

VOLTEX[®] GB-500

GAS VAPOR & WATERPROOFING BARRIER



PRODUCT MANUAL



CETCO[®]

PRODUCT OVERVIEW

VOLTEX® GB-500 waterproofing membrane composite is comprised of a 500-micron thick, 7 layer engineered film consisting of polyethylene and a EVOH barrier layers integrated with a bentonite-geotextile waterproofing tanking membrane. Along both PE roll edges, the two layers are not integrally bonded for 150 mm to facilitate ease of welding or taping the PE/EVOH geomembrane overlap and then overlapping the bentonite-geotextile layer component to form a duel overlap assembly.



APPLICATIONS

VOLTEX® GB-500 waterproofing membrane composite is designed for use as a waterproofing membrane and a gas-vapor barrier that resists the ingress of radon, methane, and carbon dioxide gases into building foundations from landfills and naturally occurring sources. VOLTEX® GB-500 waterproofing membrane composite can be installed on sites with passive or active sub-slab ventilation measures; used in conjunction with GEOVENT™ ventilation composite and relevant vent connectors as applicable.

VOLTEX® GB-500 waterproofing membrane composite can be used in both hydrostatic and non-hydrostatic conditions. This product fully complies with the latest codes of practice for gases and water as published by BRE, CIRIA and BSI (BS 8485:2015+A1:2019; BS8102: 2009) and is suitable for use as a gas and water protection system for NHBC AMBER 1 and AMBER 2 site characterizations.

LIMITATIONS

VOLTEX® GB-500 waterproofing membrane composite should only be installed after substrate preparation has been properly completed and is suitable to receive the waterproofing system. Concrete work should use conventional cast-in-place forms that produce a smooth surface. Do not use stay-in-place concrete forming; use removable forming products only.



VOLTEX® GB-500 PRODUCT MANUAL

ACCESSORIES

From flashings to tapes, VOLTEX® GB-500 waterproofing membrane composite has a full line of accessory products to support a proper application for your project.



- » **DS-80 SEAMTAPE** - PREMIUM DOUBLE SIDE TAPE 80 MM WIDE USED TO SEAL OVERLAPPED POLYETHYLENE FILM EDGES OF VOLTEX® GB-500 WATERPROOFING MEMBRANE COMPOSITE
- » **BLACKSEAL TG** - TROWEL GRADE MASTIC USED TO DETAIL AROUND PENETRATIONS, CORNER TRANSITIONS AND TERMINATIONS.
- » **SS-80 SEAMTAPE®** - PREMIUM SINGLE SIDE TAPE 80 MM WIDE USED TO SEAL OVERLAPPED POLYETHYLENE FILM EDGES OF VOLTEX® GB-500 WATERPROOFING MEMBRANE COMPOSITE.
- » **SS-400 FLASHING** - GAS-PROOF SINGLE SIDE ADHESIVE FLASHING 400 MM WIDE USED TO SEAL CORNER TRANSITIONS, TERMINATIONS, PATCHING OF VOLTEX® GB-500 WATERPROOFING MEMBRANE COMPOSITE.
- » **DS-30 TAPE** - PREMIUM DOUBLE-SIDED TAPE 30MM WIDE USED TO SECURE OVERLAPPED BENTONITE-GEOTEXTILE LAYER EDGES
- » **CETBIT 300** - PREMIUM SELF-ADHERING RUBBERIZED BITUMEN WATERPROOFING MEMBRANE USED FOR GRADE FLASHING
- » **GB-500** - 500 MICRON, 7-LAYER CO-EXTRUDED POLYETHYLENE/ EVOH FILM USED AS AN ACCESSORY PRODUCT
- » **CETSEAL™ SEALANT/ADHESIVE** - SINGLE-COMPONENT POLYETHER GENERAL SEALANT AND ADHESIVE.
- » **HYDROBAR® SWELLABLE DETAILING BAR** - SWELLABLE DETAILING BAR

VOLTEX® GB-500 PRODUCT MANUAL



VOLTEX® GB-500 waterproofing membrane composite is designed for below-ground waterproofing applications where the product is properly confined. VOLTEX® GB-500 waterproofing membrane composite and accessory products should not be installed in standing water or over ice. If ground water contains strong acids, alkali's, or is of a conductivity of 6,000 $\mu\text{mhos/cm}$ or greater, water samples should be submitted to the manufacturer for compatibility testing.

VOLTEX® GB-500 waterproofing membrane composite is designed for use under reinforced concrete slabs 100 mm thick or greater on a compacted earth/gravel substrate. VOLTEX® GB-500 waterproofing membrane composite requires a minimum 150 mm thick reinforced concrete slab if installed over a blinding slab.

VOLTEX® GB-500 waterproofing membrane composite is not designed for split-slab plaza deck construction or to waterproof expansion joints. Do not use this product on masonry block foundation walls. Consult CETCO for special installation guidelines that apply to shotcrete and precast concrete construction.



INSTALLATION GUIDELINES

Before installing VOLTEX® GB-500 waterproofing membrane composite read this installation manual to gain familiarity with specific procedures and applications. This manual covers the general installation guidelines for the following applications. For applications not covered in this manual, contact CETCO for specific guidelines.

- » *UNDERSLAB INSTALLATION*
- » *PROPERTY LINE CONSTRUCTION*
- » *BACKFILLED WALLS*
- » *SPECIAL CONDITIONS*

UNDERSLAB INSTALLATION

VOLTEX® GB-500 waterproofing membrane composite is engineered for use under reinforced concrete slabs 100 mm thick or greater on a compacted earth. There is a minimum requirement of 150 mm thick reinforced concrete slab if installed over a blinding slab.

Prior to installing VOLTEX® GB-500 waterproofing membrane composite the substrate must be properly prepared. Complete all required elevator pit, sump pit, grade beam and piling work prior to installing VOLTEX® GB-500 waterproofing membrane composite under main slab area. These areas must be correctly tied into the underslab waterproofing to form a monolithic seal.



1.1 SUBSTRATE PREPARATION

Substrate may be concrete, compacted earth or sand. Earth and sand substrates should be compacted to a minimum 85% Modified Proctor density. Substrate should be smooth and without sharp deflections or pockets.

1.2 INSTALLATION

Install VOLTEX® GB-500 waterproofing membrane composite over the properly prepared substrate with the woven geotextile side up, securing the polyethylene (PE/EVOH) liner of the

overlap assembly by means of heat-welding or double-taping to meet the project specification requirements.

Heat-Welded Overlap Installation:

It is recommended that the polyethylene (PE/EVOH) liner of VOLTEX® GB-500 waterproofing membrane composite membrane overlaps, plus overlaps with accessory products are sealed by heat welding where possible. With both geotextile edge layers folded back, heat-weld PE/EVOH liner of VOLTEX® GB-500 waterproofing membrane composite with roll sides and roll-ends overlapped a minimum 100mm (Detail W-1). Overlap applicable accessory products a minimum of



100mm and heat-weld. Heat-welding should be carried out by trained competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015+A1:2019. VOLTEX® GB-500 waterproofing membrane composite membrane overlaps should be dry, clean, and flat without wrinkles or defects prior to heat-welding. Ensure that the air temperature does not fall below daily dew point temperature to prevent the risk of surface condensation forming on VOLTEX® GB-500 waterproofing membrane composite. Prior to welding, fold back both geotextile roll edges for direct access to the lapped polyethylene (PE/EVOH) liner edges. After welding the polyethylene (PE/EVOH) liner, then fold back over and lap the geotextile layer edges of the membrane (Detail W-2). Complete overlap assembly by applying a continuous bead of CETSEAL™ sealant/adhesive between the lapped geotextile layers.

Taped-Overlap Installation:

Where VOLTEX® GB-500 waterproofing membrane overlaps plus overlaps with accessory products are to be sealed by taping, VOLTEX® GB-500 waterproofing membrane composite roll-sides and roll-ends should be overlapped minimum 100mm. Taped overlaps with accessory products should also be minimum 100mm. VOLTEX® GB-500

waterproofing membrane overlaps should be dry, clean, and flat without wrinkles or defects prior to taping. Conduct all seam taping when ambient and surface temperature is +4°C or above. Prior to taping, fold back both geotextile roll edges for direct access to the lapped polyethylene (PE/EVOH) liner edges. Install continuous line of DS-80 TAPE centered within the 100mm overlap of the polyethylene (PE/EVOH) liner; install DS-80 Tape in longest practical lengths with roll ends lapped minimum 50mm (Detail T-1). Using a silicone roller, press along the entire DS-80 tape line to bond the tape to both polyethylene (PE/EVOH) liners. With geotextile edge layers still folded back, complete taping by installing SS-80 Tape centered over the exposed top PE/EVOH liner lap edge. Install SS-80 Tape continuously centered along all PE/EVOH liner overlaps; with SS-80 Tape roll ends lapped minimum 50mm. Using silicone roller, press SS-80 tape to PE/EVOH liner of VOLTEX® GB-500 waterproofing membrane. After taping the polyethylene (PE/EVOH) liner, then fold back over and lap the geotextile layer edges of the membrane. Complete overlap assembly by applying a continuous bead of CETSEAL™ sealant/adhesive between the lapped geotextile layers.

When the slab is poured in sections, VOLTEX® GB-500 waterproofing membrane should extend a minimum 500 mm beyond the slab edge (Figure 1.3). This enables VOLTEX® GB-500 waterproofing membrane to be properly overlapped for subsequent slab section pours. WATERSTOP-RX® waterproofing sealant should be installed in all applicable slab construction joints.

1.3 PILE CAPS AND GRADE BEAMS

VOLTEX® GB-500 waterproofing membrane is typically not installed over pile caps. Prior to installation of VOLTEX® GB-500 waterproofing membrane around pile caps, apply BLACKSEAL® TG Mastic minimum 3.0 mm thick in corner extending minimum 100 mm on vertical and minimum 100 mm on horizontal substrate. Then apply 20mm thick fillet of BLACKSEAL® TG Mastic around base of the piling (Figure 1.12). Cut and install VOLTEX® GB-500 waterproofing membrane to closely counter pile cap. Then apply minimum 3.0mm thick counter flashing of BLACKSEAL® TG Mastic encapsulating cut edge of VOLTEX® GB-500 waterproofing membrane; with counter flashing extending onto VOLTEX® GB-500 waterproofing membrane composite minimum 50mm. Install WATERSTOP-RX® waterproofing sealant on top surface of pile cap around reinforcing steel (Figure 1.12).

