Rd.
 Mississauga, On.
 L5T 1B7
 Ph: 905-564-6100
 Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

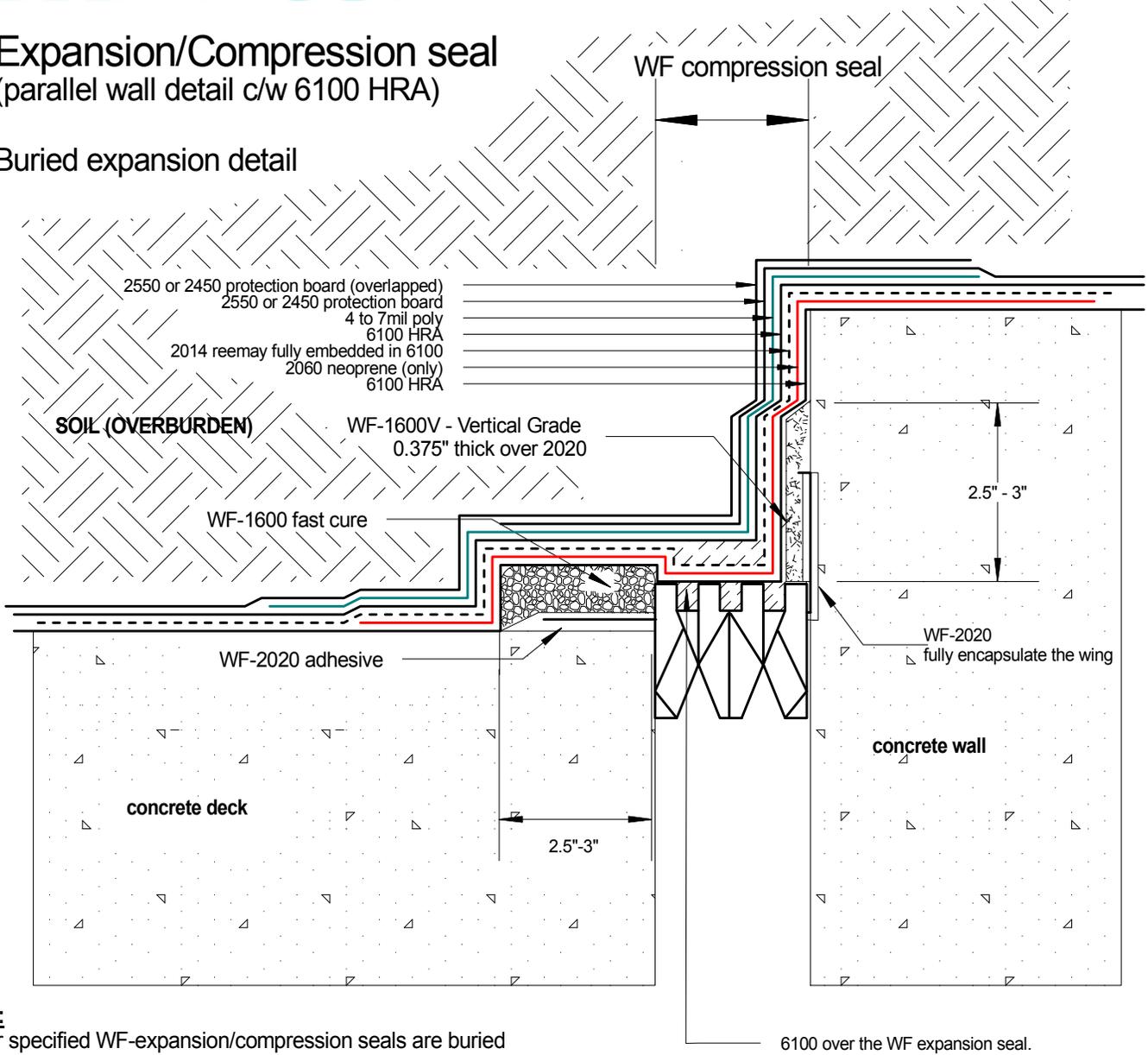
Tremco Inc.
 3735 Green Rd,
 Cleveland, OH. USA
 44122
 Ph: 216-292-5000
 Fax: 216-292-5036

Date: Feb-5-2008		Drawing No. D-89-1C
Drawn by: G.M.	Approved: <>	Scale:
Project:		



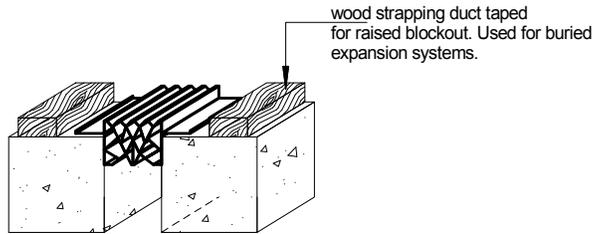
Expansion/Compression seal (parallel wall detail c/w 6100 HRA)

Buried expansion detail

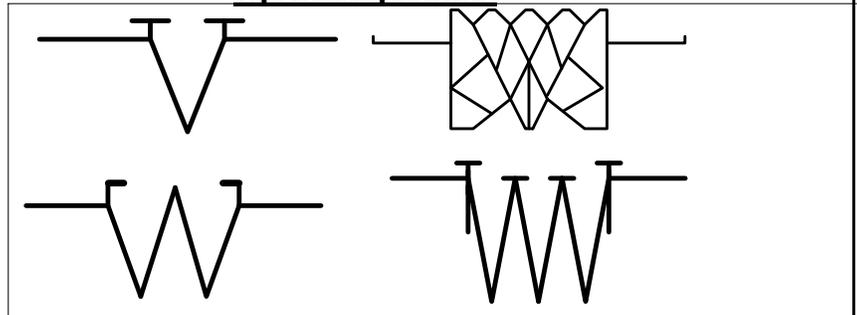


Note:

If our specified WF-expansion/compression seals are buried under soil such as building perimeters, install to surface of concrete. No 3/4" depth blockout will be required.



Optional profiles



Tremco Canada
Permaquik division
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date: Aug-13-2008

Drawing No. D-1066-9B

Drawn by: G.M.

