# INSTALL DATA

# THERMAFLEX with EMCRETE Nosing Material

## IMPORTANT:

Do not handle this material until all members of your crew have read (or have been read to) all relevant MSDS sheets as well as these instructions. If any of your crew do not understand any of this information call EMSEAL:

**US/Canada Toll Free: 800-526-8365** **US Phone: 508-836-0280** **Canada Phone: 416-740-2090**

## TEMPERATURE LIMITATIONS:

The substrate temperature for installation of the THERMAFLEX systems must measure 7°C (45°F) minimum during pouring of the nosing material as well as for at least 4-hours after pouring of the nosing is completed.

## Installation Overview (NOTE: Install in accordance with detailed instructions that follow this summary.)

- Remove all unsound concrete in or around the blockouts. The horizontal blockout base must be level and all major spalls must be repaired. Proper preparation geometry and suitable patching materials compatible with the nosing must be used.
- The blockout must be perfectly clean and dry prior to installation.
- Apply primer on concrete allowing 30 minutes to dry.
- Thoroughly solvent-clean sealing gland and position in joint-gap.
- Mask-off top surface of sealing gland with duct tape.
- Mask-off deck with duct tape.
- Mix nosing ingredients according to the supplied instructions.
- Pour nosing material into the blockouts. Force material under flanges ensuring they're firmly embedded and that there are no air pockets or unfilled voids under the flanges.
- Trowel smooth.
- Remove masking and form tape.

## I. PRE-INSTALLATION PREPARATION:

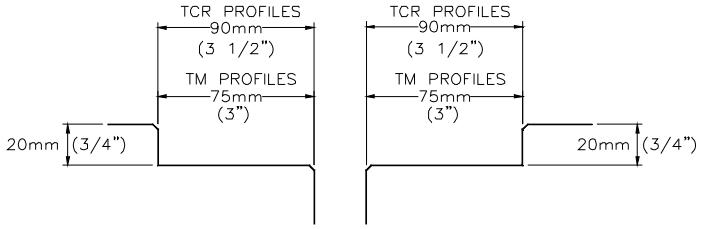
The following preparation of the deck must be completed without exceptions prior to the scheduling of an EMSEAL Technical Representative:

### 1: Prepare Blockouts

Blockouts must measure at least 20mm (3/4") deep throughout their length. Width for the blockouts varies with the specific system being installed:

| Model #: | Standard Blockout Dimensions: |
|---|---|
| For TM 1.5 and TM 2.5 | 20mm deep x 75mm (3/4-inches) x (3-inches) |
| For TCR Series | 20mm deep x 90mm (3/4-inches) x (3 1/2-inches) |

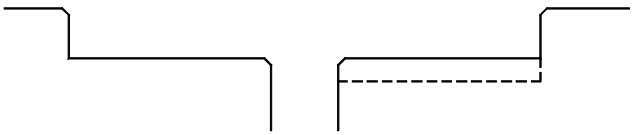
Blockouts must be measured at intervals along the entire length of each joint. Where blockouts measure less than 20mm (3/4") deep, they must be grinded or cut to 20mm (3/4") deep.




The corner of the concrete at the edge of the block-out and at the top of the joint face must be ground with a maximum 3mm (1/8") radius to eliminate sharp edges.

### 2: Ensure Decks Are Level Across Joint Gap

Each joint must be inspected and measured to determine if there are areas where the deck is not at the same height on both sides of the joint gap.
The difference in deck heights cannot be greater than 6mm (1/4").
If deck heights remain uneven it may be necessary to either:
a) bush and grind down the high-side deck before cutting blockouts;
b) build up the low side with a feathered patch properly keyed into the deck.
Whichever method is chosen by the contractor, the work must be carried out in accordance with accepted practices of his trade and with the necessary approval of the owner and/or consulting engineer.



Adjustment of the high-side blockout depth may additionally be used to achieve the minimum difference as long as the resulting high-side blockout is no more than 25mm (1 inch) deep.
If the high-side blockout is deepened, additional nosing material will be required to shape the nosing to accommodate the differential. The additional nosing material required must be calculated and ordered from EMSEAL immediately.