Detail grade beams the same as pile caps (Figure 1.14) with a non-hydrostatic condition. For hydrostatic conditions, VOLTEX® GB-500 waterproofing membrane composite should be installed under the entire grade beam (Figure 1.15). Line the grade beam form-work with VOLTEX® GB-500 waterproofing membrane composite prior to placement of reinforcing steel. Leave a minimum 300mm of VOLTEX® GB-500 waterproofing membrane composite exposed at the top of the form to tie into below slab waterproofing course.

1.4 SLAB PENETRATIONS

Apply BLACKSEAL® TG Mastic extended minimum 100mm onto penetration and onto horizontal blinding slab substrate surface at minimum 3.0mm thickness. If compacted soil or gravel substrate, first cut and fit a minimum 300mm x 300mm patch of VOLTEX® GB-500 waterproofing membrane composite around penetration, placed with PE/EVOH film layer facing upward, prior to installing BLACKSEAL® TG Mastic. Cut VOLTEX® GB-500 waterproofing membrane composite to closely fit around penetrations (Figure 1.16). Cut and install VOLTEX® GB-500 waterproofing membrane composite to closely contour pipe. Apply a minimum 20 mm thick fillet of BLACKSEAL® TG Mastic around the penetration base to completely fill any void area between VOLTEX® GB-500 waterproofing membrane composite and the pipe penetration (Figure 1.17). Then apply minimum 3.0mm thick counter flashing of BLACKSEAL® TG Mastic encapsulating cut edge of VOLTEX® GB-500 waterproofing membrane composite; with counter flashing extending onto VOLTEX® GB-500 waterproofing membrane composite minimum 50mm. Install WATERSTOP-RX® waterproofing sealant around pipe penetration above the waterproofing course (Figure 1.12).

1.5 ELEVATOR PITS

VOLTEX® GB-500 waterproofing membrane composite should be placed on vertical surfaces and on the substrate below the slab to form a continuous material course around the elevator pit (Figure 1.17). If the vertical soil cut is smooth and

stable, VOLTEX® GB-500 waterproofing membrane composite may be installed directly against the soil. Contain unstable soils with a retaining wall. Install VOLTEX® GB-500 waterproofing membrane composite directly against the retaining wall. Due to various elevator piston plunger designs, consult CETCO for specific installation and detailing for piston plungers that penetrate the pit slab.

1.6 EDGE OF SLAB, BACKFILLED WALLS

When the installation reaches the outer edge of the slab, continue VOLTEX® GB-500 waterproofing membrane composite up to the top edge of the forms inside surface (Figure 1.21) or extend the VOLTEX® GB-500 waterproofing membrane composite sheet out the top of the form a minimum of 300 mm (12") (Figure 1.22). At the slab corner, VOLTEX® GB-500 waterproofing membrane composite should remain in contact with the substrate and the inside surface of the concrete form.

When the slab edge form is removed, any undamaged portion of VOLTEX® GB-500 waterproofing membrane composite extended outside the form should be positioned and secured to the top of the concrete footing. Damaged material outside the form should be cut off and disposed of. Overlap the secured VOLTEX® GB-500 waterproofing membrane composite edge on top of the footing a minimum 150 mm with the succeeding wall waterproofing. Install HYDROBAR® swellable detailing bar at wall-to-footing corner prior to

installing overlapping wall waterproofing.

WATERSTOP-RX® waterproofing sealant should be installed in the perimeter wall/slab intersection joint as illustrated in Figure 1.22.

1.7 EDGE OF SLAB, PROPERTY LINE CONSTRUCTION

Where property line retaining walls, such as soldier pile and lagging, are used as the outside form, continue the Underslab VOLTEX® GB-500 waterproofing membrane composite installation up the retaining wall a minimum 300mm above the top edge of the slab or footing (Figure 1.22). The extra 300mm sheet extension is very important since there is no access to the outer edge of the slab after it is poured.

Slab to Wall Corner Transition:

Install SS-400 FLASHING sheet horizontally oriented (butyl adhesive layer facing installer) with minimum 200mm of the sheet extending out onto the horizontal substrate. Remove release liner from SS-400 FLASHING and install the edge of the Underslab VOLTEX® GB-500 waterproofing membrane composite to the corner overlapping the full width of the SS-500 FLASHING on the substrate (with polyethylene (PE/EVOH) liner side onto the adhesive). Then install the bottom sheet course of VOLTEX® GB-500 waterproofing membrane composite on the retaining wall with its bottom edge to the corner; fully overlapping the SS-400 FLASHING. The top edge of the VOLTEX® GB-500 waterproofing membrane composite

sheet on the wall must extend a minimum 300mm above the elevation of the finished slab surface. Secure VOLTEX® GB-500 waterproofing membrane composite sheet to shoring wall with washer-head fastener maximum 300mm on center along the top edge; fastened only through the polyethylene (PE/EVOH) liner (Figure 1.24). Apply

20mm thick cant of BLACKSEAL® TG Mastic at slab-to-wall corner transition; completely filling any gap between the two edges of VOLTEX® GB-500 waterproofing membrane composite membranes. Extend minimum 3.0mm thick flashing of BLACKSEAL® TG Mastic onto both VOLTEX GM-500 edges minimum 50mm.

PROPERTY LINE CONSTRUCTION

The use of construction techniques described in this section allow the exterior building dimensions to coincide with the property line, thereby maximizing use of available land for building. Cast-in-place property line construction methods include soldier pile & lagging, metal sheet piling, earth-formed shotcrete retention walls, and auger cast caisson walls.

For all property line construction methods, VOLTEX® GB-500 waterproofing membrane composite is installed to the shoring wall prior to concrete placement. Install VOLTEX® GB-500 waterproofing membrane composite with the bentonite-geotextile side inward, facing the installer. Refer to each applicable construction method in Section 2 for specific substrate preparation and detailing installation guidelines.

Protect bentonite waterproofing products from hydrating before material is contained with concrete or backfill. After any precipitation, standing water should be pumped off the waterproofing as soon as possible.

Shoring Wall: Excavation work should provide shoring wall in good condition to receive waterproofing system. Wood lagging shoring should extend to the lowest level of the waterproofing installation with any voids or cavities exterior of the lagging filled with compacted soil or cementitious grout. Voids or cavities at tiebacks should be filled with grout or compacted soil prior to VOLTEX® GB-500 waterproofing membrane composite installation. Interior surface of lagging timbers should be monolithic and tight together with gaps less than 25mm. Gaps greater than 25mm should be completely filled with cementitious grout or other solid material.

Cut rock excavations and concrete auger cast caisson retaining walls must be sufficiently planar. Typically, a shotcrete or grout layer is required to provide a planar surface to install VOLTEX® GB-500 waterproofing membrane composite. As applicable, use construction methods to stop flowing water through shoring wall during the waterproofing system installation.

2.1 PROPERTY LINE WALL INSTALLATION

TAPED SEAM GUIDELINES:

After the slab-to-wall corner transition sheet and bottom wall sheet course have been installed per Section 1.7, VOLTEX® GB-500 waterproofing membrane composite sheets should be installed vertically oriented in one full length up the shoring wall. Install the VOLTEX® GB-500 waterproofing membrane composite into position with washer-head low profile fasteners maximum 300mm on center across the top edge of the sheet and through just the polyethylene film along both membrane edges (Figure 2.3). Install adjacent sheet of VOLTEX® GB-500 waterproofing membrane composite with polyethylene (PE/EVOH) film edge overlapping the previous sheets polyethylene film edge 100mm and then follow these installation steps:

1. Fold back bentonite geotextile membrane edges and install continuous strip of DS-80 TAPE centered within the 100mm wide overlap in between the two polyethylene (PE/EVOH) film layers; with the tape covering all the washer-head fasteners. Roll the taped seam. (Figure 2.4)
2. As required to secure adjacent sheet edge, fasten through the taped polyethylene film seam using low profile washer-head fasteners 600 - 900mm on center (Figure 2.4).
3. Install continuous strip of SS-80 TAPE centered along exposed polyethylene film edge. Roll the SS-80 Tape to assure bond (Figure 2.5).

4. Install a continuous strip of DS-30 TAPE along the edge of one of folded back bentonite-geotextile edges.
5. Fold back and overlap both bentonite-geotextile layer edges tight to the shoring wall; with the DS-30 Tape strip positioned in between the two geotextile edges. Roll the DS-30 taped seam (Figure 2.6).

Continue installation up wall until grade detail, or as specified.

Pipe Penetrations:

Apply BLACKSEAL® TG Mastic minimum 3.0mm thick extended minimum 100mm onto penetration and onto substrate surface. Cut VOLTEX® GB-500 waterproofing membrane composite to closely fit around penetration and install with polyethylene film side pressed into BLACKSEAL® TG Mastic. Trowel a minimum 20mm thick fillet of BLACKSEAL® TG Mastic around the penetration base to completely fill any void area between VOLTEX® GB-500 waterproofing membrane composite and the pipe penetration. Seal cut edge of VOLTEX® GB-500 waterproofing membrane composite with 3.0mm thick counter flashing of BLACKSEAL® TG Mastic; extending counter flashing minimum 50mm onto VOLTEX® GB-500 waterproofing membrane composite and pipe.

Grade Termination:

Terminate VOLTEX® GB-500 waterproofing membrane composite 300 mm below finished grade elevation with washer-head fasteners maximum 300 mm on center. Install minimum 450mm wide strip of CETBIT 300 self-adhering waterproofing

membrane to concrete wall above top edge of VOLTEX® GB-500 waterproofing membrane composite; with bottom edge of CETBIT 300 overlapping top edge of VOLTEX® GB-500 waterproofing membrane composite minimum 100 mm. Overlap all roll ends of CETBIT 300 a minimum 100mm to form a continuous grade flashing. Elevation of flashing shall be per project details and specifications. Install a rigid termination bar along top edge of CETBIT 300 grade flashing strip; fastened maximum 300mm on center. Complete grade termination detail with tooled bead of CETSEAL™ sealant/adhesive along the top edge.

Prior to backfilling work apply protection layer over the VOLTEX® GB-500 waterproofing membrane composite. 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 diameter or less, free of debris, sharp objects, and stones larger than 20 mm. See termination details figures 3.11.

2.2 SOLDIER PILE & LAGGING RETAINING WALL

Verify the following substrate preparation work has been completed. Then install VOLTEX® GB-500 waterproofing membrane composite following the property line installation guidelines in Section 2.1.

Preparation:

Gaps between the wood lagging should be no wider than 25 mm. If the gaps between lagging timbers are greater than 25 mm, the gaps should be completely filled with cementitious grout, wood, or compacted soil (Figure 2.7). If water is flowing through the lagging, a thin polyethylene sheeting can be installed over the area before VOLTEX® GB-500 waterproofing membrane composite is installed.