Approved: <>

Scale:

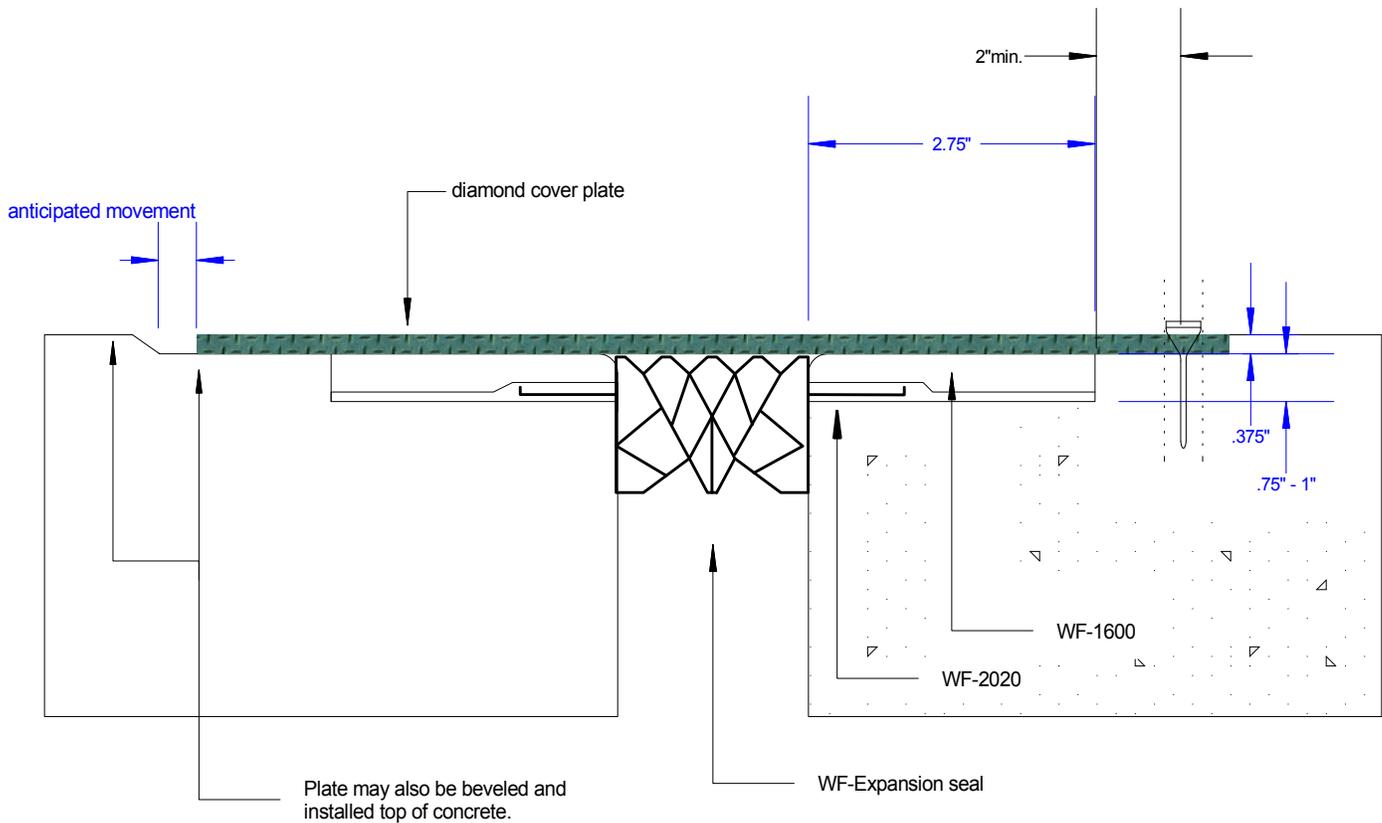
Project:



WF Expansion Seal

Typical blockout shown c/w cover plate.

