



**ELEVATE**  
RETAINING WALLS

# Technical Details for Backfill, Drainage & Subgrade

## The following are typical backfill and subgrade properties used in the design of the Counterfort Wall System:

- Minimum Internal Angle of Friction
  - Backfill – 28 degrees
  - Subgrade – 30 degrees
- Density – 120 pcf
- Compactable to meet local code requirements

## The following are typical classifications of acceptable drainage materials (or similar):

- CA-7
- CA-5
- CA-8
- CA-11\*
- CA-13 thru CA-16\*
- FA1\*
- FA2\*

\* See descriptions

**The Counterfort Wall System** is designed to work with most on-site clay backfill and readily available rock or soil backfill. Subgrade improvements may be necessary to meet bearing requirements (coordinate with geotechnical report). In situations where the existing subgrade may not be conducive to sliding resistance and to aid in leveling of the counterfort bases, it is recommended to install a free-draining, self-compacting gravel layer to directly interface with the Counterfort Base slab.

Drainage is not backfill dependent. The Counterfort Wall System can be installed with either a drainage layer comprised of free-draining aggregate wrapped in filter fabric or a geo-composite wall drain directly behind the back face of the wall to provide drainage down the height of the wall. The water is then either outlet through weep holes in the face of the panel or to sub-drains that will flow to drainage structures along the wall.

Regardless of the material selected, the drainage course should be separated from the remaining backfill with the use of a filter fabric for the entire length and height of the wall. If the contractor selects a material meeting CA-11, CA-13 thru CA-16, FA1 or FA2, they shall wrap the entire length of the structural sub drain in filter fabric (if the sub-drain option is chosen).

The Counterfort Wall System can also accommodate economical backfill options with properties similar to those mentioned above on a case by case basis provided the contractor can provide gradation information for drainage material and basic properties for the requested backfill (i.e. density and internal angle of friction).