In areas with large gaps (up to 65 mm) between lagging timbers, AQUADRAIN® sheet drainage composite can be installed over the lagging to provide a uniform surface to install VOLTEX® GB-500 waterproofing membrane composite (Figure 2.8). Securely fasten AQUADRAIN® sheet drainage composite to the lagging surface with washer head nails before installing VOLTEX® GB-500 waterproofing membrane composite. Gaps larger than 65 mm between lagging should be completely filled with grout, wood, or compacted soil even if AQUADRAIN® sheet drainage composite is installed prior to VOLTEX® GB-500 waterproofing membrane composite. Do not use plywood or other surface treatment over large lagging gaps that leaves the cavity void.

2.3 METAL SHEET PILING RETAINING WALL

Verify the following substrate preparation work has been completed. Then install VOLTEX® GB-500 waterproofing membrane composite following the property line installation guidelines in Section 2.1. Special knurled powder-actuated

fasteners are recommended to secure VOLTEX® GB-500 waterproofing membrane composite to the metal sheet piling.

Alternate Plywood Method:

Alternatively, 12 mm thick plywood may be fastened to the sheet piling to create a planar surface upon which VOLTEX® GB-500 waterproofing membrane composite is installed. All void spaces between the plywood and sheet piling must be filled with compacted earth or concrete. Install VOLTEX® GB-500 waterproofing membrane composite to plywood following “Property Line Construction” Guidelines in Section 2.1.

2.4 EARTH FORMED SHOTCRETE RETAINING WALL

Verify the following substrate preparation work has been completed. Then install VOLTEX® GB-500 waterproofing membrane composite following the property line installation guidelines in Section 2.1.

Preparation:

The surface of the earth formed diaphragm wall must be sufficiently planar to provide an adequately smooth surface to apply VOLTEX® GB-500 waterproofing membrane composite. VOLTEX® GB-500 waterproofing membrane composite can be applied over large, relatively shallow changes in plane. The surface should not contain sharp protrusions in excess of 4 mm. Fill all voids with cementitious grout and remove protrusions prior to installing VOLTEX® GB-500 waterproofing membrane composite.

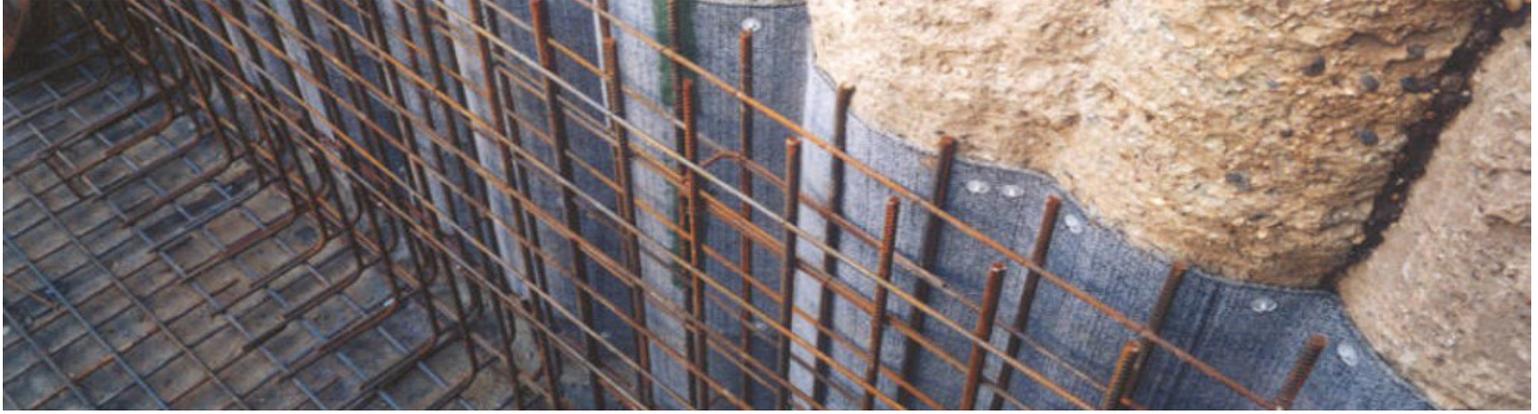
2.5 SECANT / CONTIGUOUS PILED WALLS

Verify the following substrate preparation work has been completed. Then install VOLTEX® GB-500 waterproofing membrane composite following the property line installation guidelines in Section 2.1.

Preparation:

The surface of secant / contiguous piled and cut rock excavation walls must be sufficiently planar to provide an adequately smooth surface to apply VOLTEX® GB-500 waterproofing membrane composite. VOLTEX® GB-500 waterproofing membrane composite can be applied over large, relatively shallow changes in plane. The surface should not contain sharp protrusions in excess of 4 mm. Fill all large recesses between piles with cementitious grout prior to installing VOLTEX® GB-500 waterproofing membrane composite (Figure 2.17). Cut rock excavations typically require shotcrete or grout work to provide planar substrate surface to install VOLTEX® GB-500 waterproofing membrane composite.

BACKFILLED WALLS



Install VOLTEX® GB-500 waterproofing membrane composite with the bentonite side against the concrete wall on cast-in-place concrete foundation walls prior to backfilling. VOLTEX® GB-500 waterproofing membrane composite may be applied as soon as the forms are removed. It is not necessary to wait for the concrete to completely cure. Use VOLTEX® GB-500 waterproofing membrane composite with concrete cast with conventional forms that produce smooth surface.

3.1 SURFACE PREPARATION

Footings should be swept clean of silt, rocks and debris to provide VOLTEX® GB-500 waterproofing membrane composite with direct contact to the concrete in the application area. The wall surface must be properly prepared before VOLTEX® GB-500 waterproofing membrane composite is installed. Areas of surface honeycombing or voids should be filled with cementitious grout or BLACKSEAL® TG Mastic. Protrusions of over 6 mm should be knocked off smooth with the concrete surface. Concrete work should include completely filling taper-tie holes with non-shrink cementitious grout and a piece of WATERSTOP-RX® waterproofing sealant centered in the wall (Figure 3.1). Apply BLACKSEAL® TG Mastic over

exterior grouted surface of all form tie holes.

3.2 INSTALLATION

Before installing the first course of VOLTEX® GB-500 waterproofing membrane composite, place HYDROBAR® swellable detailing bar at the wall/footing inside corner (Figure 3.2). “Butt” the ends of HYDROBAR® swellable detailing bar together to form a continuous line.

Beginning at the bottom corner of the wall, install VOLTEX® GB-500 waterproofing membrane composite horizontally oriented with 1.5 m on one wall and the remainder around the corner on the other wall surface (Figure 3.2). Cut the bottom edge of VOLTEX® GB-500 waterproofing membrane composite at the corner a minimum of

150 mm so that VOLTEX® GB-500 waterproofing membrane composite can be extended onto the footing. Fasten VOLTEX® GB-500 waterproofing membrane composite into position with washer head fasteners maximum 600 mm on center. Then cut and install a VOLTEX® GB-500 waterproofing membrane composite section over the uncovered footing corner area. Apply SS-80 TAPE and DS-80 TAPE as applicable at the VOLTEX® GB-500 waterproofing membrane composite overlaps. (Figure 3.2); Minimum 100mm overlap.

Install adjacent VOLTEX® GB-500 waterproofing membrane composite rolls of the bottom course horizontally oriented. Each roll should overlap the preceding roll a minimum 100 mm and should extend onto the footing a minimum 150mm. At vertical inside corners apply a continuous 20 mm fillet of BLACKSEAL® TG Mastic directly in the corner prior to installing VOLTEX® GB-500 waterproofing membrane composite (Figure 3.3). When hydrostatic conditions exist, the vertical wall VOLTEX® GB-500 waterproofing membrane composite should cover the entire footing and overlap the Underslab waterproofing a minimum 150mm (Figure 3.6). Tape all VOLTEX® GB-500 waterproofing membrane composite membrane overlap seams with SS80 TAPE and DS-80 TAPE as applicable.

Backfill:

The excavated area should be backfilled and compacted promptly after VOLTEX® GB-500 waterproofing membrane composite is installed. Use placed backfill as a platform in applying succeeding VOLTEX® GB-500 waterproofing

membrane composite courses. The backfill must be compacted to a minimum 85% Modified Proctor density. Backfill should consist of compactable soils or angular aggregate (20mm or less) free of debris, sharp objects, and stone larger than 20mm.

3.3 BACKFILLED WALL PENETRATIONS

Apply BLACKSEAL® TG Mastic minimum 3.0mm thick extended minimum 100mm onto penetration and onto substrate surface. Cut VOLTEX® GB-500 waterproofing membrane composite to closely fit around penetration and install with polyethylene film side pressed into BLACKSEAL® TG Mastic. Trowel a minimum 20mm thick fillet of BLACKSEAL® TG Mastic around the penetration base to completely fill any void area between VOLTEX® GB-500 waterproofing membrane composite and the pipe penetration. Seal cut edge of VOLTEX® GB-500 waterproofing membrane composite with 3.0mm thick counter flashing of BLACKSEAL® TG Mastic; extending counter flashing minimum 50mm onto VOLTEX® GB-500 waterproofing membrane composite and pipe.

3.4 GRADE TERMINATIONS

Terminate VOLTEX® GB-500 waterproofing membrane composite membrane 300 mm below finished grade elevation with washer-head fasteners maximum 300 mm on center. Install CETBIT 300 flashing strip to primed concrete substrate with bottom edge overlapping top edge of VOLTEX®

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GB-500 waterproofing membrane composite membrane minimum 100 mm. 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 CETBIT 300; fastened maximum 300 mm on center. Complete grade termination detail with tooled bead of CETSEAL™ sealant/adhesive along the top edge.

3.5 MASONRY BLOCK WALLS

VOLTEX® GB-500 waterproofing membrane composite is not recommended for waterproofing masonry block walls. Consult with CETCO regarding recommended products and installation guidelines for masonry block walls.

SPECIAL CONDITIONS



Install VOLTEX® GB-500 waterproofing membrane composite with geotextile side against the cast-in-place concrete foundation walls prior to backfilling. VOLTEX® GB-500 waterproofing membrane composite may be applied as soon as the forms are removed. It is not necessary to wait for the concrete to completely cure. Use VOLTEX® GB-500 waterproofing membrane composite with concrete cast with conventional forms that produce smooth surface.

4.1 PRECAST CONCRETE CONSTRUCTION

Consult CETCO regarding products and special installation guidelines for precast concrete wall construction.