detail>> D-1492-57-A



Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date:
Apr-29-2010

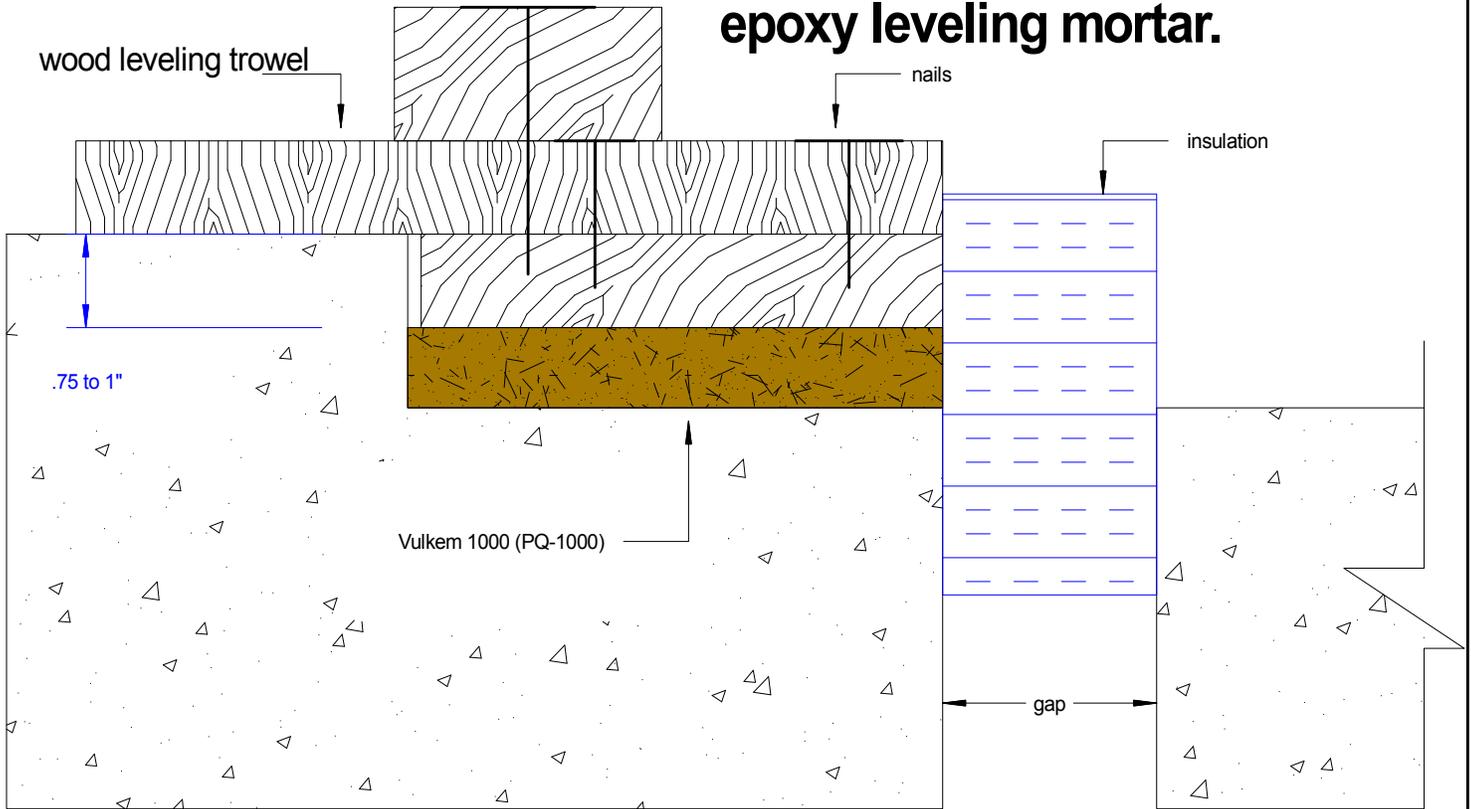
Drawing No.
D-1492-57-A

Drawn by: G.M.
Approved: <>

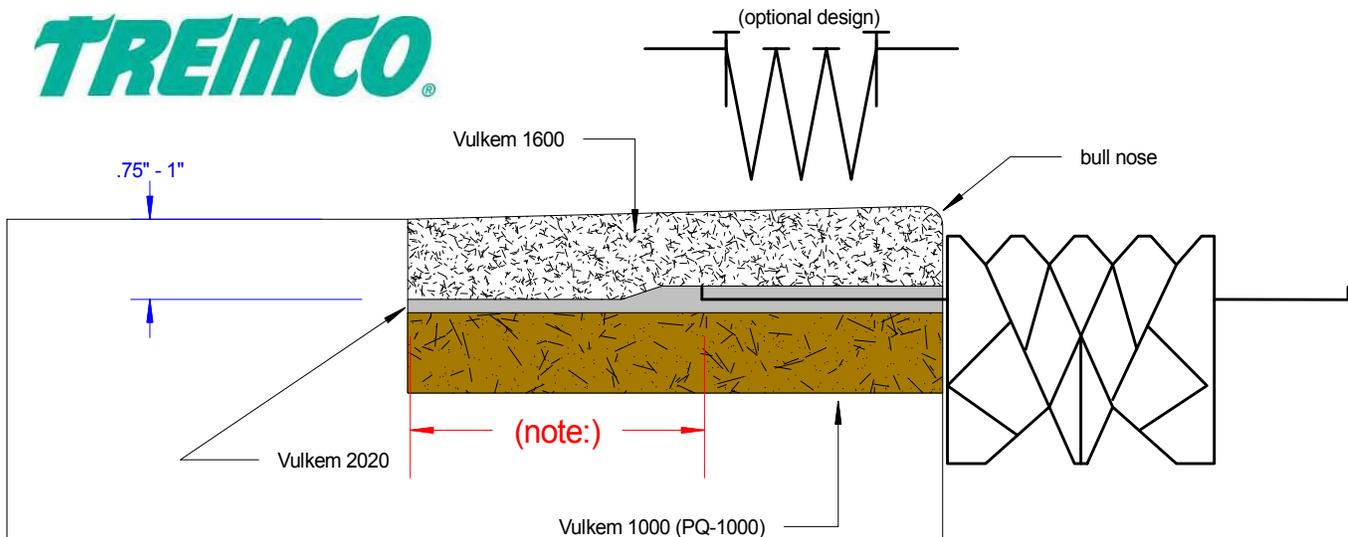
Scale:

Project:

Vulkem 1000 structural grade epoxy leveling mortar.



TREMCO



Note:
The 2020 adhesive should completely cover the winged flanges 100% for upper level (exposed parking) decks. Underground levels (non-exposed), will require the 2020 adhesive to cover the surface of the wing flanges up to 80%. The area from the edge of the wing flange to the concrete side **(note:)** should be skim coated as to not waste material.

Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date: Mar-26-2008

Drawing No. D-882-1A

Drawn by: G.M. Approved: <>

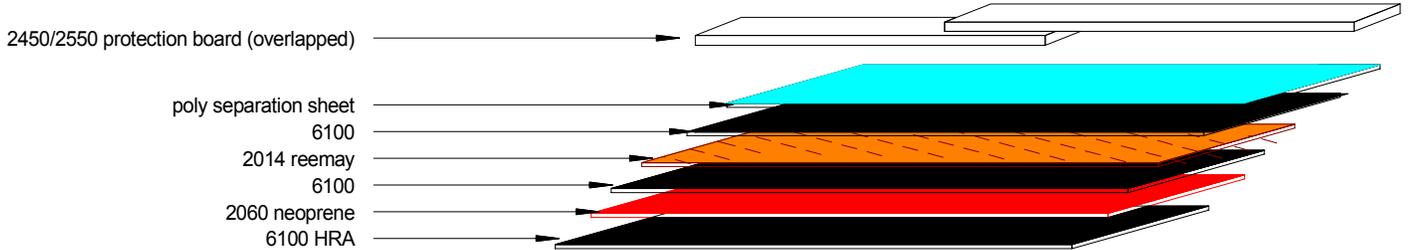
Scale:

Project:

