

Approved Products List Users Guide

The geotechnical /foundations web site has a variety of approved products lists (APL's), pre-qualified wall lists and a standard of use for our customers benefit. At times the lists can be confusing in how to apply the information contained therein. This short guide will attempt to explain the application of such information.

MN/DOT has reviewed, evaluated and studied many wall and reinforced steepened slope (RSS) systems for use with AASHTO and in-house requirements of best engineering practice. Standard design charts and plan sheets have been developed for use with said APL's.

Dry-Cast Masonry Walls:

In the case of a dry-cast masonry wall one should first review the current Technical Memorandums (found on the MN/DOT Technical Support web pages of the Office of Technical Support) for application restrictions. Next designers can use the standard plan sheets (also found on the MN/DOT Technical Support web site under the 5-297.640 series) as applicable. Non applicable cases will have to be by special design from the Geotechnical Office, the Bridge Office or by Contractor/Consultant Engineer. Finally the materials used in the construction of the standard designs must be on the MN/DOT APL maintained by the Foundations Unit. Step one should be looking at the "Freeze-Thaw and Quality Control Approved List for Masonry Units" to see if the Contractor proposed block is included on the list, that it was made at one of the listed plants and that it has a yes for the quality control plan. If a block product is not on this list it may not be used on any MN/DOT or State Aid projects. At the same time one needs to check the proposed geosynthetic reinforcement to make sure it is contained on the "Approved Products List – MBW Reinforcement Class." Then one should check that the combination of the proposed wall units will work with the proposed reinforcement class by looking them up on the "Approved Products List – MBW Unit/Geosynthetic Reinforcement Combinations." This list has all the applicable variables in tabular format, including wall batter angles, nominal block widths commonly used and reinforcement class. The MBW Unit to be used must be shown on the same line as the Soil Reinforcement to be used. If it is not, the connection capacity is not in accordance with MN/DOT requirements and it shall not be used. Note that sometimes the term "Segmental Retaining Wall" (SRW) has been used interchangeably with "Modular Block Wall" (MBW) systems. They are usually made of Dry-Cast concrete but some Wet-Cast units do exist.

Reinforced Steepened Slopes (RSS):

This type of system is evaluated in much the same way as the Dry-Cast Masonry Walls noted above except that there is no block facing to consider and there is no Technical Memorandum. The standard plans sheets for this retaining system are also found on the MN/DOT Technical Support web site next to the Masonry wall

sheets in series 5-297.640's. The Foundations Unit maintained "Approved Products List – RSS Geosynthetic Reinforcement" is what must be used to verify that the proposed geosynthetic is listed and of the required strength type (Type 1, 2 or 3).

Mechanically Stabilized Earth (MSE) Wall Systems:

This type of retaining wall system is generally a generic name for many types of walls on the market using reinforcement within the soil mass consisting of metallic, geosynthetic, or other materials and any number of different facing blocks, panels or treatments. MN/DOT has further restricted this type of system to exclude the afore mentioned Dry-Cast Masonry block. As such, this category of wall systems uses a Wet-Cast air entrained concrete mix for the facing panels. These types of walls do not have the same usage restrictions as the Wet-Cast systems. When a plan or project proposes to use this type of retaining wall it must be one of the systems that have been evaluated and approved for use as listed on the "Pre-Qualified MSE Wall Systems" list.

Light-Weight Fill Materials:

A wide variety of light-weight fill materials have been used by MN/DOT in difficult soil conditions. Shredded tires are but one of the many. Past action at the MN Legislature set some requirements into law and made reference to additional requirements as defined by MN/DOT. As such, the MN/DOT Foundations Unit has posted "MN/DOT Shredded Tire Standard" on the Foundations Web site.