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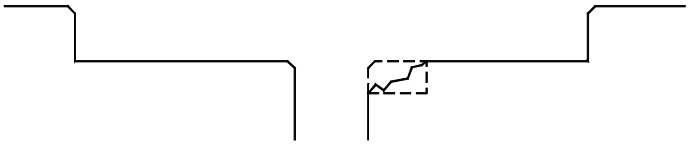
**EMSEAL LLC,** 111 Royal Group Crescent, Woodbridge, ON L4H 1X9 Canada **PH:** 416.740.2090 **FX:** 416.740.0233

### 3: Sound Blockouts & Adjacent Concrete With A Hammer

Using a hammer, tap every inch of the blockouts and concrete immediately adjacent to the blockouts.
Areas that sound hollow, or crumble, crack, or loosen must be removed and repaired using established trade practices, concrete repair techniques and/or procedures that meet the approval of the consulting engineer.

### 4: Repair Spalled Joint-Gap Edges

Badly spalled edges of the joint-gap face must be patched. Proper spall repair practices must be used without compromise.
Failure to repair damage to the edges of the joint-gap will result in the seal being unsupported at these points.
The spalled area should be grinded or cut to make a flat and level ledge or shelf where the spall used to be.



The width and depth of the shelf must be sufficient to remove the spall entirely. Patching material applied to sloped surfaces of a spall is unacceptable.
Most structural, non-shrink, quick-setting, polymer-modified grouts are suitable for spall repair (consult EMSEAL).
Do not use patching materials that contain magnesium phosphate.

The area to be patched must be absolutely clean and free of contaminants such as dust, dirt, oils, etc.—Consult with patching material manufacturer for specific preparation requirements.

High density foam board (Dow Styrofoam blue board, or Foamular pink board) must be installed into the joint gap across the area to be patched. DO NOT USE WHITE BEADBOARD.
The patching mortar must be packed firmly against the foam board and completely into the prepared shelf.
Patching materials must not cantilever over the joint-gap.

All repair materials have a cure time specified. No THERMAFLEX should be installed before the patching-material manufacturer's cure time has passed.

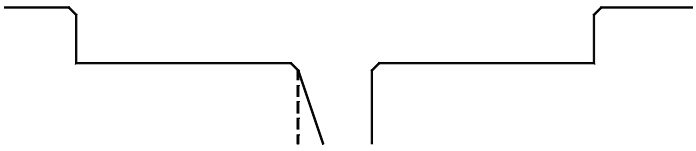
### 5: Sound All Patches & Repairs With Hammer

Once the patching material has cured, the repaired areas must be sounded using a hammer to determine if the patch is bonded and properly consolidated.
Patches that sound hollow, or crumble, crack, or loosen must be removed completely and be redone.

(Note: Upon arrival at the jobsite, an EMSEAL technician will sound the blockouts with a hammer. Any unsound concrete or patches will be deemed unacceptable. Discovery of unsound substrate may delay the installation and result in further charges for future site inspection and installation training.)

### 6: Ensure Joint-Gap Faces are Parallel, Plumb & Perpendicular

If the joint is wedge-shaped and one of the double-cell (TM 1.5 or TM 2.5) or TCR sealing glands is being used, the wedge will cause the seal to be ejected from the joint during installation, resulting in the seal being improperly seated. Additionally, the wedge-shaped joint will prohibit the seal from folding down into the joint during compression.
If joint faces are not perpendicular, plumb, true and parallel, the



joints must be saw-cut to at least the depth of the gland below its flanges to make them so.

### 7: Free Joint-Gap of Obstructions

All objects, concrete lumps, wood, forms, refuse, etc. must be removed from the joint gap.
Any objects left between the concrete faces forming the joint-gap could restrict the free movement of the slabs and result in damage to the concrete.