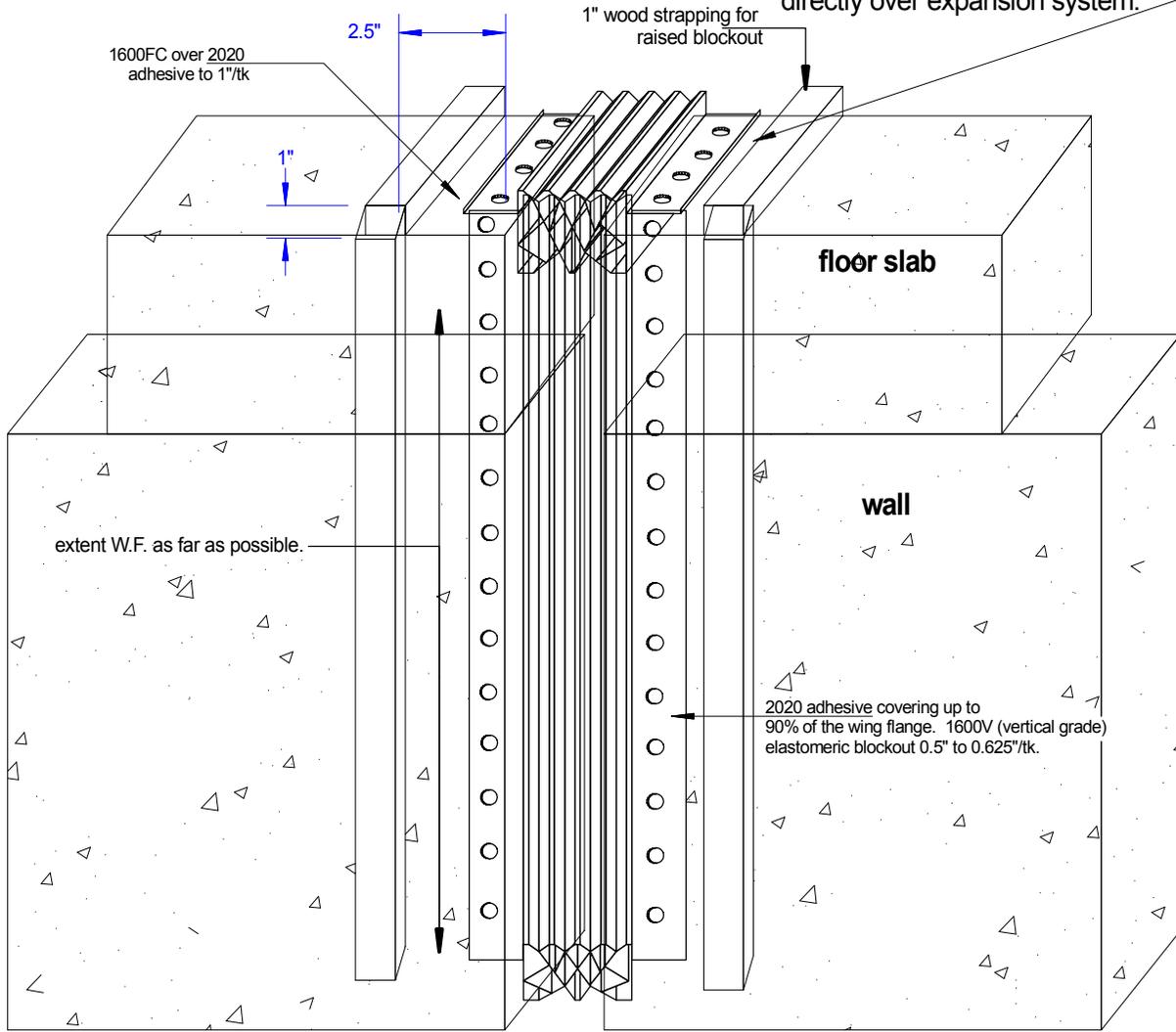


WF-expansion system to vertical wall c/w 6100 HRA installation

Once strapping has been removed, install 6100 membrane components as listed.



Install 6100 HRA components directly over expansion system.



Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

Date: Aug-16-2008

Drawing No. D-1077-2A

Drawn by: G.M.

Approved: <>

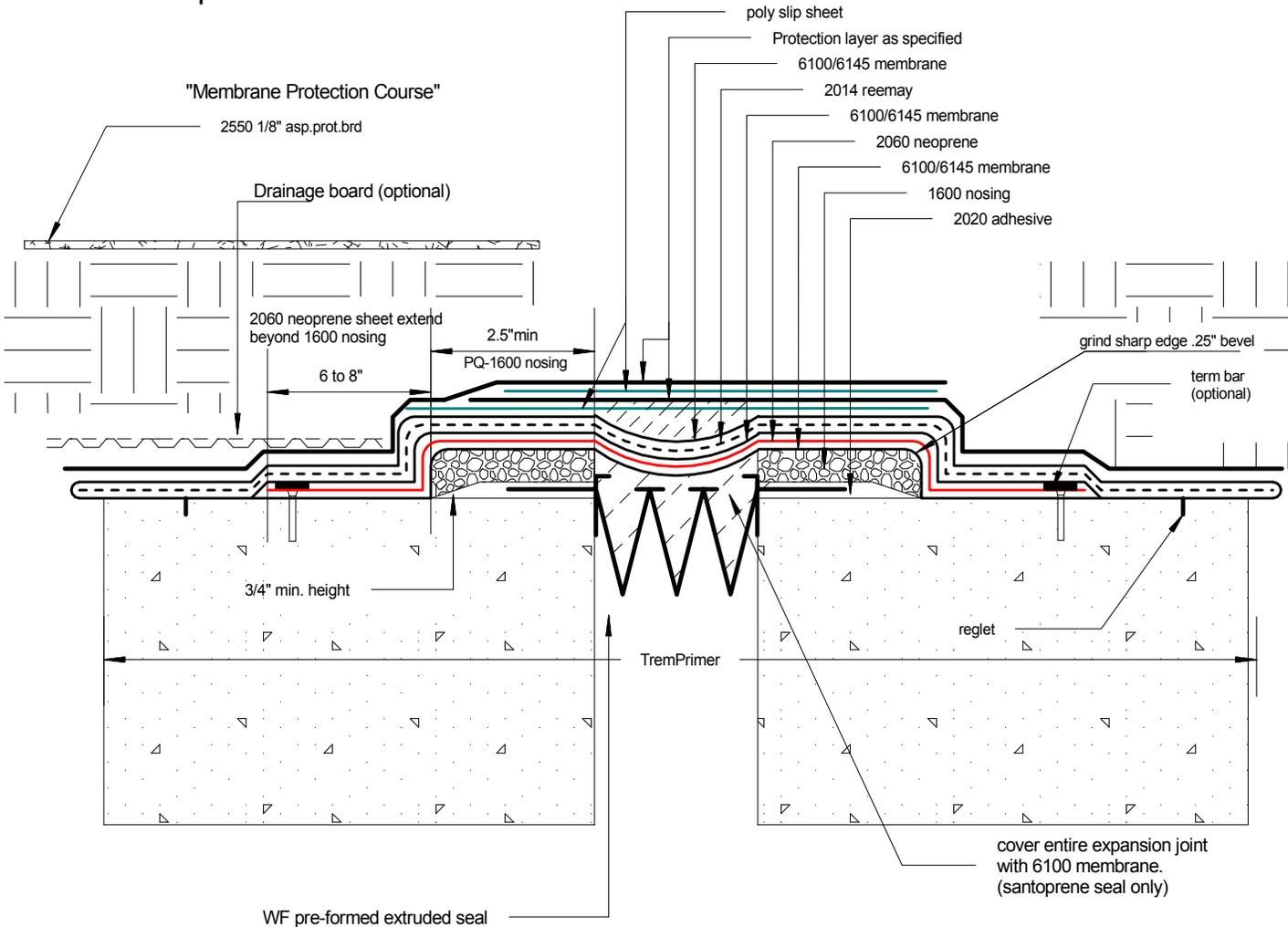
Scale:

