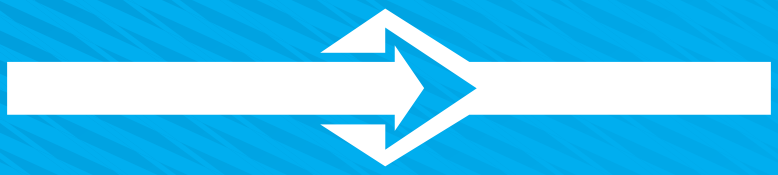
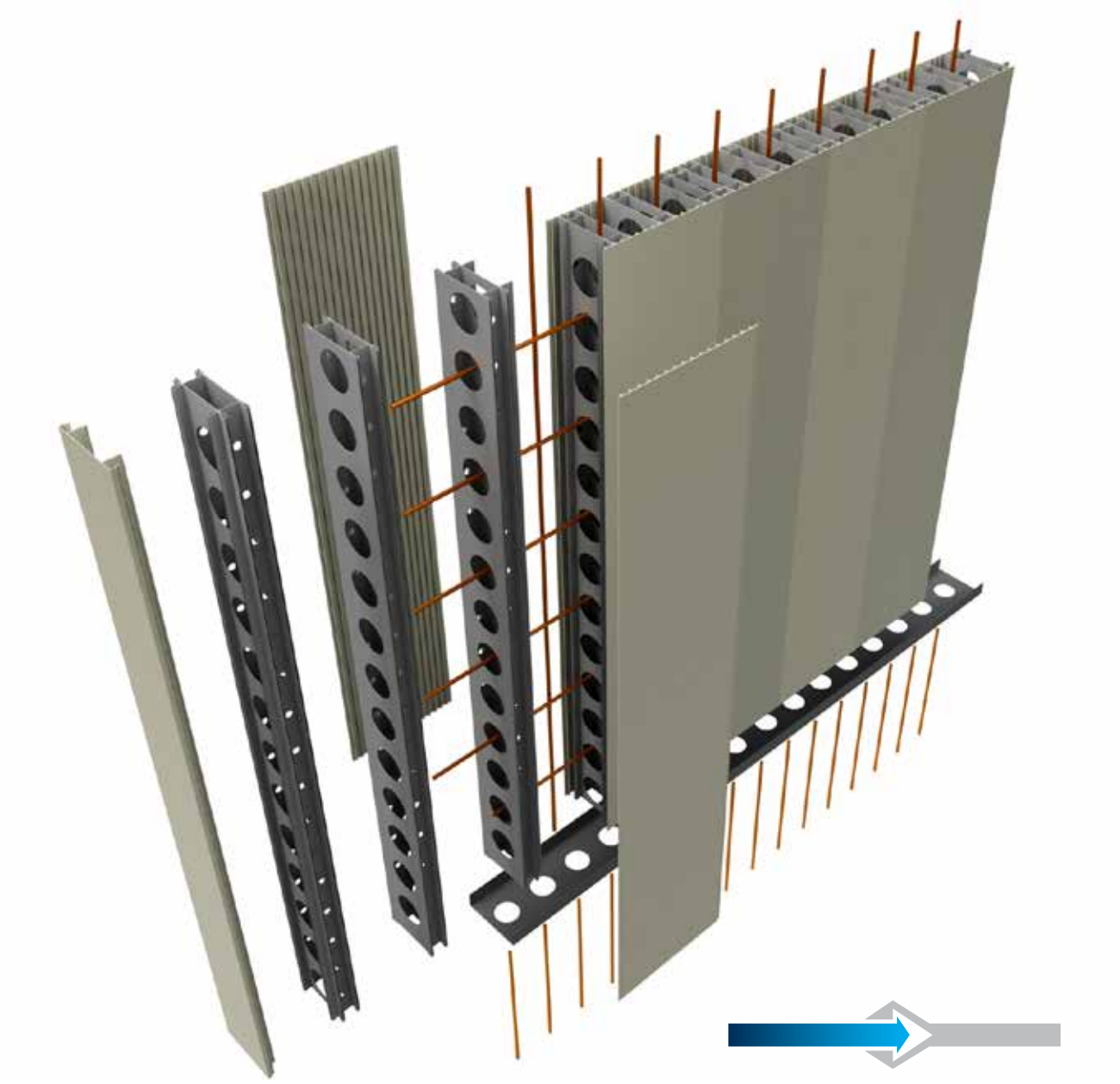


PERMAFORM

INSTALLATION MANUAL



PERMAFORM

PERMAFORM INSTALLATION MANUAL

Permaform is a Polyvinyl Chloride (PVC) permanent wall formwork system which is concrete filled. Once filled, it serves as structural elements and allows the builder to reduce the overall construction time of the project.