4.2 CONTAMINATED CONDITIONS

Use contaminant resistant grade sodium bentonite in VOLTEX® GB-500 waterproofing membrane composite in conditions where the groundwater contains high concentrations of chemicals or saline. These conditions are typically encountered at industrial sites and coastal regions. If groundwater contains strong acids, alkalis, or has a conductivity of 6,000 $\mu\text{mhos/cm}$ or greater (high salt concentration), water samples should be submitted to CETCO for compatibility testing.

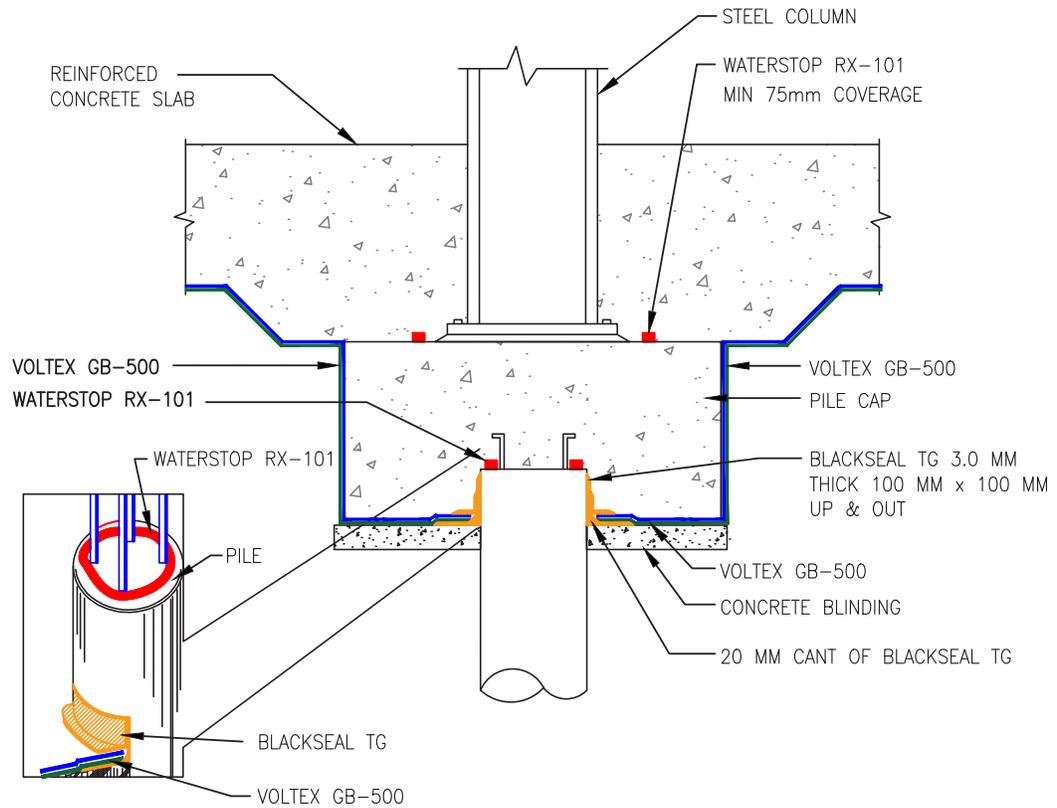
IMPORTANT NOTICE

FOR SHOTCRETE, PRECAST CONCRETE, EXPANSION JOINTS AND OTHER APPLICATIONS NOT COVERED IN THIS MANUAL, CONTACT CETCO FOR TECHNICAL ASSISTANCE AND INSTALLATION GUIDELINES.

Contact CETCO for verification of specification and installation requirements to comply for eligibility of CETCO HYDROSHIELD® Warranty for waterproofing. Gas barrier performance is not eligible for CETCO HYDROSHIELD® Warranty for waterproofing. Gas barrier performance is limited to material only warranty.

FIGURE 1.12

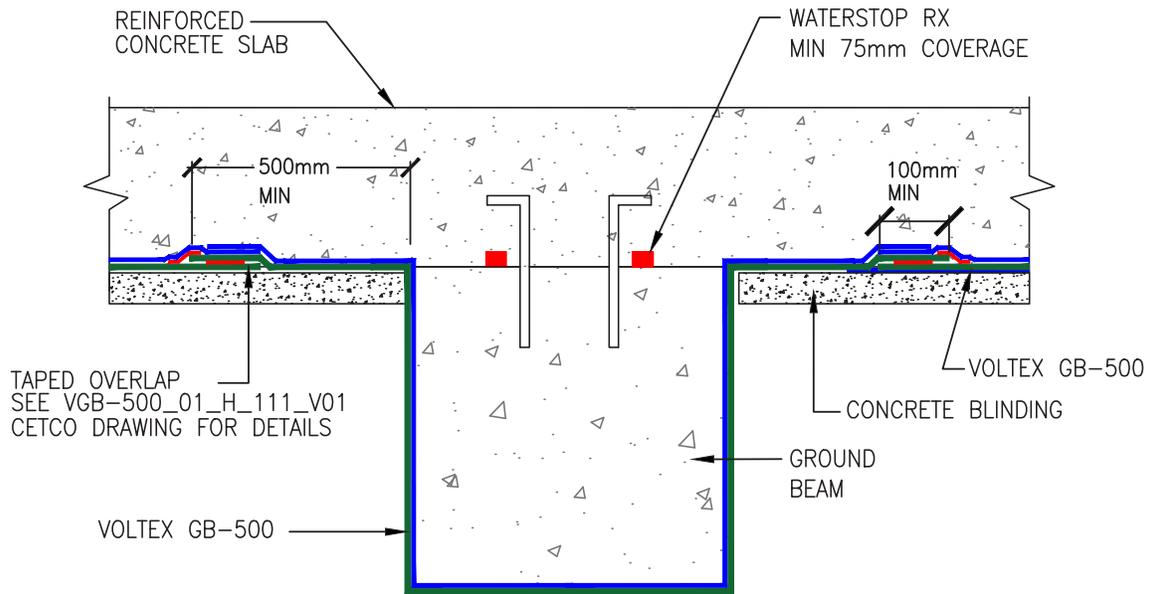
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.15

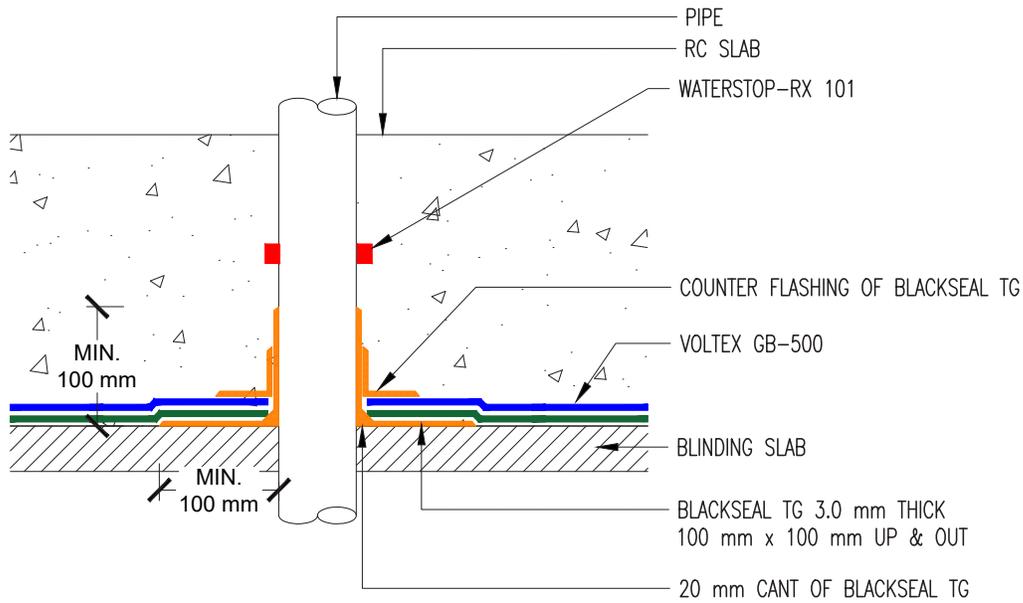
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.16

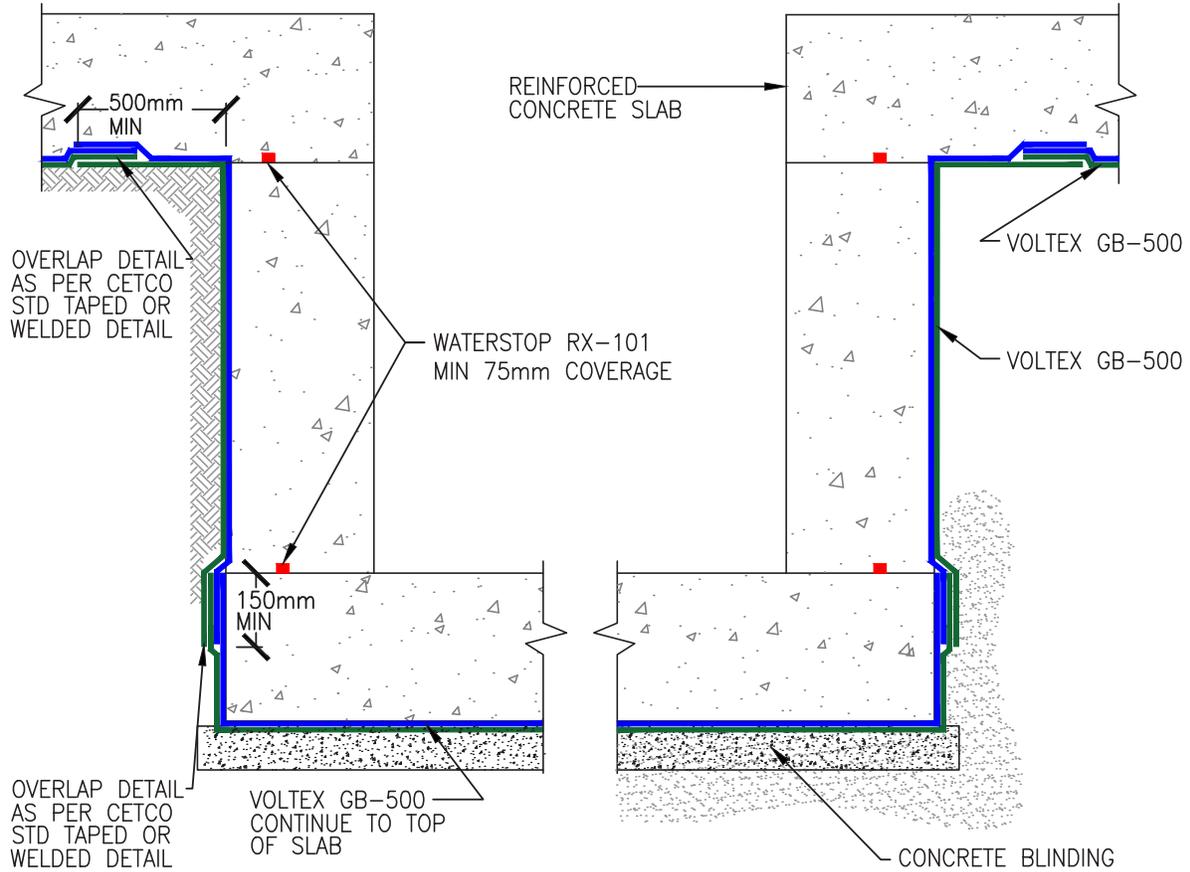
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 UNDER SLAB WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.17

