Submittal Package

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TegoBloc Swell *(Bentonite)* Waterproofing

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SECTION 071700 - March, 2023

TegoBloc Swell Bentonite Geotextile Waterproofing System with Drain-Max Prefabricated Drainage Composite Master Guideline Specification for Cast-In-Place Concrete

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Supplementary Conditions, and Division 1 General requirements, apply to the work of this section.

1.02 WORK SUMMARY

A. The work of this section includes, but is not limited to the furnishing and installing the following materials, per project specifications and drawings, or as directed by waterproofing manufacturer:
1. TegoBloc Swell waterproofing membrane with all applicable accessory products.
2. Drain-Max Prefabricated drainage composite and Drain-Max Total Drain Base Drain

1.03 RELATED SECTIONS

A. Other specification Sections which directly relate to the work of this section include, but are not limited to, the following:

1. Division 2: Subsurface and Geotechnical Investigations
2. Division 3: Waterstops
3. Division 5: Expansion Joint Products
4. Division 7: Joint Treatment/ Sealants, Flashing and sheet metal, and Insulation
5. Division 22: Deck and Floor Drains and other Mechanical Penetrations
6. Division 26: Conduit and other Electrical Penetrations
7. Division 31: Earthwork, Excavation and Fill, Shoring,
8. Division 33: Geocomposite Foundation Drainage

1.04 SYSTEM DESCRIPTION

A. Provide waterproofing system and prefabricated drainage composite system to prevent the passage of liquid water and install without defects, damage or failure. Waterproofing shall be two high strength geotextiles interlocked encapsulating minimum 5.37 kg/sqm (1.10-lbs/sf) granular sodium bentonite.

1.05 SUBMITTALS

A. General: Prepare and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections.

B. Product Data: Submit manufacturer’s product data, with complete general and specific installation instructions, recommendations, and limitations.

C. Product Samples: Submit representative samples of the following for approval:
1. TegoBloc Swell waterproofing membrane
2. Drain-Max Total Drain Base Drain and Drain-Max 220 Prefabricated drainage composite

D. Waterproofing Material and Labor Warranty: At time of bid, submit a sample copy of the Manufacturer’s Waterproofing warranty complete with all coverage’s, limitations, and conditions.

E. Contractor Certificate: At time of bid, submit written certification that installer has current Approved Applicator status with waterproofing material manufacturer.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Installing company should have at least three (3) years experience in work of the type required by this section, who can comply with manufacturer's warranty requirements, and who is an Approved Applicator as determined by waterproofing/drainage system manufacturer.

B. Manufacturer Qualifications: Waterproofing membranes and all accessory products shall be provided by a single manufacturer with a minimum of 30 years experience in the direct production and sales of waterproofing systems. Manufacturer shall be capable of providing field service representation during construction, approving an acceptable installer, and recommending appropriate installation methods.

C. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field installation to establish procedures to maintain required working conditions and to coordinate this work with related and adjacent work. Verify that final waterproofing and waterstop details comply with waterproofing manufacturer's current installation requirements and recommendations. Pre-con meeting attendees should include representatives for the owner, architect, inspection firm, general contractor, waterproofing contractor, concrete contractor, excavating/backfill contractor, and mechanical and electrical contractors if work penetrates the waterproofing.

D. Materials: Obtain waterproofing membrane with accessory products and prefabricated drainage materials from a single manufacturer to assure material compatibility.

E. Independent Inspection: Owner shall make all arrangements and payments for an independent inspection service to monitor waterproofing material installation compliance with the project contract documents and manufacturer’s published literature and site-specific details. Independent Inspection Firm shall be an approved company participating with the waterproofing manufacturer’s Certified Inspection Program. Inspection service shall produce reports and digital photographs documenting each inspection. Reports shall be made available in a timely manner to the Contractor, waterproofing installer, waterproofing material manufacturer, and Architect. Inspections should include substrate examination, beginning of waterproofing installation, periodic intervals, and final inspection prior to concrete or backfill placement against the waterproofing.

F. Water Sample Test: Waterproofing contractor shall supply project site water sample to waterproofing membrane manufacturer for analysis. Manufacturer shall conduct test free of charge. Contractor is responsible for collection and shipment 2-liters (64-fluid ounces) of actual site water. Water should be shipped in uncontaminated, sealed plastic container to: GMX, Inc. 3014 Chamber Drive, Monroe NC 28110, Attn: Technical Services. Also provide project name, city and state along with return address to forward test results.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Handling: Deliver materials in factory sealed and labeled packaging. Sequence deliveries to avoid delays, while minimizing on-site storage. Handle and store following manufacturer's instructions, recommendations and material safety data sheets. Protect from construction operation related damage, as well as damage from weather, excessive temperatures and prolonged sunlight. Remove damaged material from site and dispose of in accordance with applicable regulations.

B. Storage: Do not double-stack pallets during shipping or storage. Protect waterproofing materials from moisture, excessive temperatures and sources of ignition. Provide cover, top and all sides, for materials stored on-site, allowing for adequate ventilation.

1.08 PROJECT CONDITIONS

A. Substrate Condition: Proceed with work only when substrate construction and preparation work is complete and in condition to receive waterproofing system. All plumbing, electrical, mechanical and structural items to be under or passing through the waterproofing shall be positively secured in their proper positions prior to waterproofing system installation. Substrate preparation shall be per waterproofing manufacturer's guidelines.

B. Weather Conditions: Perform work only when existing and forecasted weather conditions are within the guidelines established by the manufacturer of the waterproofing materials. Do not apply waterproofing materials in areas of standing or active water; or over ice and snow. Though exposure to precipitation and ground water seepage typically will not adversely affect TegoBloc Swell, the General Contractor shall maintain site conditions to remove standing water from precipitation or ground water seepage in a timely manner. Should TegoBloc Swell be subjected to pre-hydration because of prolonged immersion, inspection of the material and written acceptance from GMX, Inc. is required prior to concrete or backfill placement.

1.09 WARRANTY

A. Material only Warranty from the Manufacturer for five (5) years.
B. Installation warranty from the Applicator for two (2) years.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Provide TegoBloc Swell waterproofing membrane and applicable accessories as manufactured by GMX, Inc. 3014 Chamber Drive, Monroe NC 28110 www.gmxco.com

2.02 MATERIALS

A. TEGOBLOC SWELL BENTONITE GEOTEXTILE WATERPROOFING MEMBRANE

1. TEGOBLOC SWELL MEMBRANE: 1.2 x 4.5m (4' x 15') roll of interlocked geotextiles encapsulating a minimum 4.8 kg/sqm (1.0-lbs/sf) of granular sodium bentonite. Composite shall consist of one woven and one nonwoven polypropylene geotextile, interlocked using a needle-punching process that produces interlocks over the entire area of the product.

TegoBloc Swell performance properties:

PROPERTY	TEST METHOD	TYPICAL VALUE
Hydrostatic Pressure Resistance	ASTM D 5385 mod.	70 m (231 ft.)
Permeability	ASTM D 5084	1 x 10^{-9} cm/sec.
Grab Tensile Strength	ASTM D 4632	422 N (95 lbs.)
Puncture Resistance	ASTM D 4833	445 N (100 lbs.)
Low Temperature Flexibility	ASTM D 1970	Unaffected at -32°C (-25°F)
Peel Adhesion to Concrete	ASTM D 903 mod.	2.6 kN/m (15 lbs. /in.)

B. ACCESSORY WATERPROOFING PRODUCTS: All accessory waterproofing materials shall be provided by the waterproofing manufacturer or shall have manufacturer's written approval for substitution.

1. TegoBloc LiquiSeal: Trowel grade detailing mastic
2. TegoBloc TxSwell: 50 mm diameter x 60 cm 2' long, water soluble tube container filled with active granular sodium bentonite.

3. TegoBloc GrSwell: 22.7 kg (50 lbs.) bag of active granular sodium bentonite.
4.FasTape: sealant tape.
5. Termination Bar: Min. 3 mm (1/8") thick by 25 mm (1") wide stainless steel or aluminum termination bar with pre-punched holes punched 150 mm (6") on center for fastening.
6. Cementitious Wall Board: 12 mm (½") thick cementitious board for protection of waterproofing during the removal of metal soldier pile cap and top lagging boards.
7. Ultra-Guard EFS – single-component general sealant and adhesive
8. TegoBloc Boots – pre-formed, single piece thermoplastic cover for tie-back heads and soil nails. Three sizes available: 6", 8", and 10".
9. TegoBloc SA – self-adhering flashing membrane used for grade and thru-wall detailing.

C. BASE AND SHEET DRAINAGE COMPOSITE

Drain-Max drainage composite by GMX, Inc. shall be used where specified to promote positive drainage. Use base drain accessory connectors and outlets as required.

1.Drain-Max ® 220 – 4-ft x 50ft roll of a three-dimensional polypropylene drainage core with a nonwoven geotextile adhered to one side to allow water passage while restricting soil particles. Composite includes a thin polyethylene sheet on the back of the drainage core.

A. Compressive Strength, 718 kPa (15,000psf); B. Water Flow Rate, 251 l/m/m (20gpm/ft);
C. Thickness, 11 mm (7/16")

2.Drain-Max ® Total Drain Base Drain – (1") thick x 300 mm (12") high base drain composite designed to collect water from sheet composite drainage and then discharge the water to proper sump system or gravity to daylight.

A. Compressive Strength, 457 kPa (10,000psf); B. Water Flow rate, 1,197 l/m/m (97gpm/ft);
C. Thickness, 25 mm (1")

PART 3- EXECUTION contains work sections pertaining to both zero-lot line construction and backfilled foundation wall construction. Therefore, PART 3 should be edited to only include work sections specific to the job site conditions required on the project. Sections 3.01, 3.02, and 3.03 pertain to all applications. Section 3.04 through Section 3.11 pertain only to zero-lot line construction. Sections 3.04B, through Section 3.10B pertain only to backfilled cast-in-place concrete wall applications.

PART 3 – EXECUTION

A. Comply with contract documents and manufacturer's product data, including product application and installation instructions.

3.01 SUBSTRATE INSPECTION AND CONDITIONS

A. The installer, with the Owner's Independent Inspector present, shall examine conditions of substrates and other conditions under which this section work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected and are acceptable for compliance with manufacturer's warranty requirements. General substrate conditions acceptable for the waterproofing installation are listed below. For conditions not covered in this Section, contact the waterproofing manufacturer for guidance.

B. WORKING MUD SLAB: Working concrete mud slabs should have a float finish to provide a planar surface; without sharp angular depressions, voids or raised features.

C. COMPACTED SOIL OR GRAVEL SUB-GRADE: Sub-grade shall be compacted to a minimum Modified Proctor compaction of 85% or greater as specified by civil/geotechnical engineer. The finished sub-grade surface shall be well-leveled, uniform, free of debris and standing water or ice. Aggregate sub-

grades shall consist of 19 mm (¾") stone or smaller and rolled flat, free from any protruding sharp edges. If substrate consists of large aggregate, place a high-strength geotextile layer over the aggregate and then provide several inches of compacted soil or sand for uniform support and containment of waterproofing sheets. Specific sub-grade preparation shall be approved by the project's civil or geotechnical engineer.

D. WOOD TIMBER SHORING: Wood lagging shoring should extend to the lowest level of the waterproofing installation with any voids or cavities exterior of the lagging timbers filled with compacted soil or cementitious grout. Interior surface of lagging boards should be planar and tight together with gaps less than 25 mm (1"). Gaps more than 25 mm (1") should be filled with cementitious grout, compacted soil, wood, extruded polystyrene (20 psi min.) or GMX, INC. approved polyurethane spray foam. Do not use plywood or other surface treatment over large lagging gaps that leave the cavity void. In areas where lagging gaps are 63 mm (2-1/2") or less, Drain-Max sheet drainage can be installed over lagging to provide uniform surface to mount the waterproofing without requirement of filling gaps. Drain-Max sheet and Total Drain base drain system should be connected to an operative water discharge system. All lagging board nails and other mechanical projections shall be removed or pounded flush. Install a protection material over all soldier piles with raised lagging hanger bolts, form tie rods, or other irregular surface; protection material should extend a minimum 150 mm (6") to both sides of the steel piling.

E. CUT ROCK FACE OR AUGER CAST CAISSON SHORING WALLS: Interior surface of cut rock and concrete auger pile retention walls should be planar without irregular surface conditions, voids, and sharp transitions that would leave a void space to the outside of the drainage and waterproofing installation. Irregular rock, void pockets, cracks, sharp concave transitions should be completely filled or smoothed with cementitious grout, shotcrete, or other approved solid material.

F. MECHANICAL OR OTHER PENETRATIONS: Mechanical, structural, or architectural materials that will pass through the plane of the waterproofing membrane shall be properly installed and secured in their final position prior to installation of the waterproofing system.

G. CONCRETE: Concrete to be waterproofed shall be properly placed and consolidated. Reinforced structural slabs should be a minimum of 150 mm (6") thick when placed on a working mud slab. Reinforced concrete slab(s) on compacted grade shall be a minimum of 100 mm (4") thick. When hydrostatic conditions exist, install TegoBloc Swell under all footings, elevator pits and grade beams. Cast-in-place concrete to receive waterproofing shall be of sound structural grade with a smooth finish, free of debris, oil, grease, laitance, dirt, dust, or other foreign matter which will impair the performance of the waterproofing and drainage system and which do not comply with manufacturer's warranty requirements. TegoBloc Swell can be installed on green structural concrete as soon as the forms are removed provided the contractor gains written approval from project structural engineer listing any site-specific concrete curing time requirement. Do not apply TegoBloc Swell waterproofing directly over lightweight insulating concrete, wood, or steel decking.

1. Remove dirt, debris, oil, grease, cement laitance, or other foreign matter which will impair or negatively affect the performance of the waterproofing and drainage system.

2. Protect adjacent work areas and finished surfaces from damage or contamination from waterproofing products during installation operations.

3. Form fins, ridges, ponding ridges and other protrusions should be level and smooth with concrete surface.

4. Honeycombing, aggregate pockets, tie-rod holes and other voids shall be completely filled with non-shrink cementitious grout and level with monolithic concrete surface.

5. Horizontal deck or roof concrete surfaces should be sloped for positive drainage to the deck drains or the perimeter edges. Deck drain positions should be designed with an appropriate sump depression surrounding the drain.

6. Precast concrete deck units shall be installed and secured to structural supports in accordance with the concrete panel manufacturer's requirements and industry practice. All joints between precast units shall be completely grouted and flush with deck. Any differential in elevation between precast units shall be feathered for a smooth transition.

7. For below grade expansion joints between 25 mm – 100 mm (1"- 4") in width, install appropriate Expansion Joint prior to the installation of the TegoBloc Swell Waterproofing System

NOTE: Related work to be completed under Division 3. GMX Waterstop-RX shall be installed in all applicable vertical and horizontal concrete construction cold pour joints and around applicable penetrations, structural members, and tie-rod form holes that extend through the wall. Refer to GMX Waterstop-RX Product Manual for further installation procedures and guidelines.

3.02 SURFACE PREPARATION

A. Remove dirt, debris, oil, grease, cement laitance, or other foreign matter which will impair or negatively affect the performance of the waterproofing and drainage system.

B. Protect adjacent work areas and finish surfaces from damage or contamination from waterproofing products during installation operations.

3.03 GENERAL INSTALLATION GUIDELINES

A. Property Line Walls, install TegoBloc Swell membrane with the dark gray woven geotextile side in the direction to receive concrete pour; white geotextile side outward against retaining wall. Overlap TegoBloc Swell membrane edges minimum 100mm (4"). Under slab, install TegoBloc Swell with the dark gray woven geotextile side up; white geotextile side facing down. Overlap TegoBloc Swell membrane edges minimum 100 mm (4"). Backfilled walls and roofs of earth covered structures, install TegoBloc Swell with the white geotextile side outward, away from the concrete, facing the installer, dark gray geotextile against concrete. For backfilled walls overlap TegoBloc Swell membrane edges a minimum 100mm (4").

B. Expansion Joints: TegoBloc Swell waterproofing is not an expansion joint filler or sealant but can be incorporated with an Expansion Joint to create a warranty eligible, solution for waterproofing the below grade expansion joint. Please refer to the Expansion Joint Installation Guide for installation instructions.

3.04 AQUADRAIN DRAINAGE COMPOSITE (Non-Hydrostatic Applications)

A. At the base of the lagging wall, install Drain-Max Total Drain base-drain horizontally oriented with the open core edge up and the 50 mm (2") fabric flap side away from the lagging wall. Secure the bottom edge of Total Drain to the lagging wall with washer-head fasteners every few feet. Use couplers and corner fittings, as required, to form a continuous Total Drain installation. Install discharge outlet fittings to connect with discharge pipes as required for the project. Weep discharge pipes stubbed into Total Drain or Drain-Max sheet without proper discharge connection fittings is not acceptable.

