Assessment of Performance of Reinforced Soil Slopes on ODOT Projects

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Reinforced Soil Slopes at ODOT

Originally Item Special (Item 690)

Supplemental Specification 863

- Original – October 2012
- Current – October 2014 (Update to Designer Note – Language on Enhancing Slope Erosion Protection)
Reasons for Assessment

- Increased Usage (including VECP)
- Reports of Issues
Assessment Background

- 47 Sites Identified Statewide (Source: CMS and Site Manager)
- Each Site Will Be Visited by OGE (16 Visited So Far)
- “White Paper” Will Be Issued and Georeferenced Database Created
Data Collected

- Visual Inspection
  - Location/Size Information
  - Vegetation Coverage
  - Erosion Features
  - Slope Deformation
  - Performance Vs. Adjacent (Unreinforced) Slope
  - Grid Exposure
Results

Vegetation Coverage
- Average 70-75%
- Minimum 40% / Maximum 95%

Erosion Features
- 75% of slopes have minor erosion features
  (example: small number of 6” deep rills)
Results

Slope Deformation

- 5 Sites Have No Deformation
- 7 Sites Have Minor Deformation
- 3 Sites Have Moderate Deformation
- 1 Site Has Major Deformation (Active Landslide)
Results

Vs. Adjacent (Unreinforced) Slopes
- 3 Sites are Performing Worse
- 12 Sites (75%) are Performing Comparable
- 1 Site is Performing Better

Grid Exposure
- Grid was Exposed at 7 Sites
Conclusions (So Far)

Much of the Slope Deformation Appears to be in Landslide-Prone Areas

Examples

- RSS Installed (for Ramp Widening) at Exact Location of Multiple Landslides in Past 40 years
- 1.5:1 and 2:1 RSS Issues Comparable to Adjacent 3:1 Unreinforced Embankment
Conclusions (So Far)

- Nothing Definitive Regarding Steepness of Slope and Performance – 1.5:1 vs. 2.0:1
- Stormwater Runoff Issues are not Global
- Recommendation to Wrap All Slopes Steeper Than 2.0:1 is Still Under Consideration
Conclusions (So Far)

- Any Changes Will Likely Be Within the Designer Note of SS863 (Lessons Learned/Guidance on Applicability)

- Slopes with Moderate or Major Deformation will be Examined Further (Review of Design, Instrumentation, etc)
Miscellaneous SGE/GeoMS Topics

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Miscellaneous Topics

Unsuitable vs. Unstable (Subgrade)

- Geotechnical Bulletin 1 – Section H
- Unsuitable – A-4b, A-2-5, A-5, A-7-5, A-8a, A-8b, LL>65, Rock or Coal
- Unstable – Predicted Via GB1 Criteria but Actual Limits Determined Via Proof Roll
- Location & Design Volume 3 Plan Note G121
  - Need to Identify/Label Unsuitable vs. Unstable
  - Sequence of Construction
Geotechnical Bulletin 1

Update to GB 1 Subgrade Analysis Spreadsheet

Any suggestions, requests, etc. to stephen.taliaferro@dot.ohio.gov
SGE Section 701

Electronic Submissions

How Do We Obtain Your Boring Locations in an Automated Fashion?

- Borings in GeoMS from 2004 – 4,977
- Borings in GeoMS from 2010-2014 – 741

Will Continue to Look for Alternatives

Character Recognition?
Upcoming Changes to GeoMS

- Mostly Internal
- Increased Opportunity for Customization for Registered Users
  - Select Your Preference for Basemap (Topo, Satellite, Hybrid, etc.)
  - Electronic Submissions?
  - Ability to Export Data for a Region
Questions?

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