

# SWELLTITE®

## COMPOSITE BENTONITE WATERPROOFING SYSTEM

### DESCRIPTION

SWELLTITE is a highly effective waterproofing composite of sodium bentonite compound integrally bonded to a geomembrane liner. This composition combines the active waterproofing benefits of sodium bentonite with the strength and puncture resistance of a thick geomembrane liner.

SWELLTITE is a true advancement in waterproofing membrane technology. Unlike other membrane systems, SWELLTITE's reactive bentonite compound can expand to seal small punctures in the membrane. SWELLTITE is manufactured at a factory controlled thickness of 2.0 mm (80 mils) assuring the specifier, contractor, and owner of consistent material application. This engineered composite consists of a thick geomembrane liner and bentonite compound with a clear release film attached. SWELLTITE contains virtually zero VOC, can be installed to green concrete, and most importantly, has proven effective for more than 20 years.

### APPLICATIONS

SWELLTITE is designed for below-grade vertical and horizontal structural foundation surfaces, as well as, above grade split-slab construction. Typical below-grade applications include backfilled concrete walls, masonry block walls, earth-covered roofs, and tunnel roofs. Typical above grade split-slab construction applications include plaza decks, parking decks, and balconies. Additionally, SWELLTITE can be used for interior split-slab applications for mechanical rooms, kitchens, and laboratory facilities. Applications may include structures under continuous or intermittent hydrostatic pressure.

### INSTALLATION

**General:** Install SWELLTITE and accessory products in strict accordance with the manufacturer's installation guidelines. Install SWELLTITE with the bentonite compound directly against the substrate to be waterproofed. For ease of handling, the sticky bentonite compound is covered with a siliconized release film that must be removed during installation. Schedule waterproofing material installation to permit prompt placement of backfill material or concrete. For applications not covered herein, contact CETCO for specific installation guidelines.

**Storage:** Store SWELLTITE and accessory products in a dry location protected from construction operations and weather. Protect materials from moisture, excessive temperatures and prolonged exposure to direct sunlight during storage. When storing materials outside at a jobsite, provide weather-proof covering, top and all sides (allow for adequate ventilation). Do not double stack pallets in storage or during shipment.

**Preparatory Work:** 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 substrate surface. Completely fill any Form-tie holes, honeycombing, voids, and cracks with non-shrink cementitious grout, M-2000 or BENTOSEAL. Concrete surfaces to receive M-2000 Liquid Flashing should be water cured a minimum of 7 days prior to application. Where possible, design horizontal concrete surfaces with proper slope to drain.

### FOUNDATION WALL

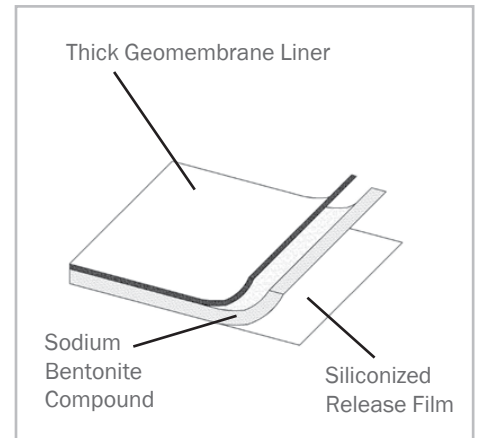
#### INSTALLATION

Before installing SWELLTITE membrane to foundation walls, prepare substrate, and detail all vertical inside corners, penetrations, and the footing/wall joint as follows:

**Vertical Inside Corners:** Install a 19mm (¾") thick, continuous fillet of BENTOSEAL® or M-2000 mastic at all vertical inside corners.

**Penetrations:** Apply a 18mm (¾") thick cant of BENTOSEAL or M-2000 mastic around base of penetrations. Extend mastic a minimum of 150mm (6") outward from penetration 2.3mm (90-mils) thick. After SWELLTITE membrane is installed, apply a counter flashing of mastic at membrane edge around penetration.

**Footing/Wall Joint:** Install at footing/wall joint a continuous 19mm (¾") thick, 45° angle cant of BENTOSEAL or M-2000 mastic.



