GSI W-1 Webinar Entitled:

"A Data Base and Analysis of 320 Failed MSE Walls With Geosynthetic Reinforcement"

Webinar Overview

Mechanically stabilized earth walls, berms and slopes with geosynthetic reinforcement have been developed since the 1970's; first with geotextiles and then geogrids. Our estimate is that approximately 200,000 exist and the technology is utilized worldwide. Unfortunately, there have been many failures; some with excessive distortion while others have actually collapsed in whole or part. The main statistical findings of the 320 case histories that we have on file are as follows:

1. 98% were private walls
2. 70% failed between 1999-2010
3. 79% were in North America
4. 75% were masonry block faced (i.e., SRWs)
5. 83% were 4 to 12 m high
6. 94% were geogrid reinforced (others GT)
7. 75% failed in less than four years
8. 73% used silt and clay backfill soils
9. 76% had poor or moderate compaction
10. 99% caused by improper design or construction; none (0%) were GG or GT manufacturing failures
11. 63% caused by internal or external water (i.e., remaining 37% caused by soil related issues)

Details of this data set will be described and from it four salient features will be discussed in detail; (i) fine grained soil backfills, (ii) compaction of these same soils, (iii) routing of internal drainage systems, and (iv) surface and adjacent water control. Concluding comments will include specific recommendations to designers and contractors alike.

Learning Objectives

Participants will become familiar with details of geosynthetic reinforced MSE structures. Different modes of failure (deformation versus collapse) will be illustrated. These 320 failures will be categorized insofar as soil related versus water related along with the primary accompanying details. This webinar will hopefully lead to mitigating the large number of current failures in the future.

Webinar Benefits

(i) Understand the idiosyncrasies of MSE structures
(ii) Learn about the major circumstances of failures
(iii) Learn the significance of soil issues vis-à-vis water issues
(iv) Learn of the various weaknesses of soil issues and water issues insofar as failures are concerned
(v) Learn about four specific issues which are involved in most of the failures
(vi) Understand the negative implications that this large group of failures has on the credibility of the technology and on everyone involved in it

Intended Audiences

Owners of MSE walls, berms and slopes in both the public and private sectors; federal, state and regional geotechnical, transportation, and environmental engineers; engineers from municipal districts and townships; private and municipal land developers, architectural and landscape designers; general civil consulting engineers; testing laboratories servicing these organizations; manufacturers and representatives of geosynthetic materials; contractors and installers of MSE walls, berms and steep soil slopes; academic and research groups; and others desiring technically related information on this important aspect of our constructed infrastructure.

Specific Topics Covered

1. Introduction and Background
2. GSI's Incremental Involvement
3. The Two Failure Classifications
4. Main Statistical Findings
5. Major Design & Construction Issues
6. Summary Comments

Webinar Instructor

George Koerner, Ph.D., P.E. & CQA

Vita:
George R. Koerner is Director of the Geosynthetic Institute. He is in charge of laboratory accreditation, field certification and continuing education at the Institute. He also manages several research projects and has published over 350 technical papers in his 35-year association with polymers used in below ground construction. Dr. Koerner's Ph.D. is from Drexel University in Geotechnical Engineering. He is a registered professional engineer and a certified quality auditor. George has received many awards over the years. The most notable being IFAI's Environmental Technologies Award of Excellence 1995, ASCE's DVGI Geotechnical Engineer of the year in 2004, the title of ASTM Fellow in 2013 and GMA's first Koerner lecture in 2017.