

**VOLCLAY**  
**SWELLTITE®**  
**COMPOSITE BENTONITE**  
**WATERPROOFING MEMBRANE**

PRODUCT MANUAL

**CETCO**  
BUILDING MATERIALS GROUP

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## SECTION 2 TYPICAL APPLICATIONS

Swelltite is designed for waterproofing below-grade vertical and horizontal structural surfaces, as well as, above grade split-slab construction used with plaza areas, parking garages and sports stadiums. Swelltite is excellent for below-grade masonry block walls and cut-and-cover tunnels.

- SPLIT-SLAB PLAZA DECK CONSTRUCTION
- CUT & COVER TUNNELS
- MASONRY BLOCK FOUNDATION WALLS
- CONCRETE FOUNDATION WALLS
- EARTH-COVERED STRUCTURES

## SECTION 1 PRODUCT DESCRIPTION

Swelltite is a waterproofing membrane composite consisting of a thick layer of Volclay® sodium bentonite compound integrally bonded between a tough geomembrane liner and a clear poly siliconized release liner. Swelltite is manufactured at a factory controlled 90-mil (2.3 mm) thickness. Roll size is 40" x 37' 9" (1.02 m x 11.5 m); 125 square feet (11.5 sq m).

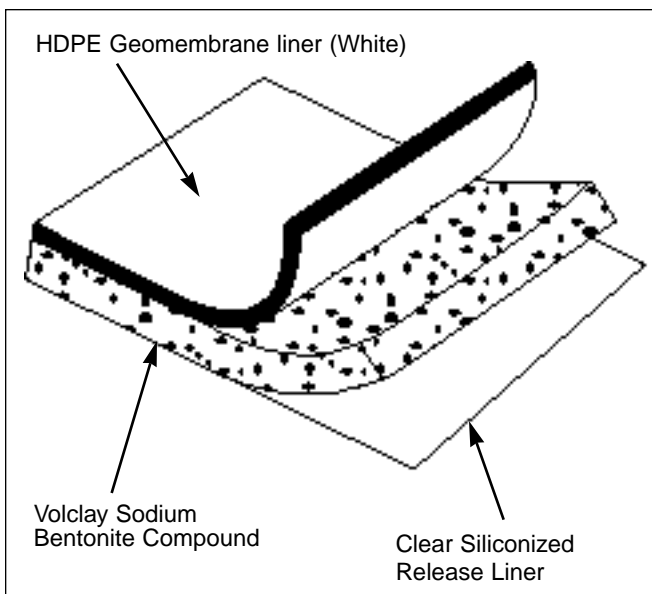


Figure 1 - Swelltite Waterproofing Composite.

## SECTION 3 PERFORMANCE CHARACTERISTICS

Swelltite is a dual waterproofing composite that combines the strength and puncture resistance of a geomembrane liner with the proven active waterproofing of Volclay® sodium bentonite. Swelltite has been successfully tested by independent laboratories to resist over 200 feet (61m) of hydrostatic pressure.

The flexible, tough geomembrane liner functions as both the first layer of waterproofing and a protection course. The geomembrane liner protects the Volclay bentonite compound from inclement weather and possible construction related damage. At the liner seams, the sodium bentonite compound reacts with the water and swells. This swelling effectively seals off the water and prevents it from penetrating the structure or moving laterally behind the liner.

Swelltite is a true advancement in waterproofing membrane technology. It works by forming a monolithic membrane upon hydration with water. When wetted, unconfined bentonite can swell up to 15 times its dry volume. When confined under pressure the swell is controlled, forming a dense, impervious waterproofing membrane. The swelling action of the bentonite compound can seal small concrete cracks caused by ground settlement, concrete shrinkage, or seismic action; problems over which there is normally no control.

## SECTION 4 ACCESSORY PRODUCTS

### **Volclay M-2000 Liquid Flashing®**

Volclay M-2000 Liquid Flashing is a trowel-grade, bitumen modified polyurethane waterproofing mastic used as a detailing product around penetrations, drains and at corner transitions for **horizontal deck** and **vertical wall** installations. M-2000 Liquid Flashing is a single-component moisture curing elastomer that meets the requirements of ASTM C836-84. M-2000 is regulated as a non-hazardous, non-flammable material when shipped via ground trucking service.

