

WALL HEIGHT DESIGN TABLES

Maximum Wall Heights For Freestone Rockface Block Retaining Walls

(Tables are a guide only and subject to an engineer's final design)

TABLE 1

Maximum wall heights for Freestone Rockface gravity retaining walls, backfilled with a 300mm blue metal drainage layer.

TABLE 2

Maximum wall heights for Freestone Rockface gravity retaining walls, backfilled with no fines concrete to the specified width behind the wall.

TABLE 3

Indicative wall heights for Freestone Rockface retaining walls, laid on a reinforced concrete footing and reinforced with vertical and horizontal steel as specified.

TABLE 1

Freestone Rockface Gravity Wall backfilled with 300mm blue metal drainage layer.

Maximum Wall Height 'H' (m)		
Backslope Conditions/Loadings	Wall Height	Retained Soil Types
Level with: No Surcharge	0.6	Type 1
	0.7	Type 2
	0.8	Type 3
Level with: Domestic Vehicles	0.5	Type 1
	0.6	Type 2
	0.6	Type 3
1:4 with: No Surcharge	0.5	Type 1
	0.6	Type 2
	0.6	Type 3
1:4 with: Domestic Vehicles	0.5	Type 1
	0.5	Type 2
	0.6	Type 3

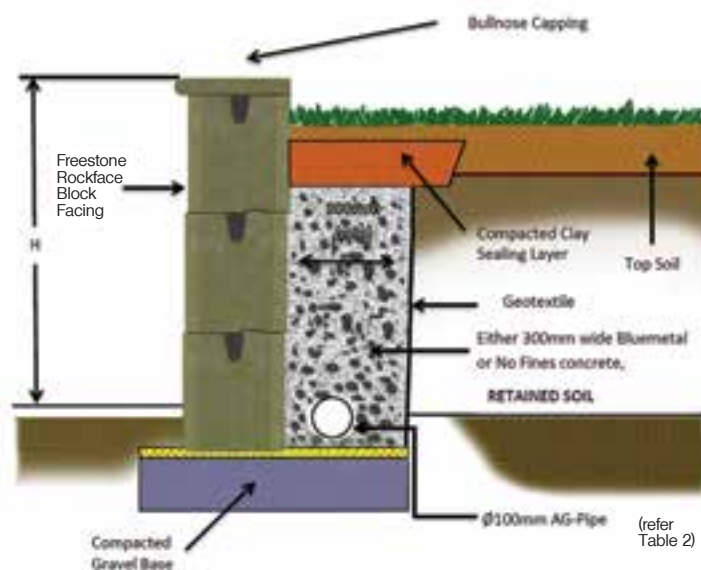


TABLE 2

Freestone Rockface Gravity Wall backfilled with no fines concrete drainage layer.

Maximum Wall Height 'H' (m)*					
Backslope Conditions/Loadings	Wall Height (m)	Base thickness (m)	Width of no fines concrete		
			Width of no fines concrete backfill behind blocks		
			Type 1	Type 2	Type 3
Level with: No Surcharge	1.0	0.20	0.35	0.3	0.3
	1.2	0.20	0.45	0.45	0.35
	1.4	0.25	0.65	0.65	0.55
	1.8	0.30	0.95	0.95	0.85
	2.0	0.35	*	1.15	1.15
Domestic Vehicles	1.0	0.15	0.55	0.45	0.45
	1.2	0.20	0.65	0.65	0.55
	1.4	0.25	0.95	0.75	0.75
	1.8	0.30	1.25	1.05	1.05
	2.0	0.35	1.55	1.35	1.15
1:4 Backslope	1.0	0.15	0.65	0.55	0.55
	1.2	0.20	0.85	0.75	0.75
	1.4	0.25	1.45	1.15	0.95
	1.8	0.30	*	1.55	1.25
	2.0	0.35	*	1.75	1.75

No-Fines Concrete Backfill/Infill Spec.

No-fines concrete infill placed behind retaining walls shall be free-draining, allowing water to pass readily through it to the drainage system. In its unhardened state, no-fines concrete shall have low slump and shall not exert a lateral pressure in excess of 4 kPa per metre depth on the retaining wall facing restraining it. No-fines concrete used to provide enhanced stability to a retaining wall shall have a bulk density not less than 1800 kg/m³. No-fines concrete shall form a coherent mass, capable of adhering to the retaining wall facing.

No-fines concrete shall meet the following specs:

- Aggregate to GP cement ratio shall be not greater than 6 : 1
- Aggregate shall be GP (poorly graded) nominal 20mm crushed rock.
- Compressive strength shall be not less than 10 MPa.

