

GSI W-23 Webinar Entitled: “Geotextile Filters: Concerns and Issues”

Webinar Overview

It is roughly estimated that geotextiles have been used in over 500,000 filtration applications to date. Improper performance is extremely rare and in our database of field problems there are only 82 published or known cases ($\approx 0.016\%$). Yet, these are important to recognize in the context of “lessons learned” so as not to be repeated in the future. The various case histories are categorized into the following groups:

- geotextile filter design problems
- problems involving atypical soils
- problems involving atypical permeants
- geotextile filter installation problems

The webinar is illustrated with cross-sections of specific situations as well as photographs of significance.

Insofar as a summary and recommendations are concerned, it is felt that the state-of-the-practice in geotextile filter design is very good when dealing with water as the permeant flowing through “typical” soils. In this regard, atypical permeants and/or unique soils need special consideration. Certainly, high suspended soils and/or biological contaminants are of concern. Unique soil types such as cohesionless fine sands and silt, dispersive clays and ochre should also be evaluated accordingly. Four different long-term laboratory equilibrium tests are described for such situations and they are compared and contrasted to one another. Lastly, graded geotextile filters are described and recommended for unique situations.

Learning Objectives

Participants will learn the three concepts of geotextile filtration design using a series of gradually sophisticated methods. All of the 82-field case histories will be explained in this context. Not only causes of problems will be illustrated but also clear explanations will be given. Many situations become obvious after the situation has occurred. Also, several situations are still challenging at the present time, e.g., reversing flow conditions, ochre growth, and installation practices.

Webinar Benefits

1. Understand current geotextile filter design methods
2. Understand which specific soil types are problematic
3. Understand which permeant types are problematic
4. Understand which installation problems have occurred
5. Learn about the four long-term laboratory tests that are available

Intended Audiences

- Transportation, geotechnical, geoenvironmental and hydraulic engineering designers working in the respective field of expertise
- Owners, regulators and permittees of systems which includes the necessity of soil and/or geotextile filtration
- Contractors installing geotextile filters insofar as proper practices are concerned
- Geotextile manufacturers from the perspective of past practice is concerned including a correct and incorrect range of using their products

Specific Topics Covered

1. Background
2. Geotextile Design Problem
3. Problems Involving Atypical Soils
4. Problems Involving Atypical Permeants
5. Geotextile Installation Problems
6. Summary and Recommendation

Webinar Instructor

Dr. George R. Koerner is the current director of the Geosynthetic Institute, a position that he has held since 2014. George's interest in geosynthetics spans his entire professional life from undergraduate work in the 1980's to the present. He holds his PH.D. in Civil, Architectural and Environmental Engineering from Drexel University in Philadelphia. George's master thesis was on direct shear testing of geosynthetic interfaces and his doctoral dissertation was on landfill leachate clogging of soil and geosynthetic filters. Both are regularly cited to this day.

Dr. George Koerner is a Professional Engineer in both Pennsylvania and New Jersey, and is an ASQC Quality Auditor. During his 30-years of geosynthetic activities, Dr. Koerner's output has been tremendous and he has to his credit the following publications:

- Books Edited or Co-Edited – 15
- Journal Papers – 18
- Symposium and Conference Publications – 40
- Book Chapters and Published Reports – 4
- Miscellaneous Articles – 30

The Geosynthetic Institute is a nonprofit research and development organization dedicated to the proper use of geosynthetics in its myriad applications. As director of the Geosynthetic Institute, Dr. George Koerner is also in charge of the laboratory accreditation and inspection certification programs.