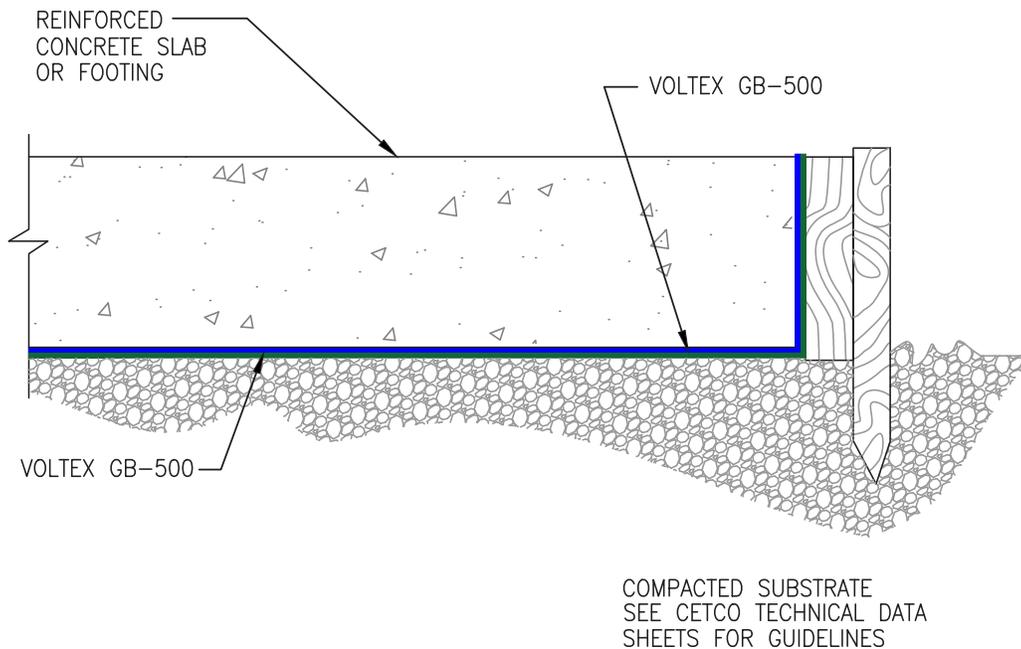
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 UNDER SLAB WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.21

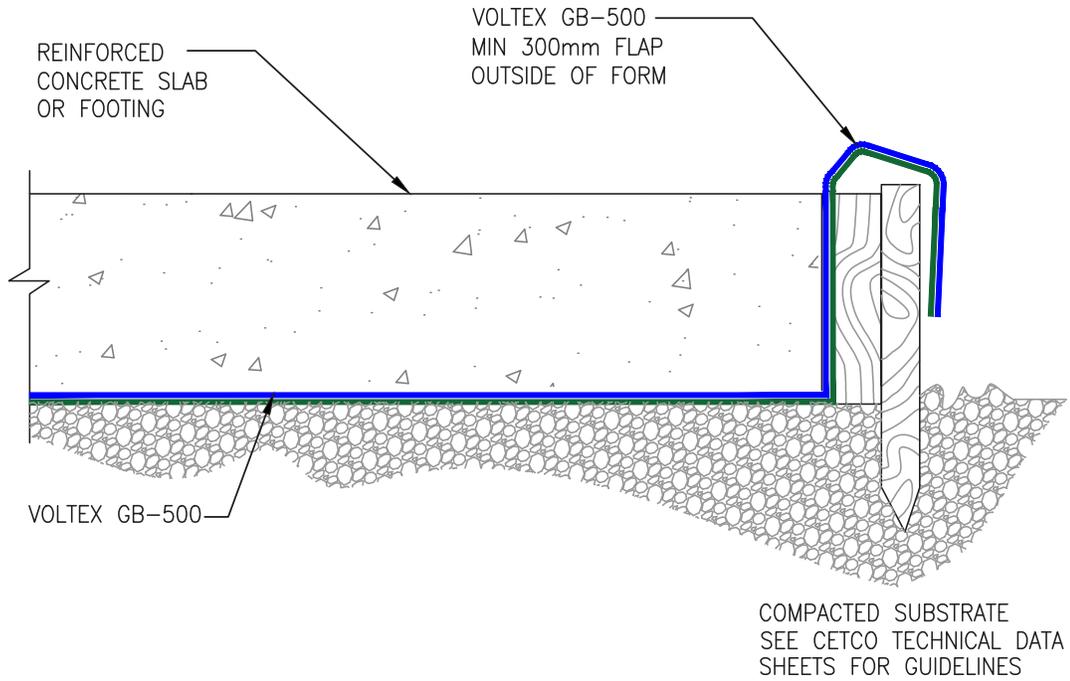
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.22

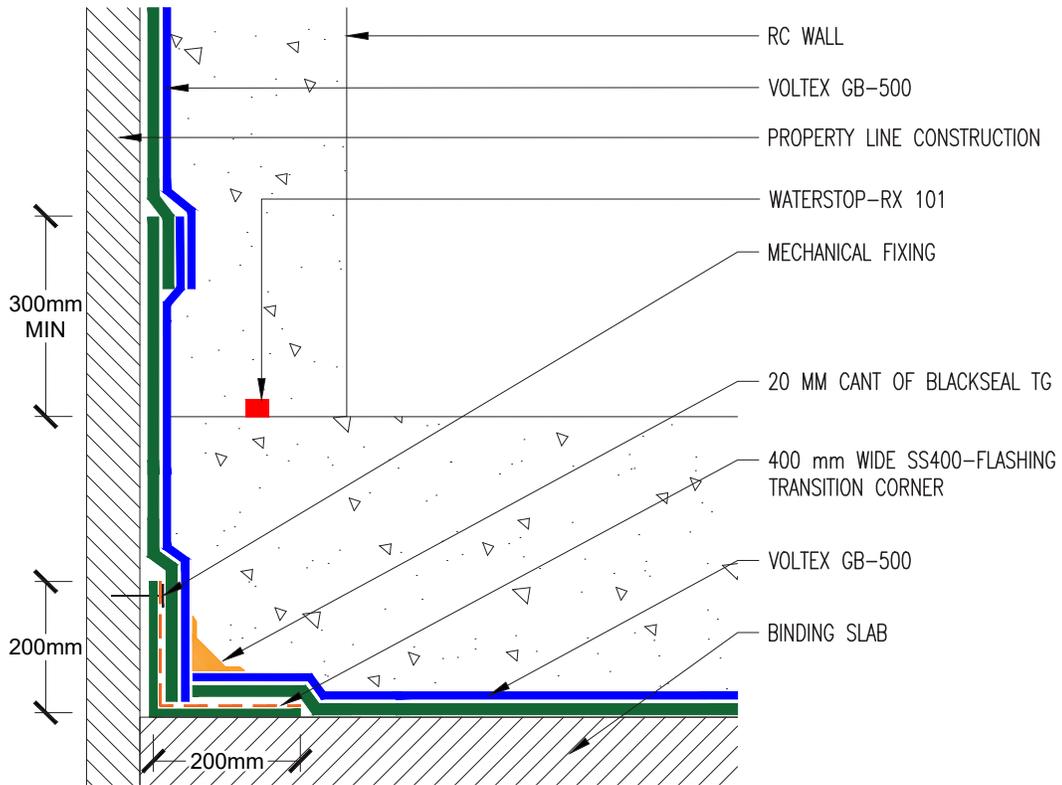
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.24

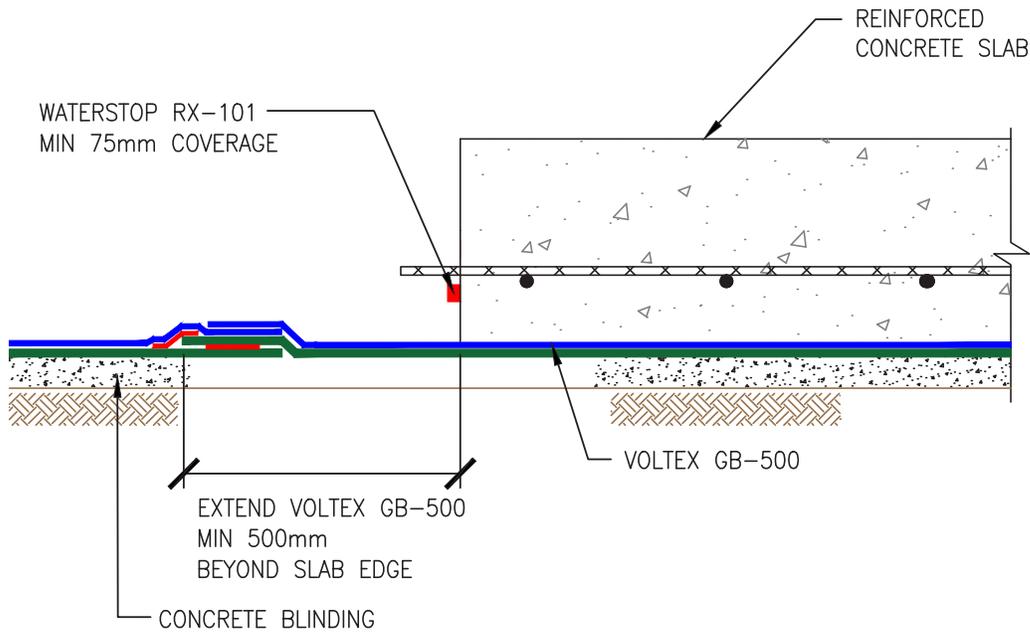
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 UNDER SLAB WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 1.3