### **Volclay Bentoseal®**

Volclay Bentoseal is a patented trowel grade sodium bentonite compound used as a detailing mastic around penetrations and at corner transitions for **vertical wall** installations. Bentoseal is regulated as a non-flammable, non-hazardous material when shipped via ground truck shipment. Do not ship air freight.

### **A-3000WB Adhesive®:**

Water-based latex adhesive applied to substrates to promote adhesion of Swelltite Membrane. Typical application rate 250-275 sq ft/gallon (25 sq m). Packaged in 5-gallon pails; 36 pails per pallet. Non-hazardous material when shipped via ground trucking service. Do not ship air freight.

### **Volclay Seamtape®**

Volclay Seamtape is a tacky butyl rubber tape used to seal Swelltite overlap seams. Volclay Seamtape seals the membrane edges from inclement weather and construction debris.

### **Volclay Waterstop-RX®**

Volclay Waterstop-RX is a flexible, expanding strip waterstop designed for nonmoving concrete construction joints. Waterstop-Rx is not a self-adhering product. Use WB-Adhesive to secure it into place.

### **Aquadrain®**

Subsurface drainage composites consisting of high-impact, 3-dimensional polystyrene core and a filter fabric. Aquadrain provides a consistent positive drainage flow rate in both vertical and horizontal applications. Its thin profile and high compressive strength make it ideal for split-slab construction.

## SECTION 5 GENERAL GUIDELINES

### **Surface Preparation**

Structural concrete surfaces should be smooth and free of dirt, rock, debris, oil, grease, laitance, or other foreign materials. Remove form fins and other protrusions to match monolithic surface. Completely fill any honeycombing, voids, and cracks with non-shrink cementitious grout, M-2000 or Bentoseal. Form-tie holes should be completely filled with non-shrink cementitious grout. Concrete surfaces to receive Volclay M-2000 should be water cured a minimum of 7 days prior to application. Where possible, design horizontal concrete surfaces with proper slope to drain.

### **Weather Conditions**

Install Swelltite only in dry weather. Installation should not proceed when work areas are flooded or excessively wet, nor when rain can be reasonably anticipated before Swelltite can be properly covered.

### **Flood Testing**

Flood testing of Swelltite is not required, nor recommended. When a flood test is specified, consult manufacturer for any special installation instructions that may be applicable.

### **Backfill / Topping Material Requirements**

Swelltite requires proper containment from compacted backfill or topping ballast material. On decks, Swelltite requires a minimum 3" (75mm) thick structural concrete slab or a minimum paver assembly (includes sand or grout leveling course) weight of 20-lbs (9 kg) per square foot. Compact backfill to minimum 85% Modified Proctor density.

### **Storage & Handling**

Store product in dry location protected from construction operations and weather. Protect waterproofing materials from moisture, excessive temperatures and prolonged exposure to direct sunlight during storage. Provide cover, top and all sides (allow for adequate ventilation), for materials stored on-site. Do not double stack pallets.

### **Limitations**

Do not use product without proper backfill or topping slab confinement. Swelltite is not designed, nor intended as a primary seal for waterproofing expansion joints. Do not use Swelltite with a pedestal paver system on a deck. Do not install in standing water or during precipitation.

## SECTION 6 - HORIZONTAL MEMBRANE INSTALLATION

Before installing the membrane, prepare substrate, and detail all drains, transition corners and penetrations.

**Membrane Installation:** REMOVE CLEAR RELEASE FILM from back of membrane before installation. Install membrane with bentonite compound against the structure (white HDPE liner side up) from the low point to the high point across the fall line to create a shingle-style installation. Overlap all membrane edges a minimum of 2" (50 mm). Stagger membrane roll end seams a minimum 12" (300 mm).

Cut membrane to closely fit around penetrations overlapping previously installed M-2000. Trowel 60-mil (1.5 mm) thick counter flashing of M-2000 over membrane edge around penetrations, drains, and elevation changes. Seal all membrane overlap seams with Volclay Seamtape (see Figure 8).

**(Optional Adhesive Method):** Apply A-3000WB Adhesive by roller or sprayer at a rate of 250-275 sq ft per gallon (25 sq m per 3.8 l) and allow to cure (turn black) before applying membrane. After adhesive has cured, follow membrane installation instructions above. Primed surfaces not covered by membrane during same working day must be re-primed.

Consult manufacturer if deck is precast concrete planks or for other conditions not stated herein.