The installation of Permaform should only be undertaken by persons with building industry knowledge and who have a trade background. Working on the structure of a building is inherently dangerous and challenging and there are a range of site specific situations, issues, and complexities etc. that arise frequently. While every effort has been taken to make this guide as comprehensive as possible, it is not possible to produce a document that covers every detail and every circumstance that could arise in the process of installing Permaform.

To ensure successful application of Permaform, it is critical that builders and trades people follow the recommended practises. The installers of Permaform need to be supervised by a person who has at least conventional form-working, carpentry or foreman qualifications to adhere to safe construction practices. These include the requirements of the applicable local authority's Occupational Health and Safety rules and building codes of practice for form-working and concrete steel placement. The most important issues for installation are to secure forms against loadings such as winds, accidental impact and concrete pouring.

This document therefore, is produced solely as a guide. It is the responsibility of the installer to read and understand this manual thoroughly. If you are not sure, ask the question before proceeding.

As the manufacturer, Permaform Australia accepts no liability for any consequences whatsoever that arise as a result of the use of Permaform on any site or in any application as these things are completely beyond the control of Permaform Australia. By undertaking to install Permaform, the persons doing so acknowledge they have the skills, knowledge, experience and ability to safely, efficiently and professionally install Permaform; thereby indemnifying Permaform Australia from any claim that arises from such installation except to make good or replace (at their discretion) any product that has failed as a result of defective materials or manufacture.

PLEASE READ THE FOLLOWING CAREFULLY

Where the Permaform module is required to be cut or drilled on site, all installers must wear appropriate dust proof respirators and protective eyewear. Appropriate cutting devices consisting of drills, grinders with steel blades or carpenters circular saws must be used.

Always double check the walls are plumb, straight, square, level and properly supported prior to pouring.

INSTALLATION

It is important to consider the wall layout and to establish the best starting point and sequence in which to proceed with installation of panels to ensure you have a large working space kept clear.

Consideration should also be given to the position of bracing to provide the best results and also to minimise restriction of free movement by personnel around the site. If the walls are going to be filled from a mobile scaffold it is recommended you run the braces in a way that leaves one face of each wall clear.

DELIVERY TO SITE

Once delivery of Permaform is taken, transport it to the site by arranging appropriate freighting measures. The packs will have to be unloaded by forklift or by crane. If pallets need to be vertically hoisted in a multi-level environment a crane will be necessary.

The crane driver and dog man are responsible for the safe and damage-free unloading of the product. Proper wide flat lifting slings should be used to vertically lift Permaform packs if cranes are used at the construction site.

Do not lift more than one (1) Permaform delivery pack at a time unless lifting bars are used. This will prevent panels from being squashed and possibly damaged. The crane operator must ensure the packs are softly placed at the nominated site location without dropping the packs from height.

WALL SET OUT

Using pins/markings provided by the surveyor ensure that the walls are clearly and accurately set out.

APPLYING THE BOTTOM TRACK

Using a chalk line, mark the slab or footing from each of the pins/marks outlining one of the wall faces made available by the surveyor.

An approved waterproofing detail must be applied in conjunction with the Bottom Track on all external walls and any portion of wall that separates or adjoins wet-areas.

Align the appropriate side of the Bottom Track with the marked line and fix using concrete pins through the Bottom Track into the concrete. Apply enough fixtures to ensure the Bottom Track is securely fastened to the concrete.

CORNERS AND T-JUNCTIONS

It is likely you will have to install corners and T-Junctions in your wall. It is recommended that you start at one nominated corner point.

MATERIAL REQUIRED

Main Panel, End Cap, Junction Track (male/female), Hex Head Screws, Polyurethane Sealant, Drill, 100mm Hole saw.

+ Lay the panel flat on the ground or at waist height securely and safely.
+ Install the relevant End Cap to one side of the panel.
+ Place a Junction Track (male/female) on the face of the panel, apply a double bead of Polyurethane sealant and screw into position with screws either side of the Junction Track at 200mm centres.