B. Install the bottom course of Drain-Max 220 sheet drainage (geotextile side against the lagging wall) with the 220 bottom edge fabric flap tucked behind the top edge of the Total Drain against the lagging to prevent the passage of soil into the core at the connection. Bottom edge of 220 core should be in contact with open top core edge of Total Drain. Place the 50 mm (2") fabric flap of the Total Drain over the back of the 220 core and secure it with tape to maintain flap position. Secure the top edge of Total Drain to the lagging wall with washer-head fasteners 600 mm (24") on center.

C. Install subsequent courses of Drain-Max 220 sheet drainage to within 300 mm (12") of finished grade or as shown on the project drawings. Tightly abut adjoining sheet drain core edges and tuck the extra fabric flaps behind the adjacent roll edge to prevent soil from entering the sheet drain. Secure sheet drain

to lagging wall with washer-head fasteners. Where drainage sheet panels are installed overlapped, bottom edge of higher course shall be installed to the outside of the lower course to shed water like a roof shingle.

D. Prior to installing drainage composite near grade, install 12 mm (½") thick cementitious wall board centered over metal soldier pile from finished grade elevation to specified depth of soldier pile removal. Cementitious wall board will protect drainage and waterproofing when top of soldier pile is excavated and removed. Remove cementitious board with removal of soldier pile top and lagging.

E. Around penetrations and tie-back heads, cut sheet drainage composite to fit and wrap extra filter fabric around open core edge to prevent soil from entering core.

F. At the top of the sheet drain installation, wrap the filter fabric flap behind the exposed top core edge to prevent intrusion of soil into the core and secure sheet drain to wall with termination bar fastened 300 mm (12") on center with the fabric wrapped.

Note: Specify Drain-Max sheet composite and base drain for non-hydrostatic site conditions for collection and transport of water. Drain-Max system shall be connected to an operable drain discharge system.

3.05 SLAB TO ZERO-LOT LINE SHORING WALL TRANSITION COURSE

A. At base of shoring wall, install TegoBloc Swell corner transition sheet horizontally oriented (white geotextile side against shoring wall; dark gray geotextile side facing installer) with the bottom edge extending out onto the horizontal substrate a minimum 300 mm (12") and the top edge of the sheet extending a minimum 300 mm (12") above the finished slab elevation. Secure TegoBloc Swell sheet to shoring wall through the Drain-Max with washer-head fasteners maximum 600 mm (24") on center. Overlap edges of TegoBloc Swell sheets a minimum 100 mm (4").

B. If the slab thickness is greater than 600 mm (24"), install a second full sheet or cut strip of TegoBloc Swell horizontally oriented on the shoring wall to meet the 300 mm (12") requirement above of the top slab elevation. Overlap top edge of previous sheet and edges of adjacent sheets a minimum 100 mm (4").

3.06 UNDER SLAB INSTALLATION

A. Reinforced structural foundation slabs should be a minimum of 150 mm (6") thick when placed on a working mud slab. Reinforced concrete slab(s) on compacted grade shall be a minimum of 100 mm (4”) thick. Install TegoBloc Swell under all footings, elevator pits and grade beams when hydrostatic conditions exist or are anticipated per the historical high ground water elevation reported in the project’s geotechnical documents.

B. Install under slab TegoBloc Swell membrane extending to base of shoring wall (dark gray geotextile side up) fully overlapping the 300 mm (12”) horizontal tail of the TegoBloc Swell corner transition sheet installed per Section 3.05 Work. Secure corner edge of membrane with washer-head fasteners or pneumatic staples 300 mm (12”) on center.

C. Place TegoBloc Swell directly on properly prepared substrate (white geotextile side down; dark gray geotextile side up facing installer) with adjoining edges overlapped a minimum of 100 mm (4”). Stagger sheet end seams a minimum of 60 cm (24”). Mechanically fasten or staple TegoBloc Swell membrane as required to prevent movement from construction operations or concrete placement. When the slab is poured in sections, extend TegoBloc Swell a minimum 300 mm (12") beyond the slab edge to enable proper overlapping.

D. Install waterproofing system at all grade beams, pile caps, and other detail areas in accordance with manufacturer’s detail for specific project condition(s).

E. Slab Penetrations: For all pipe, rebar, structural or other penetrations install waterproofing system in accordance with manufacturer's standard detail for specific project condition(s).

F. Inspect finished TegoBloc Swell installation and repair any damaged material prior to concrete slab placement.

NOTE: Related work to be completed under Division 3. Waterstop-RX shall be installed in all slab joints, around applicable slab penetrations and structural members. Refer to Waterstop-RX Product Manual for further installation procedures and guidelines.

3.07 WOOD LAGGING WALL INSTALLATION

A. Install a strip of TegoBloc Swell over all soldier piles with raised lagging hanger bolts, form tie rods, or other irregular surface. TegoBloc Swell strip should extend a minimum 150 mm (6") to both sides of the piling. Apply TegoBloc LiquiSeal 6 mm (¼") thick by 50 mm (2") to TegoBloc Swell strip surface along both side edges of the soldier pile.

B. Starting at the base corner, install base course of TegoBloc Swell (horizontally oriented) to lagging wall over the previously installed sheet drainage and corner transition TegoBloc Swell course (Section 3.04 and 3.05 Work). Secure sheet edges to shoring wall with washer-head fasteners placed a maximum 600 mm (24") on center around sheet edge. Overlap adjacent TegoBloc Swell sheet edges a minimum 100 mm (4").

C. After the bottom horizontal course, TegoBloc Swell sheets can be installed either vertically or horizontally oriented. Continue TegoBloc Swell installation up wall to finished grade elevation detail, staggering all sheet roll ends of adjacent courses a minimum 300 mm (12"). Do not allow horizontal TegoBloc Swell overlap joints to run at same elevation as the concrete pour lift joints; extend membrane past a minimum 150mm (6"). Overlap adjacent TegoBloc Swell sheet edges a minimum 100 mm (4").

C. Tie-Back Heads: For all tie-back heads and soil nails, install waterproofing system with applicable size TB-Boot in accordance with manufacturer's detail for specific project condition(s). For irregular shoring wall conditions at tie-backs or oversize tie-back heads consult manufacturer for alternate detail for specific project condition(s).

D. Penetrations: For all pipe, rebar, structural and other penetrations install waterproofing system in accordance with manufacturer's detail for specific project condition(s).

E. Inspect finished TegoBloc Swell installation and repair any damaged material prior to concrete placement.

3.08 LAGGING WALL EXCAVATION, GRADE TERMINATION AND BACKFILL

A. Coordinate with excavation and backfill operations conducted under Division 31 Work to remove the top few wood lagging timbers and top end of the metal soldier piles per local building code or project requirements. Identify and repair any waterproofing and drainage sheet damaged by excavation and removal of soldier pile heads and lagging. Where excavated, fasten all exposed TegoBloc Swell overlap seams maximum 600mm (24") on center.

B. Terminate TegoBloc Swell membrane 300 mm (12") below finished grade elevation secured with washer-head fasteners maximum 300 mm (12") on center to exterior surface of concrete wall. Per manufacturer's detail for specific project condition(s), install TegoBloc SA flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc Swell membrane minimum 100 mm (4"). Overlap all roll ends a minimum 100 mm (4") to form a continuous flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along the top edge of TegoBloc SA; fastened maximum 300 mm (12") on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

C. Backfill shall be placed and compacted to minimum 85% Modified Proctor density promptly after waterproofing has been installed. Closely coordinate with contractor responsible for Backfill work by informing them each time a waterproofed area is ready for backfill. Backfill shall consist of compactable soil or angular aggregate free of debris, sharp objects, and stones larger than 19 mm (¾”). Care should be used during backfill operation to avoid damage to the waterproofing system. If damage occurs, cease backfilling and report damage. Damaged waterproofing must be repaired per manufacturer’s guidelines.

3.09 METAL SHEET PILING RETENTION WALLS

A. Trowel 12 mm (1/2") thick layer of TegoBloc GrSwell along all sheet piling interlocks. Any areas of water seepage at the interlocks can be sealed prior to TegoBloc Swell installation by injecting TegoBloc GrSwell to the outside of the sheet piling interlocks.

B. Cut the under slab TegoBloc Swell to tightly contour with the metal sheet piling wall. Then pour 38 mm (1-1/2”) cant of TegoBloc GrSwell on top of the TegoBloc Swell along the property line wall. Then install the base shoring wall TegoBloc Swell sheet overlapping the under slab TegoBloc Swell sheet a minimum 300 mm (12”). Cut the bottom edge of the shoring wall sheet at piling transitions to allow the bottom strips to lay flat onto the under slab TegoBloc Swell. Finally, apply TegoBloc GrSwell at the cut TegoBloc Swell edges extending outward from the shoring wall for a minimum of 150 mm (6”).

C. Starting at the base corner, install course of TegoBloc Swell (horizontally oriented) to metal sheet piling wall over the previously installed sheet drainage and corner transition TegoBloc Swell course. Secure sheet edges to shoring wall with washer-head fasteners placed a maximum 600 mm (24") on center around sheet edge.

D. After the bottom horizontal course, TegoBloc Swell sheets can be installed either vertically or horizontally oriented. Continue TegoBloc Swell installation up wall to finished grade elevation detail, staggering all sheet roll ends of adjacent courses a minimum 300 mm (12"). Do not allow horizontal TegoBloc Swell overlap joints to run at same elevation as the concrete pour lift joints; extend membrane past a minimum 150mm (6”). Overlap adjacent TegoBloc Swell sheet edges a minimum 100 mm (4”).

E. Tie-Back Heads: For all tie-back heads and soil nails, install waterproofing system with applicable size TB-Boot in accordance with manufacturer’s detail for specific project condition(s). For irregular shoring wall conditions at tie-backs or oversize tie-back heads consult manufacturer for alternate detail for specific project condition(s).

F. Penetrations: For all pipe, rebar, structural and other penetrations install waterproofing system in accordance with manufacturer’s detail for specific project condition(s).

G. Terminate TegoBloc Swell membrane 300 mm (12”) below finished grade elevation secured with washer-head fasteners maximum 300 mm (12”) on center to exterior surface of concrete wall. Per manufacturer’s detail for specific project condition(s), install TegoBloc SA grade flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc Swell membrane minimum 100 mm (4”). Overlap all roll ends a minimum 100 mm (4”) to form a continuous flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along the top edge of TegoBloc SA; fastened maximum 300 mm (12”) on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

H. Inspect finished TegoBloc Swell installation and repair any damaged material prior to concrete placement.

3.10 CUT ROCK FACE OR AUGER CAST CAISSON RETENTION WALLS

A. Cut rock face or auger cast caisson wall should be sufficiently planar to provide adequately smooth surface to apply TegoBloc Swell. TegoBloc Swell will conform to large gradual change in planes (e.g., around caisson column) but should not be installed over sharp surface deflections or voids. Deflections/voids should be filled with cementitious material to create suitable substrate for waterproofing installation.

B. Install TegoBloc Swell wall transition course at base of cut face rock or auger cast caisson wall per Section 3.05 instructions.

C. Starting at the base corner, install course of TegoBloc Swell (horizontally oriented) to the shoring wall over the previously installed sheet drainage and TegoBloc Swell corner transition course (Section 3.04 and 3.05 Work). Secure sheet edges to shoring wall with washer-head fasteners placed a maximum 600 mm (24") on center around sheet edge. Overlap adjacent TegoBloc Swell sheet edges a minimum 100 mm (4”).

D. After the bottom horizontal course, TegoBloc Swell sheets can be installed either vertically or horizontally oriented. Continue TegoBloc Swell installation up wall to finished grade elevation detail, staggering all sheet roll ends of adjacent courses a minimum 600 mm (24"). Do not allow horizontal TegoBloc Swell overlap joints to run at same elevation as the concrete pour lift joints; extend membrane past a minimum 150mm (6”). Overlap adjacent TegoBloc Swell sheet edges a minimum 100 mm (4”).

E. Tie-Back Heads: For all tie-back heads and soil nails, install waterproofing system with applicable size TB-Boot in accordance with manufacturer’s detail for specific project condition(s). For irregular shoring wall conditions at tie-backs or oversize tie-back heads consult manufacturer for alternate detail for specific project condition(s).

F. Penetrations: For all pipe, rebar, structural and other penetrations install waterproofing system in accordance with manufacturer’s detail for specific project condition(s).

G. Terminate TegoBloc Swell membrane 300 mm (12”) below finished grade elevation secured with washer-head fasteners maximum 300 mm (12”) on center to exterior surface of concrete wall. Per manufacturer’s detail for specific project condition(s), install TegoBloc SA grade flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc Swell membrane minimum 100 mm (4”). Overlap all roll ends a minimum 100 mm (4”) to form a continuous flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along the top edge of TegoBloc SA; fastened maximum 300 mm (12”) on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

H. Inspect finished TegoBloc Swell installation and repair any damaged material prior to concrete placement.

3.11 CLEAN UP

A. In areas where adjacent finished surfaces are soiled by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their recommendations and instructions. Remove all tools, equipment and remaining product on-site. Dispose of section work debris and damaged product following all applicable regulations.

The following Sections 3.04B, through Section 3.10B pertain only to backfilled cast-in-place concrete wall applications.

3.04B SLAB / BACKFILLED WALL FOOTING EDGE TRANSITION COURSE

A. Inside the slab/footing form edge, secure TegoBloc Swell sheet horizontally oriented (white geotextile side down; dark gray geotextile side up) to the top inside edge of the exterior slab/footing form with the sheet conforming to the interior form surfaces and then extending out onto the horizontal slab substrate a minimum 300 mm (12"). Overlap edges of adjacent TegoBloc Swell sheets a minimum 100 mm (4") and secure to prevent sheet movement during construction or concrete placement.

3.05B UNDER SLAB INSTALLATION

A. Install TegoBloc Swell under all footings, elevator pits and grade beams when hydrostatic conditions exist or are anticipated per the historical high ground water elevation reported in the project's geotechnical documents.

B. Install TegoBloc Swell membrane (white geotextile side down; dark gray geotextile side up) extending to interior edge of footing/slab edge, fully overlapping the 300 mm (12") horizontal tail of the TegoBloc Swell slab edge sheet installed in Section 3.04B. Overlap edges of adjacent TegoBloc Swell sheets a minimum 100 mm (4") and secure to prevent sheet movement during construction or concrete placement.

C. Place TegoBloc Swell directly on properly prepared substrate (white geotextile side down; dark gray geotextile side up facing installer) with adjoining edges overlapped a minimum of 100 mm (4"). Stagger sheet end seams a minimum of 60 cm (24"). Mechanically fasten or staple TegoBloc Swell as required to prevent movement from construction operations or concrete placement. When the slab is poured in sections, extend TegoBloc Swell a minimum 300 mm (12") beyond the slab edge to enable proper overlapping.

D. Install waterproofing system at all grade beams, pile caps, and other detail areas in accordance with manufacturer's detail for specific project condition(s).

E. Slab Penetrations: For all pipe, rebar, structural or other penetrations install waterproofing system in accordance with manufacturer's standard detail for specific project condition(s).

F. Inspect finished TegoBloc Swell installation and repair any damaged material prior to concrete slab placement.

NOTE: Related work to be completed under Division 3. Waterstop-RX shall be installed in all slab joints, around applicable slab penetrations and structural members. Refer to Waterstop-RX Product Manual for further installation procedures and guidelines.

3.06B BACKFILLED CAST-IN-PLACE CONCRETE WALLS

A. Place TegoBloc TxSwell along the wall/footing intersection with ends "butted" tightly together to form a continuous installation.

B. Trowel 19 mm (3/4") thick, continuous TegoBloc GrSwell fillet at all inside wall corner transitions. Trowel TegoBloc GrSwell form-tie pockets/patches and any slightly irregular concrete surface honeycomb areas.

C. Starting at the base of the wall, install TegoBloc Swell sheet horizontally (dark gray geotextile side against the wall; white geotextile side facing installer) covering the TegoBloc TxSwell and extending onto the footing a minimum of 150 mm (6"). For hydrostatic conditions, cover the entire footing and overlap waterproofing membrane from under slab work a minimum of 150 mm (6"). Attach TegoBloc Swell using washer-headed mechanical fasteners maximum 600 mm (24") on center. Overlap all adjacent sheet edges a minimum 100 mm (4"). Stagger all vertical overlap seams a minimum of 300 mm (12").

D. After the bottom horizontal course, TegoBloc Swell sheets can be installed either vertically or horizontally oriented. Continue TegoBloc Swell installation up wall to finished grade elevation detail, staggering all sheet roll ends of adjacent courses a minimum 300 mm (12"). Do not allow horizontal TegoBloc Swell overlap joints to run at same elevation as the concrete pour lift joints. Overlap all adjacent TegoBloc Swell sheet edges a minimum 100 mm (4”) and secure with washer-head fastener maximum 600 mm (24”) on center.

E. Penetrations: For all pipe, rebar, structural and other penetrations install waterproofing system in accordance with manufacturer’s detail for specific project condition(s).