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

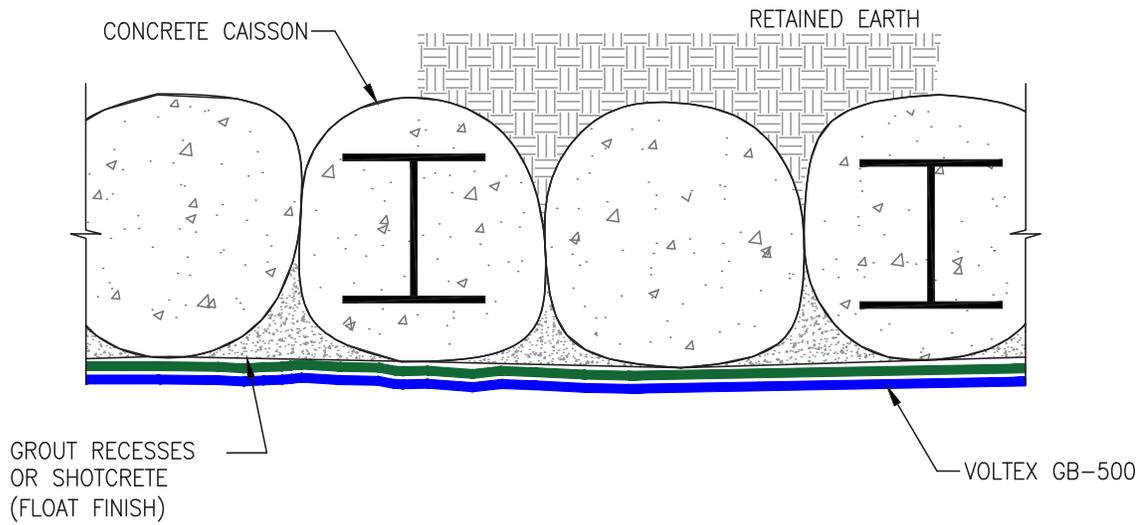


INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.17

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

PLAN VIEW

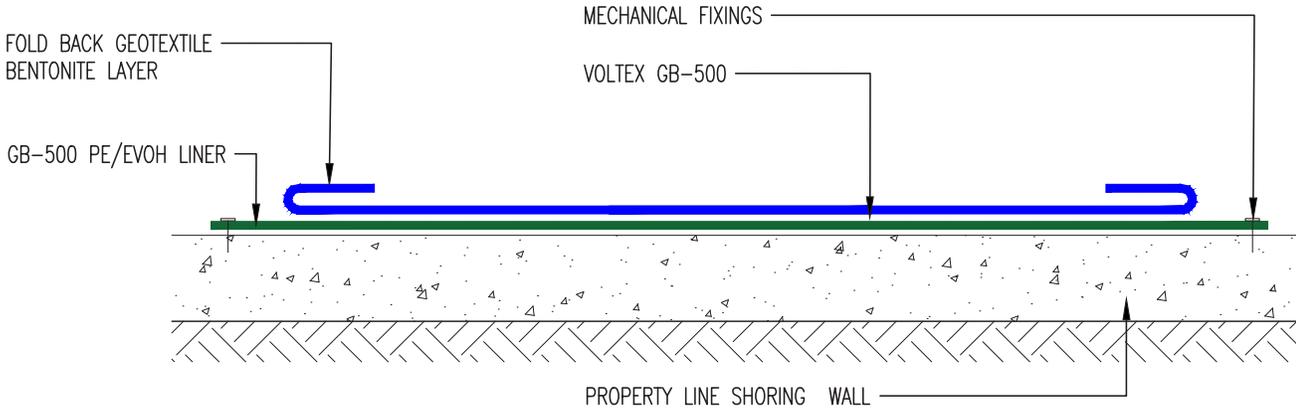


INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.3

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

PLAN VIEW

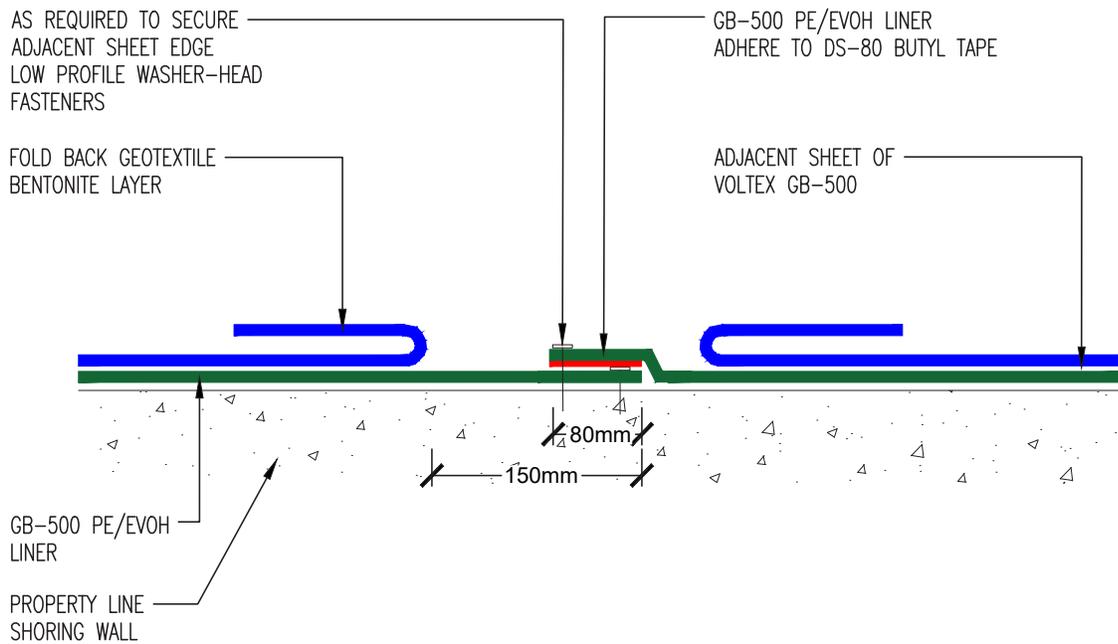


INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.4

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

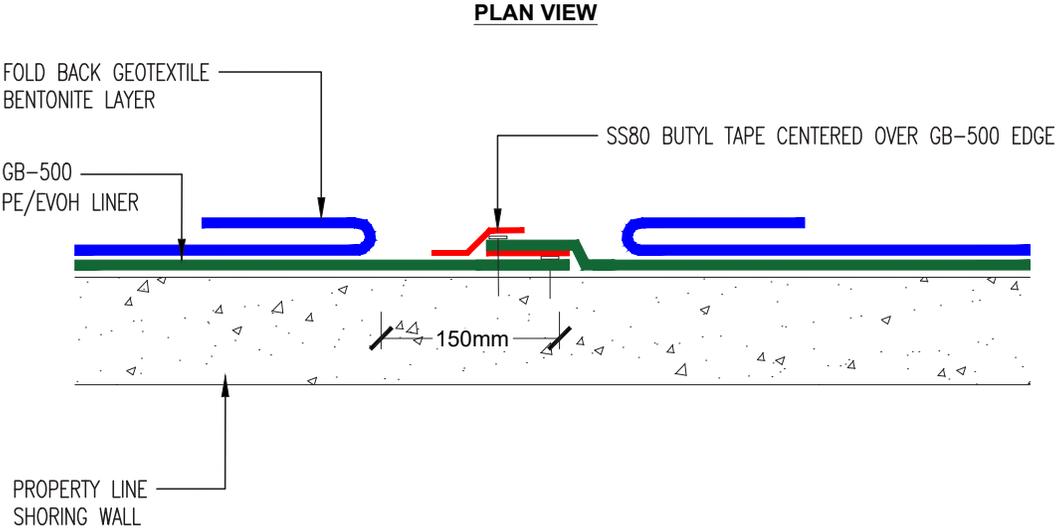
PLAN VIEW



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.5

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