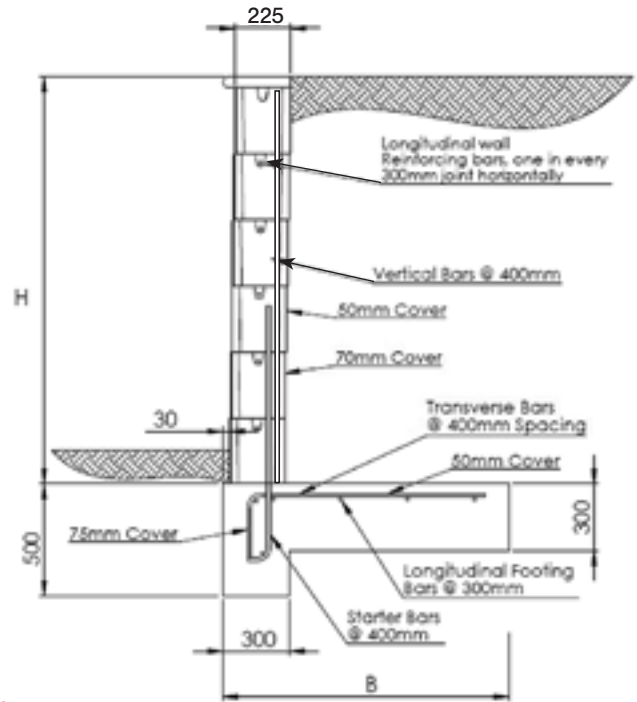
Construction Notes

- 1 Blocks should be backfilled with no-fines concrete every 2 courses (400mm) high, blocks should be filled first prior to backfilling behind the wall to reduce pressure.
- 2 Blocks should be wetted prior to core filling to increase flow of no-fines concrete.
- 3 At least 25% of Freestone Rockface block wings should be removed from the rear of the blocks prior to backfilling.

TABLE 3

Freestone Rockface Reinforced Retaining Wall laid on a reinforced concrete footing.

Wall Height (m)	Base Width (m)	Starter Bar Type	Min. Bar Lap (mm)	Transverse Bar Type	Longitudinal Bar Type	Soil Types
1.4	1.4	N12	500	N12	N12	Type 1
	1.2	N12	500	N12	N12	Type 2
	1.0	N12	500	N12	N12	Type 3
1.6	1.5	N12	700	N16	N12	Type 1
	1.3	N16	700	N16	N16	Type 2
	1.1	N16	700	N16	N16	Type 3
1.8	1.6	N16	700	N16	N16	Type 1
	1.4	N16	700	N16	N16	Type 2
	1.2	N16	700	N16	N16	Type 3
2.0	1.8	N20	700	N20	N16	Type 1
	1.6	N16	700	N16	N16	Type 2
	1.4	N16	700	N16	N16	Type 3
2.25	2.1	N20	700	N20	N16	Type 1
	1.8	N16	700	N16	N16	Type 2
	1.5	N10	700	N16	N16	Type 3



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CONSTRUCTION NOTES

Soil Type Descriptions

TYPE 1 SOILS

Includes soft and firm clay, fine sands, silty clays.
Internal Friction Angle $\geq 20^\circ - 24^\circ$

TYPE 2 SOILS

Includes stiff sandy clays and gravelly clays
Internal Friction Angle $\geq 25^\circ - 30^\circ$

TYPE 3 SOILS

Includes FCR, rock, sandstone and gravels.
Internal Friction Angle $\geq 30^\circ+$

- The following assumptions have been made regarding soil properties:
 - Infill Soil Types – As Above: Internal Friction Angle $\geq 20^\circ - 30^\circ+$
 - Bearing Pad
 - Compacted density angle: at least 18.6 kg/m³
 - Effective internal friction angle: at least 37°
 - Effective Cohesion: at least 5kPa
- Caution is required when using heavy or dry clays as retained soil or backfill.
- Surcharge loads are as follows:
 - Domestic Vehicles – 500 kg/m² (5 kPa)
 - Heavy Vehicles – To be separately assessed
- Drainage shall be supplied in the form of a slotted P.V.C. ag-pipe with geotextile sock drain (fall at 1:100 min. to S/W disposal system) or with weep holes. A 300mm drainage layer shall be provided behind the wall.
- Table 1 gravity wall design table should be used for low, non-structural garden walls only.
- Wall embedment is critical, ensure embedment parameters are followed and compacted fill is placed in front of wall.
- For backslope conditions greater than 1 in 4, seek specific engineering advice. Vehicle traffic should be allowed no closer than 1 metre behind the wall.

Engineering - To comply with most council requirements, please seek specific engineering advice for walls over 1 metre high or for low walls carrying vehicle traffic, etc.

Engineer's design program available at islandblock.com.au/designprogram