F. Terminate TegoBloc Swell membrane 300 mm (12”) below finished grade elevation secured with washer-head fasteners maximum 300 mm (12”) on center to exterior surface of concrete wall. Per manufacturer’s detail for specific project condition(s), install TegoBloc SA flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc Swell membrane minimum 100 mm (4”). Overlap all roll ends a minimum 100 mm (4”) to form a continuous flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along the top edge of TegoBloc SA; fastened maximum 300 mm (12”) on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

G. Inspect finished TegoBloc Swell installation and repair any damaged material prior to backfill placement. Assure that TegoBloc Swell is not displaced during backfill placement or soil compaction.

3.07B PREFABRICATED DRAINAGE COMPOSITE INSTALLATION (Non-Hydrostatic Walls)

A. At the base of the wall, place Drain-Max Total Drain (Total Drain) base-drain horizontally oriented with the open core side up and the 50 mm (2”) flap of fabric side tight against the wall over the previously installed TegoBloc Swell waterproofing using wash-head mechanical fasteners or general construction adhesive. The 50 mm (2”) fabric flap along the top edge of Total Drain should be tightly secured against the wall. Use Total Drain accessory fittings, as required, to form a continuous installation. Install Total Drain discharge outlet fittings to connect to discharge pipes as required for the project.

B. Install the bottom course of Drain-Max 220 sheet drainage (plastic core side against the wall) with the 220-bottom core edge in contact with open top core edge of Total Drain. Secure sheet drain to wall with washer-head fasteners. Secure extra fabric flap of 220 extending down the top front edge of Total Drain to prevent the passage of soil into the core at the connection.

C. Install subsequent courses of Drain-Max 220 sheet drainage to within 300 mm (12”) of finished grade or as shown on the project drawings. Tightly abut adjoining sheet drain core edges together and secure the extra fabric flaps over the front of adjacent roll edges to prevent soil from entering the sheet drain. Secure sheet drain to wall with washer-head fasteners. Where drainage sheet panels are installed overlapped, bottom edge of higher course shall be installed to the outside of the lower course to shed water like a roof shingle.

D. Around penetrations and tie-back heads, cut sheet drainage composite to fit and wrap extra filter fabric around open core edge to prevent soil from entering core.

F. At the top of the sheet drain installation, wrap the filter fabric flap behind the exposed top core edge to prevent intrusion of soil into the core and secure sheet drain to wall with termination bar fastened 300 mm (12") on center.

3.08B INSULATION

A. Always apply TegoBloc Swell waterproofing directly to properly prepared structural concrete substrates. Insulation, if used, should be installed to the exterior of the waterproofing. Do not apply TegoBloc Swell waterproofing over lightweight insulating concrete.

3.09B BACKFILL EXCAVATED CAST-IN-PLACE CONCRETE WALLS

A. Backfill shall be placed and compacted to minimum 85% Modified Proctor density promptly after waterproofing has been installed. Closely coordinate with contractor responsible for Backfill work by informing them each time a waterproofed area is ready for backfill. Backfill shall consist of compactable soil or angular aggregate free of debris, sharp objects, and stones larger than 19 mm (¾"). Care should be used during backfill operation to avoid damage to the waterproofing system. If damage occurs, cease backfilling and report damage. Damaged waterproofing must be repaired per manufacturer's guidelines.

3.10B CLEAN UP

A. In areas where adjacent finished surfaces are soiled by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their recommendations and instructions. Remove all tools, equipment and remaining product on-site. Dispose of section work debris and damaged product following all applicable regulations.

End of Section 071700

TEGOBLOC™ SWELL

BENTONITE GEOTEXTILE WATERPROOFING SYSTEM | Membrane Waterproofing

GMX A Garland Industries Subsidiary

COMMERCIAL

DESCRIPTION

TegoBloc™ Swell is a distinctive green colored, high strength geotextile that is a highly effective waterproofing composite with 4.8 kg/sqm of sodium bentonite per square meter (1.0 lbs./sf). The high swelling, low permeable sodium bentonite is encapsulated between a non-woven and woven geotextile. A needle punch process interlocks the geotextiles together forming an extremely strong composite that maintains the equal coverage of bentonite, as well as protects it from inclement weather and construction related damage. Once backfilled, TegoBloc™ Swell hydrates and forms a monolithic waterproofing membrane. TegoBloc™ Swell contains zero VOC's, can be installed in almost any weather condition to green concrete, and most importantly, it has proven effective on both new and remedial waterproofing projects worldwide. TegoBloc™ Swell works by forming a low permeability membrane upon contact 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 TegoBloc™ Swell can self- seal small concrete cracks caused by ground settlement, concrete shrinkage, or seismic action; problems over which there is normally no control. TegoBloc™ Swell forms a strong mechanical bond to concrete when the geotextile fibers are encapsulated into the surface of cast- in-place concrete.

APPLICATIONS

TegoBloc™ Swell is designed for below-grade vertical and horizontal structural foundation surfaces. Typical cast-in-place concrete applications include backfilled concrete walls, earth-covered roofs, structural slabs, tunnels, and property line construction. Property line construction applications include soldier pile and lagging, metal sheet piling, shotcrete, and stabilized earth retention walls. Applications may include structures under continuous or intermittent hydrostatic pressure.

Where contaminated ground-water conditions exhibit higher levels of the following contaminants: salt water, nitrates, phosphates, chlorides, sulfates, lime and organic solvents, contact GMX Technical Service for more information.

INSTALLATION

General: Installation guidelines herein are for cast-in-place concrete applications. For shotcrete, precast concrete, and other applications not covered herein, refer to specific TegoBloc™ Swell literature or contact GMX, INC. for applicable installation guidelines. Install TegoBloc™ Swell in strict accordance with the manufacturer's installation guidelines using accessory products as required. Install TegoBloc™ Swell with the green (woven) geotextile toward the concrete to be waterproofed. Install GMX Waterstop RX in all applicable horizontal and vertical concrete construction joints. Schedule waterproofing material installation to permit prompt placement of concrete or compacted backfill.

Preparatory Work: Under Slab: Substrate should be smooth and compacted to a minimum of 85% Modified Proctor density. Concrete Walls: Concrete should be free of voids and projections. Surface irregularities should be removed before installation. Apply TegoBloc™ LiquiSeal to form-tie pockets, construction joints and honeycombs. Tapered form tie holes extending through the wall should be filled with Department of Transportation (D.O.T.) non-shrink grout and a piece of GMX Waterstop RX centered in the wall.

Property Line Shoring Walls: Install TegoBloc™ Swell only after proper substrate preparation has been completed and is suitable to receive the waterproofing.

UNDER CONCRETE FLOOR SLABS

TegoBloc™ Swell is recommended for use under structural reinforced concrete slabs 100 mm (4") thick or greater on a compacted earth/ gravel substrate a minimum 150 mm (6") thick reinforced slab, if installed over a mud slab. Where hydrostatic conditions exist, install TegoBloc™ Swell under footings and grade beams.

Place TegoBloc™ Swell over the properly prepared substrate with the dark gray (woven) geotextile side up. Overlap all adjoining edges a minimum 100 mm (4") and stagger sheet ends a minimum 300 mm (12"). Fasten edges together a maximum of 450 mm (18") on center.

Cut TegoBloc™ Swell to closely fit around penetrations and pile caps. Install TegoBloc™ GrSwell under cut TegoBloc™ Swell edge at detailing and then apply a minimum 20 mm (¾") thick fillet of TegoBloc™ LiquiSeal to top of cut TegoBloc™ Swell edge at penetrations, pile caps, grade beams, and other detailing. Extend TegoBloc™ LiquiSeal onto TegoBloc™ Swell and detail a minimum of 50 mm (2"). For hydrostatic conditions, TegoBloc™ Swell should be installed under grade beams and footings. Extend TegoBloc™ Swell onto footing a minimum 150 mm (6") when required to tie into vertical wall waterproofing.

Where property line retaining walls, such as soldier pile and lagging, are used as the outside concrete form, install a horizontally oriented TegoBloc™ Swell transition course at the base of the wall per "Shoring Wall Transition" instructions within the "Property Line Construction" section herein. Continue the under slab TegoBloc™ Swell installation up to the retaining wall overlapping the corner transition course a minimum 300 mm (12").

BACKFILLED CAST-IN-PLACE CONCRETE WALLS

Before installing the first course of TegoBloc™ Swell, place TegoBloc™ TxSwell at the wall/footing transition corner. Butt the ends of TegoBloc™ TxSwell together to form a continuous line.

Beginning at the bottom corner of the wall, install TegoBloc™ Swell horizontally oriented with 1.5 m (5-ft.) on one wall and the remainder around the corner on the other wall surface. Cut the bottom edge of TegoBloc™ Swell at the corner a minimum of 150 mm (6") so that TegoBloc™ Swell can be extended onto the footing. Fasten TegoBloc™ Swell into position with washer headed fasteners a maximum 600 mm (24") on center. Then cut and install a TegoBloc™ Swell section over the uncovered footing corner

area. Apply TegoBloc™ LiquiSeal at the TegoBloc™ Swell section to TegoBloc™ Swell overlap at the corner. Install adjacent TegoBloc™ Swell rolls of the bottom course horizontally oriented. Each roll should overlap the preceding roll a minimum 100 mm (4") and should extend onto the footing a minimum 150 mm (6"). At inside wall corners apply a continuous 20 mm (¾") fillet of TegoBloc™ LiquiSeal directly in the corner prior to installing TegoBloc™ Swell. Stagger all vertical overlap joints a minimum of 300 mm (12"). For hydrostatic conditions, the vertical wall TegoBloc™ Swell should cover the entire footing and overlap the under slab waterproofing a minimum 150 mm (6").

Cut TegoBloc™ Swell to closely fit around penetrations. After installing TegoBloc™ Swell, trowel a minimum 20 mm (¾") thick fillet of TegoBloc™ LiquiSeal around the penetrations to completely fill any space between the penetration and the TegoBloc™ Swell edge. Extend TegoBloc™ LiquiSeal onto the penetration and over the TegoBloc™ Swell edge 38 mm (1-½"). In areas where multiple penetrations are close together, it maybe impractical to cut TegoBloc™ Swell to fit around each penetration. Therefore, apply a 20 mm (¾") thick fillet of TegoBloc™ Swell around base of each penetration and cover the entire area between the penetrations. Extend TegoBloc™ Swell 38 mm (1-½") onto the penetrations.

Terminate TegoBloc™ Swell membrane 300 mm (12") below finished grade elevation with washer-head fasteners maximum 300 mm (12") on center and a tooled bead of Ultra-Guard EFS. Install TegoBloc™ SA flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc™ Swell membrane minimum 150 mm (6"). Overlap all roll ends a minimum 100 mm (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 TegoBloc™ SA fastened maximum 300 mm (12") on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams. Backfill should be placed and compacted to minimum 85% modified proctor density promptly after waterproofing installation. Backfill should consist of compactable soil or angular aggregate 20 mm (¾") or less and free of debris and sharp objects.

NOTE: TegoBloc™ Swell is not recommended for masonry block walls. Contact GMX, INC. regarding products and installation guidelines for masonry block foundation walls.

PROPERTY LINE CAST-IN-PLACE CONSTRUCTION

Use TegoBloc™ Swell to waterproof various types of cast-in-place property line construction, including metal sheet piling, soldier pile and lagging, auger cast caisson, shotcrete, and stabilized-earth shoring walls.

Lagging Wall Preparation: Remove all projections and fill all voids in the retaining wall larger than 25 mm (1") with cementitious grout per project design or compacted soil. Drain-Max 200 drainage composite can be installed over lagging gaps up to 63 mm (2-½") to provide a uniform surface to mount the TegoBloc™ Swell. Gaps larger than 63 mm (2-½") should be filled with cementitious grout per project design, wood, extruded polystyrene (25 psi min.), spray foam (20 psi min.), or compacted soil even if Drain-Max 200 is installed prior to TegoBloc™ Swell. Do not use plywood or other surface treatment that leaves the lagging gaps void.

Shoring Wall Transition: At base of shoring wall, install TegoBloc™ Swell corner transition sheet horizontally oriented (dark gray woven geotextile facing installer) with the bottom edge extending out onto the horizontal substrate a minimum 300 mm (12") and the top edge of the sheet extending a minimum 300 mm (12") above the finished slab elevation. Secure TegoBloc™ Swell sheet to shoring wall with washer-head fasteners maximum 600 mm (24") on center. Overlap edges of TegoBloc™ Swell sheets a minimum 100 mm (4"). If the slab thickness is greater than 600 mm (24"), install a second full sheet or cut strip of TegoBloc™ Swell on the shoring wall to meet the 300 mm (12") requirement above of the top slab elevation. Overlap top edge of previous sheet and edges of adjacent sheets a minimum 100 mm (4").

Shoring Wall Installation: Starting at the base corner, install course of TegoBloc™ Swell (horizontally oriented) to lagging wall over the previously installed corner transition sheet; with the bottom edge extending down to the wall/slab transition. Secure sheet edges to shoring wall with washer-head fasteners maximum 600 mm (24") on center. After the bottom horizontal course, TegoBloc™ Swell sheets can be installed either vertically or horizontally oriented. Continue TegoBloc™ Swell installation up wall to finished grade elevation overlapping adjacent TegoBloc™ Swell sheet edges a minimum 100 mm (4") and staggering all sheet roll ends of adjacent courses a minimum 300 mm (12"). Do not allow TegoBloc™ Swell overlap joints to run at same elevation as the concrete pour lift joints; extend membrane past a minimum 150 mm (6").

Prior to installing TegoBloc™ Swell at grade, install 12 mm (½") thick cementitious wall board centered over metal soldier pile from finished grade elevation to specified depth of soldier pile and lagging removal. Remove cement wall board during excavation to terminate system at grade.

Tie-Back Heads: Select appropriate size to fit over tie-back plate and allow proper cast-in-place concrete coverage per project requirements. TegoBloc™ Boot should fit over entire tie-back head without the tie-back plate or cables in direct contact with the TegoBloc™ Boot. Prior to TegoBloc™ Boot installation, fill voids in retention wall substrate and tie-back head assembly with spray foam (min 20 psi) or cementitious grout per project design. For non-hydrostatic conditions, install and secure Drain-Max 200 drainage composite course per manufacturer's guidelines to soil retention wall prior to installing TegoBloc™ Boot. For hydrostatic conditions, install TegoBloc™ Boot prior to waterproofing membrane. With soldier piles, strip piles with waterproofing membrane prior to TegoBloc™ Boot placement. Secure TegoBloc™ Boot to soil retention system using washer head fasteners along the outside edge of the fl at base. Apply 6 mm (1/4") thick by minimum 75

mm (3”) wide continuous ring of TegoBloc™ LiquiSeal onto the fl at base just outside of the 12 mm (½”) raised collar. Install 1.2 m by 1.2 m (4’ x 4’) piece of TegoBloc™ Swell (With precut hole in center to fit tight around the 12 mm (½”) raised collar) over the entire fl at base with outside edges fastened to the retaining wall. Secure inside TegoBloc™ Swell edge around raised collar with washer-head fasteners that pass through the TegoBloc™ LiquiSeal ring; typical fastener spacing 150 mm (6”).

Do not install fasteners or puncture TegoBloc™ Boot inside of the 12 mm (½”) raised collar. Apply counter flashing of TegoBloc™ LiquiSeal along TegoBloc™ Swell sheet edge around raised collar. Then install TegoBloc™ Swell field sheet overlapping outer membrane edge minimum 100 mm (4”).

Penetrations: Install a cut collar of TegoBloc™ Swell tightly around the penetration; extending a minimum 200 mm (8”) radius. Apply TegoBloc™ LiquiSeal over TegoBloc™ Swell collar around penetration, extending TegoBloc™ LiquiSeal a minimum 75 mm (3”) radius at 6 mm (1/4”) thickness. Then install main course of TegoBloc™ Swell membrane tightly around the penetration. Next, detail around penetration with 20 mm (3/4”) thick cant of TegoBloc™ LiquiSeal. Last, install GMX GMX Waterstop RX around the pipe maintaining Min. 75 mm (3”) concrete coverage. With sleeved pipes, Division 3 work should include filling the gap between the pipe and the sleeve with D.O.T. non-shrink grout and install GMX GMX Waterstop RX around pipe sleeve.

Soldier Pile Stripping: Install a strip of TegoBloc™ Swell over all soldier piles with raised lagging hanger bolts, form tie rods, or other irregular surface. TegoBloc™ Swell strip should extend a minimum 150 mm (6”) to both sides of the piling. Apply TegoBloc™ LiquiSeal 6 mm x 50 mm (¼” x 2”) to TegoBloc™ Swell strip surface along both edges of each soldier pile.

Cementitious Board: Prior to installing TegoBloc™ Swell to finished grade detail, install 12 mm (½”) thick cementitious wall board centered over steel soldier pile from finished grade elevation to specified depth that the top of steel soldier pile and lagging will be removed.