Project:



Buried "pre-formed" compression seal
PQ-6100 or Permaphalt system

Shown: 6100 membrane over pre-formed expansion seal with aggregate over burden. If asphalt is placed directly over the expansion system, create a blockout as per our standard details.



6100 membrane installation sequence:

- 1) 6100 membrane installed directly to primed concrete then over expansion system
- 2) install 2060 neoprene
- 3) install 6100 membrane
- 4) install 2014 reemay
- 5) install 6100 membrane
- 6) install 5mil poly slip sheet 1 side or over entire joint
- 7) install 2550 asphaltic protection board
- 8) install poly slip sheet
- 9) install 2550 asphaltic protection board

Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

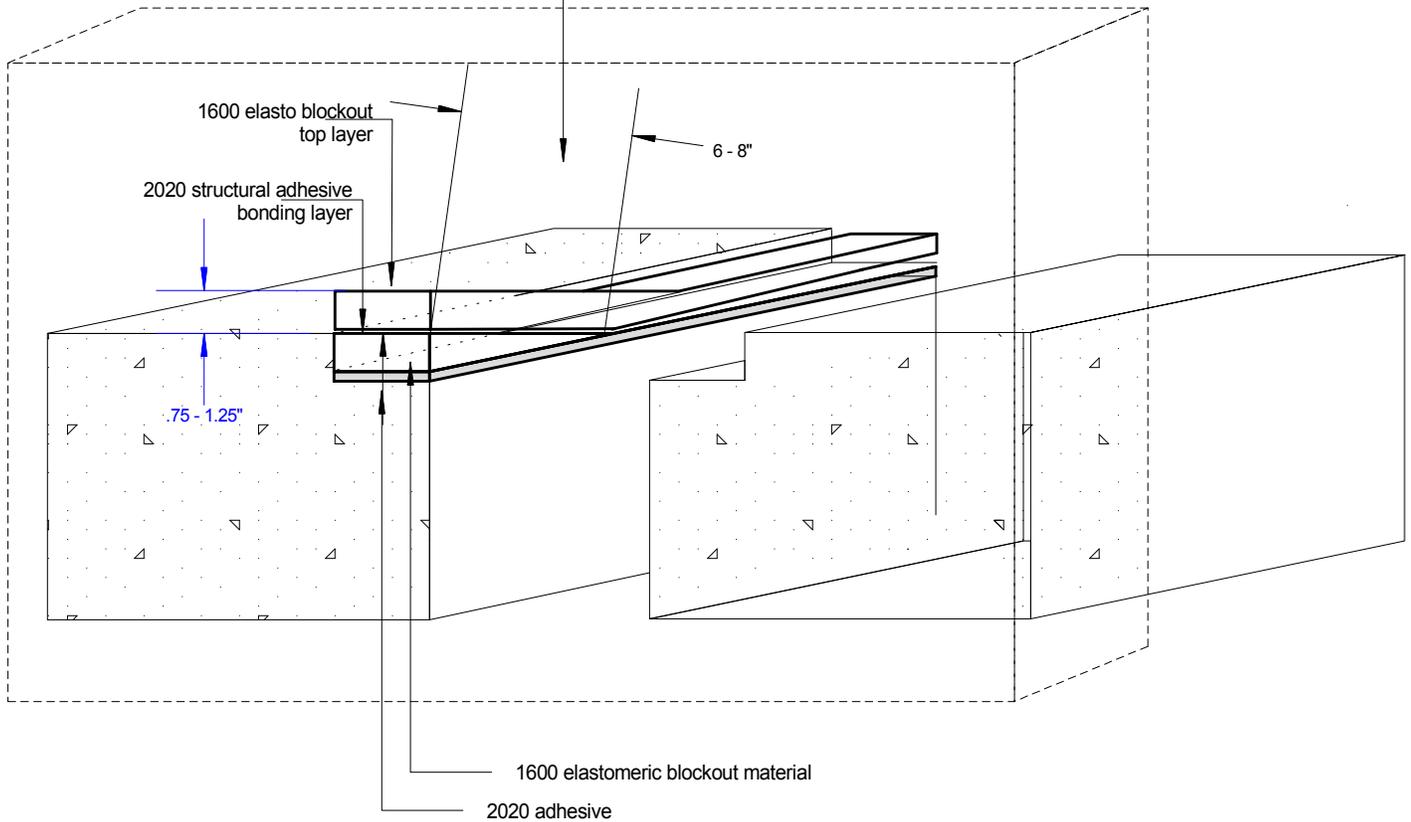
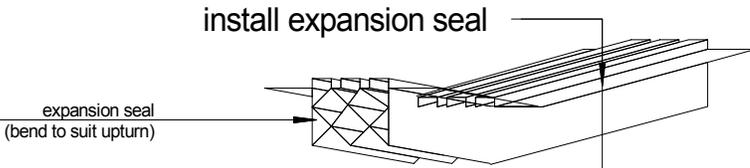
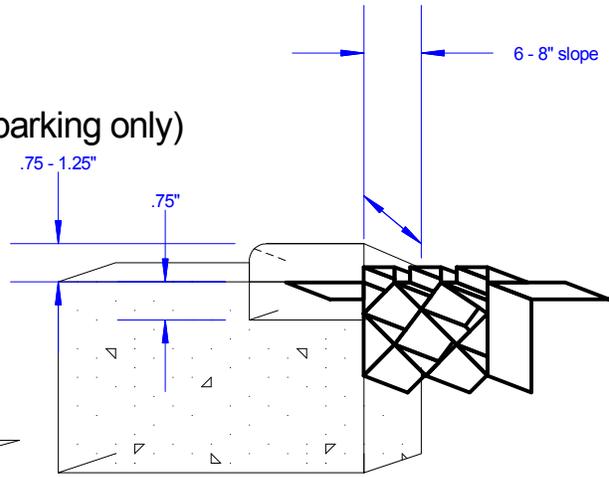
Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph:216-292-5000
Fax: 216-292-5036

