

GEOTEXTILE WRAP-FACE WALL USING MARGINAL BACKFILL

Brandon Parrish

Dr. John Bowders, Thesis Supervisor

ABSTRACT

A concrete retaining wall was constructed during October/November 2005. The height of the wall was 9 feet with a stem width of 0.83 ft, while the width of the base was 1.83 ft. The backfill was a low plasticity clay (CL). As a result of this design, the wall was not able to withstand the lateral pressures from the backfill and noticeable cracks in the wall developed within one month after backfilling. The backfill soil was then removed to relieve pressures on the wall until a remediation scheme could be developed and implemented. A geotextile wrap-face wall was chosen to reinforce the soil mass behind the existing concrete wall, which now acts as a façade. The in-situ soil (CL), a marginally suitable material, was used for the backfill. Extensive drainage was incorporated in the design and construction of the geotextile wrap-face wall to decrease backfill pore pressures. A gap between the face of the geotextile wall and the back of the concrete wall allows for deformation of the wrap-face wall without contacting the concrete wall. Index and compaction tests were performed on the backfill soil and interface shear tests were conducted with the geotextile and soil to provide design parameters. The geotextile wrap-face wall was constructed in July 2006, and the performance was monitored over a period of four months.