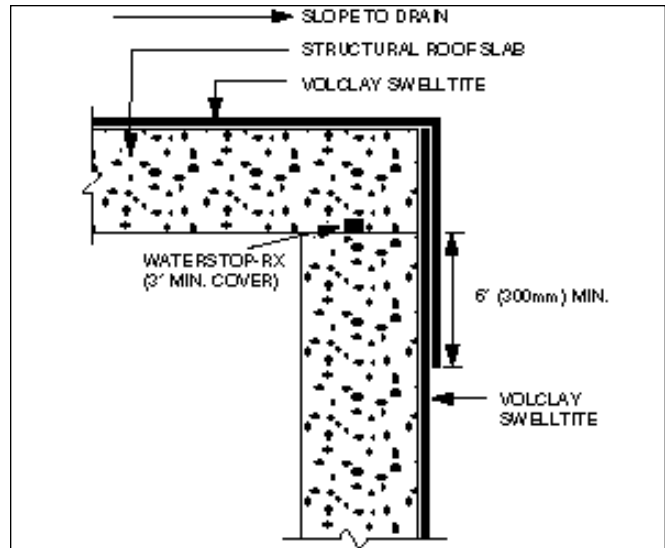


Figure 2 - Horizontal to vertical detail.

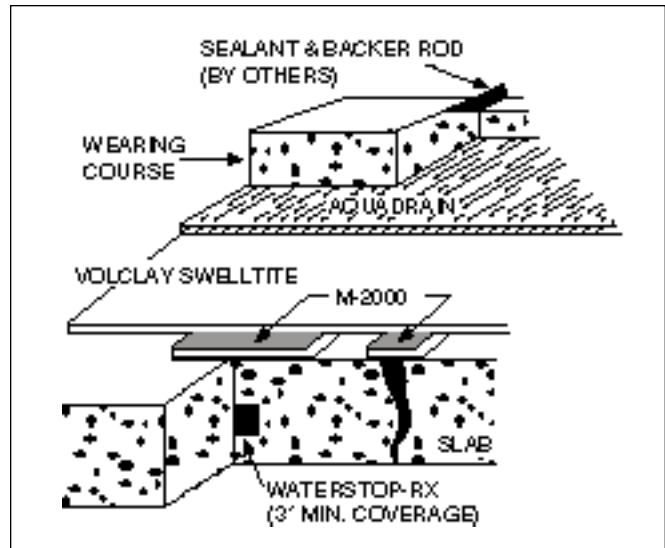


Figure 3 - Horizontal joint and crack detail.

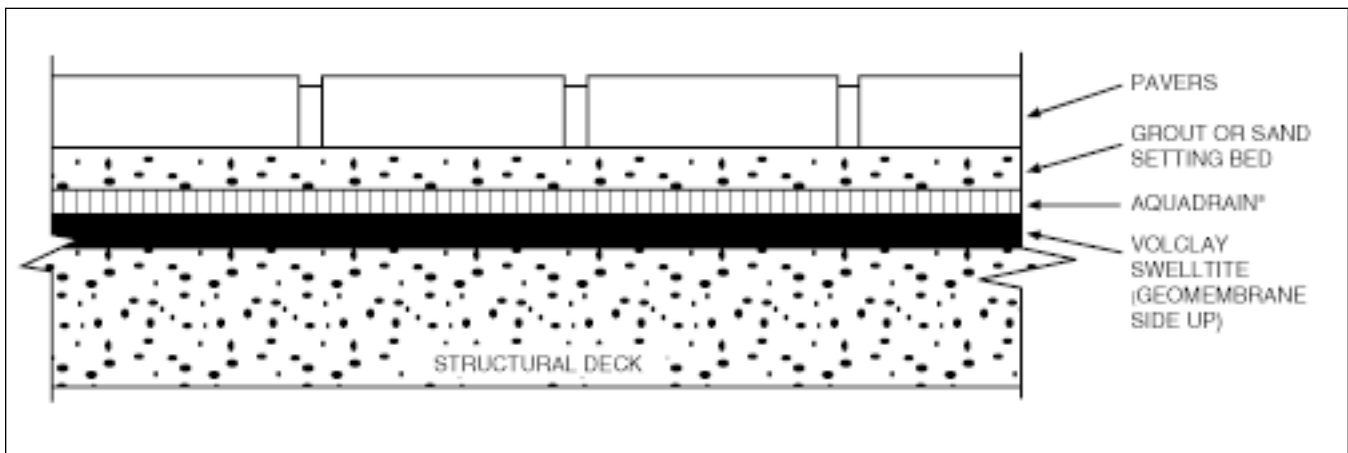


Figure 4 - Typical paver plaza deck detail.