SWELLTITE COMPOSITE

## SWELLTITE® COMPOSITE BENTONITE WATERPROOFING SYSTEM

**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/M-2000 cant and onto the footing a minimum of 150mm (6") with bentonite compound directly against the wall (white liner side toward installer). Secure all membrane edges with washer-head mechanical fasteners maximum 600mm (24") on center or less as required to contour surface. SWELLTITE membrane may be installed either horizontally or vertically oriented. Overlap all membrane edges a minimum of 50mm (2"). Stagger membrane roll ends a minimum of 300 mm (12"). Seal all membrane overlap seams with CETCO Seamtape. Continue membrane installation to finished grade detail or as specified.

Cut membrane to closely fit around penetrations. Trowel a minimum 19mm (¾") thick layer of BENTOSEAL or M-2000 mastic around penetrations. Extend mastic onto penetration and completely fill area between membrane edge and penetration. Seal all overlap seams with CETCO Seamtape.

Terminate SWELLTITE membrane 300mm (12") below finished grade elevation with washer-head fasteners maximum 300mm (12") on center. Install ENVIROSHEET flashing to primed concrete substrate with bottom edge overlapping top edge of SWELLTITE membrane minimum 100mm (4"). Overlap all roll ends a minimum 100mm (4") to form a continuous flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along top edge of ENVIROSHEET; fastened maximum 300mm (12") on center. Complete grade termination detail with tooled bead of CETSEAL along the top edge, at all penetrations through the flashing and all exposed overlap seams.

Backfill material should be placed and compacted to 85% Modified Proctor density immediately following the application of the membrane. If backfill cannot be applied im-

mediately, protect membrane edges from precipitation with CETCO Seamtape. If backfill contains sharp or irregular material, cover membrane with CETCO approved protection material course to avoid damage during backfilling and compaction.

Tie into underslab waterproofing as required by overlapping the underslab waterproofing a minimum of 6" (150mm). When a drain tile is required, install it below the top of the footing.

**Masonry Block Walls:** 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 walls.

### HORIZONTAL DECK INSTALLATION

Before installing SWELLTITE membrane, prepare substrate and detail all drains, transition corners and penetrations. Consult manufacturer if deck is precast concrete planks or for other conditions not stated herein.

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

**Penetrations:** Trowel a minimum 19mm (¾") cant of M-2000 around the penetration. Extend M-2000 outward from penetration a minimum of 150mm (6") at 2.3mm (90-mil) thick. After membrane has been installed overlapping M-2000 50mm (2"), apply a 1.5mm (60-mil) thick counter flashing of M-2000 at the membrane edge.

**Transition Corners:** Apply a 19mm (¾") thick M-2000 fillet to inside transition corners. Then extend M-2000 at 2.3mm (90-mil) minimum thickness for 150mm (6") in both directions from the corner. Allow M-2000 to cure a minimum of 12 hours prior to installing membrane. After membrane has been installed to the corner, apply a 1.5mm (60-mil) thick counter flashing of M-2000 covering the membrane edge.

**Membrane Installation:** REMOVE CLEAR RELEASE FILM from back of membrane before installation. Install membrane with bentonite compound directly against the deck (white 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 50mm (2"). Stagger membrane roll ends a minimum 300mm (12"). Seal all membrane overlap seams with CETCO SEAMTAPE.

Cut membrane to closely fit around penetrations overlapping previously installed M-2000. Apply 1.5mm (60 mil) thick counter flashing of M-2000 over membrane edge.

### OPTIONAL ADHESIVE METHOD

Apply A-3000WB Adhesive by roller or sprayer at a rate of 25sq m per 3.8 liters (250–275 sq ft per gallon) and allow to cure (dry black) before applying membrane. After adhesive has cured, follow membrane installation instructions for applicable application, foundation wall or deck, excluding the mechanical fasteners. Primed surfaces not covered with membrane during the same working day must be re-primed.

## SWELLTITE® COMPOSITE BENTONITE WATERPROOFING SYSTEM

### SIZE PACKAGING

SWELLTITE roll size is 1.02m (40") wide by 11.5m (37' 9") long; 11.5 sq m (125 square feet) per roll.

### LIMITATIONS

Do not install SWELLTITE in standing water or during precipitation. If ground water contains strong acids, alkalies, or is of a conductivity of 2,500 µmhos or greater, submit water samples to the manufacturer for compatibility testing.

SWELLTITE is not designed for unconfined above-grade waterproofing applications or subsurface applications that do not provide full confinement coverage. Do not install SWELLTITE on horizontal plaza deck applications that utilize pavers placed on pedestals.