CORNERS AND T-JUNCTIONS (CONTINUED)

Identify the holes that will need to be drilled out to accommodate reinforcing and concrete flow. (Always start at the bottom of the panel where the half size internal rib hole begins.)

Once centres have been established, drill your holes with a 100mm Hole saw.

Clip the adjacent panel to the Junction Track with the appropriate locking side; depending on whether a male or female Junction Track is being used. (Either profile can be used to commence the forming of a corner or T-Junction.)

When installing Permaform, ensure that all the internal rib holes align with each other for the free circulation of concrete through the panels. **All panels are supplied with a half size internal rib hole at one end which defines the bottom of the panel.**

If ending at a corner in a nonstandard panel width, you will need to repeat the previous steps with the exception of replacing the End Cap with a Corner Stop.

The Corner Stop is an L-shape section with is affixed to the open end of each corner panel.

Prior to fixing, apply a double bead of Polyurethane sealant to the underside of the Corner stop and screw into position with screws either side at 200mm centres.

EXTERNAL BOTTOM TRACK FLASHING REQUIREMENTS

Attention must be paid at this time to external walls and the detailing specified for both horizontal and vertical joints and any flashings must be installed.

BRACING THE FIRST PANEL

Bracers are screwed to the panel using 1 screw per brace, ensuring that the screws engage with the panel face.

Make sure to not over tighten as to thread the PVC panel.

The base of the brace is fixed to the slab using an anchor style bolt.

The panel is plumbed with a spirit level or similar before the brace is fixed. In some instances there may be no slab to affix the brace base by bolt.

In this case it is recommended to use a steel peg driven through the brace base plate into the ground.

COMMENCEMENT OF PANEL INSTALLATION

The first panel to be placed, whether it is a straight or corner panel, is stood vertically beside the Bottom Track.

It is recommended to start with a stop end panel or a corner panel, as this first panel needs to be plumbed from adjacent faces.

Working in a two man team, adhering to safe manual handling procedures, the panel is then lifted clear of the starter bars, aligned with the track and then lowered into position within the tracks upturned edges.

Occasionally it may be necessary to lift the panel clear and actually bend the starter bar/s that are fouling to re-align them sufficiently for the panel to easily be lowered into position.

PLACEMENT AND FREQUENCY OF BRACES (IF NO UPPER DECK IS AVAILABLE)

When the first panel of the wall is in place, it is essential that the panel is square, straight, plumb and true before further panels are installed.

Adjustable braces are recommended to be able to push/pull the top of the wall into alignment.

In situations where panels higher than 3.3m are being installed, or on sites known to be subject to wild wind conditions, it is the responsibility of the builder and the installers to ensure that the Permaform panels are adequately braced to maintain their integrity until filled with concrete.

Along with the bracing, the top of the panels must also be secured with a timber strong back or steel angle along the top of the Permaform panels.

These are to be screwed to the panel. One screw per panel is recommended.

Once completed, screw one side of the Bottom Track to each panel at the base.

This process is then repeated for the length of the wall.

PANEL TO PANEL INSTALLATION

The next panel is now brought alongside the Bottom Track, and with two trades people, lifted clear of the starter bars.

The bottom corner of the lifted panel which is to adjoin the standing panel should then be guided into position by aligning the internal male anchors within the female anchors.

The lifted panel is then clipped against the standing panel and slid down over the starter bars.

Should any of the starter bars foul on the panels internal ribs, the bar can be adjusted by being pulled or pushed clear of the rib.

The external anchors can be engaged by using a lump hammer or rubber mallet and timber offcut, and lightly, tap the panels together engaging the external anchors.

PLACING THE REINFORCING

Determine where the scheduled horizontal bars are to be placed and slide the bars through panels. In a situation where the wall will need reinforcing to be spliced (wall over 6m long) you will need enough panels clipped, braced and secured to fully engage the horizontal bar so as to not obstruct the subsequent panel that is to be connected.

Once the next stages of panels are installed, ensure that the concurrent horizontal bar splices over the first bar as detailed in the engineering guide.

For short wall ending at a corner, the reinforcing needs to be placed prior to engaging the End Cap.

Corners can be left open and closed up last by using a Corner Stop.

Once the horizontal bars are placed, slide the vertical bars from the top of the Permaform panel at centres provided by the engineer.

ENDING YOUR WALL

As Permaform panels come in 400, 200 + 100mm, wide sections you also may need to from time to time, to cut down a section in order to finish within the desired wall dimension.