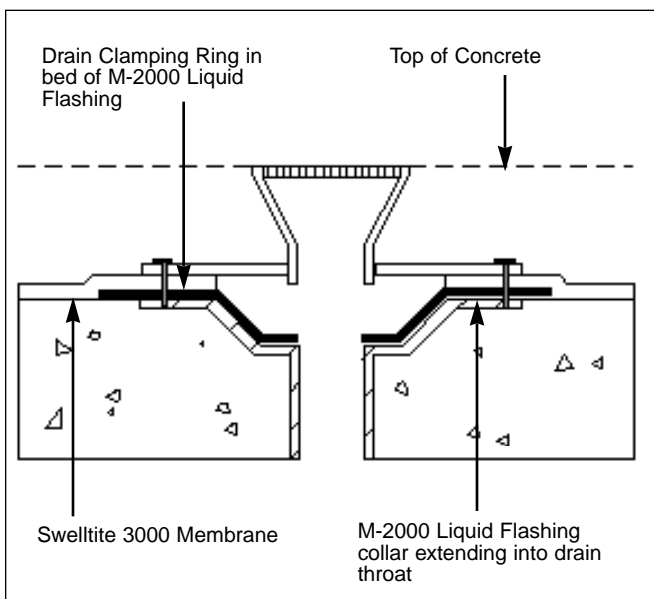
## SECTION 7 DECK DETAILING

Before installing the membrane, prepare substrate, and detail all drains, transition corners and penetrations.

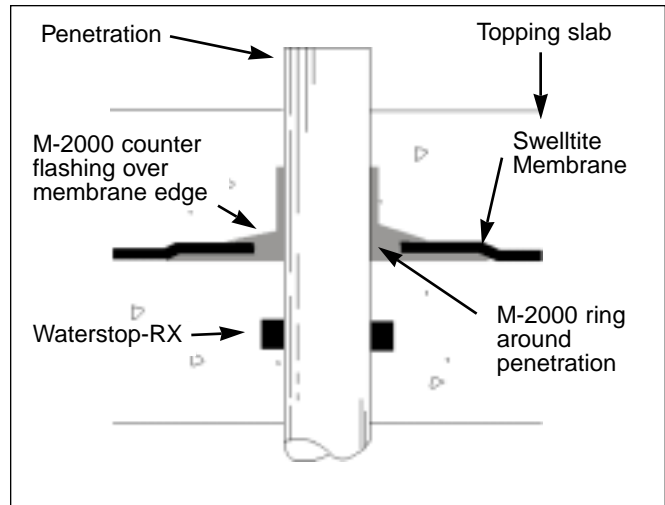
**Drains.** Trowel a minimum 90-mil (2.3 mm) thick layer of Volclay M-2000 on the drain ring and continuing into the drains inward throat slope. Extend M-2000 a minimum of 6" (150 mm) around the drain (see Figure 5). Allow M-2000 to cure a minimum of 12 hours prior to installing membrane. After Swelltite is installed to contour drain, apply a 60-mil (1.5 mm) thick layer of M-2000 to counter flash membrane edge.

**Penetrations.** Trowel a minimum 3/4" (18 mm) cant of Volclay M-2000 around the penetration. Extend M-2000 outward from penetration a minimum of 6" (150 mm) at 90-mils thick (see Figure 6). After membrane has been installed overlapping M-2000 2" (50 mm), apply a 60-mil thick counter flashing of M-2000 at the membrane edge.

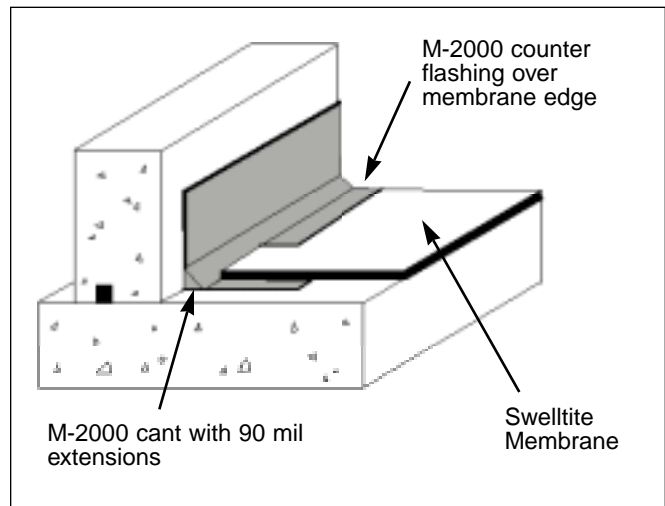
**Transition Corners.** Apply a 3/4" (18 mm) thick Volclay M-2000 fillet to inside transition corners. Then extend M-2000 at 90-mil minimum thickness for 6" (150 mm) in both directions from the corner (see Figure 7). Allow M-2000 to cure a minimum of 12 hours prior to installing membrane. After membrane has been installed to the corner, apply a 60-mil thick counter flashing of M-2000 to cover the membrane edge.



