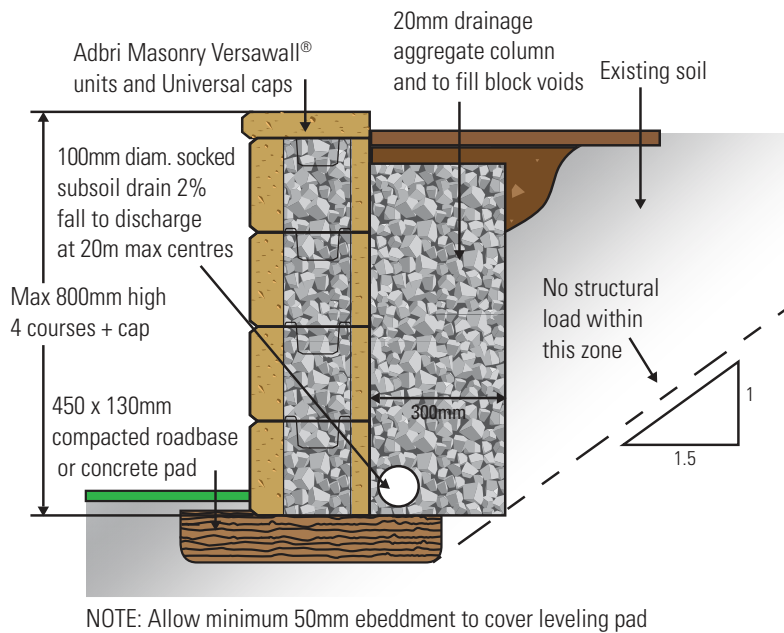


VERSAWALL RETAINING WALL SYSTEM

The Versawall® retaining wall system is the split face retaining wall format in the Versa range of products manufactured by Adbri Masonry. The system comprises individual units, installed in a totally vertical formation, comprising 400mm long x 200mm high standard units, and split faced corner units. There are three primary methods of installing the Versawall® retaining wall system.

1. GRAVITY WALL DESIGN



This installation method only applies where the ground level at the top of the wall is level, and there are no structures to be constructed at the top of the wall that will impose additional loading on the wall. This includes driveways, sheds, houses etc.

The 800mm high gravity wall design can use either concrete, crushed granular material or Torpedo™ Base Block for the levelling pad and will require the units to be fully corefilled with a 12-20mm drainage aggregate. This is in addition to a 300mm wide column of drainage aggregate to the rear of the Versawall® retaining wall units.

The design to 800mm high for the above detail shows the system at its maximum unreinforced limit. Any additional loading, or a backslope of the retained material, will result in failure of the wall if it is installed in this manner. Any additional loading or backslope of the retained material **MUST** be installed in accordance with the relevant Adbri Masonry segmental retaining wall technical specification brochure.

2. NO FINES CONCRETE (NFC)

No Fines Concrete (NFC) is a blend of aggregate, cement and water, the 'no fines' refers to there being no sand or no fines materials in the concrete mix. The cement and water coats and binds the aggregate allowing it to form a homogeneous mass. The NFC used in retaining wall construction should exhibit a 6 : 1, to 8 : 1, aggregate : cement ratio to ensure adequate strength is achieved.

NFC is used instead of standard concrete as the voids that naturally occur when aggregate is installed behind wall units are maintained between the aggregates in the NFC. This is important as it allows water to pass through the NFC, preventing any water pressure from building up behind the wall, whilst creating the extra mass required to ensure the wall is structurally stable.



It is extremely important that bond be achieved between the wall units and the NFC. There is no point in building your Versawall® wall then filling up the void behind it with NFC afterwards. If you do this, the very first heavy rainfall event, where the water pushes through the voids in the NFC, will push over the wall units sitting in front of it.

