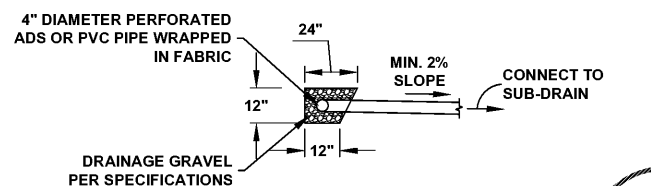
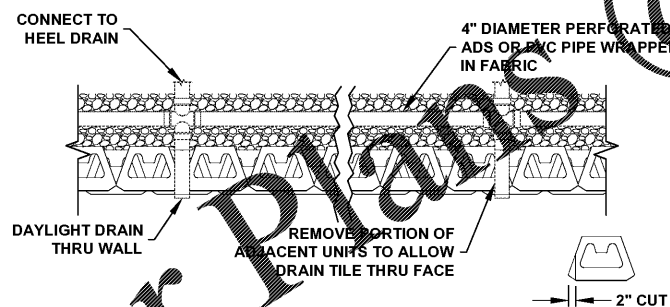


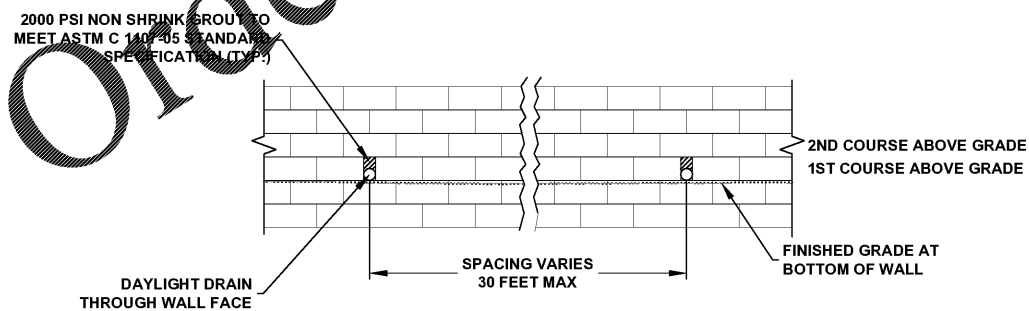
1 TYPICAL RETAINING WALL CROSS SECTION (NOT TO SCALE)



HEEL DRAIN DETAIL (N.T.S.)



PLAN VIEW



PROFILE VIEW

SUB-DRAIN DETAIL FOR TYPICAL WALL SECTION (N.T.S.)

- NOTES:**
- 4-FT. HT. CHAIN-LINK FENCE WITH TOP AND BOTTOM RAIL IS USED AS GUARD RAIL AT RETAINING WALL LOCATIONS.
 - SHOP DRAWING SUBMITTAL SHALL CONFIRM THAT THE FENCE COMPLIES WITH 2018 IBC SECTION 1015 & 1607.8 (GENERALLY DESCRIBED BELOW).
 - TOP BAR & HAND RAIL: RESIST A LINEAR LOAD OF 50 POUNDS PER LINEAR FOOT & RESIST 200LB CONCENTRATED LOAD.
 - 4 INCH DIAMETER SPHERE CANNOT PASS THROUGH ANY OPENING UP TO A HEIGHT OF 34 INCHES (VERTICAL PICKETS/POST OR BOTTOM RAIL).
 - CONSTRUCTION OF UTILITIES SHOULD BE COMPLETED COINCIDENTLY WITH THE CONSTRUCTION OF THE RETAINING WALL(S). THERE WILL BE NO TRENCHING ALLOWED ONCE GEOGRID IS LAYED AND WALL IS CONSTRUCTED; UNDER NO CIRCUMSTANCES SHOULD THE GEOGRID BE SEVERED.

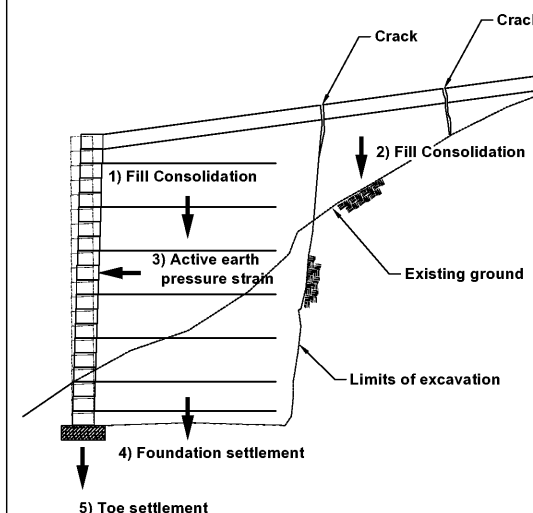
Backfill Movement and Soil Cracks

Mechanically Stabilized Earth (MSE) retaining walls are flexible reinforced soil masses, which interact with the foundation and retained backfill zones to provide a stable retaining structure. These soil zones have different stress/strain/consolidation properties which can result in differential movements and strain of the reinforced and retained soil matrix.

Relative movement of the soil masses is typically noted in taller wall or tiered structures with small soil cracks occurring behind the wall structure near the boundary of soil zones with different strain properties. Experience has shown that this type of soil cracking is most noticeable after very heavy rainstorms where the additional saturated soil weight and seepage pressure involved can cause slight differential movement of the masses. A wall schematic and possible causes are shown below:

Possible causes of soil cracking

- Consolidation of reinforced zone backfill** - Any settlement of reinforced fill relative to adjacent soils may cause cracking at the end of reinforcement. If soils are placed and compacted in dry conditions, water can cause secondary consolidation of the reinforced fill and cracking at the end of the reinforced zone.
- Consolidation of retained soil wedge** - Similar to Item 1 causing cracking at the back of fill wedge relative to existing soils.
- Lateral wall movement due to active earth pressure state** - lesser quality backfill soils exhibit higher lateral movement to mobilize the active earth pressure state. If the reinforced wall mass strains laterally, the fill must settle accordingly and cracking can occur.
- Foundation settlement** - The foundation soils of many wall structures have not experienced the loading from the new fill which can cause differential settlement between the wall volume and cut slope.
- Toe Settlement** - The wall toe can experience more settlement than the wall heel due to the lack of overburden or confining pressure resulting in slight lateral wall movement in the upper wall section and tension cracking at the end of reinforcement.



TYPICAL SECTION

Soil cracks can also be a sign of global instability or continuing settlement which requires evaluation by a geotechnical engineer. However, most minor soil cracking observed is structurally insignificant to the long term performance of the wall structure but can lead to reflective cracks in pavement sections and/or separation of curbs when of greater magnitude.

Significantly increasing the length of the upper reinforcement levels to help bridge the potential crack zones can be prudent precaution for projects with flexible pavements extending over all zones. High quality backfill, proper backfill placement and compaction, and firm foundations are the best precautions against soil cracking.