Date:	Feb-2-2008	Drawing No.	D-88-2B
Drawn by:	G.M.	Approved:	<>
Project:			



Expansion / Compression seal
 >upturn slope termination to wall (underground parking only)

draft >> D-341-1A (rev-1 aug-1-2007)



Tremco Canada
 6178 Netherhart Rd.
 Mississauga, On.
 L5T 1B7
 Ph: 905-564-6100
 Fax: 905-564-6110

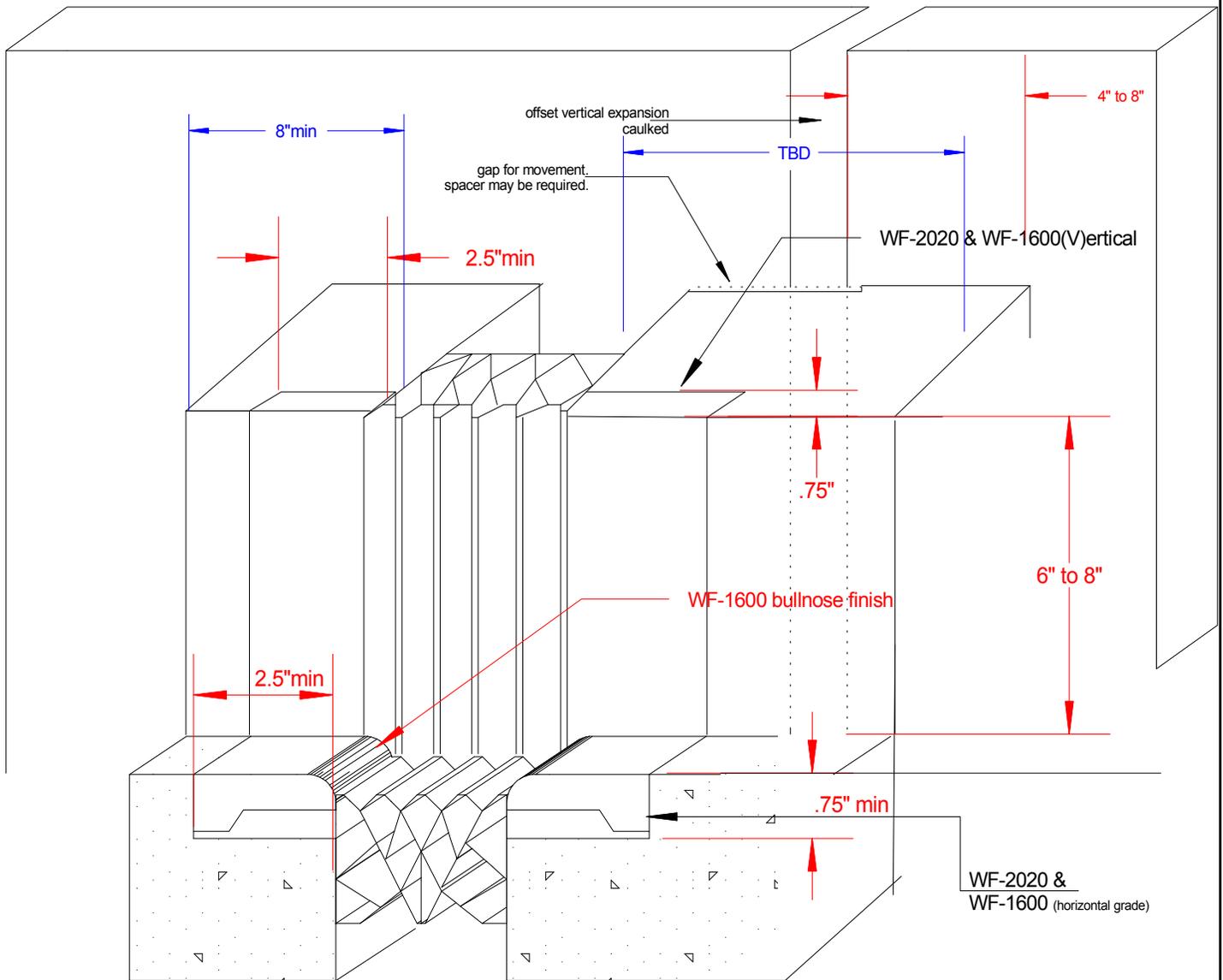
Tremco Inc.
 www.tremcosealants.com

Tremco Inc.
 3735 Green Rd,
 Cleveland, OH. USA
 44122
 Ph:216-292-5000
 Fax: 216-292-5036

Date: Jan-8-2008		Drawing No. D-341-1B (rev-2)
Drawn by: G.M.	Approved: <>	Scale:
Project:		



WF Expansion System (Offset parapet gap detail)



