Initiative for Geotechnical Research & Innovative Practices

IIT Gandhinagar

iGrip webinar series on GEOSTRUCTURES

Innovative Flexible Two-Stage Facing MSE Wall Solution to Address Soft Ground and Land Subsidence Geohazards

Monday, April 27, 2020 @ 10:00AM IST

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Thank you for joining us for the first lecture of the iGrip webinar series held on 27-Apr-2020 at 10am. A total of 412 people registered for the webinar with the following estimated distribution: Industry:147, Faculty:142, Students: 96, Govt dept/PSU: 27. The webinar was attended by 404 registrants from all over the country and abroad. It was a good blend of professionals, academicians, and students. Participants were from a wide spectrum of organizations, such as the Bureau of Indian Standards, AECOM, York University, UNSW Sydney, Tata Consulting, L&T, Keller, Atkins, Texas A&M, RITES, BHEL, CPWD, Dept of Atomic Energy, IITs, and NITs.

We are fine-tuning our online program and welcome your further comments and suggestions at Email: igrip@iitgn.ac.in

By Naresh C. Samtani
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Naresh Samtani is the owner and President of NCS GeoResources, LLC, located in Tucson, Arizona, USA. Naresh has worked on major transportation facilities in many parts of the USA including hundreds of bridges and retaining walls, several ground-improvement projects, and hundreds of lane miles of pavements. He earned his doctorate from the University of Arizona in Tucson and has more than 30 years of experience. He is Fellow of the American Society of Civil Engineers (ASCE) and a Geotechnical Engineering Diplomate in ASCE's Academy of Geo-Professionals. Naresh is an instructor for the National Highway Institute (NHI) of the Federal Highway Administration (FHWA) and has also instructed for the ASCE. He has authored or co-authored over 15 manuals for agencies such as FHWA and the American Association of State Highway and Transportation Officials (AASHTO), research reports for National Cooperative Highway Research Program (NCHRP) of the Transportation Research Board (TRB), 20 webinars for ASCE's Geo-Institute, as well as self-paced web-based training for FHWA. He has delivered over 100 short courses, over 100 distance-learning presentations such as webinars, and several invited and keynote lectures. He has helped develop implementation processes and comprehensive design policies for variety of topics related to bridges, walls, pavements, and scour for several agencies with emphasis on multi-disciplinary interaction between geotechnical, structural, drainage, roadway, and construction specialists. Currently, Naresh concentrates on forensics, expert consultation, education, research, and training services. More information about Naresh and his activities can be found at www.ncsgeoresources.com.

Abstract

One of the greatest advantages of mechanically stabilized earth (MSE) structures is their flexibility and capability to tolerate deformations due to poor subsoil foundation conditions. However, there can be situations where geological conditions require flexibility that is well beyond that provided by "normal" MSE structures. MSE walls with two-stage facing systems can be used where significant (e.g., > 1/100) differential settlements are anticipated and use of slip joints, larger joint openings and/or ground improvement are not feasible to minimize the adverse effects of total and differential settlements. A case history is presented where two-stage facing MSE walls were used at abutments of a bridge located at a site which had soft ground coupled with significant land subsidence due to groundwater withdrawal. This presentation discusses an innovative flexible two-stage facing MSE wall solution that was used to address soft ground and land subsidence geohazards. The approach to define the problem, selection of various mitigation measures that were integrated into the design of the two-stage facing MSE wall, and construction aspects will be presented. General guidance will also be provided for identification of land subsidence and associated concerns so that appropriate geostructures can be selected that are safe and provide the desired serviceability over their design lifetimes.