Grade Termination: Terminate TegoBloc™ Swell membrane 300 mm (12”) below finished grade elevation with washer-head fasteners maximum 300 mm (12”) on center and a tooled bead of Ultra-Guard EFS. Install TegoBloc™ SA flashing to primed concrete substrate with bottom edge overlapping top edge of TegoBloc™ Swell membrane minimum 150 mm (6”). Overlap all roll ends a minimum 100 mm (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 TegoBloc™ SA fastened maximum 300 mm (12”) on center. Complete grade termination detail with tooled bead of Ultra-Guard EFS along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

Where lagging timbers and the top of steel soldier piles are removed, repair any waterproofing damaged by the excavation and removal of the retention wall system. Secure all excavated TegoBloc™ Swell overlap seams with washer-head fasteners maximum 600 mm (24”) on center. Backfill shall be placed and compacted to minimum 85% Modified Proctor density promptly after waterproofing installation. Backfill should consist of compactable soil or angular aggregate 20 mm (¾”) or less and free of debris and sharp objects.

LIMITATIONS

TegoBloc™ Swell should only be installed after substrate preparation has been properly completed and is suitable to receive the waterproofing system. Concrete work should be cast-in-place with conventional forms that produce a smooth surface. Do not use stay-in-place concrete forming; use removable forming products only.

TegoBloc™ Swell is designed for below-grade waterproofing applications where the product is properly confined. TegoBloc™ Swell should not be installed in standing water or over ice. If ground water contains strong acids, alkalis, or is of a conductivity of 2,500 µmhos/cm or greater, water samples should be submitted to the manufacturer for compatibility testing. TegoBloc™ Swell should not be used if contaminated ground water or saltwater conditions exist.

TegoBloc™ Swell is designed for use under reinforced concrete slabs 100 mm (4”) thick or greater on a compacted earth/gravel substrate. TegoBloc™ Swell requires a minimum 150 mm (6”) thick reinforced concrete slab if installed over a mud slab. TegoBloc™ Swell is not designed for split-slab plaza deck construction.

TegoBloc™ Swell is not intended to seal expansion joints; contact GMX, INC. for expansion joint applications. Do not use TegoBloc™ Swell on masonry block foundation walls. Do not apply to shotcrete and precast concrete construction. TegoBloc™ Swell installation guidelines contain herein are for cast-in-place concrete applications and do not cover shotcrete or precast concrete applications. Refer to TegoBloc™ Swell website for additional property line shoring wall construction technique details. Consult GMX, INC. for applicable products and installation guidelines for applications not covered herein.

PACKAGING

TegoBloc™ Swell is available in 3.61’ x 16.4’ rolls, or 59.2 sf. per roll. TegoBloc™ Swell is packaged 35 rolls per pallet.

STORAGE: Keep TegoBloc™ Swell and all accessory products dry prior to back fill or concrete placement.

ACCESSORY PRODUCTS

Install TegoBloc™ Swell using accessory products in strict accordance with the manufacturer’s installation guidelines and details. Primary accessory products include TegoBloc™ LiquiSeal, Ultra-Guard EFS, TegoBloc™ SA grade flashing, TegoBloc™ TxSwell, FasTape, TegoBloc™ Boot, and TegoBloc™ GrSwell.

ASSOCIATED SYSTEM PRODUCTS

Drain-Max 200 subsurface drainage composite, CXJ Expansion Joints, and GMX Waterstop RX expanding concrete joint waterstop.

IMPORTANT NOTICE: CONTACT GMX, INC. FOR VERIFICATION OF SPECIFICATION AND INSTALLATION REQUIREMENTS TO COMPLY WITH ISSUANCE FOR ELIGIBILITY OF SYSTEM WARRANTY.

TEGOBLOC™ SWELL

BENTONITE GEOTEXTILE WATERPROOFING SYSTEM | Membrane Waterproofing

GMX A Garland Industries Subsidiary

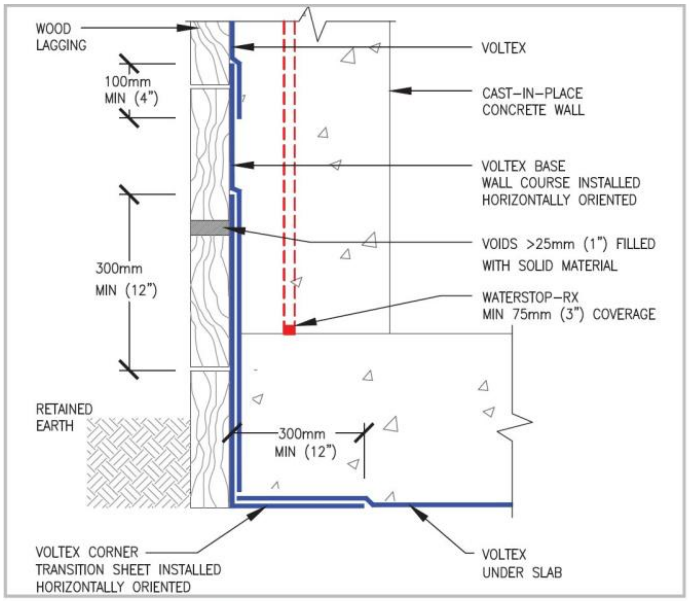
COMMERCIAL

TECHNICAL SERVICES | PRODUCT SPECIFICATIONS
Type: TegoBloc™ Swell

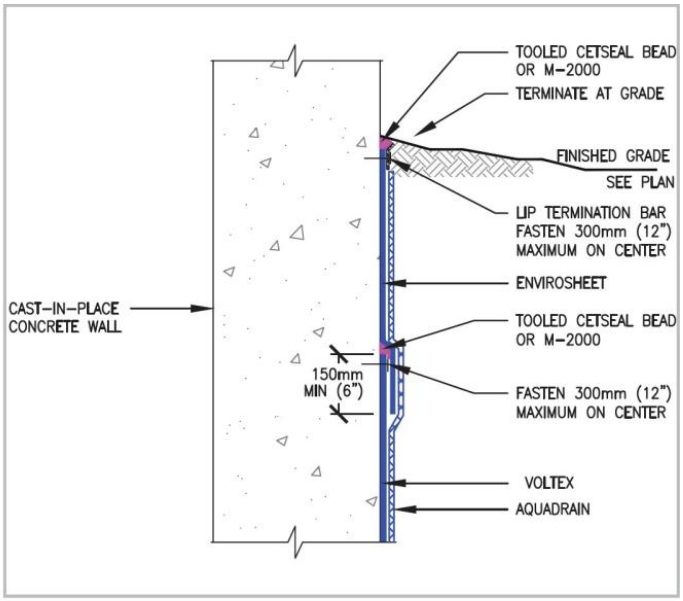
Bentonite Mass Per Unit Area	ASTM D 3776 (mod.)	1.0lb/sqft (4.8kg/sqm)
Peel Adhesion to Concrete	ASTM D 903 (mod.)	15 lbs/in (2.6kN/m min)
Hydrostatic Pressure Resistance	ASTM D 5385 (mod.)	231 ft (70 m)
Permeability	ASTM D 5084	1 x 10^{-9} cm/sec
Grab Tensile Strength	ASTM D 4632	120 lbs (530 N)
Puncture Resistance	ASTM D 4833	140 lbs (620 N)
Low-Temperature Flexibility	ASTM D 1970	Unaffected @ –25° F (-32° C)

TECHNICAL DATA

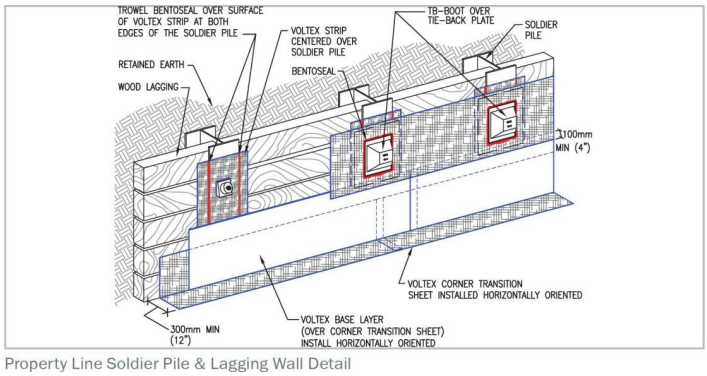
Property	Test Method	Nominal Value
Bentonite Mass Per Unit Area	ASTM D 3776 (mod.)	1.0lb/sqft (4.8kg/sqm)
Peel Adhesion to Concrete	ASTM D 903 (mod.)	15 lbs/in (2.6kN/m min)
Hydrostatic Pressure Resistance	ASTM D 5385 (mod.)	231 ft (70 m)
Permeability	ASTM D 5084	1 x 10^{-9} cm/sec
Grab Tensile Strength	ASTM D 4632	95 lbs (422 N)
Puncture Resistance	ASTM D 4833	100 lbs (445 N)
Low Temperature Flexibility	ASTM D 1970	Unaffected @ –25° F (–32° C)



Property Line Transition



Grade Termination



Property Line Soldier Pile & Lagging Wall Detail

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TEGOBLOC™ LIQUISEAL

7 SHEET APPLIED | Membrane Waterproofing

GMX A Garland Industries Subsidiary

COMMERCIAL

DESCRIPTION

Composition: TegoBloc™ LiquiSeal is a trowel-grade sealant composed of sodium bentonite and butyl rubber. The combination of sodium bentonite and butyl rubber ensures its effectiveness in various surface preparation and waterproof detailing applications.

Water Activation: LiquiSeal has the unique property of swelling upon contact with water. This swelling action enhances its ability to create a watertight seal, making it effective in preventing water intrusion.

Compatibility: Designed specifically for use with Voltex waterproofing membranes. Ensures compatibility and optimal performance when used in conjunction with these membranes.

Consistency: LiquiSeal exhibits the consistency of thick grease, facilitating ease of application. This characteristic allows for smooth and uniform application on a variety of substrate materials.

Application Method: Applied using a trowel, which provides control over the thickness and coverage of the sealant. Bonds effectively to most substrate materials, ensuring a secure and reliable seal.

Versatility: Suitable for a variety of surface preparation tasks, including waterproof detailing work. Its versatility makes it a valuable component in creating comprehensive waterproofing solutions.

Benefits: Provides an effective barrier against water intrusion, contributing to the overall waterproofing system. Offers ease of handling and application due to its grease-like consistency. Facilitates a reliable bond with different substrate materials.

Considerations: When applying LiquiSeal, it's essential to follow manufacturer guidelines and recommended application techniques. Adherence to proper surface preparation methods enhances the effectiveness of the sealant. TegoBloc™ LiquiSeal serves as a crucial component in waterproofing applications, particularly when working with Voltex membranes. Its unique composition and swelling characteristics make it a valuable tool for achieving watertight seals in various construction scenarios. Always refer to the manufacturer's guidelines for optimal usage.

APPLICATIONS

TegoBloc LiquiSeal Applications and Guidelines:

Fillet Material: Utilized as fillet material at both horizontal and vertical inside corners. Ensures proper sealing and waterproofing at these critical junctions.

Flashing Material: Applied as flashing material around drains, mechanical and electrical penetrations, as well as curbs and parapets. Creates a watertight seal and prevents water intrusion at vulnerable areas.

Sealing Material: Functions as a sealing material at waterproofing terminations. Provides a secure and durable seal to prevent water ingress at termination points.

Repair Material: Used as a repair material for addressing small concrete substrate surface defects before waterproofing membrane installation. Helps in achieving a smooth and even surface for membrane application.

Trowel-Grade Waterproofing: Acts as a trowel-grade waterproofing solution for extremely irregular substrate surfaces. Ensures comprehensive waterproofing coverage, even on challenging surfaces.

Compatibility: Formulated for use on structural concrete, masonry, wood, and most metal surfaces. Offers versatility and suitability for various construction materials.

Limitations: Not recommended for use on extruded polystyrene (EPS) concrete forming systems. Use only in applications with proper confinement to ensure effective performance. Backfill soils should be compacted to an 85% Modified Proctor density for optimal results. Not intended for use as an expansion joint sealant.

TegoBloc™ LiquiSeal serves as a versatile accessory product for below-grade waterproofing applications, providing reliable sealing and protection against water intrusion. Its formulation and application versatility make it an essential component in ensuring the integrity of waterproofing systems. Always adhere to manufacturer guidelines and specifications for the best outcomes.

INSTALLATIONS

TegoBloc LiquiSeal Applications and Guidelines:

Thickness and Temperature: Apply LiquiSeal at a thickness of 1/4" (6 mm), unless specified otherwise in project details or by the manufacturer. Application is suitable where ambient and surface temperatures are -4°C (25°F) or above. Store LiquiSeal above 4°C (40°F) before application.

Surface Preparation: Ensure all surfaces to receive LiquiSeal are dry and free of contaminants such as dirt, dust, grease, rust, oil, curing agents, etc. Application can be done on structural concrete surfaces as soon as forms are removed. Achieve optimal adhesion and minimize waste by using a fine hair broom or equivalent finish. Apply LiquiSeal just prior to the installation of the waterproofing membrane.

Timing and Exposure: Avoid leaving LiquiSeal exposed for prolonged periods before concrete or backfill placement.

Penetration Areas: Around penetrations, LiquiSeal application should fill the space between TegoBloc Swell waterproofing membrane and the penetration. Maintain a minimum fillet thickness of 3/4" (19 mm) around the penetration, ensuring continuity. Extend LiquiSeal onto the penetration by 1-1/2" (36 mm) at a thickness of 3/16" (5 mm). For hydrostatic conditions with a head of 33' (10 m) or greater, double the above application rates. hese guidelines ensure proper application of TegoBloc™ LiquiSeal, creating a reliable and effective seal for various construction applications. Always follow project details, manufacturer recommendations, and industry best practices for the best results.

PACKAGING

TegoBloc™ LiquiSeal is available in 3-gallon (11.3 liter) pails; 30 pails per pallet. Each pails weighs 36 lbs. (16.3 kg).

SHIPPING, STORAGE AND CLEAN UP

TegoBloc LiquiSeal Shipping and Safety Recommendations:

Shipping Instructions: Ship TegoBloc™ LiquiSeal via ground trucking service. *Caution: Do not ship LiquiSeal via air freight.*

Additional Shipping Information: Refer to the Material Safety Data Sheet (MSDS) for any supplementary shipping information.

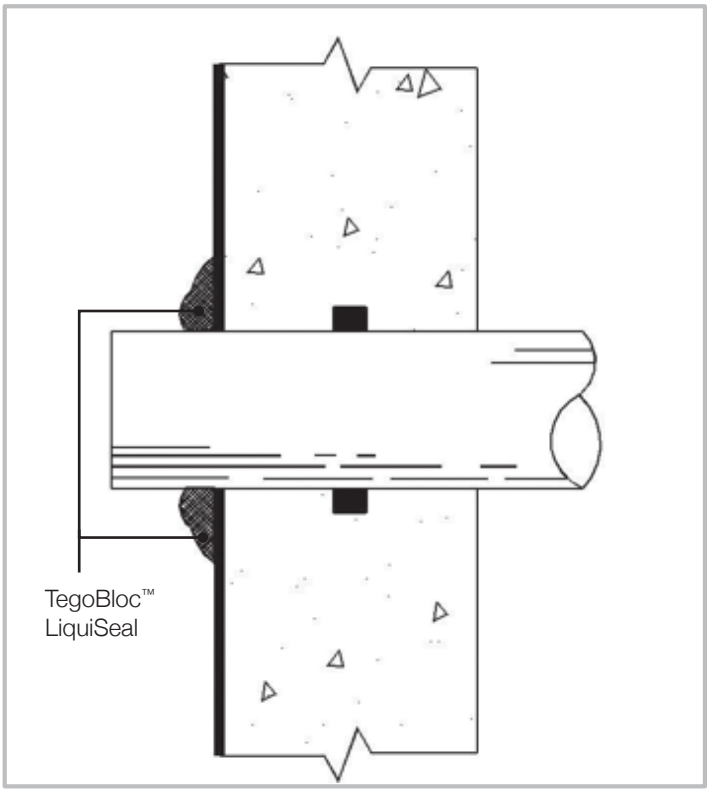
Storage Guidelines: Keep LiquiSeal cans always sealed when not in use. Store above 4°C (40°F) in a dry storage area. Store away from heat and flames.

Tool Cleaning: Clean tools with a damp rag before the mastic has cured.