### 8: Clean Blockouts of All Contaminants

Blockouts must be clean and free of old sealant, grease, dirt, moisture or any other contaminants.
Blockouts that once contained a premolded expansion joint may have old sealant or mastic trapped in the depressions or "craters" in the base of the blockout. All old sealant or mastic must be chipped from these depressions.
Using a dry abrasive blast, clean and expose the coarse aggregate on the concrete surfaces to receive the elastomeric concrete. (If local codes do not allow sand-blasting, consult with EMSEAL for an acceptable, alternative grinding technique.)
The abrasive blast (or grinding) must remove all laitance.
Remove abrasive material with a stream of oil-free, moisture-free air. (A high-speed electric air blower works well for this.)

### 9: Manufacturer Inspection

Blockout and joint surfaces will be examined by the EMSEAL representative for compliance with the above requirements.
Failure to prepare the blockouts and adjacent concrete according to items 1-8 above will result in a failure of the expansion joint system. The decision to install the expansion joint material into blockouts which in the stated opinion of the EMSEAL technician are not properly prepared will result in the voiding of any warranties of performance issued by EMSEAL.
If "approval", by someone other than the contractor, of the blockouts and concrete repair methods is required, this must be obtained from the consulting engineer prior to installation of the elastomeric seal.

## II. MATERIALS & TOOLS REQUIRED FOR INSTALLATION

### 1: Equipment Required of Contractor

In addition to the following, it is expected that the contractor will have the tools and equipment necessary to properly prepare the blockouts in accordance with Section I above:

- 4-inch diamond-cup angle grinder. (Note: While it is often perceived as an undersized piece of equipment, the 4-inch diamond-cup, hand-held angle grinder is essential and the most effective tool for blockout preparation. This is because the diamond-cup grinder fits easily into the blockouts as well as into confined areas. This tool will be used to round the edges of the blockout and joint-gap as well as to deepen blockouts where necessary and grind the blockout surface for final preparation.
- Six - 50mm (2-inch wide by 6-inch long) margin trowels
- Two - hand-held wire brushes (do not use powered wire brushes as they polish the concrete)
- heavy duty extension cords
- generator--where convenient heavy-duty, local electricity is not available
- lint-free rags
- acetone or other solvent
- One - serreated bread knife with 250 mm (10-inch) blade
- duct tape (at least 6 times as much as the joint footage)
- plastic sheet (for covering deck and equipment at mixing station)
- Rolls of red construction paper (at least twice as much as joint footage, to mask off deck adjacent to joint-gap)
  *Tip: Tar/felt paper is not good because it marks the deck when walked on or when solvents are spilled onto it.*
  *Tip: Plastic sheet is okay but can be slippery to walk on.*
- Four - 4-inch paint brushes
- Four - clean, 1-gallon, paint buckets (to hold trowels in solvent, mix small quantities of material, etc.)
- (for TCR glands only) compression tool (ice-breaker/garden edge trimmer) with edge wrapped in duct-tape
- hammer drill and 1/4-inch diameter masonry drill bits (if flanges are to be attached to vertical surfaces (deck-to-wall, upturns, etc.)
- Two - spray bottles (to spray solvent for gland cutting, and final nosing finish)

MIXING EQUIPMENT

- Heavy duty mixing drill(s) (3/4" chuck)
- 30" long, 3" diameter "mud mixers" with 7/16" shank
- Electric drill (for mixing small quantities of material used on vertical surfaces)
- 2-inch diameter jiffy mixer blade (for mixing materials used on small vertical surfaces)
- Power -- heavy duty extention chords or generator
- Mixing sticks used in mixing EMCRETE
- Clean 5-gallon pail to mix EMCRETE

The following is a partial list of standard contractor equipment typically required for preparation of concrete for installation of expansion joints:

- compressor & sand blasting equipment (if codes allow)
- high-powered electric blower
- Industrial shop-vac with 2-inch diameter hose
- diamond-bladed saws and grinders
- chipping hammer
- hammers, chisels, & other concrete hand tools
- proper signs, cones, tape, etc. to secure work area

**NOTE:** The lack of proper tools, materials and blockout preparation may delay the installation and result in further charges for additional installation training visits by EMSEAL.