The Permaform panel lock design offers the installer two options of ending a wall.

One option is to use an End Cap and the other is to use a Top Cap.

CREATING AN OPENING (WINDOWS AND PENETRATIONS)

Creating an opening can be done by locating the position of the opening.

Erect full length Permaform panels sequentially until arriving to first jamb. You may have to cut into the first jamb panel. This needs to be addressed and cut prior to installation.

At this point install sill panels (windows only), screw the Top Cap into place on the sill and the first jamb.

CREATING AN OPENING (CONTINUED)

Install formwork timber framing to the internal measurements of the opening. Place Top Cap on top of the timber framing for the head panels and the second jamb (this can be done by screwing the Top Cap to the timber frame).

Install head panels.

Install full length Permaform panel (the second jamb) and engage sill and header panels.

Screw the Top Cap into place by using screws on each face of the Permaform panel at 200mm centres.

BRACING AND PROPPING AT OPENINGS

At the particular points where the wet concrete pressure is at its maximum, all window and door openings must be conventionally braced.

Bracing is required at openings to keep the opening square, to prevent bowing of jambs and to contain and support the wet concrete in the header during concrete placement.

For large openings, diagonal bracing is required at the top and bottom of the headers to hold the header straight and plumb and to hold the header flush with the wall at each end of the header.

For openings adjacent to corners and piers between openings, the horizontal bracing for the jambs can be achieved by clamping.

PRE POUR CHECK

Prior to pouring the Permaform wall, the installer, engineer and builder should perform a check of all walls, ensuring they are straight, plumb, square and true, and that reinforcing both horizontal and vertical has been placed as per the structural drawings and specifications.

Make sure all the openings are the correct size and in the correct location. Also ensure that all electrical and data conduits are in and according to the plan.

CONCRETE PLACEMENT PROCEDURE

Concrete is to be placed by boom pump via a 50mm diameter end hose.

Concrete pour practice, design and slump are detailed within the engineering guide.

Commencing from an appropriate point, progressively pour the concrete into the panels.

If required, utilisation of a 25mm concrete vibrator is recommended to achieve full circulation of concrete around congested areas of reinforcing.

FINISHING THE TOP OF THE WALL

After concrete filling, strike off excess concrete and finish.

CLEAN UP

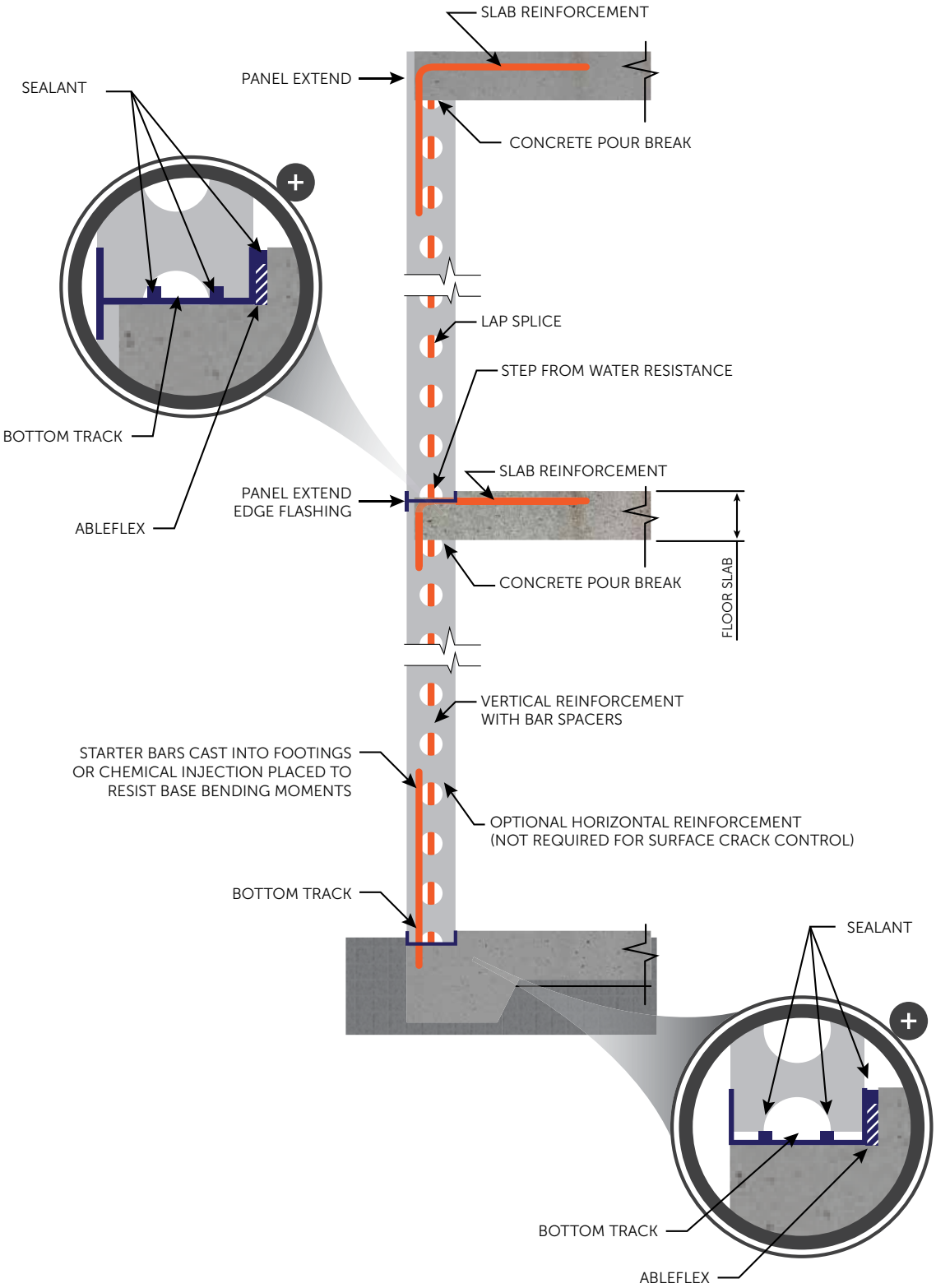
During the pour it is inevitable that some concrete will get splashed onto the wall and the surface below.