SWELLTITE is not designed to waterproof expansion joints. Expansion joints require a properly engineered expansion joint product. For foundation walls, backfill should consist

of compactible soils or crushed stone 19 mm (¾") or less. Compact soils to minimum 85% Modified Proctor density. Stone backfill larger than 19mm (¾") will require the use of a protection course; consult CETCO for specific guidelines. Avoid backfill with aggregate 38mm (1½") or larger.

On horizontal decks, SWELLTITE requires proper containment from a topping ballast material; a minimum 75mm (3") thick reinforced concrete slab or a minimum paver assembly weight of 9kg (20-lbs.) per square foot (includes sand or grout leveling course). When compactible soil topping is used, it must be at least 450mm (18") thick and compacted to a minimum 85% Modified Proctor density.

### ACCESSORY PRODUCTS

**M-2000 LIQUID FLASHING®:** M-2000 Liquid Flashing is a trowel-grade waterproofing mastic used as a detailing product around penetrations, drains and at corner transitions for horizontal deck and vertical wall installa-

tions. M-2000 is a single-component moisture curing elastomer that meets the requirements of ASTM C836-84.

**BENTOSEAL®:** trowel grade sodium bentonite mastic used for detailing around penetrations and corner transitions for below-grade wall SWELLTITE installations.

**A-3000WB ADHESIVE®:** water-based latex adhesive applied to substrates to promote adhesion of SWELLTITE Membrane. Typical application rate 250–275 sq ft/gallon.

**SEAMTAPE®:** tape used to seal membrane overlap seams.

**AQUADRAIN®:** prefabricated drainage composite consisting of a heavy filter fabric adhered to a high-strength plastic drainage core.

**WATERSTOP-RX®:** expanding bentonite based concrete joint strip waterstop designed to replace PVC dumbbell waterstops. Adhered into place with CETSEAL.

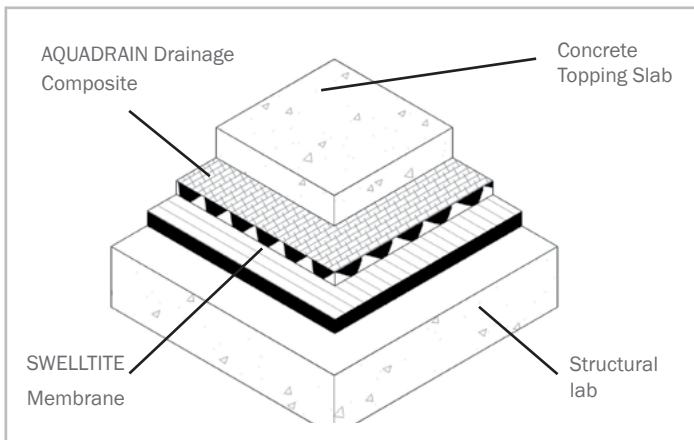
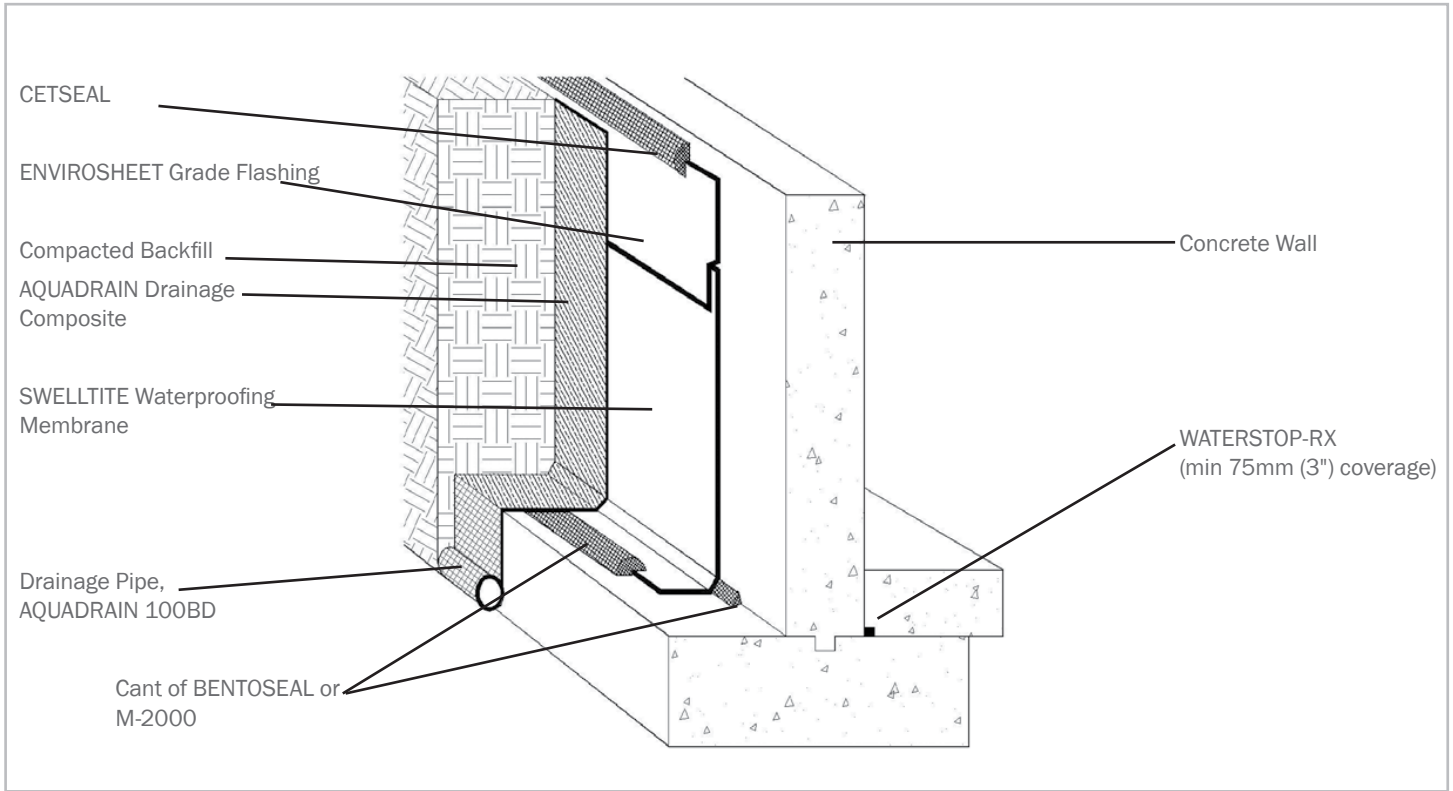
**ENVIROSHEET:** Self-adhering flashing for grade terminations.