### 2: Accessories Provided From EMSEAL

- 5 pairs - chemical resistant gloves
- bags non-sag additive (pink "fluff") - for attachment of vertical flanges if job requires this
- installation instructions

## III. INSTALLATION OF JOINT SYSTEM

**NOTE:** A team of a minimum of 4 technicians will be required for installation and the same 4 technicians must be dedicated to the installation until completion.

### STEP 1: Unroll Sealing Gland

Unroll the sealing gland top-side up in an open space to allow the rubber to relax from its coiled shipping state.

### STEP 2: Final Blockout Prep

NOTE: This step is crucial for the nosing material to adhere to the concrete and must not be compromised.

Surface shall be thoroughly clean and dry immediately prior to the installation of the elastomeric concrete.
Simply blowing out the dirt in the blockouts is usually not enough.
Inspect the blockout and use a hand-held wire brush to loosen any clumps of cement particles which still may be lodged in blockout sawcuts or depressions. DO NOT USE POWERED ROTARY WIRE BRUSHES—THESE WILL POLISH THE BLOCKOUTS RESULTING IN POOR ADHESION.

Re-apply clean and dry air blast from a high-powered electric blower or preferably use an industrial shop-vac with a 2-inch diameter hose, placing the end of the hose flat into the blockout and slide across the surface to remove all fine dust and cement particles.

DO NOT use a stream of air from a compressor which will slightly contaminate the blockout with a film of moisture or oil.

### STEP 3: Tape Off Blockout & Protect Deck

With the goal of providing a cost-effective way of keeping the deck clean and free of drips while still providing a good walking surface, the following is recommended:
Roll out red construction paper along both sides of the blockout holding the paper back from the edge approximately 1-inch. Tape off the edge of the blockout and felt paper with a continuous strip of duct tape.

## STEP 4: Prepare Pouring & Mixing Station

Pick a location central to the work and tape down construction paper in a 10-foot x 10-foot area.
(Note: On jobs with a lot of joint-footage on many levels, you may want to set up your mixing station on the back of a pickup, flat-bed, or trailer so that it can be moved from joint to joint easily.)

Use the construction paper to create a path to the protected area next to the joint(s).
(WHY? Minor drips of the black nosing material as well as tracking of nosing material on workers boots can result in unnecessary and time-consuming clean up of the deck if protection is not provided.)

## IMPORTANT: Nosing Material Storage:

Working time with the nosing material will be shorter when hot and longer when cold.
At high temperatures (above 29°C (85°F)) store the nosing material liquids and aggregate at room temperature (21°C (70°F)) in an air-conditioned space or in the shade on a covered deck level.

At low temperatures (below 16°C (60°F)) store the nosing material liquids and aggregate at room temperature (above 21°C (70°F) in a heated space.

## STEP 5: Solvent Wipe Blockout

Wipe the blockout with a rag dipped in oil-free solvent (acetone) to pick up any remaining dust particles.

## STEP 6: Prime Blockout

Prime blockouts with EMPRIME primer making sure the back vertical edge is also coated. Apply enough to visibly "wet" the entire surface but avoid ponding.
Allow the primer to dry for 1/2 hour before pouring nosing but re-prime after 3 hours if the nosing has not been installed.

Note: The EMPRIME pint container is contained in addition to the Nosing Kit (see STEP 12)

## STEP 7: Solvent Wipe Bottom of Sealing Gland

Using acetone and clean lint-free rags, wipe the underside of the flanges of the sealing gland.

## STEP 8: Install and Seat Sealing Gland

Cut the gland to the correct length (make necessary butt-welds if applicable) and install it into the joint.