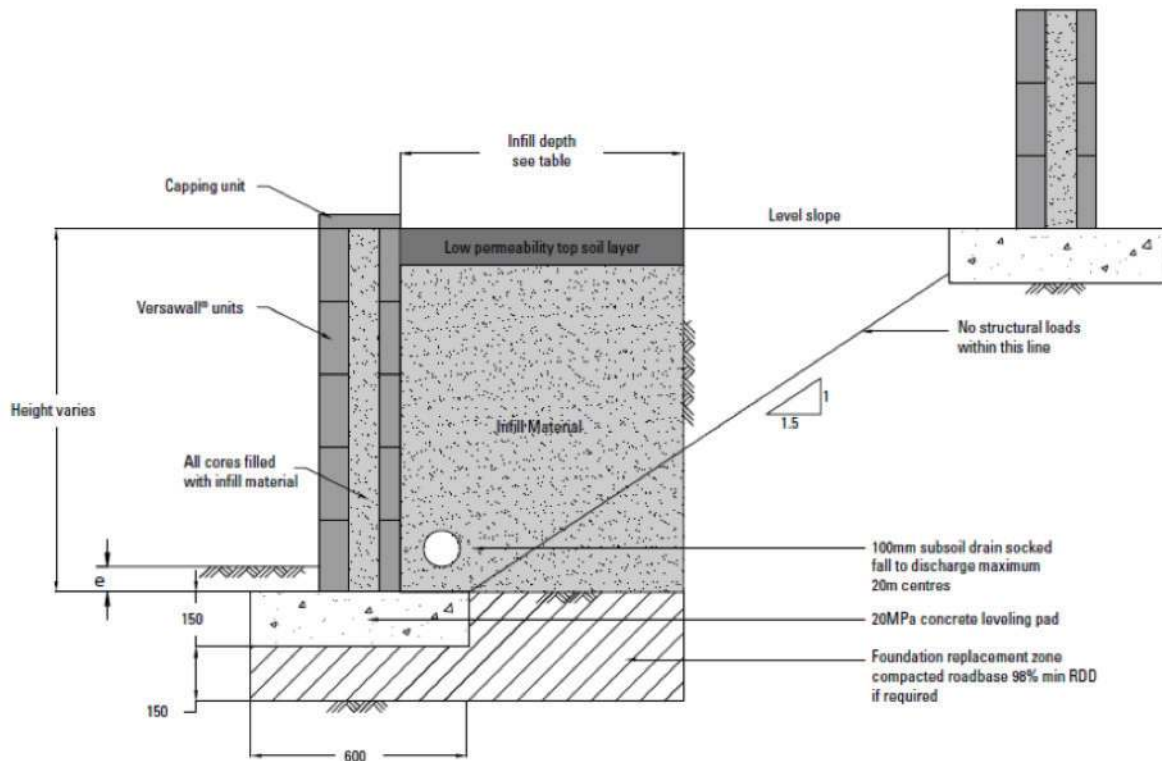
In order to ensure adequate bond is achieved between the NFC infill material zone and the blocks with the NFC corefill, it will be necessary to knock one rear wing off of every second Versawall® unit of every second installed course. This will ensure continuity and bond between the two NFC zones. The NFC shall then be placed in maximum two course lifts to both the cores and backfill of the blocks at the same time.

This will create the required bond between the NFC in the cores of the Versawall® units, and the NFC behind the Versawall® units. This will effectively tie the wall units to the NFC block behind the wall units, ensuring that they all act as one mass.

Your subsoil drainage should be installed at the base of the NFC zone as it would be in the drainage aggregate column.

SEGMENTAL RETAINING WALL TECHNICAL SPECIFICATION

The segmental retaining wall technical specification brochures include designs for Versawall® with NFC up to 1400mm in height.



VERSAWALL® RETAINING WALL DESIGN HEIGHTS

Residential Retaining Walls (including residential subdivisions)

Design Height 'H' (mm)	Surface Shape	Surcharge Load (kPa)	Foundation Material	Infill Material	Infill Material Depth (mm)	
					Type 1	Type 2
1400	Level	2.5	Replacement Zone	NFC	450	550
1200	Level	2.5	Replacement Zone	NFC	350	500
1000	Level	2.5	Replacement Zone	NFC	300	400
800**	Level	1	Natural Material	Aggregate	300	300
600**	Level	1	Natural Material	Aggregate	300	300
1400	1:4 Maximum	2.5	Replacement Zone	NFC	550	800
1200	1:4 Maximum	2.5	Replacement Zone	NFC	500	700
1000	1:4 Maximum	2.5	Replacement Zone	NFC	350	550
800	1:4 Maximum	2.5	Replacement Zone	NFC	300	450
600	1:4 Maximum	2.5	Replacement Zone	NFC	300	300

It is not recommended to exceed 1400mm in height without seeking suitable qualified engineering advice.

SEGMENTAL RETAINING WALL TECHNICAL SPECIFICATION (Cont.)

The 1400mm restriction has been implemented due to the shape of the Versawall® retaining wall units.

The Versawall® unit has an edge thickening at each end of the unit, both front and back of the block, to cater for the tongue and groove detail which assists the units in maintaining their alignment.

This detail also allows the retaining wall units to engage with the NFC along the length of the wall.

No fines concrete, as with standard concrete, will shrink after placement.

When NFC shrinkage occurs, with most other retaining wall systems, the shrinking NFC will pull away from the edges of the wall units. The increased face shell thickness will also help the wall units themselves to accommodate any movement.

With Versawall®, if the NFC shrinks, the engagement of the wall edge thickening, and reduced face thickness of these units, can result in hairline cracking of the units.

It is possible to install Versawall® to greater than the 1400mm height detailed in the technical specification brochure, but only if control joints are installed at maximum 10m centres, and engineering advice is sought.



CONTROL JOINTS

The Versawall® control joint needs to extend fully between the Versawall® units, and at least halfway through the depth of the NFC infill material depth, for the full height of the wall.

In order to achieve this it will be necessary to saw cut the units straddling the control joint at every second course. A physical barrier will need to be created between the units, the NFC corefill and the NFC infill material to ensure the shrinkage cracking is generated at that particular location.

This can be created using a flexible material such as ableflex, or an alternative material (black plastic, corflute etc) can be utilised to create the physical barrier, then an aesthetic product should be utilised between the facing of the units to cover the void.



3. VERSALOC® REINFORCED RETAINING WALL DESIGNS

Another option for the Versawall® retaining wall system is to use the retaining wall designs for a type 1 and type 2 retaining wall from the Versaloc® technical manual. All of the designs in this brochure are also able to be applied to the Versawall® retaining wall system.