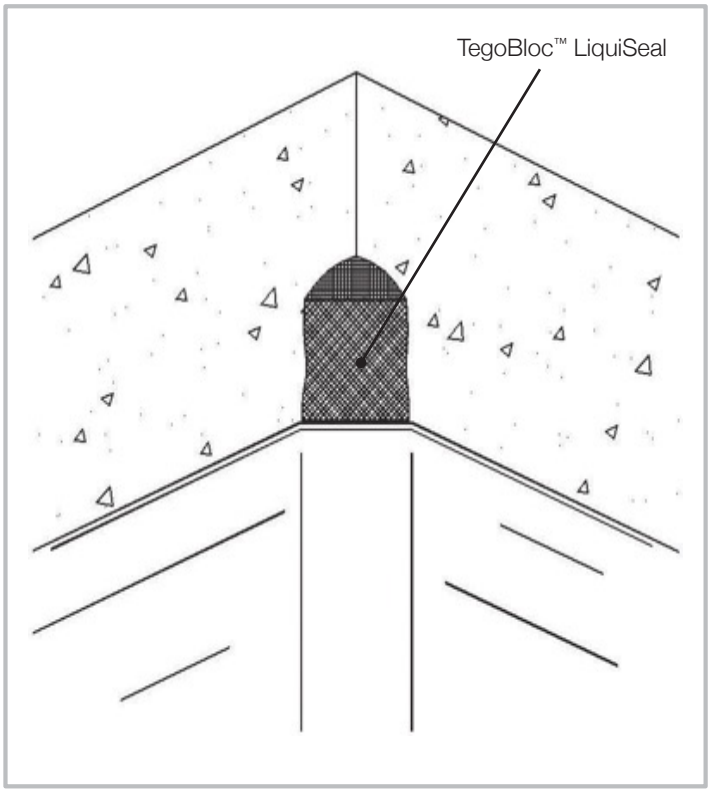
Worker Safety: Workers should wear protective clothing and eye protection. Avoid eye and skin contact, especially with open cuts. In case of eye contact, wash immediately. Do not ingest LiquiSeal.

MSDS Reference: Refer to the Material Safety Data Sheet (MSDS) for additional warnings and product safety information. Ensuring proper shipping methods, storage conditions, and worker safety practices is crucial for the effective and safe use of TegoBloc™ LiquiSeal. Always refer to the MSDS for comprehensive safety information and guidelines.

APPLICATION ILLUSTRATIONS



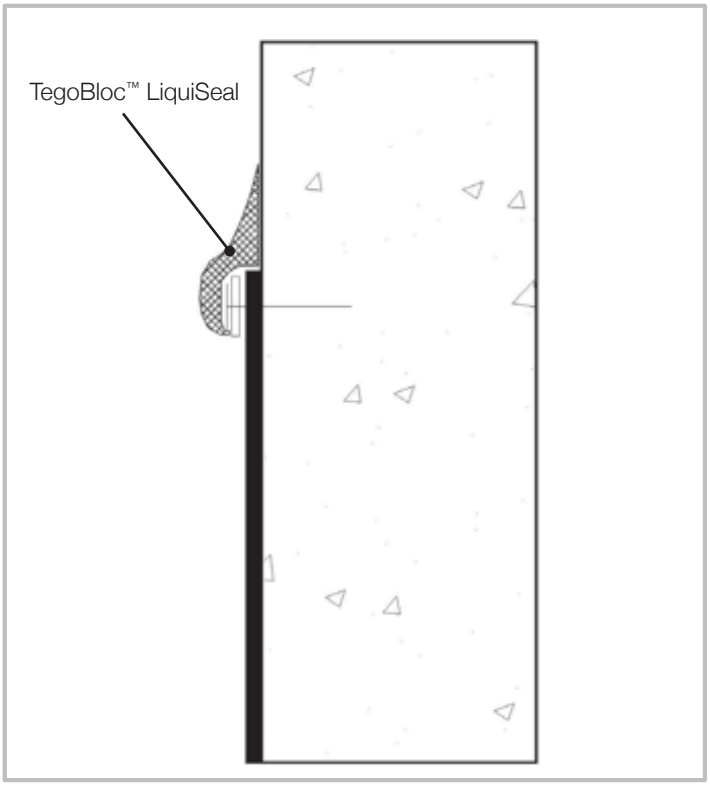
PENETRATIONS



INSIDE CORNERS

TEGOBLOC™ LIQUISEAL

7 SHEET APPLIED | Membrane Waterproofing



GRADE TERMINATIONS

APPROXIMATE COVERAGE RATE GUIDE

USAGE	TYPICAL COVERAGE
3/4" (19 mm)) inside corner fillet	27 lin. ft./gallon (2.1 m/l)
As a 90-mil thick flashing material	15 sq. ft./gallon (0.37 sq. m/l)
3/4" (18 mm) inside corner fillet with 6" (150 mm), 90-mil (2.3 mm) thick extensions	9.5 lin. ft./gallon (0.76 m/l)

Product usage will vary because of site conditions and installation procedures. Actual usage rates will vary.

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www.gmxwaterproofing.com

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperatures, application methods, test methods, actual site conditions and curing conditions. Installation conditions and methods can impact product performance.
Consult your local GMX Sales Representative for Questions.

TEGOBLOC GRSWELL

GRANULAR SODIUM BENTONITE | Membrane Waterproofing

DESCRIPTION

GrSwell is chemically treated, granular sodium bentonite used as a detailing accessory product for TegoBloc Swell Waterproofing System. When wetted, GrSwell forms into a dense, low permeable material that combines with the sodium bentonite in the waterproofing products to form a seamless waterproofing membrane.

Mineralogical composition of GrSwell is a minimum 90% Montmorillonite with a maximum 10% native sediments and unaltered volcanic ash. Typical sieve analysis is 90% through a 20-mesh sieve and 10% through a 200-mesh sieve. Free swell rating of GrSwell is: two grams sifted into deionized water swells to occupy a minimum volume of 16 cc.

APPLICATIONS

GrSwell is used to fill cavities and voids in the substrate prior to installing the main bentonite waterproofing course. It is also used to seal around slab penetrations to form a continuous waterproofing system. A fillet of GrSwell can be poured at the footing/wall junction to provide additional waterproofing protection. A 1/8" (3 mm) thick layer of GrSwell is also applied to the top of tunnels and earth-covered roofs prior to the main waterproofing material course. GrSwell is not an expansion joint sealant.

PACKAGING

GrSwell is packaged in 50 lb. (22.6 kg) bags; 40 bags per pallet. One bag equals approximately 0.83 cubic feet.

INSTALLATION

Remove dirt and other debris from area to receive GrSwell. Cut a corner of the bag for easy, directional control of product placement. Place as required around penetrations, footings and other details.

Limitations:

GrSwell should not be applied in standing water or during precipitation. GrSwell is intended for below-grade waterproofing applications. Product requires proper confinement. Confining soils should be compacted to a minimum 85% Modified Proctor density.

SAFETY

Use only with adequate ventilation and avoid breathing dust. Workers should wear approved breathing apparatus, protective clothing and eye protection. Avoid skin and eye contact. In the event of contact, wash immediately. Do not ingest. Refer to MDS for other warnings and safety information.

TYPICAL CHEMICAL ANALYSIS

Chemical	Percentage
Silica (SiO_2)	61%
Alumina (Al_2O_2)	19%
Iron Oxides (Fe_2O_2)	4%
Magnesia	2%
Soda	3%
Lime	2%
Trace Elements	3%
Water (crystal)	6%

TYPICAL APPLICATION RATE ONE BAG - 50 LBS (22.6 KG)

Application	Typical Rate
Wall/Footing Fillet 1-1/2" (38 mm)	30 lin ft (9.1 lm)
Roof Deck Layer 1/8" (3 mm) thick	70 sq ft (6.5 sq m)

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TEGOBLOC GRSWELL

GRANULAR SODIUM BENTONITE | Membrane Waterproofing

GMX COMMERCIAL

TECHNICAL DATA | PRODUCT SPECIFICATIONS
Type: Ultra-Guard HA-551

Flash Point	> 500°F (260°C)
Cone Penetration @ 77°F (25oC) @ 122°F (50oC)	 40 dmm 99 dmm
Toughness	> 20 Joules
Toughness Rating	0.04 Min
Flow	0 mm 144°F
Resiliency	> 40%
Adhesion	Pass
Water Vapor Permeance	1.7 ng/Pa. m2 s
Water Absorption	0.00-0.18 gr Max. Gain
Low-Temperature Flexibility	Pass
Crack Bridging @ -13°F (-25°C)	Pass 10 Cycles
Heat Stability (5 Hours)	Pass
Viscosity @ application temp.	2-15 seconds
Ambient Temperature Restrictions	Above 0°F (-17.7°C)
Pinholing	None
Resistance to Acid	50% sulfuric, no blistering, deterioration, delamination or re-emulsification
Resistance to Salt Water	20% (NaCo & NaCl), no blistering, deterioration, delamination or re-emulsification
Resistance to Fertilizer	15/5/5 Fertilizer, no blistering, deterioration, delamination or re-emulsification
Water Resistance	No delamination, blistering, emulsification or deterioration
Coverage Base layer Top layer Total system	 115 mils (0.115 in) thick 100 mils (0.10 in) thick 215 mils (0.215 in) thick
Packaging	30 lb. Boxes with Polyethylene Bags

May help to contribute to LEED® credits:

EA Credit 1:	Optimize Energy Performance
EQ Credit 3.1:	Construction IAQ Management Plan: During Construction
EQ Credit 4.2:	Low Emitting Materials: Paints and Coatings
MR Credit 5.1:	Regional Materials: 10% Extracted, Processed and Manufactured Regionally
MR Credit 5.2:	Regional Materials: 20% Extracted, Processed and Manufactured Regionally

SHIPPING INFORMATION

Proper Shipping Name:	Non-regulated material
Hazard Class:	Not Applicable
Identification:	Not Applicable
Packaging Group:	Not Applicable

NOTE: Applies to DOT-U.S./ MOT-CANADA/INT'L (ALL MODES).

ULTRA-GUARD COMMERCIAL WATERPROOFING

GMX A Subsidiary of Garland Industries

GMX, INC. ISO 9001:2015 REGISTERED TO

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TEGOBLOC™ TXSWELL

7 SHEET APPLIED | Membrane Waterproofing

DESCRIPTION

TegoBloc TxSwell is a detailing accessory product for GMX's Bentonite Waterproofing System used at the footing/wall junction to provide additional waterproofing protection. TxSwell consists of a thin, water-soluble tubing filled with granular sodium bentonite. When wetted, the tubing dissolves, allowing the bentonite to hydrate and form into a dense, low permeable material that combines with the sodium bentonite in the TegoBloc Swell products. Each TxSwell Tube measures 2" (50 mm) in diameter by 2' (0.61 m), assuring a consistent application of sodium bentonite at the critical footing/wall junction.

Mineralogical composition of the sodium bentonite is a minimum 90% Montmorillonite with a maximum 10% native sediments and unaltered volcanic ash. Typical sieve analysis is 90% through a 20-mesh sieve and 10% through a 200-mesh sieve. The free swell rating of the bentonite is: two grams sifted into deionized water swells to occupy a minimum volume of 16 cc.

APPLICATIONS

TxSwell is designed to work in conjunction with TegoBloc waterproofing membrane at the footing/wall junction of foundation walls. TxSwell is a convenient method of providing additional waterproofing protection at this critical junction. TxSwell is not an expansion joint sealant.

PACKAGING

TxSwell is packaged 16 tubes per carton; 32 linear feet (9.8m) per carton. Carton weighs 50 lbs. (22.6 Kg). 50 cartons per pallet.

INSTALLATION

Remove dirt and other debris from area to receive TxSwell. When using TegoBloc Swell, place TxSwell at footing/ wall junction in direct contact with wall. Butt ends together to form continuous installation. At corners, cut water-soluble tubing and bend around corner. Install TegoBloc Swell over TxSwell and backfill.

Limitations: TxSwell should not be applied in standing water or during precipitation. TxSwell is intended for below-grade waterproofing applications Compact backfill to 85% Modified Proctor density.

Safety: Use only with adequate ventilation and avoid breathing dust. Workers should wear approved breathing apparatus, protective clothing and eye protection. Avoid skin and eye contact. In the event of contact, wash immediately. Do not ingest. Refer to MSDS for other warnings and safety information.

TYPICAL CHEMICAL ANALYSIS GRANULAR SODIUM BENTONITE

CHEMICAL	PERCENTAGE
Silica (SiO2)x	61%
Alumina (Al2O2)	19%
Iron Oxides (Fe2O2)	4%
Magnesia	2%
Soda	3%
Lime	2%
Trace Elements	3%
Water (crystal)	6%

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TEGOBLOC™ TB-BOOT

7 SHEET APPLIED | Membrane Waterproofing

DESCRIPTION

TB-BOOTS: Waterproofing Tie-Back Head Covers

Description: TB-Boots are specialized tie-back covers designed to preserve the waterproofing integrity at soil retention tie-back heads. They consist of a single-piece, durable, pre-formed thermoplastic cover for a quick and straightforward waterproofing installation detail. Compatible with various GMX waterproofing membrane systems, including TegoBloc Swell, TegoBloc Pre-Wrap, and TegoBase Pre-Wrap EX.

Key Features:

3-Dimensional Pre-Formed Shape: Accommodates most tie-back heads installed at varied angles. Angled shape designed to displace a minimal amount of concrete.

Thick Thermoplastic Construction: Provides strength and durability to withstand concrete placement.

Size Options: Available in four sizes to accommodate various tie-back head sizes.

Applications: Ensures waterproofing integrity around soil retention tie-back heads during concrete placement.

Compatibility: Works seamlessly with GMX waterproofing membrane systems: TegoBloc Swell, TegoBloc Pre-Wrap, and TegoBase Pre-Wrap EX.

Benefits: Simplifies and expedites the waterproofing installation process. Offers a robust solution for maintaining waterproofing integrity. Designed to withstand the pressures of concrete placement.

Note: Ensure proper selection of TB-Boot size based on the specific tie-back head dimensions. Follow manufacturer guidelines for the best results.

APPLICATIONS

Installation of TB-Boot for Cable and Rod Tie-Back Heads

Compatibility: Suitable for both cable and rod-type tie-back heads.

Installation Steps:

Select Appropriate Size: Choose the correct TB-Boot size based on the dimensions of the specific tie-back head.

Pre-Installation Inspection: Ensure the tie-back head is properly installed and secured in place.

Positioning the TB-Boot: Place the pre-formed 3-dimensional TB-Boot over the tie-back head. Align the perimeter flat base of the TB-Boot with the soil retention system.

Mechanical Fastening: Mechanically fasten the TB-Boot to the soil retention system using appropriate fasteners. Ensure a secure and tight fit to prevent any water ingress.

Integration with Field Membrane: Integrate the TB-Boot with the field membrane installation. Ensure a continuous waterproofing system for challenging areas around tie-back heads.

Double-Check Installation: Verify that the TB-Boot is properly positioned and securely fastened. Confirm that there are no gaps or vulnerabilities in the waterproofing system

Follow Manufacturer Guidelines: Adhere to the specific guidelines provided by the manufacturer for the installation of TB-Boot.

Benefits: Provides a unified and continuous waterproofing system for challenging tie-back head areas. Ensures compatibility with both cable and rod tie-back heads. Enhances the overall integrity of the waterproofing system.

Note: Follow the manufacturer's instructions and guidelines for the correct installation of TB-Boot, considering the specific requirements of the project.

INSTALLATION

Installation of TB-Boot for Tie-Back Heads

Compatibility: Suitable for tie-back plates, cables, soldier piles, strip piles, and various tie-back head types.

Installation Steps:

Select Appropriate Size TB-Boot: Choose the correct size TB-Boot to fit over the tie-back plate, ensuring proper concrete coverage as per project requirements.

Pre-Installation Inspection: Verify that the tie-back head is correctly installed and there are no irregularities.

Void Filling: Fill voids in the retention wall substrate with spray foam (minimum 20 psi) or non-shrink grout.

Drainage Composite Installation (Non-Hydrostatic Conditions): For non-hydrostatic conditions, install and secure DrainMax drainage composite course following the manufacturer's guidelines onto the soil retention wall before TB-Boot installation.

TB-Boot Placement: Place the TB-Boot over the tie-back head, ensuring it covers the entire head without direct contact with the tie-back plate or cables.

Secure TB-Boot to Soil Retention System: Use washer head fasteners along the outside edge of the flat base to secure the TB-Boot to the soil retention system.

Apply Sealant Ring: Apply a 6 mm (1/4") thick continuous ring of LiquiSeal or Ultra-Guard EFS, at least 75 mm (3") wide, on the flat base just outside the 12 mm (1/2") raised collar.

Install TegoBloc Waterproofing Membrane: Place a 1.2 m x 1.2 m (4 ft. by 4 ft.) piece of TegoBloc waterproofing membrane over the entire flat base. Precut a hole in the center to fit tightly around the 12 mm (1/2") raised collar. Fasten the outside edges to the retaining wall using washer-head fasteners.

Secure Membrane Edge: Secure the membrane edge around the raised collar with washer-head fasteners passing through the LiquiSeal

or EFS ring. Maintain a typical fastener spacing of 150 mm (6”).

Counter Flashing: Apply counter flashing of LiquiSeal or EFS along the waterproofing membrane sheet edge around the raised collar.

Field Sheet Installation: Install the waterproofing membrane field sheet, overlapping the outer membrane edge by a minimum of 100 mm (4”).