**CETSEAL:** Single-component polyether general sealant and adhesive.

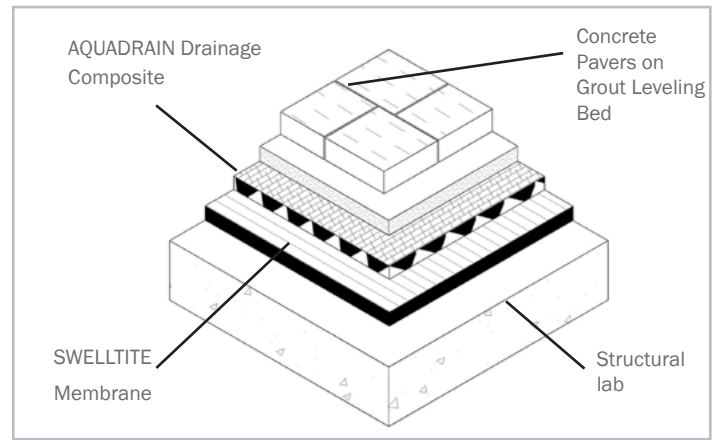
### TECHNICAL DATA

TYPICAL PROPERTIES	TEST METHOD	TYPICAL VALUE
Tensile Strength	ASTM D 412	1.15 MPa (1,660 psi)
Elongation	ASTM D 412	31%
Puncture Resistance	ASTM E 154	1335 N (300 lbf)
Hydrostatic Pressure Resistance	ASTM D 5385 mod.	70 m (231 ft)
Low Temperature Flexibility	ASTM C 836	Unaffected
Permeability	ASTM D 5887	5 x 10 <sup>-10</sup> cm/s
Water Vapor Transmission	ASTM E 96	0.01 grains/hr/ft <sup>2</sup> (0.01 Perms)