WF-Expansion/Compression Detail horizontal to offset vertical installation

Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

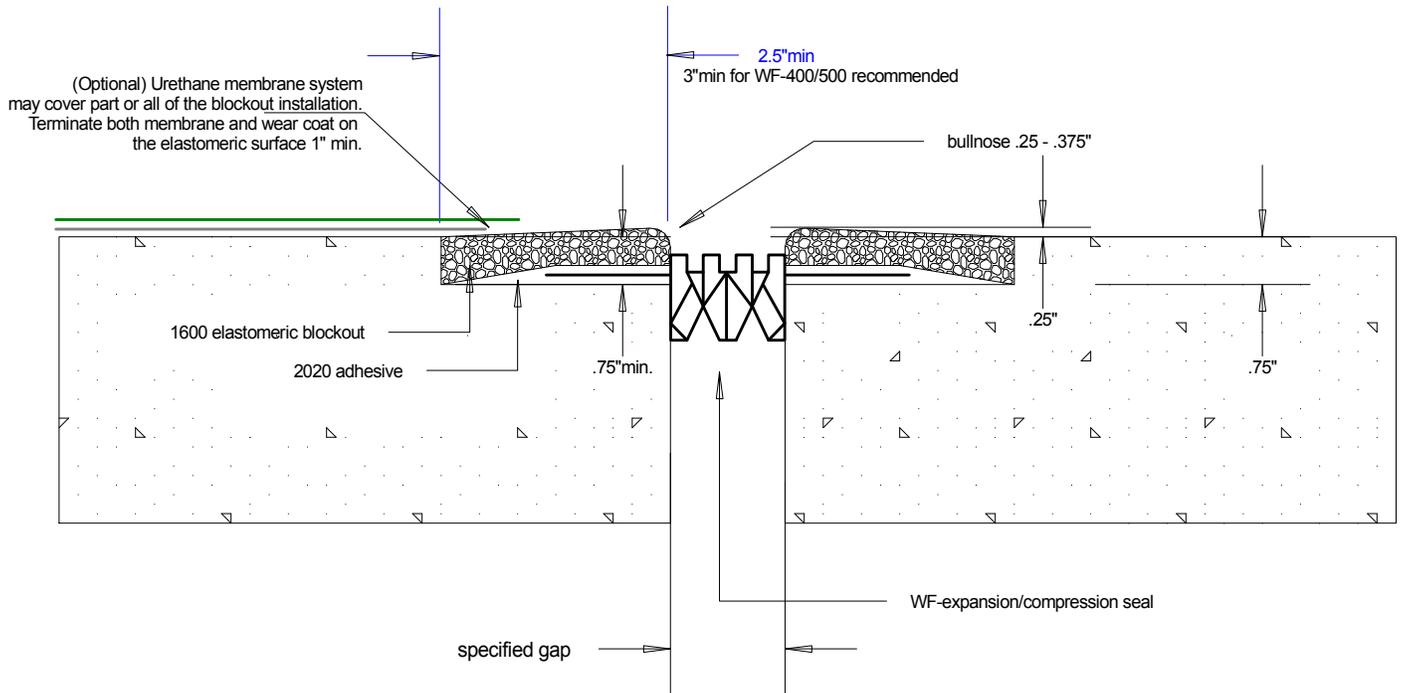
Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph:216-292-5000
Fax: 216-292-5036

Date: May-15-2006		Drawing No. D-1132-4A
Drawn by: G.M.	Approved: <>	Scale:
Project:		



WF-expansion / compression system c/w optional urethane thin set traffic deck coating



Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
www.tremcosealants.com

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036

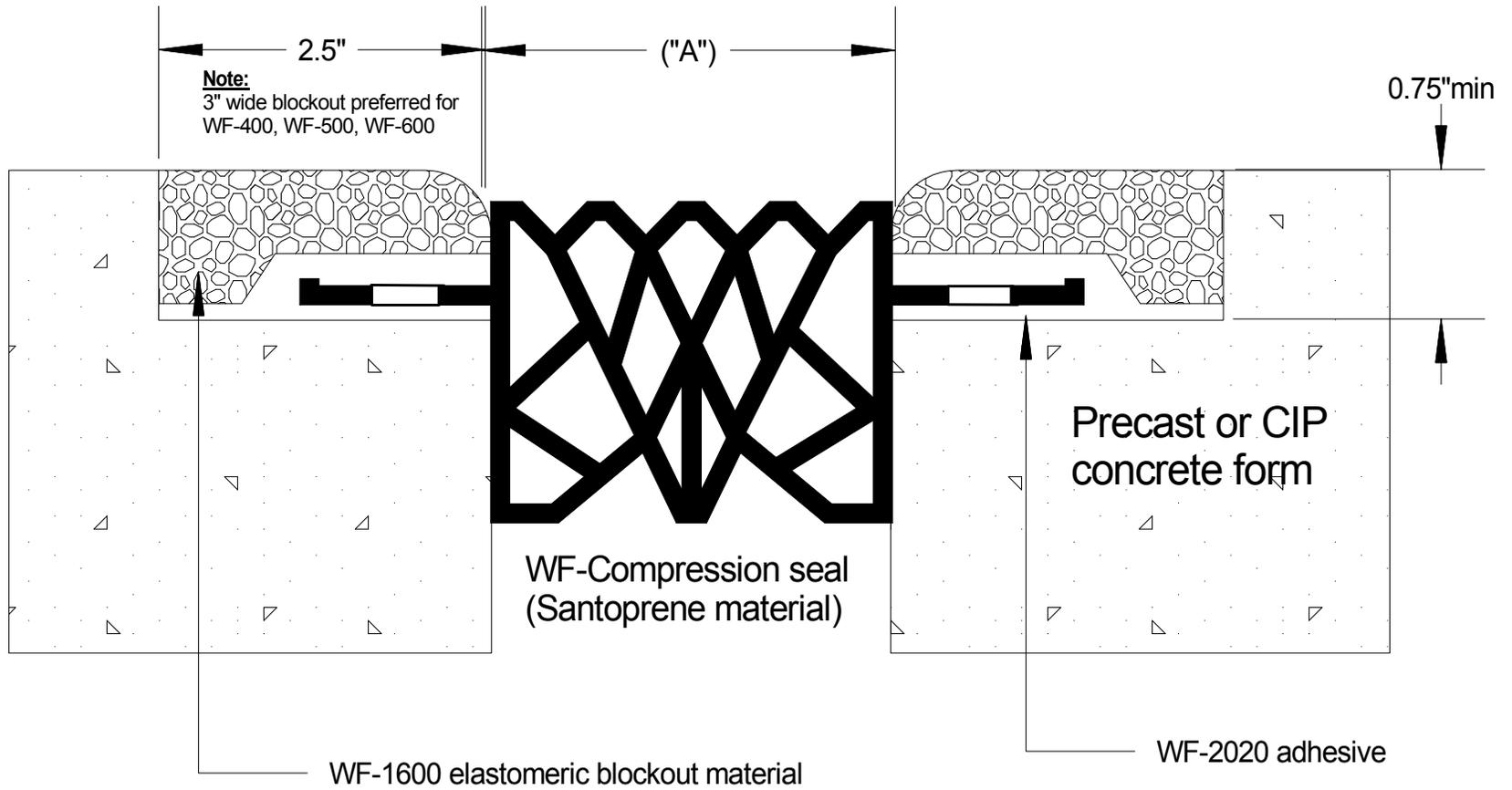
Date: Sep-6-2007

Drawing No. D-44-5C

Drawn by: G.M. Approved: <>

Scale:

