



DEEP FOUNDATIONS INSTITUTE

DFI TRAVELING LECTURER

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Summaries of Available Presentations

Emergency Repairs to Mosul Dam in Iraq: A High-Risk Dam on a Karst Foundation

Mosul Dam, on the Tigris River, is the largest dam in Iraq and provides a significant percentage of water for the country. It was constructed on problematic karst geology. The project was an international effort by the governments of Iraq, Italy and the U.S. The risk analysis of Mosul Dam showed that up to 1.5M citizens would be impacted by a catastrophic failure of the dam. This is the highest risk profile of any dam in the world. This context forged the international partnership needed to rapidly address the situation. The initial challenges included public reluctance to accept the risk posed by the dam, financing a project of this scope, establishing a secure area to execute the works, awarding a contract with Italian firm Trevi, and completing a bilateral agreement to commission the U.S. Army Corps of Engineers as the project engineer. From February 2015 to June 2019 emergency repairs were executed to reduce risk of failure.

40 Years of Dam and Levee Safety in the U.S. – Positive Impact on Infrastructure

Since the failure of Teton Dam in June 1976, which led to the enactment of dam safety legislation, the U.S. has established a robust and active dam safety program to monitor the approximate 90,500 dams registered in the National Inventory of Dams (NID) maintained by the U.S. Army Corps of Engineers. Efforts are underway to establish a national levee safety program to monitor the approximate 150,000 miles of levees in the U.S. The positive impacts these programs have had on critical infrastructure are reviewed.

Advancements in Technologies for Constructing Seepage Control Cutoffs for Dams and Levees – Beginning with Wolf Creek Dam

The first significant cutoff constructed in a major dam was at Wolf Creek Dam on the Cumberland River in Kentucky from 1975-1979 by ICOS. It was an incredible project with many innovative construction techniques. Over the last 40 years there have been many significant advances in equipment and other technologies for constructing seepage control cutoffs in dams and levees. The presentation will review these advancements.

Lessons Learned from the Failure of Teton Dam

The failure of Teton Dam in June 1976 had a significant impact on the dam engineering profession around the world. The failure has been extensively studied and the presentation will review the geotechnical aspects of the failure as well as the cultural shift in the dam engineering profession that was initiated as a result.

Fontenelle Dam – An Important Dam Safety Case History

Fontenelle Dam on the Green River in Wyoming was the first U.S. Bureau of Reclamation Dam to install a cutoff to address seepage issues. The decision to install the cutoff wall was based on the success at Wolf Creek Dam. Fontenelle experienced several significant near failure that will be presented.

Risk Informed Design and Construction – What It Is and What It Is Not

Risk in construction has always been fundamental to contractors who build critical infrastructure. Risk informed design is a term that is being used more frequently in the dam and levee engineering profession. The presentation will examine what risk informed design is and how it is being utilized in the dam and levee professions to make decisions for infrastructure investments and achieve required design reliability.

Geotechnical Baseline Reports – How to Identify a Good One and a Bad One

Geotechnical Baseline Reports (GBR) for construction have been utilized for decades as a means of allocating and managing subsurface risks associated with subsurface construction. DFI's Risk and Contracts Committee was recently formed, and GBR has been a prominent theme at recent DFI conferences and meetings. The presentation will discuss the importance and benefit of ensuring compatibility between the GBR and other contract documents, as well as the importance of involving experienced firms and individuals in the preparation and review process. The goal is to further support the development and use of GBRs as a risk management tool.

Long-Term Performance Evaluations of Cutoff Wall Backfill Materials

Development and design of backfill materials that are utilized for seepage control cutoffs have been utilized for many decades. However, little is known about the long-term properties of the backfill materials insitu. The DFI Seepage Control Committee, ICOLD Embankment Dams Committee and representatives of the major foundation companies are working together to collect, assimilate and evaluate data from projects around the world to better understand long-term performance. The presentation will review ongoing and planned future activities.

Trends in Data Management Systems and Construction Monitoring

With significant advancements in computer technologies, automated geotechnical instrumentation, in-cab construction data collection and control, geographic information systems and data visualization, LIDAR, drone surveys, etc., conventional techniques for data management cannot be sustained. This presentation will provide examples of how the geotechnical world should be looking to the future regarding data management and visualization and how we can get there in an efficient manner.



DFI 2020-2021 Traveling Lecturer

David B. Paul, P.E., is managing partner of Paul GeoTek Engineering, Denver, Colorado. He retired from the U.S. Army Corps of Engineers (USACE) at the end of 2018 after 42 years of Federal service. His last position was as the dam safety officer for the Mosul Dam Task Force, which provided technical assistance to the Government of Iraq to mitigate dam safety issues associated with the dam. He also served as special assistant for Dam Safety at the USACE headquarters in Washington, D.C., responsible for managing the USACE's portfolio of 715 dams. He is a national specialist on critical infrastructure design, dam design, levee design, construction engineering, engineering risk assessments, interim risk reduction measures (IRRM), and dam and levee safety modifications. He recently participated in the Risk Assessment for Oroville Dam in California, which is the tallest earth dam in the U.S. He has been involved in the design and construction of 10 new dams and over 75 dam modifications around the world. Paul is currently a trustee of Deep Foundations Institute (DFI) and a member of the United States Society of Dams (USSD), Association of State Dam Safety Officials (ASDSO) and American Society of Civil Engineers (ASCE). He is DFI trustee liaison of DFI's Seepage Control and International Grouting Committees, serves as chair of the USSD Committee on Construction and is active with the Embankment Dams Committee. He is the USSD representative to the International Commission on Large Dams (ICOLD) Embankment Dams Committee.

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