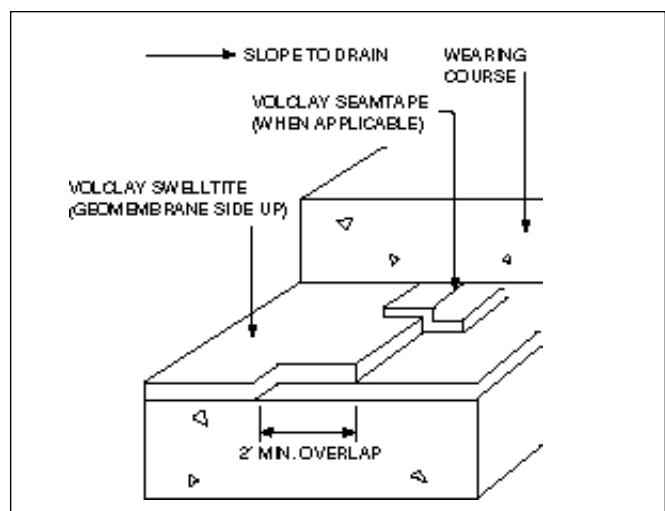
**Figure 5 - Deck Drain Detail.** CETCO recommends using a double stage drain for all deck drains.



**Figure 6 - Deck penetration detail.**



**Figure 7 - Deck-to Wall Inside Corner Detail.**



**Figure 8 - Horizontal membrane overlap detail.**

## SECTION 8 CONCRETE WALL INSTALLATION

Before installing the membrane, prepare substrate, and detail all drains, transition corners and penetrations.

**Vertical Inside Corners.** Install a 3/4" (18 mm) thick, continuous fillet of Volclay Bentoseal at all vertical inside corners.

**Penetrations.** Apply a 3/4" (18 mm) thick fillet of Volclay Bentoseal around base of penetrations. Extend Bentoseal a minimum of 6" (150 mm) outward from penetration 90-mils thick. After Swelltite membrane is installed, apply a counter flashing of Bentoseal at membrane edge around penetration.

**Footing/Wall Joint.** Install at footing/wall joint a continuous 3/4" (18 mm) thick, 45° angle fillet of Bentoseal.

**Membrane Installation.** REMOVE CLEAR RELEASE FILM from back of membrane before installation. Starting at the base of the wall, install the membrane over the Bentoseal cant and onto the footing a minimum of 6" (150 mm) with bentonite compound directly against the wall (white HDPE liner side toward installer). Secure membrane with washer-head fasteners 24" (600 mm) on center or less as required along the membrane edges. Overlap all membrane edges a minimum 2" (50 mm). Stagger membrane roll end seams a minimum 12" (300 mm). Swelltite membrane may be installed either horizontally or vertically oriented.

Cut membrane to closely fit around penetrations. Trowel a minimum 3/4" (18 mm) thick layer of Bentoseal around penetrations. Extend Bentoseal onto penetration and completely fill area between membrane edge and penetration. Membrane should not be left exposed for prolonged periods of time). Continue membrane installation to finished grade and terminate with rigid termination bar and M-2000 (see Figure 14). Seal all overlap seams with Volclay Seamtape (see Figure 13).

**Optional Adhesive Method:** Apply A-3000WB Adhesive by roller or sprayer at a rate of 250-275 sq ft per gallon (25 sq m per 3.8 l) and allow to cure (turn black) before applying membrane. After adhesive has cured, follow membrane installation instructions above without the mechanical fasteners. Primed surfaces not covered by membrane during same working day must be re-primed.

**Note:** When hydrostatic conditions exist, the vertical waterproofing should continuously overlap the under-slab waterproofing (see Figure 11).

