



Lanchester Landfill Mechanically Stabilized Earth Retaining Wall

Several landfill sites in Pennsylvania and elsewhere have successfully made use mechanically stabilized earth (MSE) retaining wall systems. This technology was specifically selected for use on Lanchester's, Area D landfill expansion in order to avoid deforestation of the adjacent woodlands. This technique was considered during the planning stage of the project and incorporated into the design in order to meet the Authority's objective to avoid tree clearing and to help maintain a more aesthetically pleasing landscape for the landfill's neighbors in Churchtown and the surrounding community.

The current MSE retaining walls at Lanchester was constructed with soil and a manufactured reinforcing product called geo-grid reinforcing. The MSE wall was designed for a 1.5 factor of safety under static conditions. This means that the structural capacity (or strength) of the MSE wall is 150% of the anticipated loading under normal conditions. The MSE wall was also designed in accordance with EPA guidance for seismic conditions with a factor of safety of 1.0. The maximum height of the MSE this wall is about 40 feet. The exterior slope of the wall is one (1) horizontal to two (2) vertical. The interior slope of the wall is three (3) horizontal to one (1) vertical. The wall was designed with a paved road on top for access to the landfill maintenance building. The Area D MSE wall is about 3,000 feet long.

In addition to landfill applications MSE retaining walls have been successfully used for decades to help build retaining walls, bridge abutments, dams, seawalls, and dikes. Although the basic principle of MSE retaining walls has been used throughout history, the development and use of modern geo-grid reinforcing system, such as the one used at Lanchester, began during the 1960s.