

Keystone® No-Fines Pervious Backfill



Construction Guidelines Using No-Fines Pervious Backfill

The No-Fines Concrete backfill system increases the mass of Keystone® retaining walls allowing the maximum gravity heights to be exceeded without using geogrids.

This is ideal for boundary walls where the geogrids would otherwise cross into the neighboring property.

No-Fines Concrete shall consist of cement, water and coarse aggregate.

The particle size distribution of the aggregate shall comply with the limitations for the nominal single sized 3/4" aggregate. This table is supplied as a guide, and does not form any part of any contract with the user.

- The maximum slope of the backfill behind the wall is to be 5% (1 vertical to 20 horizontal).

NOTES:

- No-Fines Concrete with a 6:1 ratio (Gravel : Cement) (2000 psi±).
- The density of this product will vary with the density of the aggregate used. The density range may be from 115 to 130 lbs/cf. (Table based on density of 125 lbs/cf)

- The void ratio of the mix is expected to be between 20% and 30% and should be free draining.
- This product has no slump and exerts similar pressures on the soil and formwork, as does loosely poured aggregate.
- Global stability considerations should be checked by an engineer especially in poor clay conditions.
- Design assumes a dry excavation (i.e. water table is below bottom of footing level). If ground water appears in the excavation, the wall is to be re-designed by a suitably qualified engineer.



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Construction Steps Using No-Fines Pervious Backfill

STEP 1: Excavation/Preparation of Levelling Pad

Excavate a trench 24" minimum wide and sufficiently deep to allow for a 6" Minimum crushed stone or concrete leveling base.

STEP 2: Installing the First Course

Lay the first course of units side to side over the prepared base, with the pin holes on top.

STEP 3: Installing the Pins

Place two high strength fiberglass connecting pins into each unit. Use the front holes for a near vertical wall. Use the rear holes for a 1 in 8 setback (i.e. battered walls not recommended for tight curves. For every course the wall will set back 1" min.).

STEP 4: Additional Courses

Sweep the top of the previous course of units clean of any loose gravel. Place the next course of units so that the kidney holes fit over the pins of the two units below. Pull the unit towards the face of the wall until it locks with the pins on both sides. Repeat steps 3 and 4.

STEP 5: Drainage

Install a drainage system prior to No-Fines backfill placement according to engineering specifications.

Step 6: No-Fines Concrete Backfill

Backfill the wall with No-Fines Concrete. All voids inside and between the units must also be filled. The vertical height of any pour of No-Fines Concrete is limited to 3 courses (2' max.). Each pour must be allowed to harden prior to pouring the next lift. Alternatively the wall may be braced.

STEP 7: Installing Capping Units

Lay capping units, backfill and compact to required grade. It is recommended that the capping units be secured using masonry construction adhesive or epoxy cement.

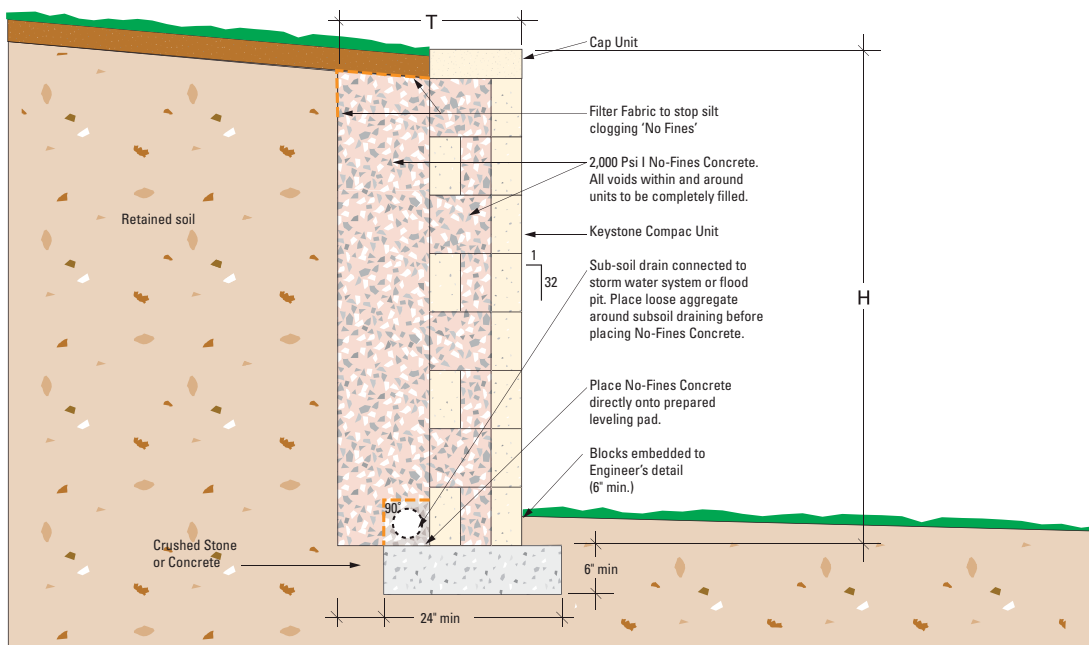


Figure 2 - Typical Construction Detail - Keystone® No-Fines Concrete Mass Gravity Wall

Table 2 - Maximum Wall Heights for Wall Construction Using No-Fines Pervious Backfill

Wall Height 'H' (ft)	Retained Soil CLAY $\phi = 26^\circ$ (POOR) 'T' (ft)	Retained Soil SAND $\phi = 30^\circ$ (AVERAGE) 'T' (ft)	Retained Soil GRAVEL $\phi = 34^\circ$ (GOOD) 'T' (ft)
3.67	2.5	2.0	2.0
5.00	3.0	2.5	2.0
6.33	3.5	3.0	2.5
7.67	N/A	3.5	3.0

ϕ Denotes the internal angle of friction of the retained material

If material below No-Fines Concrete is of poor quality, then the material must be replaced with a 6" thick layer of crushed stone