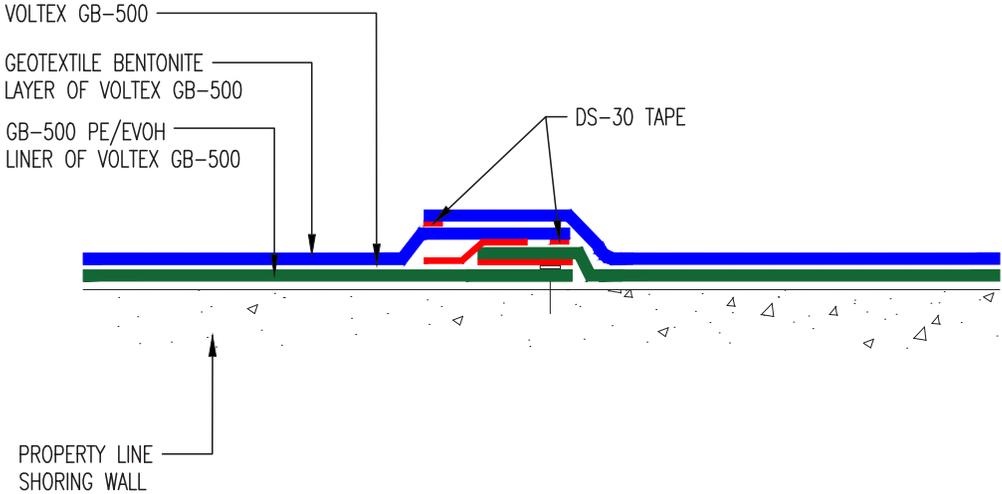


INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.6

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

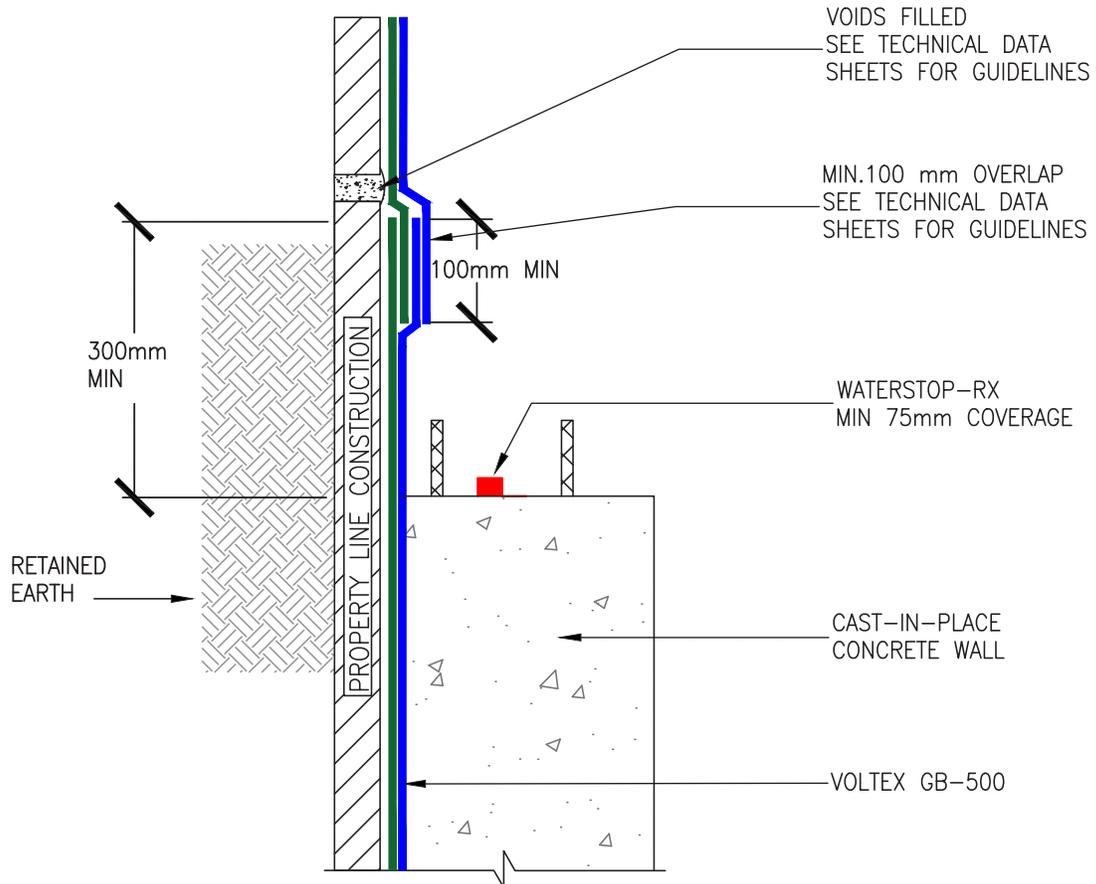
PLAN VIEW



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 2.7

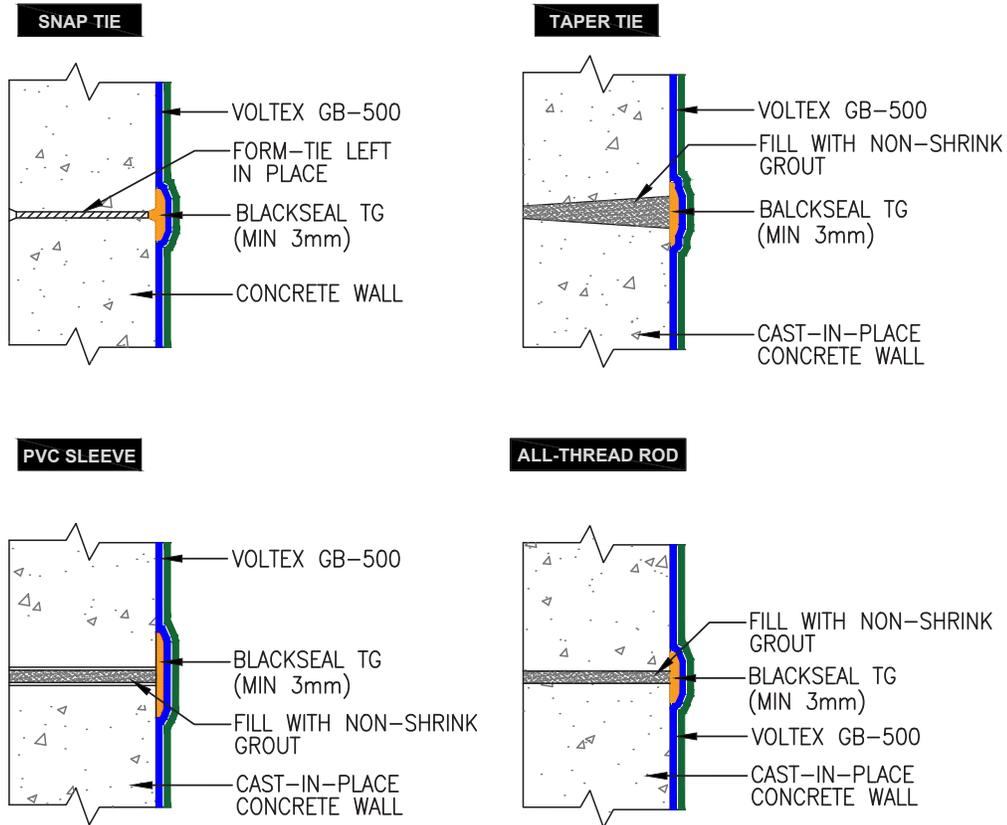
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE FACING INSTALLER

FIGURE 3.1

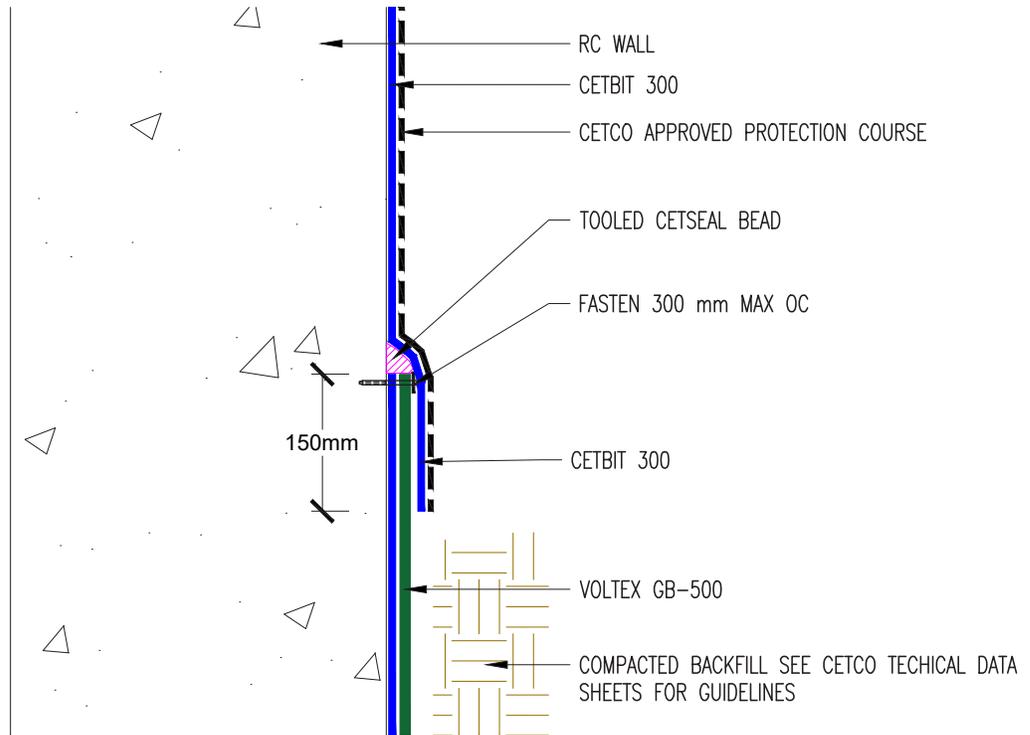
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE AGAINST CONCRETE

FIGURE 3.11

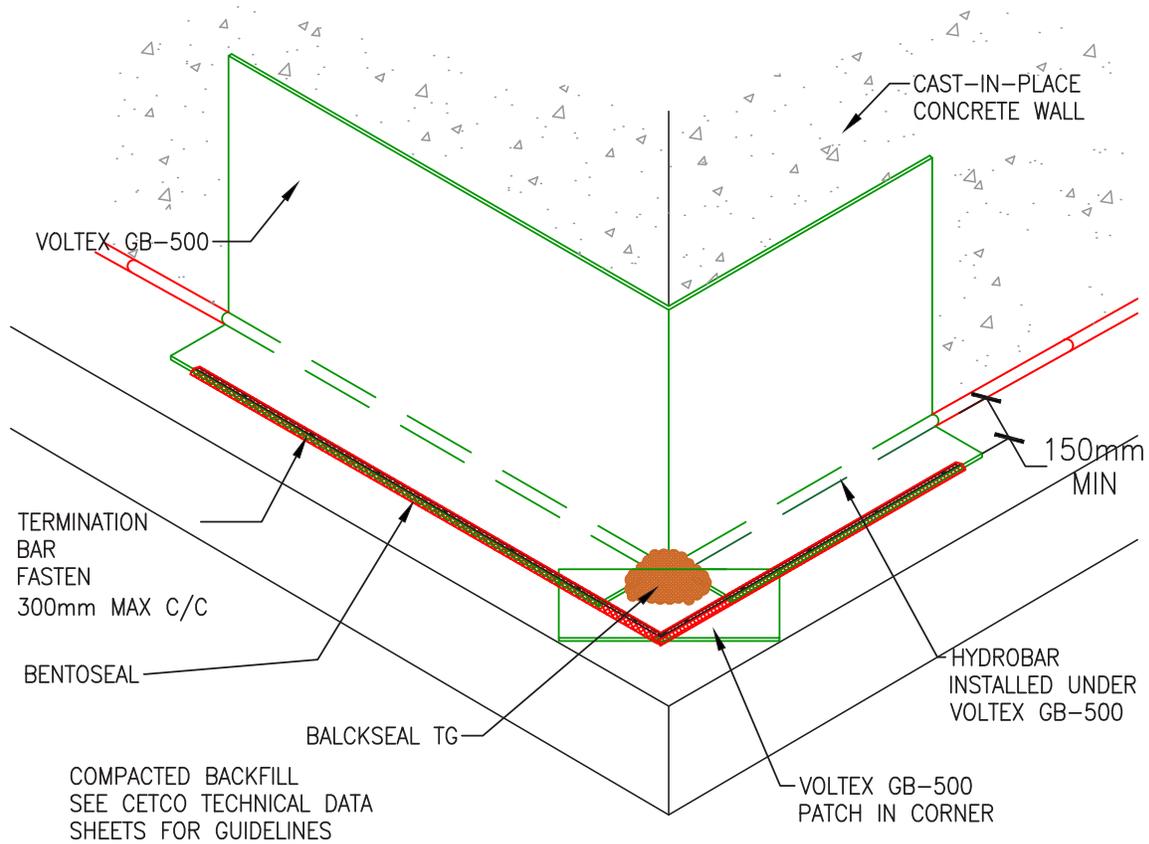
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL BACKFILLED VOLTEX GB-500 WITH GEOTEXTILE SIDE AGAINST CONCRETE