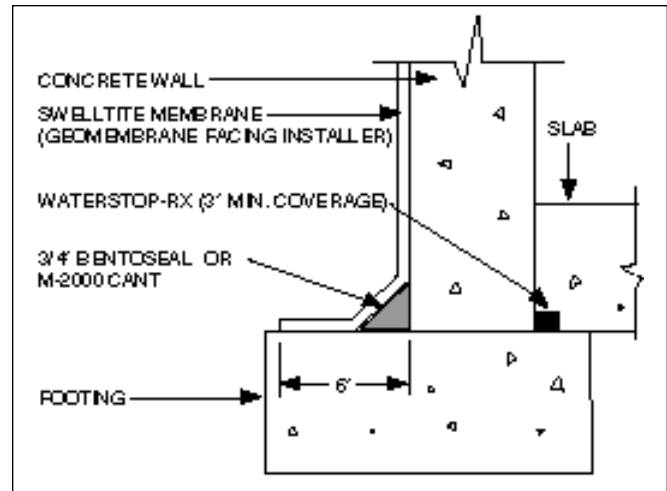


Figure 9 - Concrete wall/footing joint (non-hydrostatic).

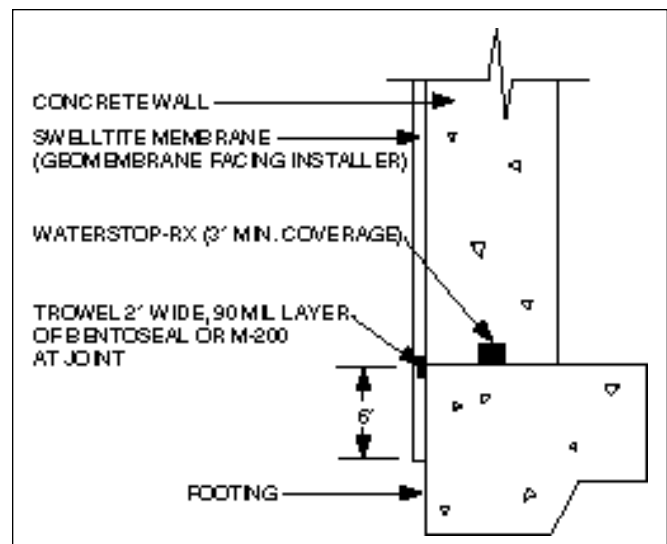


Figure 10 - Concrete wall with flush footing surface.