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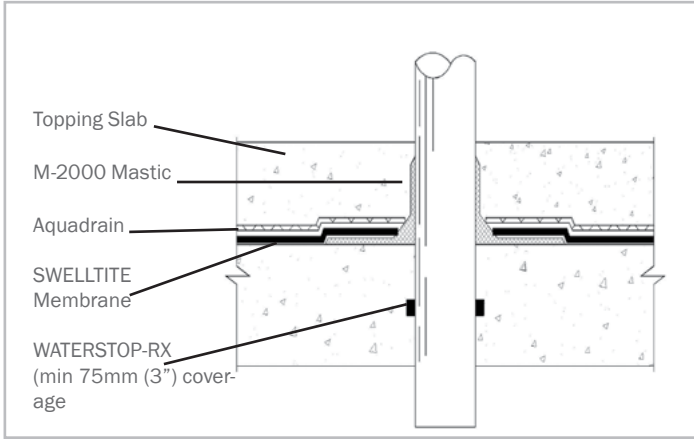


GENERAL APPLICATION DETAILS

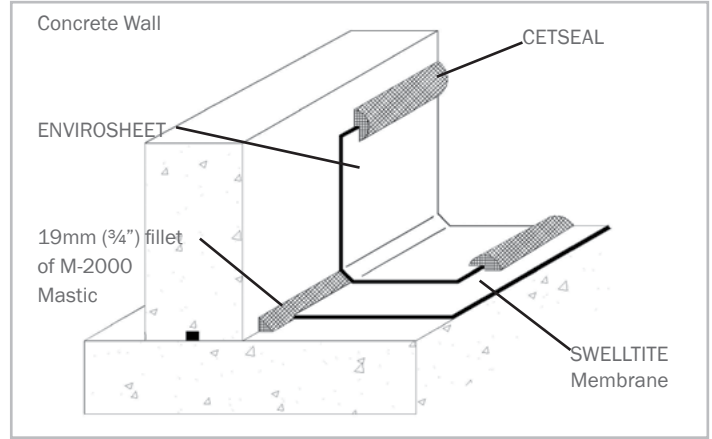


PLAZA DECK - PAVERS OVER GROUT BED

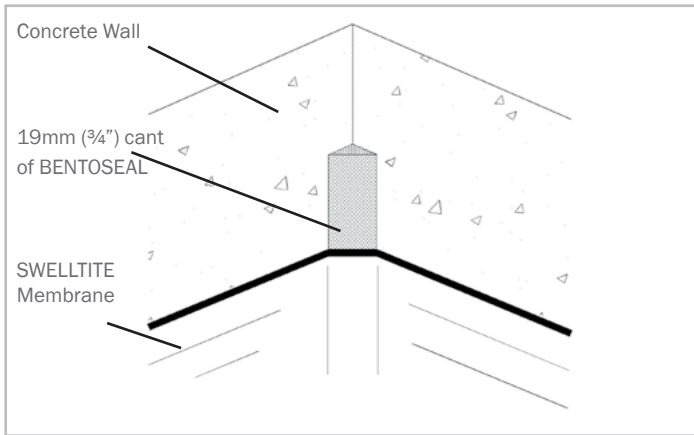
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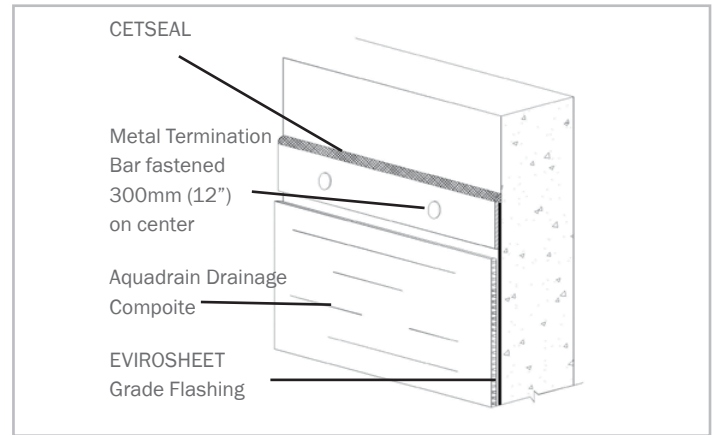
PLAZA DECK PENETRATION DETAIL



PLAZA DECK TRANSITION DETAIL



INSIDE CORNER WALL DETAIL



TYPICAL GRADE TERMINATION

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