This should be cleaned as soon as possible or before the concrete begins to set by washing the wall down and wiping off any unwanted debris from the faces.

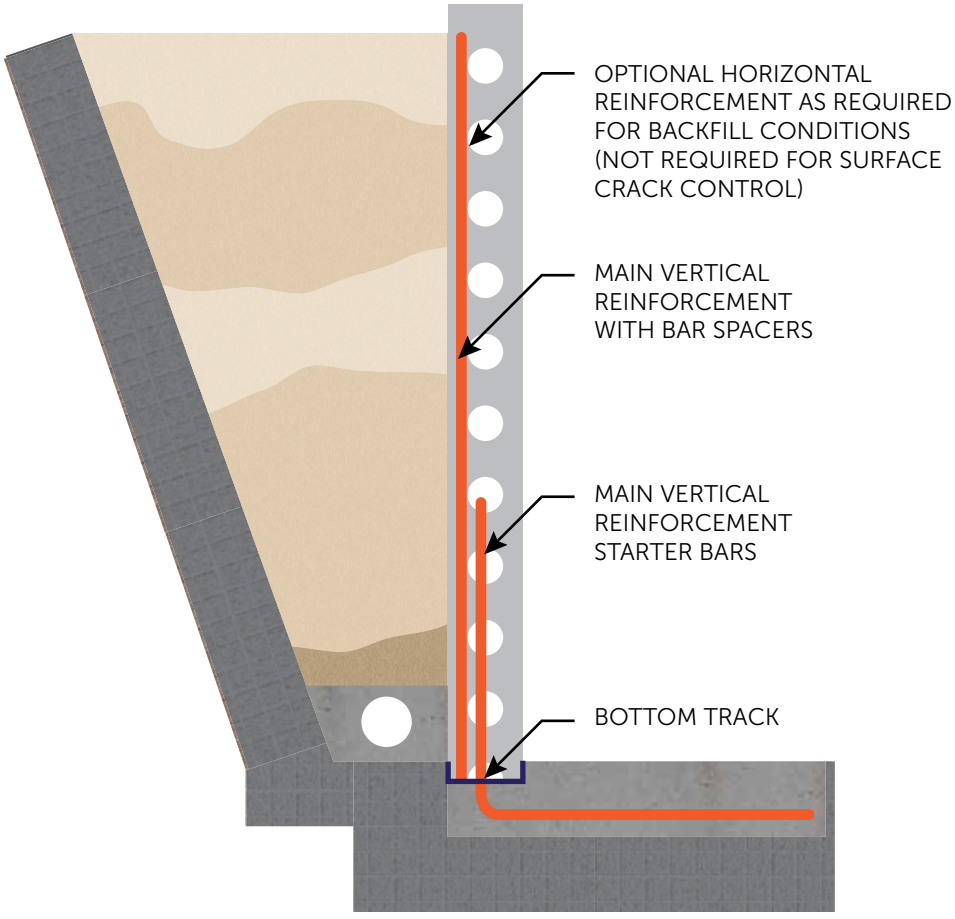
REMOVAL OF BRACES