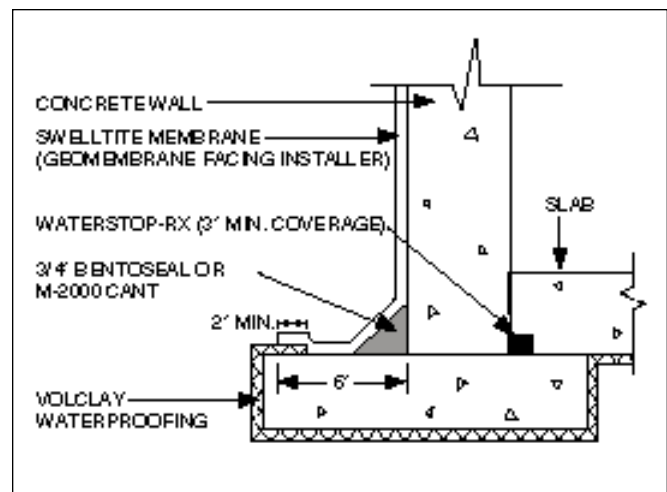
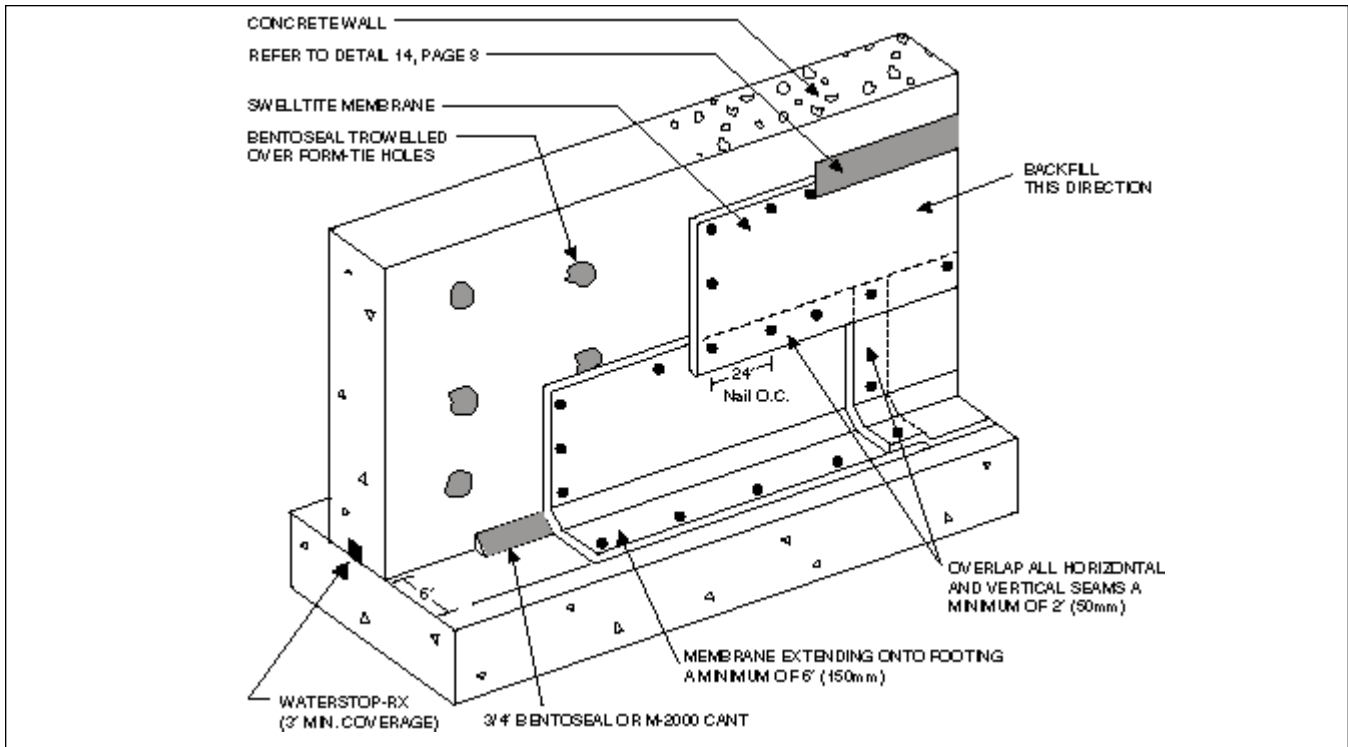


Figure 11 - Concrete wall/footing Joint (Hydrostatic).



**Figure 12** - Foundation wall detail (non-hydrostatic condition).

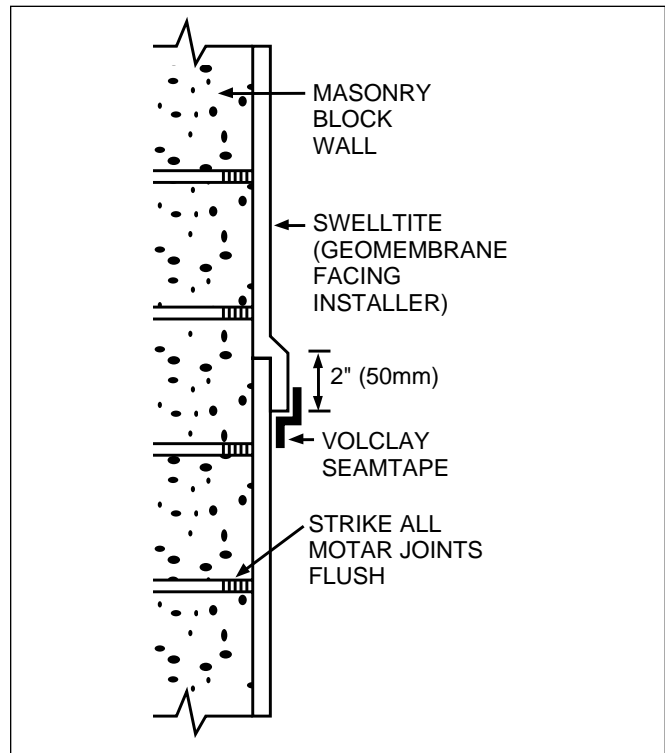
## SECTION 9 — MASONRY BLOCK WALL INSTALLATION

CETCO recommends that the masonry block cells be filled with cementitious grout or concrete. All mortar joints should be completely filled and struck flush before membrane is installed to masonry block walls (see Figure 13). Detail all vertical inside corners, penetrations and footing/wall joints per Section 8, Concrete Wall Installation.