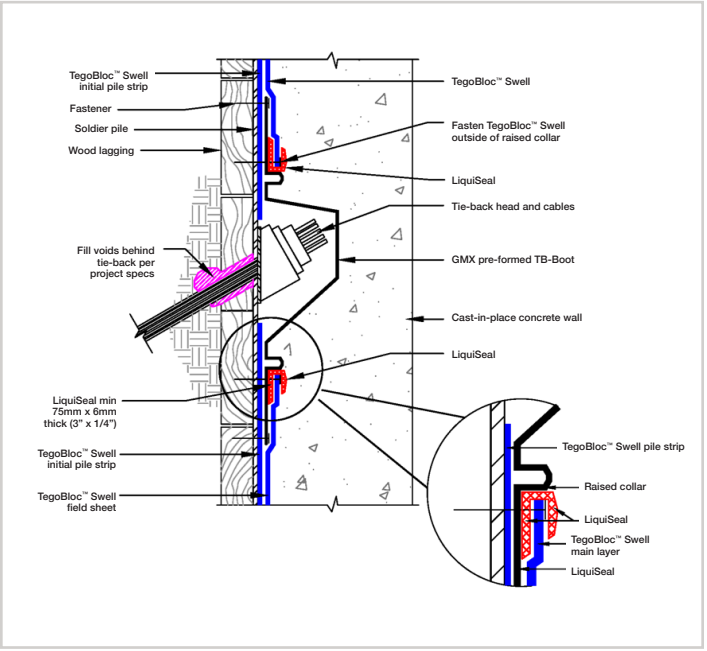
Soil Nail Rods or Rock Anchors: For soil nail rods cut within 75 mm (3”) of the soil nail retention wall surface, install TB-3 following the TB-Boot installation guidelines. For smaller tie-back heads and rock anchors cut within 150 mm (6”) of the soil retention wall surface, install TB-6SN per TB-Boot installation guidelines.

Note: Always follow the manufacturer’s guidelines for the specific TB-Boot product and project specifications.

TECHNICAL DATA

TYPICAL PROPERTIES	TYPICAL VALUE			
	TB-Boot 3	TB-Boot 6	TB-Boot 8	TB-Boot 10
Overall dimensions	420 mm x 420 mm (16.5” h x 16.5” w)	640 mm x 585 mm (25.25” h x 23” w)	1 m x 0.85 m (39” h x 33.5” w)	1 m x 875 mm (38.5” h x 34.25” w)
Center preformed cavity dimensions	125 mm x 100 mm (at base) (5” h x 4” w)	215 mm x 160 mm (at base) (8.5” h x 6.25” w)	380 mm x 240 mm (at base) (15” h x 9.5” w)	530 mm x 420 mm (at base) (21” h x 16.5” w)
Maximum height of preformed cavity from soil nail retention wall	90mm (3.5”)	150mm (6”)	200mm (8”)	250mm (10”)

INSTALLATION HYDROSTATIC CONDITION



NON-HYDROSTATIC CONDITIONS

For non-hydrostatic conditions, install and secure DrainMax drainage composite course per GMX’s guidelines to soil retention wall prior to installing TB-Boot.

NON-STANDARD INSTALLATIONS

For irregular shoring wall and tie-back head conditions not suitable for standard TB-Boot installation stated herein, please contact GMX for installation guidelines.

SHOTCRETE INSTALLATIONS

For structural shotcrete foundation walls, please contact GMX for installation guidelines.

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ULTRA-GUARD EFS

Multi-purpose Sealant

PRODUCT DESCRIPTION

Ultra-Guard EFS is a high-performance joint sealant for a wide range of construction applications. Ultra-Guard EFS delivers tough, elastic sealing performance, for joints requiring compression and extension greater than 35%.

PRODUCT INFORMATION: FEATURES & BENEFITS

- Solvent and isocyanate free, 100% solids
- Non-silicone
- Non-flammable
- Fast-curing
- Primerless bonding to most surfaces
- Paint compatible
- Low odor
- Extremely low shrinkage
- Non-staining
- Mildew resistant

STANDARDS & COMPLIANCE

- May contribute to LEED V4 EQ Material Resource Credit 4.1 - Adhesives and Sealants
- ASTM C920, Type S, Grade NS, Class 35 Uses NT, T, G, A & O
- Federal Specification TT-S-00230-C Type II, Class B
- Corps of Engineers CRD-C-541, Type II, Class B
- Conforms to OTC Rule for Sealants and Caulks
- Meets requirements of California Regs: CARB, BAAQMD and SCAQMD
- Conforms to USDA Requirements for Non-food Contact

COMMON APPLICATIONS

- Roofing
- Parapets
- Window and door frames
- Block and Masonry
- Expansion Joints
- Siding
- Weather Sealing
- Cove Joints
- Below-grade Waterproofing penetrations and transition details

HIGH PERFORMANCE DURABILITY

- Ultra-Guard EFS can be installed on damp surfaces which is defined as when no moisture is transferred to the skin when the substrate is touched.
- The cured bead exhibits excellent long-term adhesion to the porous surfaces.
- Does not dry or become brittle.
- Low odor, ideal for indoor and outdoor use

TYPICAL PROPERTIES

Please contact your GMX Sales Representative before writing specifications around this product. Product properties are as follows:

Property	Typical Value	Units	Test Method
VOC's	34.5 g/L		EPA Test Method 24
Skinover time @ 50% R.H. 70 deg F	30	Min.	ASTM C679
Density	127	#/gal	
Hardness	50	Shore A	
Shear Strength	185.7	psi	ASTM D1002
Peel Strength ABS Plastic Aluminum Mortar Glass Pine PVC Cold Rolled Steel	 12.7 25.1 25.7 26.7 24.0 25.8 23.9	lbf/in.	ASTM D903
Tensile	268	psi	ASTM D412
Elongation at Break	259	%	ASTM D412
Chemistry	Hybrid Polymer		
Movement	+/- 35%		ASTM C920
Shrinkage	0%		
Service Temperature	40°F - 200°F		
Viscosity	2,730,000 1,555,000 460,000	cps @ 1 rpm cps @ 2 rpm cps @ 10 rpm	ASTM D2196-10

Ultra-Guard EFS typical values represent data from multiple batches. Values will be refreshed, as necessary, upon data collection from additional campaigns and long-term variability discernment.

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ULTRA-GUARD EFS

APPLICATION
Remove all dirt, oil, loose paint, frost and other contamination from all working surfaces. Maintain Ultra-Guard EFS at room temperature before applying to ensure easy gunning and tooling. Test and evaluate to ensure adequate adhesion. Carefully gun the sealant with a smooth, continuous bead. If tooling is needed, do so within fifteen minutes of application.

CONCRETE
Prior to application remove any residual contamination by mechanical abrasion, sand blast- ing or power washing. On green concrete, remove all release agents and loose concrete.
Dry all visible and/or standing water. Install an appropriate backer rod to avoid three-point bonding.

METAL
Prepare all metal to ensure maximum adhesion. Remove all rust, scale and residue using a wire brush. Remove films, loose or inappropriate coatings and oils with an appropriate solvent such as alcohol.

*GMX recommends that coated substrates be tested for proper adhesion prior to starting a project to determine suitability for use.

WOOD
Wood should be clean, sound and dry prior to sealant application. Allow treated wood to weather for six months prior to application. Remove all coatings and paint to ensure proper adhesion. Ultra-Guard EFS is not recommended for use on fire retardant lumber.

PRIMING
In most applications Ultra-Guard EFS will not require a primer. However, certain substrates may require a primer to ensure a long-lasting bond and weatherproof seal. It is the applicator's responsibility to determine whether or not a primer is needed in their specific application.

CLEAN-UP
Clean tools and any uncured adhesive with mild solvent such as mineral spirits.

MATERIAL STORAGE/DISPOSAL
Store securely between 60° F - 80° F in unopened container. Recommended shelf life is 12 months from date of manufacture on bottom of tube. Keep tube tightly sealed. Dispose of contents/ container in accordance with Local/Regional/National/International Regulations. Refer to Safety Data Sheet (SDS) for further information.

SHELF LIFE AND STORAGE
The shelf life is 12 months for an unopened container from the date of manufacture. Reference the date of manufacture. YYMMDD ex. 190522 is May 22, 2019.

COLORS
Available only in BLACK

PACKAGING
There are 12, 20 oz. sausages in a case.

WARRANTY
GMX warrants that our products are manufactured and conform to strict quality assurance specifications. For warranty information visit: www.gmxwaterproofing.com/terms

LIMITATIONS
Ultra-Guard EFS should not be used in applications in which it will be permanently exposed to liquid water.

PRECAUTIONARY STATEMENTS
Do not use until all instructions and safety precautions have been read and understood. Wear protective gloves, protective clothing and eye protection. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace.
IF ON SKIN: Wash exposed body areas with soap and water.
IF IN EYES: Rinse with water, remove contact lenses and continue rinsing. If exposed or concerned get medical advice/attention.
Refer to Safety Data Sheet (SDS) for further information.

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DRAINMAX® 220

THREE-PART GEO-TEXTILE COMPOSITE DRAINAGE

GMX
A Garland Industries Subsidiary

COMMERCIAL

DESCRIPTION

DrainMax® 220 prefabricated sheet drain is composed of a dimpled polymeric core with a nonwoven geotextile bonded to the dimple side and a polymeric film bonded to the back side. The geotextile allows water to pass through while retaining backfill materials. The solid core allows water collection from one side and provides a continuous flow path to designated drainage exits. The polymeric backing film provides system compatibility with softer waterproofing membranes. DrainMax® 220 is an economical solution for single-sided subsurface vertical drainage applications requiring moderate strength and flow capacity while providing additional protection for softer waterproofing membranes.

TECHNICAL DATA

Physical Properties [1]	Test Method	Typical Values
GEOTEXTILE		
Material [2]		PP, NPNW
Water Flow Rate	ASTM D4491	165 gpm/ft²
		6,724 Lpm/m²
Grab Tensile Strength	ASTM D4632	100 lbs
		445 N
CBR Puncture	ASTM D6241	275 lbs
		1,220 N
Trapezoidal Tear	ASTM D4533	50 lbs
		222 N
Apparent Opening Size (AOS) [3]	ASTM D4751	70 sieve
		0.212 mm
Grab Elongation	ASTM D4632	6%
UV Resistance	ASTM D4355	70% / 500 Hrs
Permittivity	ASTM D4491	2.4 sec⁻¹
CORE		
Thickness	ASTM D5199	0.25 in
		6.35 mm
Compressive Strength	ASTM D6364 /	11,000 psf
	ASTM D1621	527 kPa
In-Plane Flow Rate [4]	ASTM D4716	12.5 gpm/ft
		155 Lpm/m
Perforated?		No
Backing Film for Softer Membranes		Yes
COMPOSITE		
Recycled Content [5]	CALCULATED	> 70%
Roll Size	MEASURED	4 x 50 ft
Roll Weight [6]	MEASURED	29 lbs

1. Unless otherwise noted, all physical and performance properties listed are Typical Values as defined in ASTM D4439.
2. PP = Polypropylene; NPNW = Needle-Punched Nonwoven; WM = Woven Monofilament: for use in planters.
3. AOS value listed is Maximum Average Roll Value.
4. In-plane flow rate measured under 3,600 psf (172 kPa) compressive load at hydraulic gradient of 1.0.
5. Pre-Consumer recycled content by weight.
6. Approximate packaged roll weight.

All technical information contained in this document is accurate as of revision date listed.
Please contact your GMX Account Manager for the most current technical information available.

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Consult your local GMX Sales Representative for Questions.

DRAINMAX® 520

THREE-PART GEO-TEXTILE COMPOSITE DRAINAGE

GMX
A Garland Industries Subsidiary

COMMERCIAL

DESCRIPTION

DrainMax® 520 prefabricated sheet drain is composed of a dimpled polymeric core with a nonwoven geotextile bonded to the dimple side and a polymeric film bonded to the back side. The geotextile allows water to pass through while retaining backfill materials. The solid core allows water collection from one side and provides a continuous flow path to designated drainage exits. The polymeric backing film provides system compatibility with softer waterproofing membranes. DrainMax® 520 is recommended for single-sided subsurface vertical drainage applications requiring high strength, high flow capacity, while providing additional protection for softer waterproofing membranes.

TECHNICAL DATA

Physical Properties [1]	Test Method	Typical Values
GEOTEXTILE		
Material [2]		PP, NPNW
Water Flow Rate	ASTM D4491	165 gpm/ft²
		6,724 Lpm/m²
Grab Tensile Strength	ASTM D4632	100 lbs
		445 N
CBR Puncture	ASTM D6241	275 lbs
		1,220 N
Trapezoidal Tear	ASTM D4533	50 lbs
		222 N
Apparent Opening Size (AOS) [3]	ASTM D4751	70 sieve
		0.212 mm
Grab Elongation	ASTM D4632	6%
UV Resistance	ASTM D4355	70% / 500 Hrs
Permittivity	ASTM D4491	2.4 sec⁻¹
CORE		
Thickness	ASTM D5199	0.25 in
		6.35 mm
Compressive Strength	ASTM D6364 /	11,000 psf
	ASTM D1621	527 kPa
In-Plane Flow Rate [4]	ASTM D4716	12.5 gpm/ft
		155 Lpm/m
Perforated?		No
Backing Film for Softer Membranes		Yes
COMPOSITE		
Recycled Content [5]	CALCULATED	> 70%
Roll Size	MEASURED	4 x 50 ft
Roll Weight [6]	MEASURED	29 lbs

1. Unless otherwise noted, all physical and performance properties listed are Typical Values as defined in ASTM D4439.
2. PP = Polypropylene; NPNW = Needle-Punched Nonwoven; WM = Woven Monofilament: for use in planters.
3. AOS value listed is Maximum Average Roll Value.
4. In-plane flow rate measured under 3,600 psf (172 kPa) compressive load at hydraulic gradient of 1.0.
5. Pre-Consumer recycled content by weight.
6. Approximate packaged roll weight.

All technical information contained in this document is accurate as of revision date listed.
Please contact your GMX Account Manager for the most current technical information available.

GMX ISO 9001:2015 REGISTERED TO GMX, INC.

GMX, Inc.
3014 Chamber Dr.
Monroe, NC 28110
Toll Free: 866-228-7743
www.gmxwaterproofing.com

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperatures, application methods, test methods, actual site conditions and curing conditions. Installation conditions and methods can impact product performance.
Consult your local GMX Sales Representative for Questions.

A Subsidiary of Garland Industries

FasTape SRA-W

DESCRIPTION

Low Density Polyethylene Film Tape - 9.0 mil - Synthetic Rubber Based Adhesive remains permanently tacky and bonds well to most surfaces over a wide range of temperatures; excellent low temperature bond. Tough polyethylene backing offers good abrasion and tear resistance. Highly conformable, waterproof and resistant to chemical deterioration.

APPLICATIONS

Ideal for polyethylene splicing; patching/repairing poly sheeting used in boating and RV industry; surface protection & electroplate masking; wire identification; packaging; etc. Works well in most applications where a low thread count polyethylene coated cloth tape is being used.

TECHNICAL DATA

Properties	Value
Total Thickness	9.0 mil (0.229 mm)
Tensile Strength	22 lbs/inch width
Elongation	100%
Adhesion to Steel	60 oz/inch
Adhesion to Backing	35 oz/inch
Moisture Vapor Transmission	0.4 grams/100 sq. in/24 hrs.
Color	White
Format	4” x 60 yd
Core	3”

GMX, Inc.
3014 Chamber Dr.
Monroe, NC 28110
Toll Free: 866-228-7743
www.gmxco.com

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Solid

Product Name: TegoBase Swell, TegoBloc GrSwell, TegoBloc TxSwell

Product Code:

Name, Address, and Telephone of the Responsible Party

Manufacturer

GMX, Inc.
P.O. Box 743
Matthews, NC 28106

Emergency Telephone Number

Emergency Number: 1-800-424-9300 (CHEMTREC)

Main Switch Board: (704) 334-8222

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

H370 – STOT RE 1A

H350 – Carc. 1

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) : H370 – Causes damage to organs through prolonged or repeated exposure
H350 – May Cause Cancer

Precautionary Statements (GHS-US) : P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P260 – Do not breathe dust/fumes/gas/mist/vapours/spray
P264 – Wash face, hands, and any exposed skin thoroughly after handling.
P270 – Do not eat, drink, or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P281 – Use personal protective equipment as required.
P308+P313 – If exposed or concerned: Get medical advice/attention.
P337+P313 – if eye irritation persists: Get medical attention/advice
P405 – Store locked up.
P501 – Dispose of contents/container according to local, regional, national, and international regulations.

Other Hazards

Other Hazards Not Contributing to the Classification: Not available.

Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not available

Mixture

Name	Product identifier	% (w/w)	Classification (GHS-US)
Quartz	CAS No (14808-60-7)	6	H225 - Flam. Liq. 2 H319 – Eye Irrit. 2A H351 – Carc. 2
Cristobalite	CAS No (14464-46-1)	2	Not Classified

Other components below reportable levels

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). IF exposed or concerned: Get medical advice/attention.