The removal of braces should be done in accordance to the engineering specifications. This typically would be done the day after pouring.

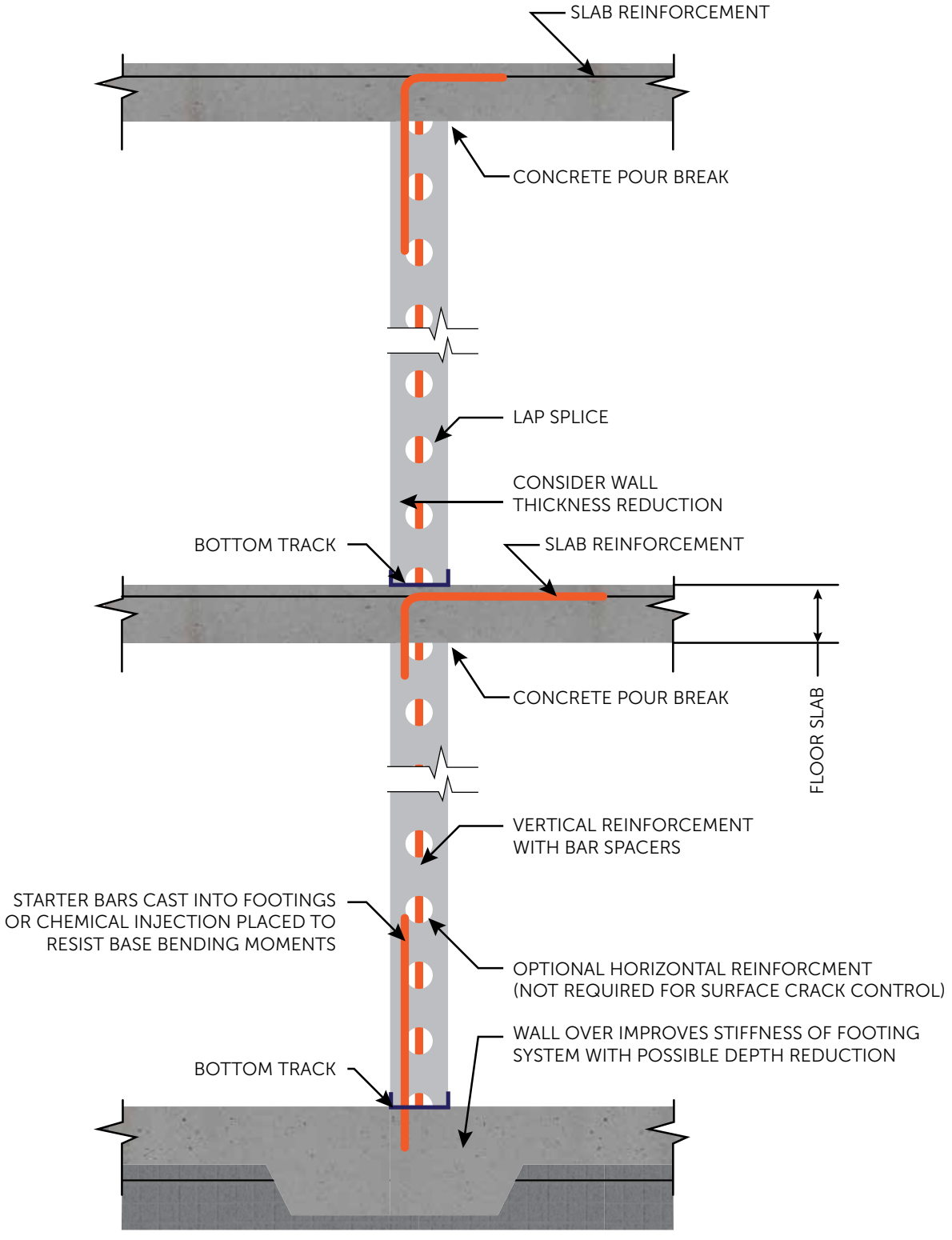
EXTERNAL WALL UPPER STOREY LOAD BEARING CONSTRUCTION