FIGURE 3.2

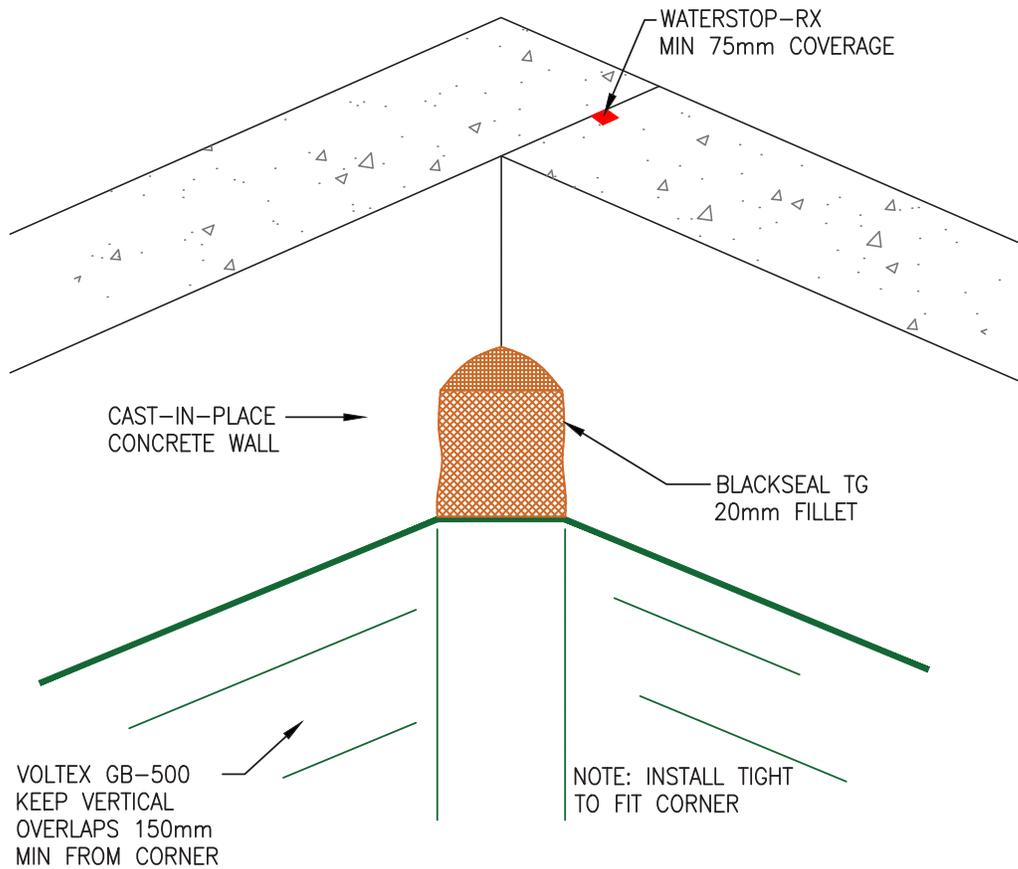
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER



INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE AGAINST CONCRETE

FIGURE 3.3

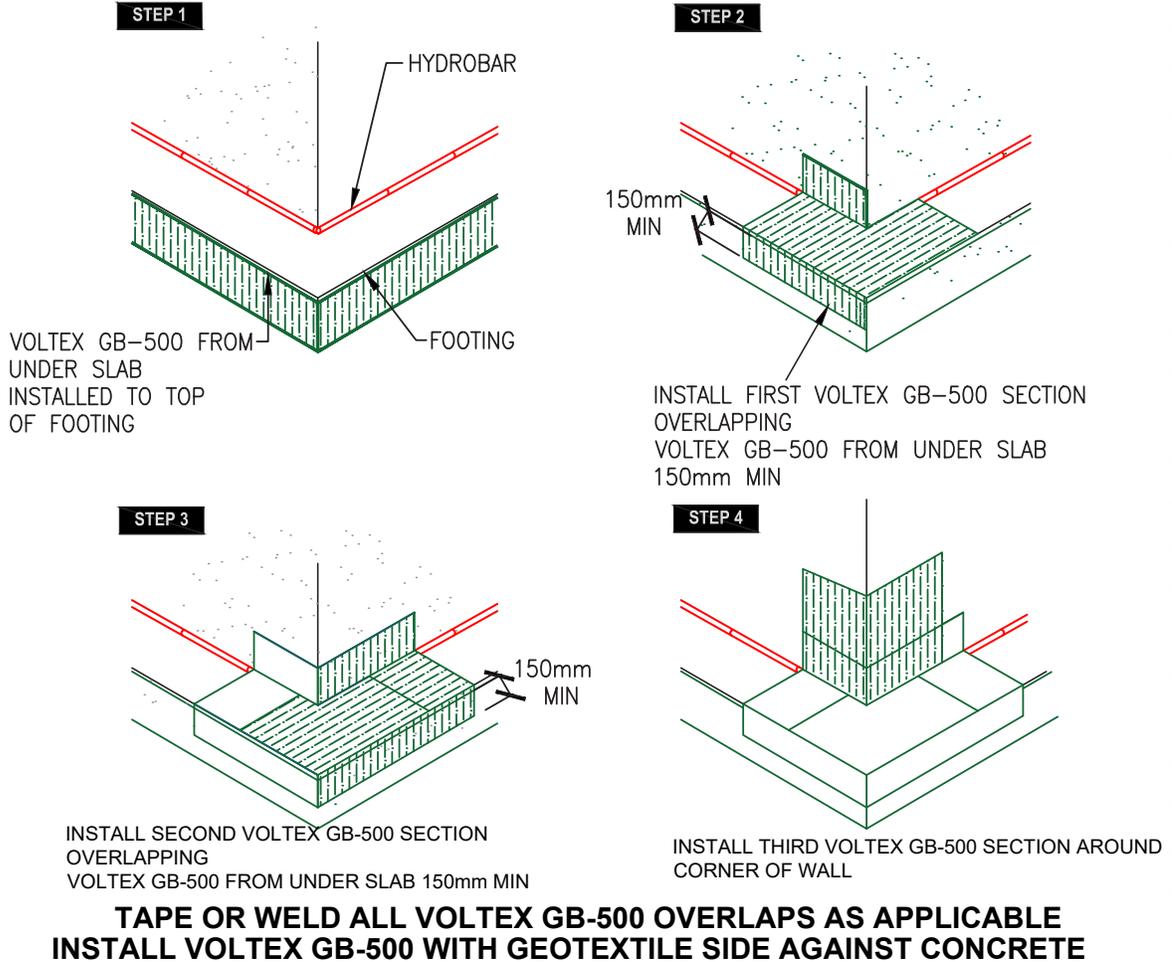
VOLTEX GB-500 GAS AND WATERPROOFING BARRIER

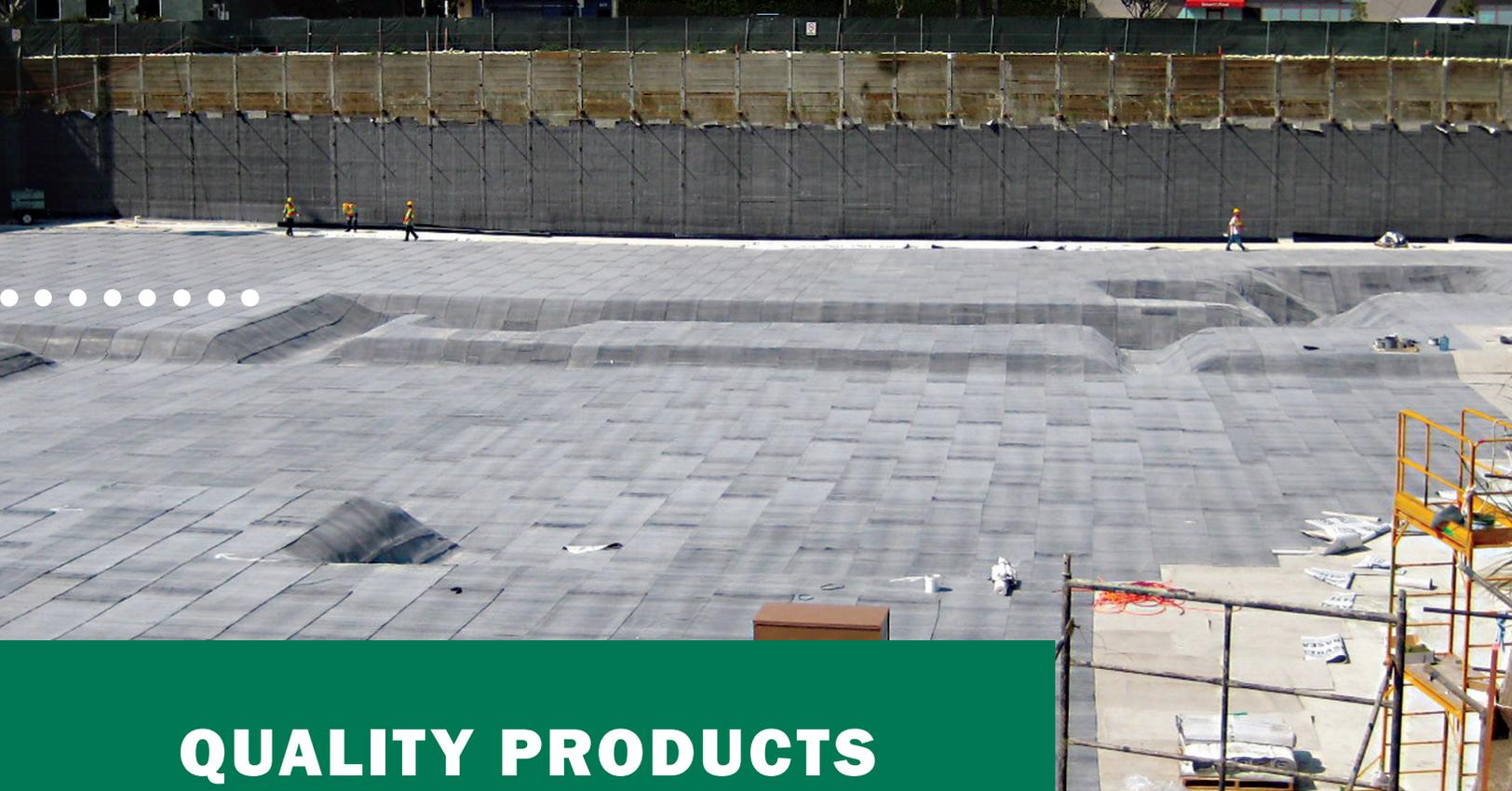


INSTALL VOLTEX GB-500 WITH GEOTEXTILE SIDE AGAINST CONCRETE

FIGURE 3.6

VOLTEX GB-500 GAS AND WATERPROOFING BARRIER





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CETCO EUROPE Ltd

Birkenhead Road

Wallasey

CH44 7BU, UK

cetco@mineralstech.com

Tel: +44 (0)151 606 5900 / 5211