

# GEORGIA DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL REQUIREMENTS<sup>i</sup>

## Introduction

The Georgia Department of Transportation (GDOT) maintains a Qualified Product List, QPL 107, for MSE (mechanically stabilized earth) Wall Systems. This list is available on the GDOT website, at <http://www.dot.ga.gov/PS/Materials/QPL>. Wall systems on QPL 107 have been evaluated by the Office of Bridges and Structures and have proven their capability of meeting material and design requirements defined in GDOT Standard Operating Procedure (SOP 33) Certification of Mechanically Stabilized Embankment Retaining Walls, and of GDOT Standard Specifications Section 627 – Mechanically Stabilized Embankment Retaining Wall – Contractor Design.

Submittals for qualification of a MSE wall system must be in accordance with GDOT SOP 33. Some of the submittal items listed in SOP 33 are contained in an IDEA report. However, there are some additional requested items, which are not listed (or specifically noted) on the IDEA protocols (<https://www.geoinstitute.org/special-projects/idea>). A retaining wall supplier with an IDEA report can supplement their submittal to GDOT by referencing where listed items are contained within their IDEA report, along with the additional, specific items that GDOT requires, as listed below. The items are presented with the GDOT Checklist item number.

Information items that are identical to, and therefore redundant to, IDEA protocol listed items (i.e., GDOT SOP33 items 3, 5, 6,7, 8, 9) are not listed in this supplemental requirements report. However, items under a topic that the agency requests which are, or may be, more specific or detailed than the IDEA protocol are listed. The wall system supplier submittal may address this in their supplemental information or, if fully addressed in their IDEA submittal, refer to their IDEA report.

GDOT should contact the IDEA webmaster and update this report if/when their policies, etc. change. This supplemental requirements report is readily updateable, and a revision number and new date should be noted when updated.

## Supplement Items

### Submission Requirements Items

1. Provide a catalogue or library of standardized concrete wall elements clearly labeled with the product line name and release date. Include example design calculations for each barrier coping detail, and no less than 3 precast panel designs to include the following:
  - Primary
  - Top out panel
  - Panel including a utility or drainage opening

Catalogue or library and design calculations shall be stamped by a professional engineer licensed in the State of Georgia. Perform design work in conformance with the AASHTO

LRFD Bridge Design Specifications utilized by the Department as defined in the current GDOT Bridge and Structures Design Manual.

2. Provide step by step example design calculations for each of the following wall configurations:
  - Wall greater than 15 feet tall retaining an infinite 2:1 slope.
  - Wall greater than 15 feet tall retaining an infinite 2:1 slope with a design flood elevation equal to  $0.5H$ .
  - Wall greater than 15 feet tall retaining a broken back slope consisting of a finite 2:1 slope that breaks over to horizontal at  $0.5H$  beyond the walls pressure surface.
  - Wall retaining a live load surcharge and including a moment slab coping with a 42-inch tall barrier section with a top width of 12 inches and a 5.25:1 sloped face. Evaluate the external and internal stability of the wall for a vehicular collision load. Evaluate the external stability of the barrier and moment slab for the same vehicular collision load. The reinforcement design of the barrier and moment slab is not required for this example.
  - Wall retaining a pile supported abutment and live loads from approach roadway. Include the design of additional soil reinforcement devices to be connected to the abutment to resist rotation and displacement caused by a lateral bridge load, applied at the top of a 2-foot tall abutment cap.

Use the following assumptions for design:

- The reinforced backfill is the material used for submitted pull out testing.
- Retained backfill has a unit weight of  $0.120 \text{ kips/ft}^3$  with an internal angle of friction equal to  $28^\circ$ .
- The live load surcharge is  $0.250 \text{ kips/ft}^2$ .
- The vehicular collision load is a 15 kip load applied at the top of the barrier shape over a distance of 5 feet, with distribution to a maximum length equal to the minimum joint spacing in the moment slab.
- The lateral load from the bridge is  $1.0 \text{ kips/ft}$  of abutment.

Catalogue or library and design calculations shall be stamped by a professional engineer licensed in the State of Georgia. Perform design work in conformance with the AASHTO LRFD Bridge Design Specifications utilized by the Department as defined in the current GDOT Bridge and Structures Design Manual.

4. Provide soil reinforcement splicing details.

10. Provide a minimum of two complete plan sets for walls that have been part of completed projects. Include contact information for the owner’s representative and clear reference to the structure’s locations.
11. Provide typical example details addressing the interaction of wall system with drain pipes, junction boxes, and catch basins.

#### Materials for Reference

- Panel connector mechanism (1 complete connection assembly, including reinforcement a minimum of 6 inches in length)
- Bearing pad (1 of each potential type)

#### Notarized Warranty Letter

The warranty letter shall be submitted on company letterhead with “QPL 107 Mechanically Stabilized Embankment Retaining Walls” in the subject line, a brief description of the retaining wall system and its proposed uses and the following statement in the body.

“This is to warrant that the product (*Product Trade Name*) as manufactured and sold by (*Company Name*) is a Mechanically Stabilized Embankment Wall meeting the current requirements of Section 627 of the Georgia Department of Transportation Standard Specifications”.

The letter shall include the signature of a person legally responsible to bind the company.

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<sup>i</sup> Report Ver 1, June 2021.