

Building a wall reinforced with geogrid

New technologies have been developed to facilitate the construction and stabilization of more imposing walls.

Techo-Bloc favors using geogrid when retaining walls require ground reinforcement. Walls are one of the most difficult aspects of landscaping. The end result may look painless enough but getting there can be a source of nightmares.

Whether decorative, structural, simple, inclined, level, stepped, etc., different walls require dealing with different conditions.

The following will guide you through the stages and various scenarios for constructing several types of walls.

Here are the steps to follow for building a wall with geogrid.

1 LOCATION

Before deciding on the final excavation site for your wall, contact the utility companies to ensure the proposed location is not encumbered with hidden wires or pipes.

2 EXCAVATION AND BASE PREPARATION

Dig a trench at least 24" (600 mm) wide by 9" (230 mm) deep. This depth takes into account that the first row will be below ground level surface, representing about 10% of the height of the wall.

The depth can increase if, for example, height of the wall is important, if the gradient in front of the wall exceeds 3H:1V, if the wall is submerged or, finally, if a different specification is required by your local engineer.

Once the trench is excavated, verify the nature of the soil to ensure they are suitable for constructing a wall; if not, consult your local engineer.

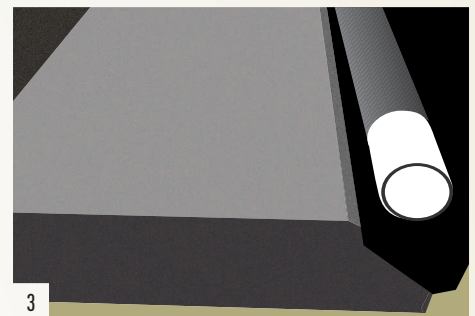
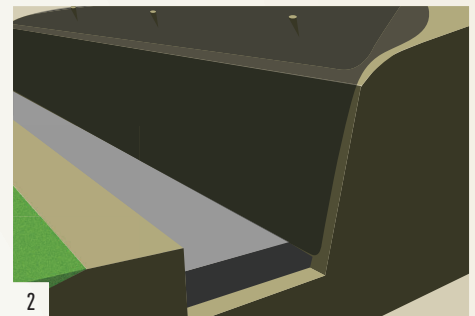
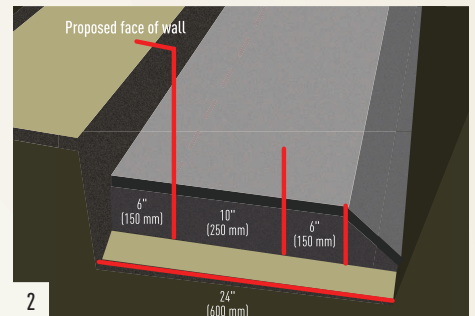
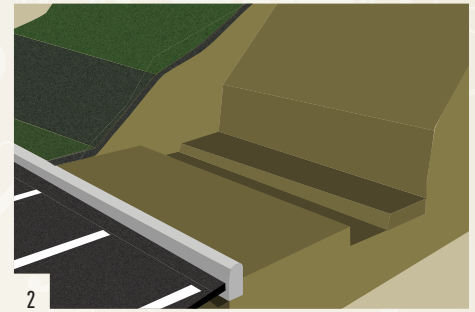
Begin the base at the wall's lowest elevation.

Install a geotextile membrane along the bottom and banks of the trench long enough to cover the backfill along its full length. The membrane will prevent the contamination of natural soils or their migration into the granular base. It should be held in place temporarily with stakes during the wall's construction. The granular base should be of 0-3/4" (0-20 mm) stone, well compacted to 98% SPD (Standard Proctor Density) and at least 6" (150 mm) deep or more, depending on the complexity of the construction or the recommendations of your local engineer.

3 THE DRAIN

The drain is an important construction element in that it prevents water from accumulating behind the wall. You should determine the drain's direction before even starting excavation. It should be towards the wall's lowest point (provide for a minimum inclination of 2%) where the exiting pipe can be attached to an existing system such as the house drain or the city's sewage system. When installing your drainage system, make sure the hydrostatic pressure behind the wall is well channeled.

The aggregates used 3/4" (20 mm) net stone behind the walls act as a drainage system. Techo-Bloc recommends the installation of a 4" (10 cm) perforated drain installed behind the first course of blocks which will have an exit at the lowest point of the wall.



4 THE FIRST BLOCK

Installing the first block of the first course is especially important because it will determine the wall's final aspect. A string line stretched behind the wall will allow you to align the blocks in a continuous and integrated fashion. Each and every block must be level in all directions.

Stepped Base: Rigorous standards must be followed in building a wall on a stepped base, whether ascending or descending:

- 4.1 The height of each level must be equivalent to one unit.
- 4.2 When calculating the levels, always take into account the amount of set-back of the different types of wall systems manufactured by Techo-Bloc.
- 4.3 Finally, overlap the levels with the largest units to ensure optimal transition between levels.

5 BACKFILLING AND INSTALLING THE FIRST GEOGRID

After erecting three courses or a maximum height of 8" (200 mm), backfill the wall with 3/4" (20 mm) net stone. Once the stone is well leveled, begin installing the first geogrid.

Make sure you use the specified geogrid or an equivalent approved by your local engineer. It should be installed on 3/4" net stone and on Techo-Bloc blocks that have been cleaned of all debris. The PVC insert attachments are installed on the geogrid at the mating of the blocks. Add an extra course of blocks to stabilize and stretch the geogrid and anchor it to the ground with spikes. Continue to fill in behind the wall, up to the next row of geogrid. Level the stone with a rake and ensure the tension is kept on the geogrid. The granular stone (3/4" net) should be enveloped by a geotextile membrane in the form of a "U" to ensure the stone is not contaminated by soil or filling material. Repeat the stacking of blocks and backfill steps until the wall reaches the desired height.

You've now reached the coping stage.

6 THE FINAL TOUCH

Fold the geotextile back towards the wall along the length of the embankment. Spread the final layer of the desired cover can be macadam, earth/grass, mulch or some other material and compact it manually. All construction sites must have a slope to drain all surface water. Always pay special attention to the water running from a roof, gutter and paved surface and the topography of the natural landscape. Form a valley to channel water towards the 3/4" (20 mm) stone. For all other applications, whether concrete pavers, poured concrete or asphalt, do not compact at least 3' (1 meter) from the wall.

The final touch is installing the coping stones. For a secure installation, surfaces should be clean of any debris before the coping stones are glued with a concrete adhesive to the last course of blocks.