*TIP: When extensive welding is required, pre-fit the the sealing gland and complete the welding before priming the blockouts.*

**TM and TMV Profiles Only:** Make sure the flange legs are seated firmly on the blockout and that they don't hang over the edge of the blockout into the joint gap. If they do hang over the edge, wedge small pieces of wood or styrofoam into the "V" thus spreading the flange legs. If the legs still do not sit firmly on the blockout, consult EMSEAL.

**TCR Profiles Only:** Using blunt "edge trimmers" or ice-breaker tools with the blade wrapped in duct tape, compress the gland and install it into the joint.

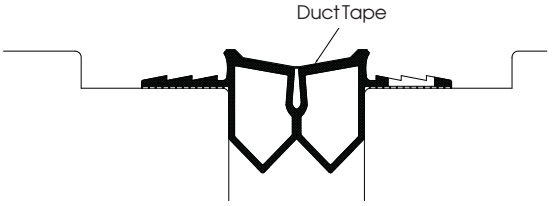
NOTE: In cases where the rate of cure of the nosing material is slow due to cold temperatures, special clamping forms may be required to secure the TCR seal in place during curing. Consult EMSEAL.

## STEP 9: Solvent Wipe Top of Sealing Gland

Using acetone and clean lint-free rags, wipe the sealing gland flanges as well as the top surface (to allow the form-tape and duct-tape to stick).

## STEP 10: Place Duct-Tape on Top of Sealing Gland

Mask off center portion of the gland with duct tape.




## STEP 11: Blow Out Blockouts Again

Blow out the blockouts again to remove any dust or debris that might have blown into the blockouts.

## STEP 12: Ready Measured Liquids, Sand and Fiber

Nosing Components:

**One POUR Contains:**

- 1/2 Gallon Jug:
  4.5 lbs of **Part A**

- 1 Gallon Pail:
  8.2 lbs of **Part B**

- LARGER WHITE PAIL CONTAINER:
  18 lbs of **Sand** and 4 lbs of **Fiber** (as well as containers for Parts A & B)

- 1 Pint Container (shipped loose. Not in the white pail)
  **EMPRIME Primer** (used in STEP 6)

## STEP 13: Mix

- In a large clean empty 5-gallon pail pour the contents of Part A.

- Using a stir stick or drill, mix the contents of Part B into the pail containing Part A. Using a stir stick, scrape out the residual contents of Part B to get all of its contents into the mixing pail.

- Using a drill mixer, immediately blend the liquids using medium speed until a uniform black mixture is achieved (10 to 15 seconds.

- With the drill mixer always turning, immediately start emptying the sand and fiber into the blended contents of Parts A & B.

- Pour the sand and fiber at a continuous but steady rate to avoid choking the mixing process.

- After all of the sand and fiberglass has been poured into the pail, mix the entire blend for 30-seconds until it is thoroughly blended. Avoid overmixing.

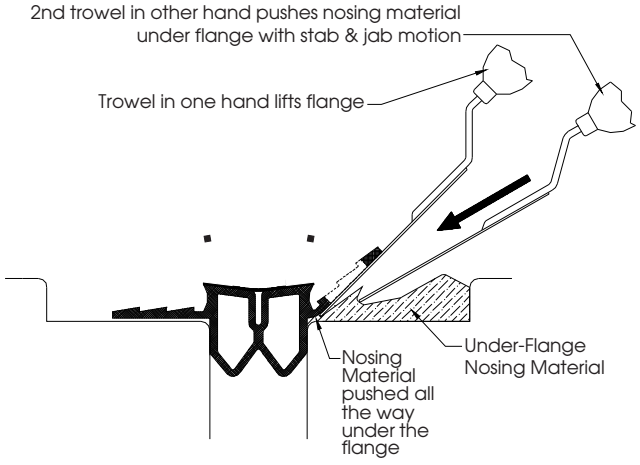
- Once mixed, the nosing material has a 5-10 minute pot life. Working time will be longer in cool weather and shorter in hot weather.

Dedicate one worker to mixing and complete each of the mixing steps efficiently and properly without wasting any time:
- After mix is complete and is being poured, prepare the components for the next mix.