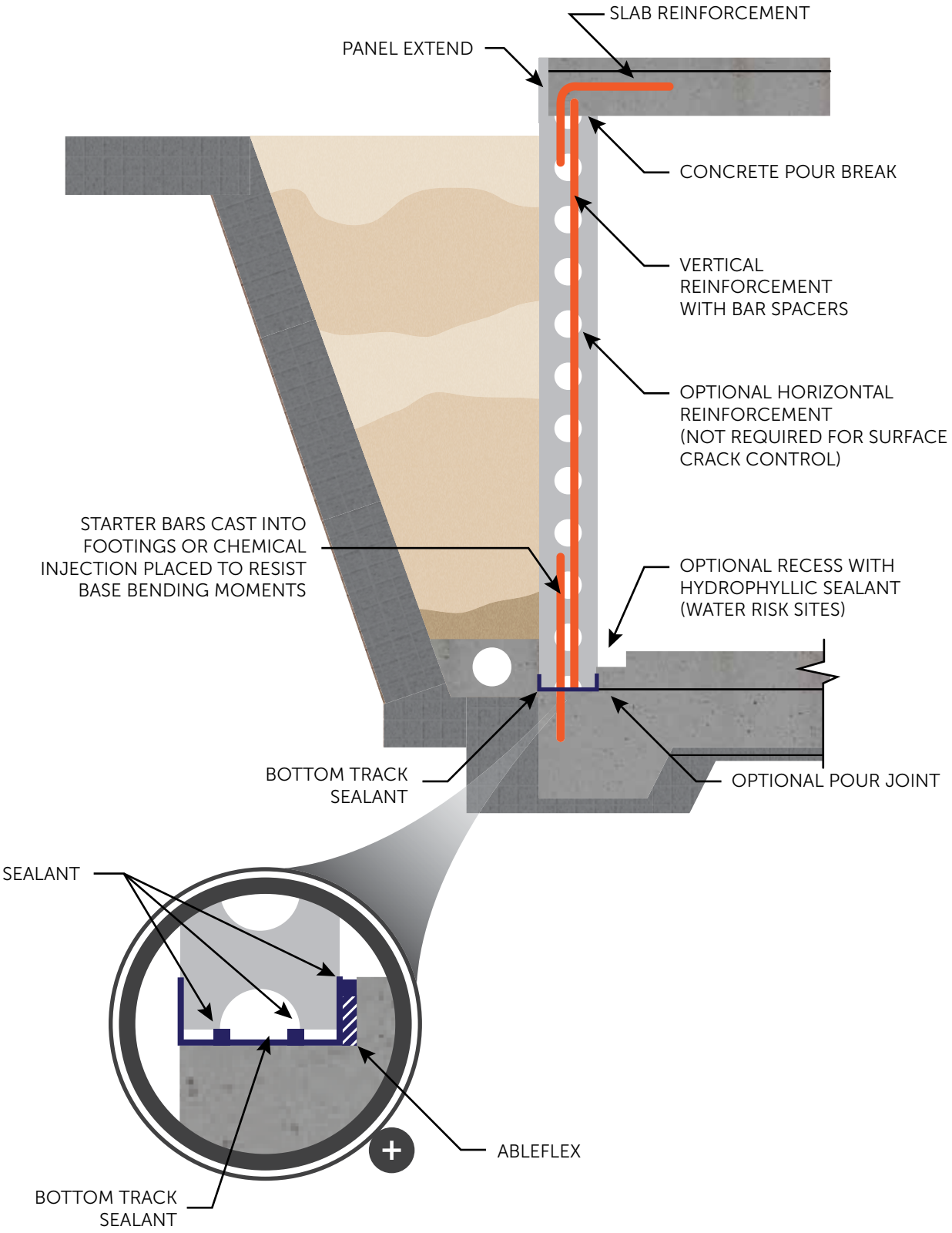
TYPICAL CANTILEVER RETAINING WALL



INTERNAL WALL UPPER STOREY LOAD BEARING CONSTRUCTION



TYPICAL BASEMENT WALL SECTION



NOTES

CONTACT:

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