First-aid Measures After Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

First-aid Measures After Skin Contact: Wash off with soap and water. Get medical attention if irritation develops and persists.

First-aid Measures After Eye Contact: Rinse with water. Get medical attention if irritation develops and persists.

First-aid Measures After Ingestion: Rinse mouth. Get medical attention if symptoms occur.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO_2). Foam. Dry powder. Dry chemical, water fog, foam.

Unsuitable Extinguishing Media: Do not use a solid water stream as it may scatter and spread fire.

Special Hazards Arising From the Substance or Mixture

No information available

Advice for Firefighters

Firefighting Instructions: Exercise caution when fighting any chemical fire.

Protection During Firefighting: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Use personal protective equipment. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Evacuate personnel to safe areas. Ensure adequate ventilation.

For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Avoid discharge into drains, water courses or onto the ground.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Keep container tightly closed. Keep in properly labeled containers. Keep out of the reach of children.

Incompatible Materials: Not available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Cristobalite (14464-46-1)		
USA Table Z-1	PEL Respirable Dust	0.05 mg/m^3
USA Table Z-3	TWA Respirable	0.05 mg/m^3 , 1.2 mppcf
US ACGIH TLV	TWA Respirable fraction	0.025 mg/m^3
US NIOSH	TWA Respirable dust	0.05 mg/m3

Quartz (14808-60-7)		
USA Table Z-1	PEL Respirable Dust	0.05 mg/m^3
USA Table Z-3	TWA Respirable	0.1 mg/m^3 , 2.4 mppcf
US ACGIH TLV	TWA Respirable fraction	0.025 mg/m^3
US NIOSH	TWA Respirable dust	0.05 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be

monitored and controlled

Exposure Controls

Appropriate Engineering Controls:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Use of an impervious apron is recommended.

Respiratory protection

Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Solid. Mat or Fabric
Odor	:	None
Odor Threshold	:	None known
pH	:	Not available
Relative Evaporation Rate (butyl acetate = 1)	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 68°F (20°C)	:	Not available
Relative Density	:	Not available
Specific Gravity	:	Not available
Solubility	:	Partly miscible
Partition coefficient: n-octanol/water	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not available
Explosion Data – Sensitivity to Static Discharge	:	Not available
VOC Content	:	CARB

SECTION 10: STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage, and transport

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: No information available.

Incompatible Materials: Powerful oxidizers. Chlorine.

Hazardous Decomposition Products: Carbon monoxide. Carbon dioxide. Hydrocarbons.

SECTION 11: TOXICOLOGICAL INFORMATION

Information On Toxicological Effects - Product

Information on likely routes of exposure

Inhalation Prolonged inhalation may be harmful.

Skin contact No adverse effects due to skin contact are expected.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics

Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Not known.

Components Species Test Results

CRISTOBALITE (CAS 14464-46-1)

Oral Acute

LD50 Rat > 22500 mg/kg

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Mild irritant to eyes (according to the modified Kay & Calandra criteria)

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization

According to the classification criteria of the European Union, the product is not considered as being a skin irritant.

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is
sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory
occupational exposure limits. May cause cancer. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

IARC Monographs. Overall Evaluation of Carcinogenicity

CRISTOBALITE (CAS 14464-46-1) 1 Carcinogenic to humans.

QUARTZ (SIO2) (CAS 14808-60-7) 1 Carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

CRISTOBALITE (CAS 14464-46-1) Cancer

QUARTZ (SIO2) (CAS 14808-60-7) Cancer

US. National Toxicology Program (NTP) Report on Carcinogens

CRISTOBALITE (CAS 14464-46-1) Known To Be Human Carcinogen.

Reasonably Anticipated to be a Human Carcinogen.

QUARTZ (SIO2) (CAS 14808-60-7) Known To Be Human Carcinogen.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard Not an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity – Ingredients

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Persistence and Degradability

No information available for this product.

Bioaccumulative Potential – Product

No information available for this product.

Bioaccumulative Potential – Ingredients

No information available for this product.

Mobility in Soil

No information available for this product.

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of in accordance with local, state, and federal regulations.

Additional Information: Empty containers should be taken for local recycling, recovery or waste disposal.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT

Proper Shipping Name	:	Non-Regulated Material.

In Accordance with IMDG

Proper Shipping Name	:	Not Regulated.
Hazard Class	:	
Identification Number	:	
Packing Group	:	
Marine Pollutant	:	

In Accordance with IATA

Proper Shipping Name	:	Not Regulated.
Hazard Class	:	
Identification Number	:	
Packing Group	:	
Marine Pollutant	:	

In Accordance with TDG

Proper Shipping Name	:	Not Regulated.
Hazard Class	:	
Identification Number	:	
Packing Group	:	
Marine Pollutant	:	

SECTION 15: REGULATORY INFORMATION

US federal regulations

OSHA Process Safety Standard:

This material is not known to be hazardous by the OSHA Highly Hazardous Process Safety Standard, 29 CFR 1910.119.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

CRISTOBALITE (CAS 14464-46-1) Cancer

QUARTZ (SIO2) (CAS 14808-60-7) Cancer

CRISTOBALITE (CAS 14464-46-1) lung effects

QUARTZ (SIO2) (CAS 14808-60-7) lung effects

CRISTOBALITE (CAS 14464-46-1) immune system effects

QUARTZ (SIO2) (CAS 14808-60-7) immune system effects

CRISTOBALITE (CAS 14464-46-1) kidney effects

QUARTZ (SIO2) (CAS 14808-60-7) kidney effects

SARA 302 Extremely hazardous substance

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Not listed.

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations WARNING: This product contains a chemical known to the State of California to cause cancer.

California Proposition 65

This product can expose you to QUARTZ (SIO2), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

WARNING:

California Proposition 65 - CRT: Listed date/Carcinogenic substance

QUARTZ (SIO2) (CAS 14808-60-7) Listed: October 1, 1988

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

CRISTOBALITE (CAS 14464-46-1)

QUARTZ (SIO2) (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 04/03/2024

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Party Responsible for the Preparation of This Document

GMX, Inc.
2034-C Van Buren Ave.
Indian Trail, NC 28709
T-704-334-8222

This information is based on our knowledge as of the Revision Date and is intended to describe the product only for the purposes of health, safety, and environmental requirements as of the Revision Date. It should not therefore be construed as guaranteeing any specific property of the product nor as providing any warranty, expressed or implied. The user assumes all responsibility, liability, risk of loss, damage, or expense arising out of, or in any way connected with, the handling, storage, use, or disposal of the product.

North America GHS US 2015 & WHMIS

Safety Data Sheet

Article

Article No.: 050109 **Version:** 2024.02

Dear Customer:

According to Federal Regulations, GMX Commercial Waterproofing Materials commercially available under the following names:

Bilar®
TegoBase
FasTape SRA W
Drain Max 200
Drain Max 220
Drain Max 380
Drain Max 500
Drain Max 520
Drain Max 650
Drain Max 680
Drain Max GR50
Ultra-Guard GB
Ultra-Guard GB FR
Drain Max GR100
Drain Max Base Drain
Drain Max Base Drain Universal End Outlet
Drain Max Base Drain Universal Tee Outlet
Drain Max 12" Corner Guard
Ultra-Guard Glass Wrap
TegoBloc Boot 3",6",8" &10"
TegoBloc SA
TegoBloc SA-LT
Ultra-Guard Reinforcing Fabric 9" & 36"

... and all surfacing and colors thereof meet the **OSHA definition of an "Article" under 29 CFR 1910.1200(c) and does not require a Safety Data Sheet (SDS) as indicated under 29 CFR 1010.1200(b)(6)(v).**

Articles of Manufacture are defined as: "... a manufactured item which is formed to a specific shape or design during manufacture, which has end use functions depending in whole or in part upon its shape or design during end use and which does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use."

As the above products fall under the definition of Articles of Manufacture, there is no need for an SDS. Therefore, no SDS has been forwarded to your attention. This helps us greatly in our efforts to reduce the amount of paper we use, and in turn to preserve our natural resources.

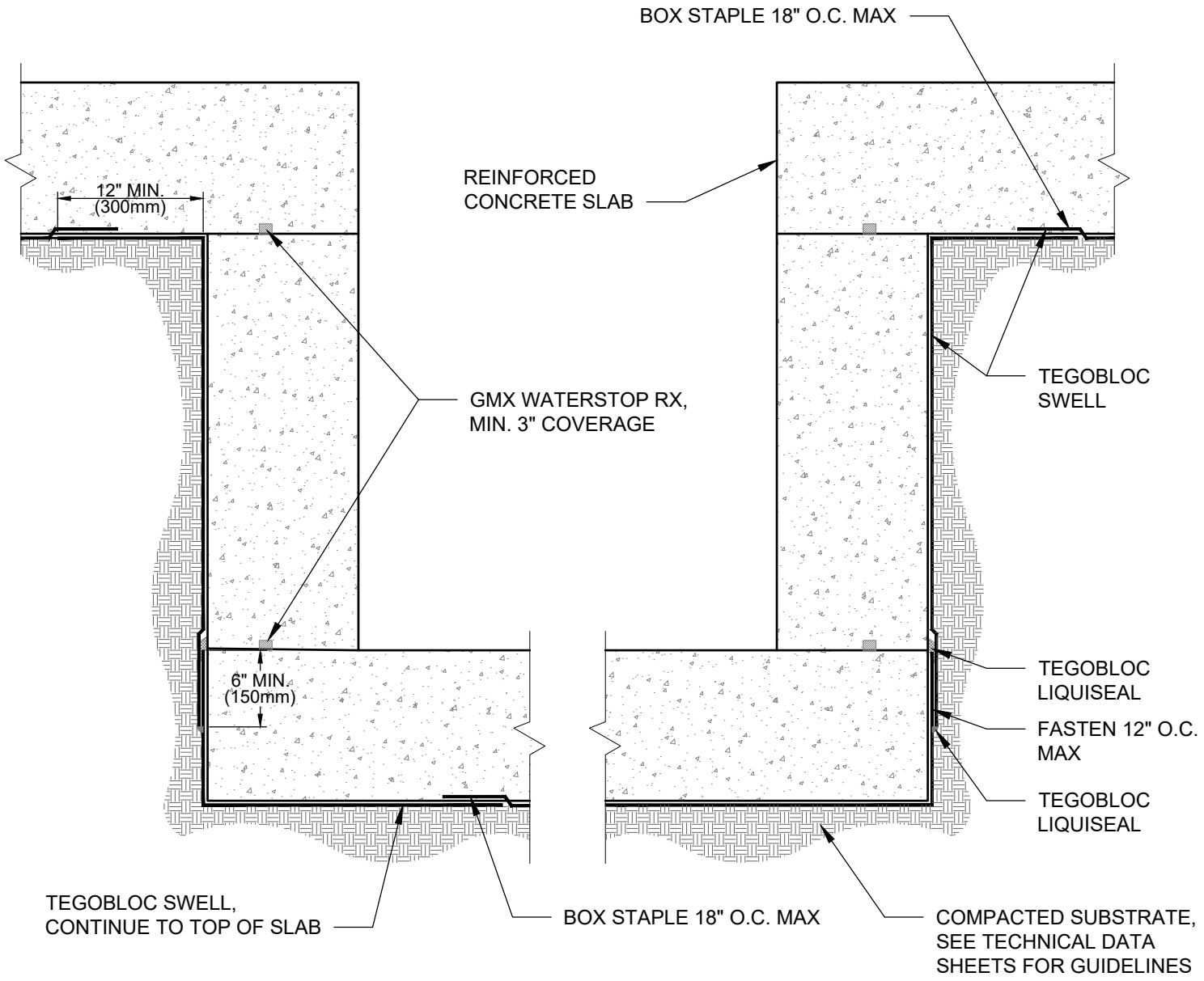
If you have any questions regarding the above, please call (704) 334-8222.

Sincerely,

GMX, INC.

Manufacturer Address
3014 Chamber Drive
Monroe, NC 28110

FILENAME: TB-S-5.dwg 7-7-23



INSTALL UNDER SLAB TEGOBLOC SWELL WITH (WOVEN) GEOTEXTILE FACING INSTALLER

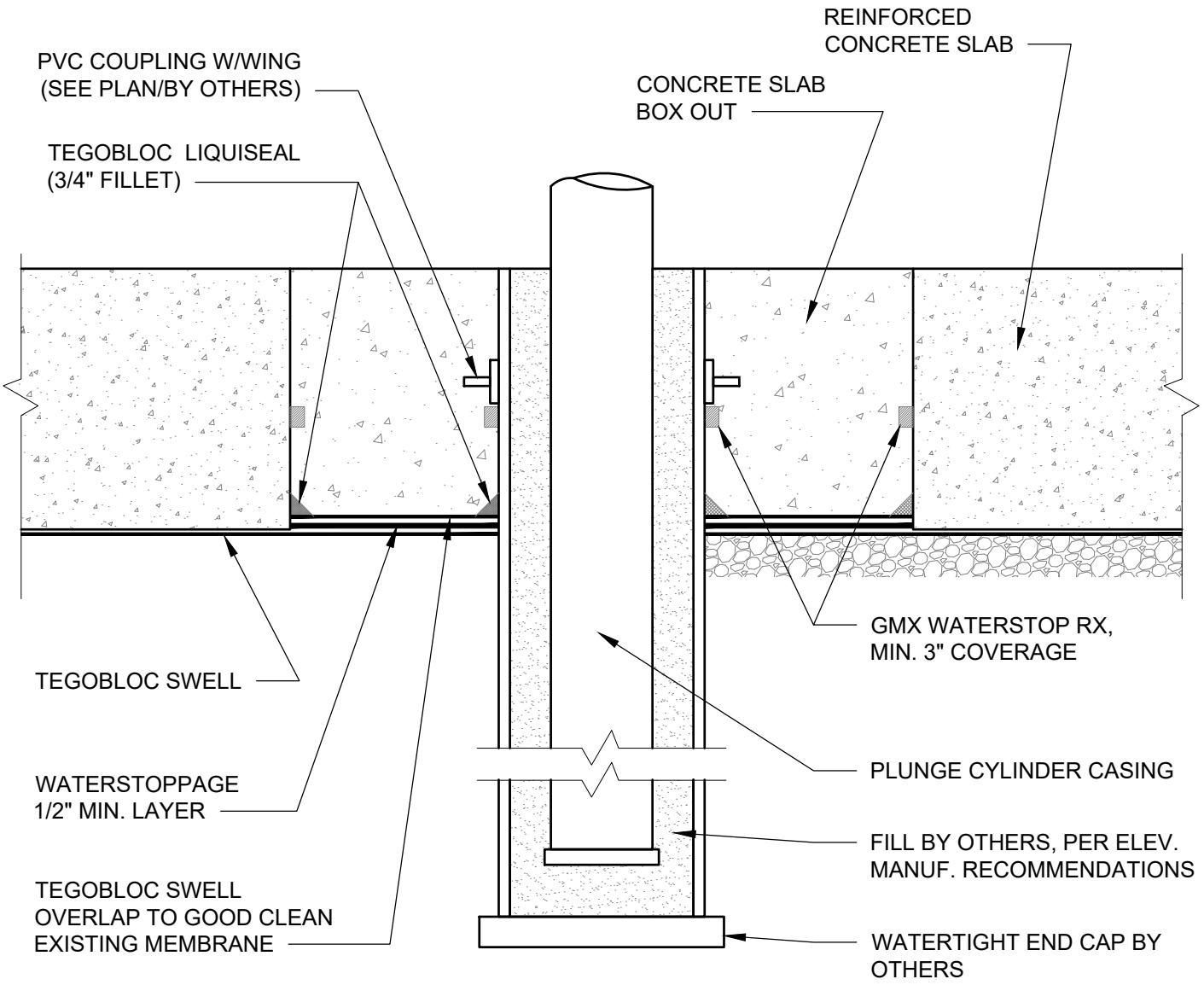
DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

TegoBloc Swell

ELEVATOR PIT - TYPICAL BACKFILLED

GMX

DETAIL ID:	TB-S-5
REPRESENTATIVE:	
DATE:	SHT: OF



NOTE: TEGOBLOC SWELL WATERPROOFING DESIGN IS INTENDED TO STOP WATER PENETRATION AROUND THE OUTSIDE OF THE PVC PIPE HOUSING. WATER TIGHTNESS OF THE PVC PIPE AND PLUNGER CYLINDER IS THE RESPONSIBILITY OF OTHERS.