## STEP 14: Pour "Under-Flange" Nosing Material into Blockouts

- Pouring requires 3 workers, one to pour and two to trowel.
- Pour one side at a time per mix.
- Pouring will be done in two lifts:
  1) The first pour will fill the blockout about one-third full with enough material for forcing under the flanges and then for covering the flanges.
  2) The second pour will fill the blockout to a point flush with the deck surface and level with the top of the foam form-tape.
- Working from the opposite side of the joint from the pourer, and moving just ahead of the pourer, one worker lifts the flange using trowels or gloved hands.
- The pourer pours the mix behind the lifted flange.

## STEP 15: Force Nosing Material Under Flanges with "Stab & Jab" Motion




- Working also on the opposite side of joint from the pourer and beside the "lifter" the third worker lifts the flange with one trowel and with a second trowel "jabs & stabs" the material under the flange ensuring that there are absolutely no voids under the flanges.

(The third worker's speed should be gauged to ensure that the material is forced under the flange completely before the material "kicks off" and stops flowing.)

**IMPORTANT—GET IT UNDER THE FLANGES:** The material must be forced all the way under the flanges up to the joint-gap edge all the way along its edge. If any spots are missed, this will result in a leak or failure of the nosing material. ***DO NOT ATTEMPT TO USE ANY OTHER TROWELLING TECHNIQUE OTHER THAN THE DEMONSTRATED "STAB & JAB" MOTION.***

## STEP 16: Pour 2nd-Pour of Nosing Material to Fill Blockouts

- With next mixture of nosing material pour over the flanges that have just been embedded to fill the blockouts.
- Use margin trowels resting on the deck at the back of the blockout and on the top of the built-in pour stops to screed the nosing material level.
- DO NOT TROWEL TOO MUCH—this nosing material is not cementitious and does not behave like mortar. It must only be troweled to spread it evenly. It will consolidate itself and must not be "worked".

NOTE: If the flanges do not lie down, allow them to float and make sure the nosing material fills in underneath them. If the flanges should fly above the level of the concrete deck, wait until the nosing material is thick enough to hold the flanges down when you push them down with the tip of a trowel.
- The finished nosing should sit slightly above the sealing insert.

## STEP 17: Remove Duct Tape & Paper Protection

- Before the elastomeric concrete nosing material has fully hardened, remove the form-tape** and duct tape from center of the gland and from the back edge of the blockouts and construction paper.
- Roll up the construction paper protection which is still suitable for reuse.
- Use a margin trowel dipped in acetone to tool the front edge of the nosing material to a 45° chamfer and where necessary, tool the back edge of the nosing flush to the deck.

Note: Keep all traffic from crossing the joint until the elastomeric concrete nosing material has fully cured.

## STEP 18: Clean-up

At the end of each day or work session the mixing equipment should be cleaned as follows:

- Scrape material off mixer paddle and soak and wash in acetone
- Clean tools and measuring pails with acetone or other solvent.

## IV. INSTALLING TRANSITIONS & TERMINATIONS

Where expansion joints begin, end and run next to, over, under, or around obstructions such as walls, columns, curbs, sidewalks, planters etc. are typically where leaks persist even after straight runs of joints have been properly sealed. Options exist to properly seal these areas.

Most transitions and terminations can be factory fabricated to drawings and measurements on center lines provided by the installer. If transitions and terminations are not supplied factory-welded to the straight lengths, they can be butt-welded to straight lengths in the field. Welding is the responsibility of the contractor. Equipment and training for the proper execution of butt-welds are available from EMSEAL.