Project: Typical



Contractors Installation Warranty Safety Margins

BLOCKOUT MINIMUM 3/4" DEEP X 2 1/2" WIDE

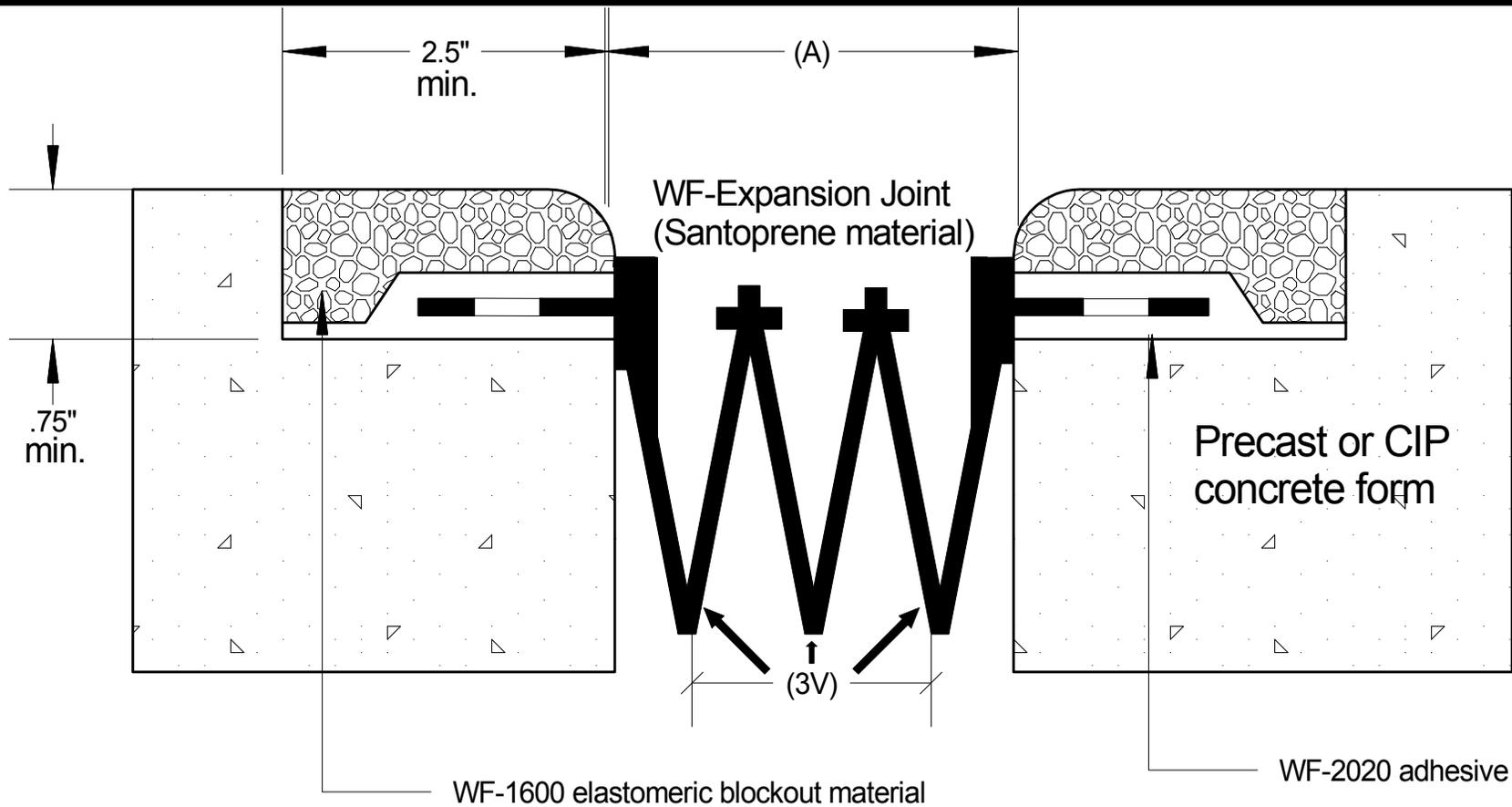
MODEL NUMBER	MOVEMENT INCHES	AVERAGE INSTALLATION WIDTH MIDWINTER "A"	AVERAGE INSTALLATION WIDTH MIDSUMMER "A"
WF-225/250	.875"	2"	1.5" / 1.75"
WF-300	1.25"	2.5"	2"
WF-400	1.375"	3.5"	2.75"
WF-500	1.5"	4.75"	3.75"
WF-600	1.75"	5.75"	4.75"



VULKEM WF SERIES

Tremco Canada
6178 Netherhart Rd.
Mississauga, On.
L5T 1B7
Ph: 905-564-6100
Fax: 905-564-6110

Tremco Inc.
3735 Green Rd,
Cleveland, OH. USA
44122
Ph: 216-292-5000
Fax: 216-292-5036



Contractors Installation Warranty Safety Margins

BLOCKOUT MINIMUM 3/4" DEEP X 2 1/2" WIDE

MODEL NUMBER	MOVEMENT INCHES	AVERAGE INSTALLATION WIDTH MIDWINTER "A"	AVERAGE INSTALLATION WIDTH MIDSUMMER "A"
WF-125(1V)	1.5	1.25	1"
WF-150(2V)	1.75	2"	1.5"
WF-200(3V)	2.75	2.5"	2"
	Typical Average Movement		



VULKEM WF SERIES

Tremco Canada
 6178 Netherhart Rd.
 Mississauga, On.
 L5T 1B7
 Ph: 905-564-6100
 Fax: 905-564-6110

Tremco Inc.
 3735 Green Rd,
 Cleveland, OH. USA
 44122
 Ph: 216-292-5000
 Fax: 216-292-5036



Tremco
3735 Green Road,
Beachwood, Ohio 44122
TEL: (216) 292-5000 • (800) 321-7906

Tremco
220 Wicksteed Avenue
Toronto, ON M4H 1G7
TEL: (416) 421-3300 • (800) 363-3213



APPLIES TO TREMCO

APPROVED CONTRACTOR/APPLICATOR/DISTRIBUTOR