INSTALL TEGOBLOC SWELL WITH (WOVEN) GEOTEXTILE FACING INSTALLER. USE CETSEAL TO SECURE WATERSTOP-RX

DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

TegoBloc Swell

FOUNDATION SLAB - ELEVATOR LIFT PLUNGER PENETRATION

GMX

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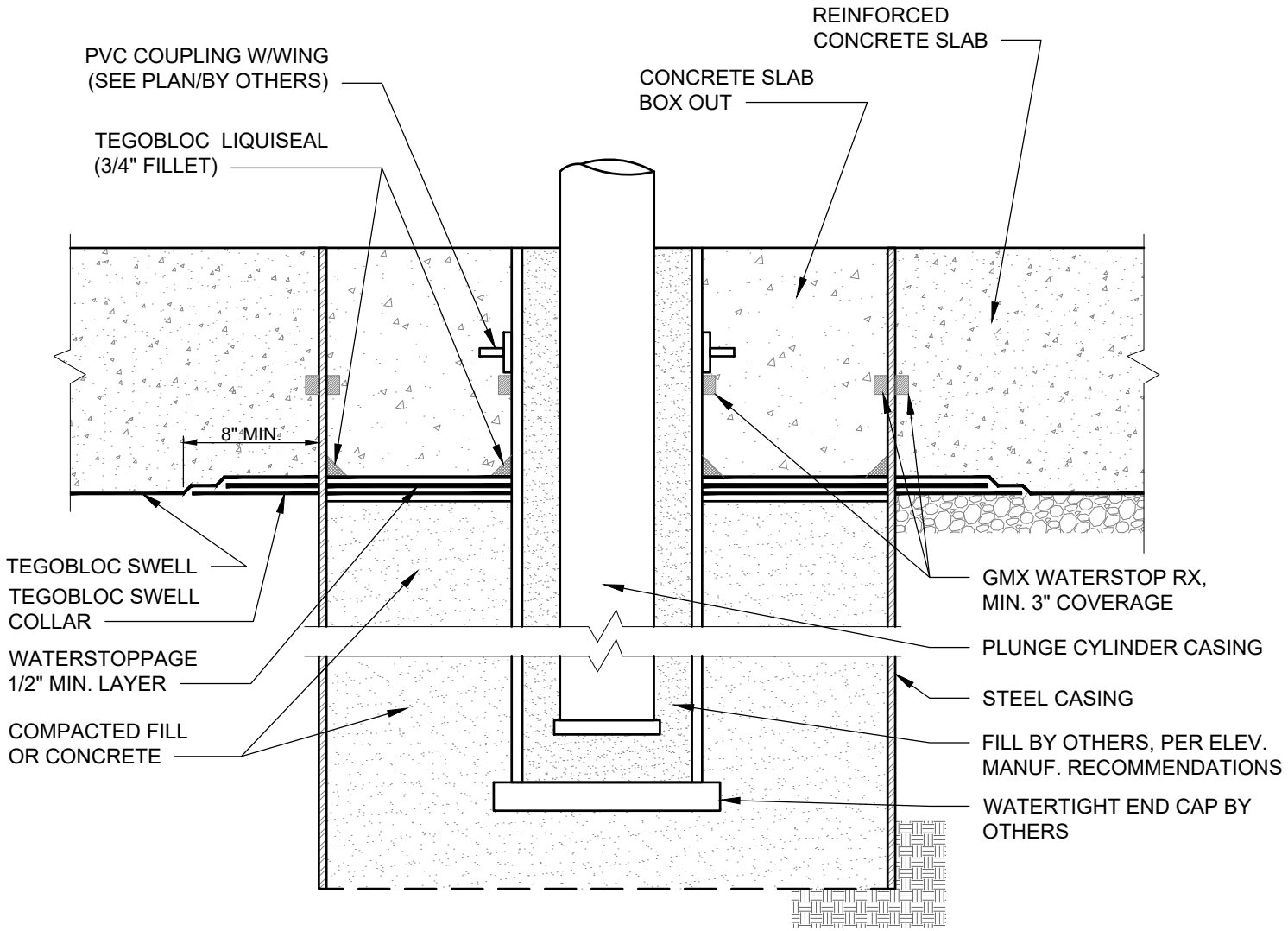
REPRESENTATIVE:	
DATE:	SHT: OF



NOTE: TEGOBLOC SWELL WATERPROOFING DESIGN IS INTENDED TO STOP WATER PENETRATION AROUND THE OUTSIDE OF THE PVC PIPE HOUSING. WATER TIGHTNESS OF THE PVC PIPE AND PLUNGER CYLINDER IS THE RESPONSIBILITY OF OTHERS.

INSTALL TEGOBLOC SWELL WITH (WOVEN) GEOTEXTILE FACING INSTALLER. USE CETSEAL TO SECURE WATERSTOP-RX

DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

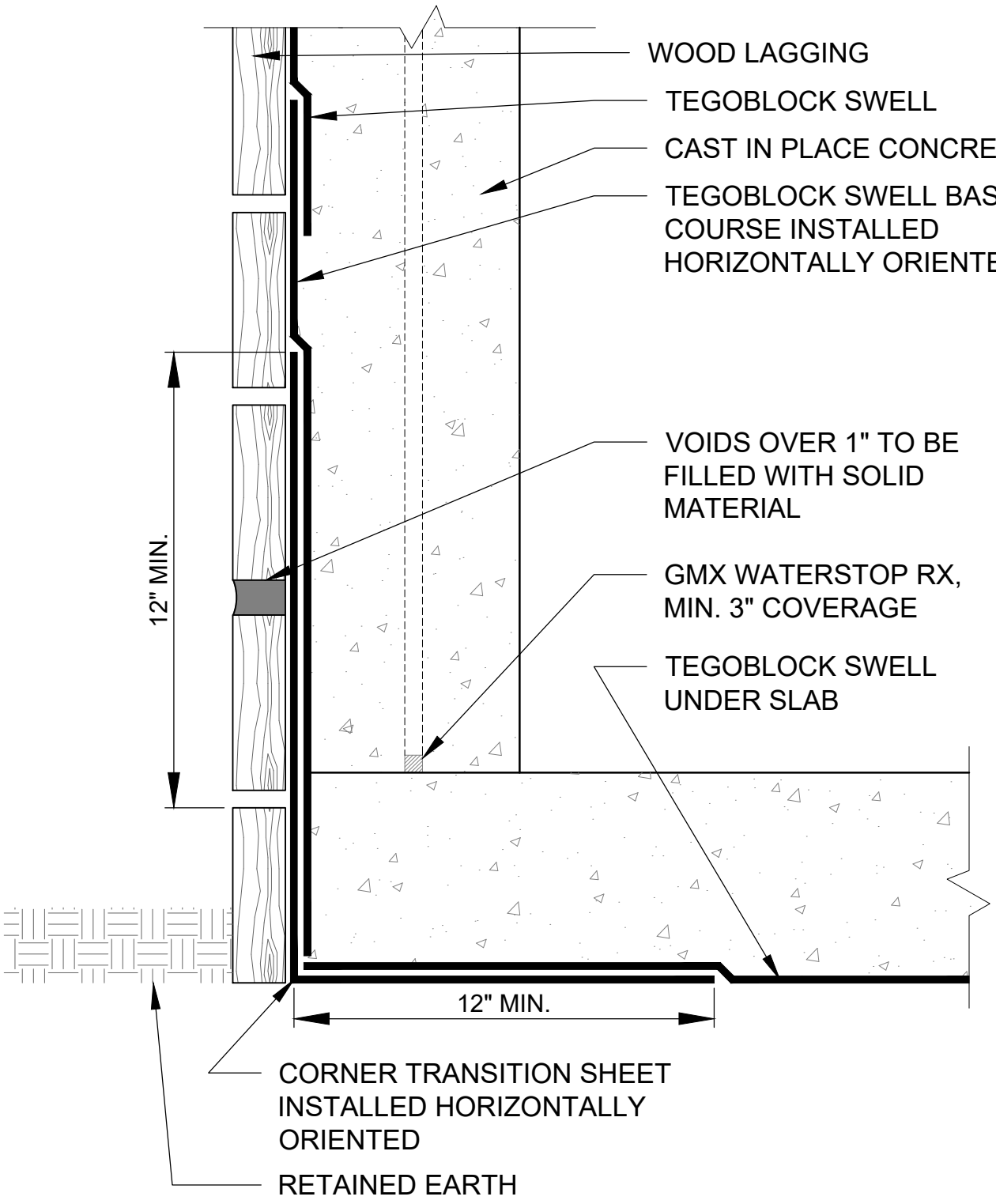
TegoBloc Swell

FOUNDATION DETAIL - ELEVATOR LIFT PLUNGER WITH CASING

GMX

DETAIL ID:	TB-S-7
REPRESENTATIVE:	
DATE:	SHT: OF

FILENAME: TB-S-1.dwg 2-23-23



DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

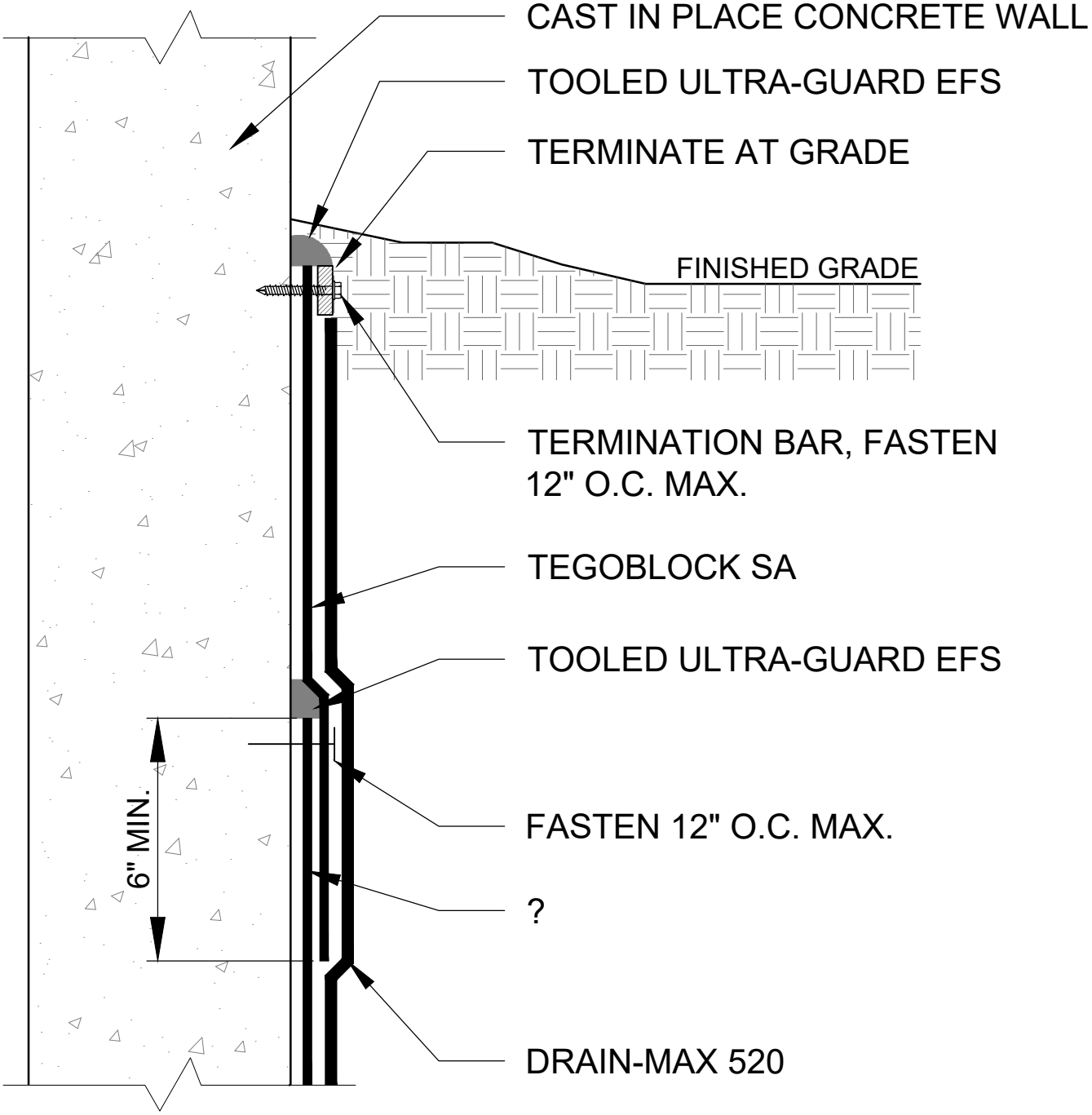
TegoBloc Swell

ZERO PROPERTY LINE

GMX
A Subsidiary of Garland Industries

DETAIL ID:	TB-S-1
REPRESENTATIVE:	
DATE:	SHT: OF

FILENAME: TB-S-2.dwg 2-23-23



DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

TegoBloc Swell

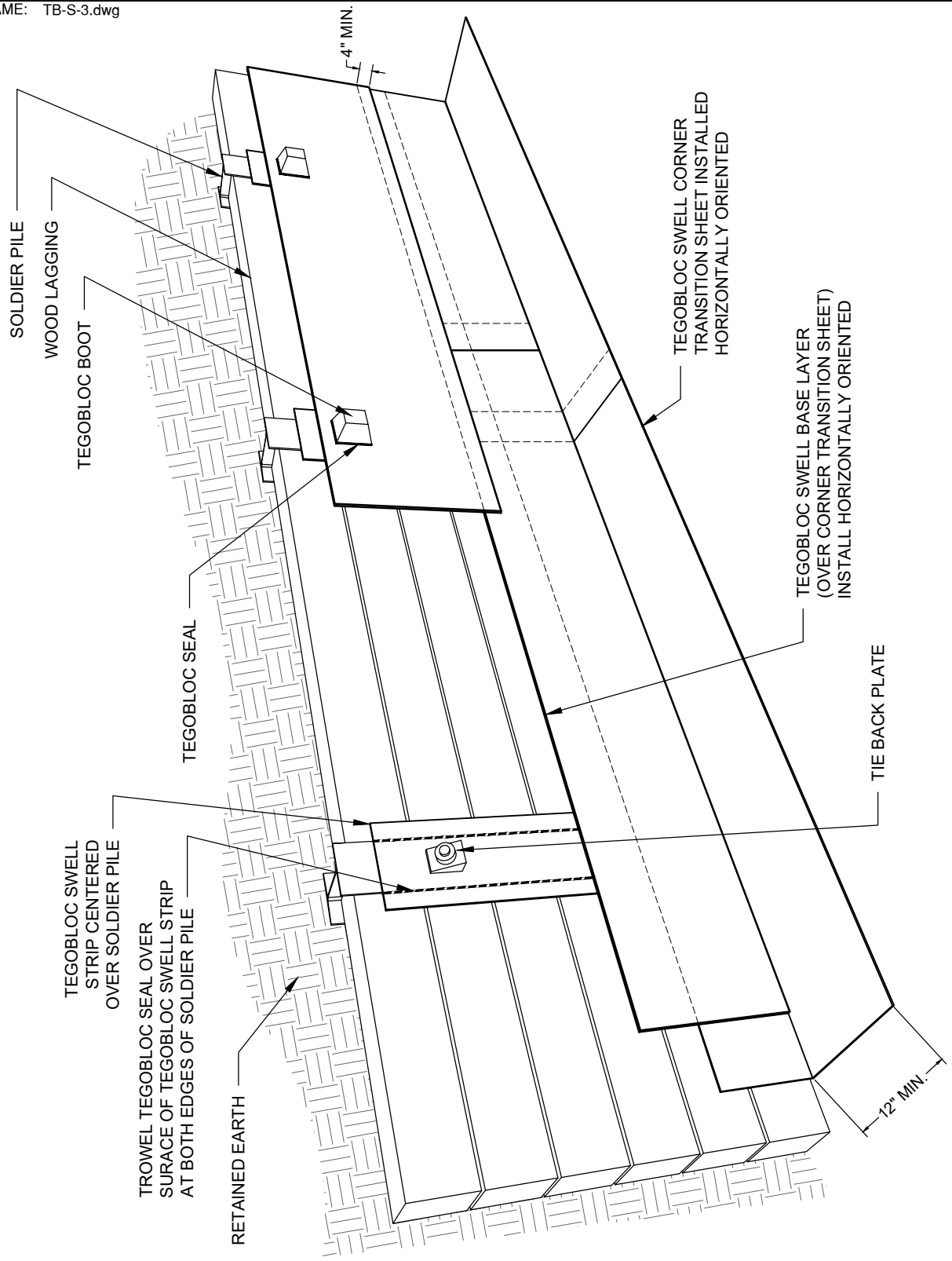
BACKFILLED WALL DETAIL

GMX
A Subsidiary of Garland Industries

DETAIL ID:	TB-S-2
REPRESENTATIVE:	
DATE:	SHT: OF

FILENAME: TB-S-3.dwg

2-23-23



DRAWINGS ON 8½"x11 TITLE BLOCKS ARE NOT TO SCALE.

TegoBloc Swell

SOLDIER PILE & LAGGING WALL DETAIL

GMX
A Subsidiary of Garland Industries

DETAIL ID:	TB-S-3
REPRESENTATIVE:	
DATE:	SHT: OF