### 1. Welding Santoprene

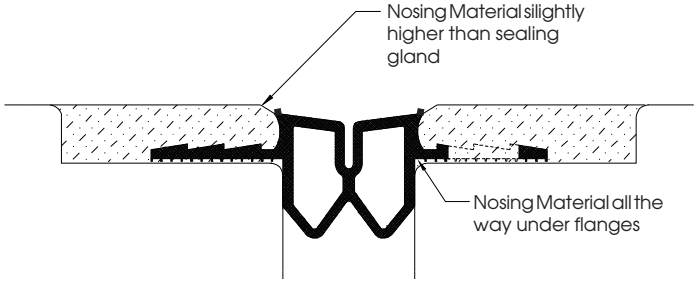
Welding is a specialized skill that MUST NOT be attempted without the in-field training of an EMSEAL Technician. The following instructions summarize the welding process to act as a reference after the training provided by EMSEAL Technician.

- Attach two 400-watt soldering irons to tines on the copper weld-plate if required.
- Plug in the irons to allow the plate to heat up.
- The 250-watt iron will be used to smooth the weld later—plug this in to heat up as well.

- Cut the sealing gland to length using the supplied miter/weld jig and the "EMSU" bread-knife with the blade made wet with toluene.
- Thoroughly clean the faces of the components to be joined as well as 4-inches of the gland next to the cut.
- Place the components into the weld-jig with the faces to be welded next to the edge of the slot that holds the weld-plate.

- The weld-plate is hot-enough to weld when a piece of scrap gland held against the blade softens and "rolls" slowly when pressed firmly against the plate.

- Insert the weld-plate into the slot in the weld jig.
- Firmly push the two components against the weld plate.
- Be sure to apply even and equal pressure on the underside as well as on the top of the gland.




Completed Installation

- Watch the Santoprene at the plate and look for the rubber to "roll" evenly around the entire perimeter of the gland.

- Back off the pressure against the weld-plate and pull the weld-plate quickly from the jig.
- Immediately push the two components together tightly and hold them together for 60 seconds.
- While pushing and while the rubber is still hot, use a tool to separate any places in the vees of the gland that should not stick together.

- Let the weld cool for about 2 minutes and remove it from the weld jig.
- Check that the entire perimeter has welded properly.
- Use the 250-watt smoothing iron to blend the weld into the gland.

- Cut 3/4-inch wide strips of Santoprene sheet to be used to wrap the weld.
- Clean the strip thoroughly with a lint-free rag made wet with acetone.
- Hold the strip against the sealing gland over the weld and inject heat from the hot-air gun onto both the underside of the sheet and the gland.
- Apply heat for a 5-second count, then remove the heat source and push the heated sheet against the gland.
- Continue this process until the sheet is firmly welded across its entire contact area.

- Once the sheet is welded on, its edges can be blended into the gland to give a neat appearance using the 250-watt smoothing iron.

NOTE: When butt-welding or smoothing, if the rubber smokes heavily and goes glossy immediately upon contact with the iron, these are signs that the iron is too hot and material is burning. Unplug the irons for a while to allow them to cool off slightly. Before attempting another butt-weld, the weld-plate must be cleaned by wire-brushing the hot Santoprene residue from the hot blade. Do not attempt to solvent-clean the blade.

### 2. Attaching to Vertical Surfaces

Where expansion joints intersect curbs or columns, and 90° factory-welded upturns are provided, attach flanges to vertical blockout or surface-mount using elastomeric concrete liquid parts A & B mixed with EMSEAL-supplied non-sag additive. If surface mounting on wall or column, mask area to receive elastomeric concrete to achieve neat "feathered" finish.

### Mixing Vertical-Grade Nosing Material

To mix nosing material for vertical applications use a mixture of smaller, more manageable units. Mark a measured container at 14 oz. for Part A. Mark another container at 30 oz for Part B. In a large mixing pail pour in the 14 oz of Part A. Then add the 30 oz. of Part B. Quickly use a stirring stick or spatula to remove the maximim amount of the less fluid Part B from its container. Begin mixing with jiffy mixer and drill on slow speed. Once liquids are blended (about 15 seconds) begin adding pink non-sag additive "fluff". Pump mixer up and down while mixing to break up clumps. Mix for 30 seconds until it is an even black mass. Use the bottom of a 2-inch margin trowel working onto the vertical surface so that it hangs in the vertical blockouts or against the wall, column, etc.