Starting at the wall/footing intersection, install bottom course of Swelltite horizontally (see Figure 12) with bentonite compound toward the structure (geomembrane facing installer). Membrane should extend over Bentoseal cant and onto footing a minimum of 6" (150 mm). All succeeding membrane lifts may be installed either horizontally or vertically. Overlap all membrane edges a minimum 2" (50 mm). Stagger membrane roll end seams a minimum 12" (300 mm).

Secure membrane with mechanical fasteners or A-3000WB Adhesive following installation instructions in Section 8, Concrete Wall Installation.

Install Volclay Seamtape centered over all membrane overlap seams (see Figure 13).



**Figure 13** - Masonry wall joint detail.

## SECTION 10 GRADE TERMINATION

Typical grade termination is the same for both concrete or masonry block walls. Install a rigid termination bar mechanically fastened 12" (300 mm) on center at the top edge of Swelltite membrane at finished grade line. Trowel M-2000 90-mils thick by 3" (75 mm) wide centered on the top edge of the membrane (see Figure 14).

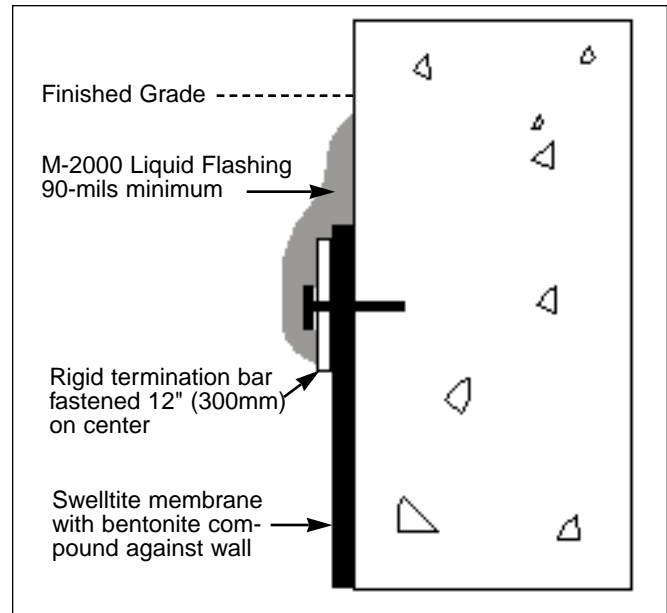


Figure 14 - Vertical wall grade termination

USE THIS INFORMATION FOR SWELLTITE ONLY. FOR SWELLTITE 3000 REFER TO SEPARATE PRODUCT SPECIFIC INSTALLATION INSTRUCTION MANUAL. CONSULT MANUFACTURER FOR INSTALLATION RECOMMENDATIONS ON CONDITIONS NOT COVERED IN THIS PRODUCT MANUAL.



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#### LIMITED WARRANTY

The information and data contained herein are believed to be accurate and reliable. Specifications and other information contained herein supersede all previously printed material and are subject to change without notice.

Manufacturers warranty of installed system is available. Contact seller for terms and sample document including all limitations.

All goods sold by seller are warranted to be free from defects in material and workmanship.

The foregoing warranty is in lieu of and excludes all other warranties not expressly set forth herein, whether express or implied by operation of law or otherwise including but not limited to any implied warranties of merchantability or fitness.

Seller shall not be liable for incidental or consequential losses, damages or expenses, directly or indirectly arising from the sale, handling or use of the goods, or from any other cause relating thereto, and seller's liability hereunder in any case

is expressly limited to the replacement (in the form originally shipped) of goods not complying with this agreement or at seller's election, to the repayment of, or crediting buyer with, an amount equal to the purchase price of such goods, whether such claims are for breach of warranty or negligence.

Any claim by buyer with reference to the goods sold hereunder for any cause shall be deemed waived by buyer unless submitted to seller in writing within thirty (30) days from the date buyer discovered or should of discovered, any claimed breach.

Materials should be inspected and tested by purchaser prior to their use if product quality is subject to verification after shipment. Performance guarantees are normally supplied by the applicator.

Note: Waterstop-RX is not an expansion joint material. Expansion joints shall be the responsibility of OTHERS.

