

**G.S. Mandal's  
Marathwada Institute of Technology, Aurangabad.**

**Civil Engineering Department**

One week STTP 25-29 October 2021 on

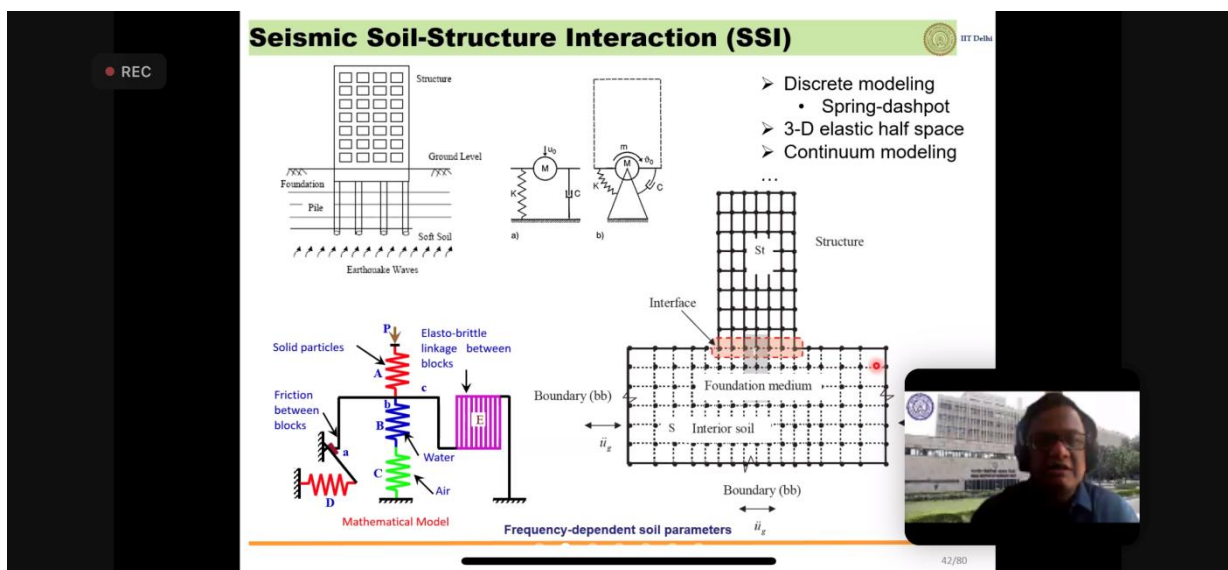
**“Advances in Geotechnical Earthquake Engineering”**

(Organized by IGS Aurangabad and Soil Dynamics forum, ISET in association with Civil Engineering Department, Marathwada Institute of Technology, Aurangabad)

The one week workshop started with a formal inauguration session at 10:45 am on 25<sup>th</sup> October 2021 through the online platform of ZOOM app. This includes a welcome speech of the Convener; Dr. M.S. Dixit (HCED, MIT Aurangabad & IGS Aurangabad chapter) followed by introductory speeches by co-conveners Dr. R. S. Jakka (Secretary, Soil Dynamics forum, ISET) and Dr. S.M. Pore (Professor, DBATU, Lonere). After this, Dr. N.G. Patil (Director, MIT, Aurangabad) and President IGS, Dr. N.K. Samadhiya (IIT Roorkee) addressed the participants. The session of Day 1 started after the inauguration function.

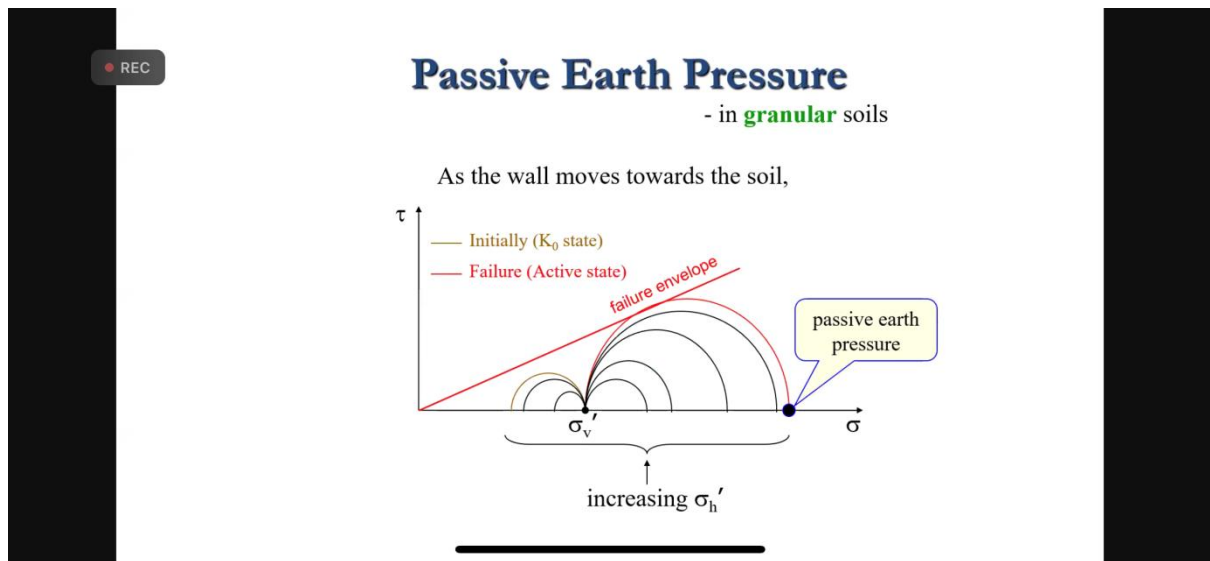
**Day 1**

**Session 1:** The first session was addressed by Dr. V.A. Matsagar (Professor, Dogra chair, IIT Delhi) at 11:15 am on the title “Introduction to Geotechnical Earthquake Engineering”. During the talk speaker has highlighted various important aspects such as ground motion, seismic soil-structure interaction, liquefaction etc. Different analysis methods to account the nonlinear material behaviour of soil are also explained to the participant. One of the snapshot of the session is shown in the Figure 1.



**Figure 1: Dr. V.A. Matsagar session**

**Session 2:** The second session was addressed by Dr. Madhavi Latha Gali (Professor, IISc Bangalore) around 12:15 pm on the topic “Seismic response of reinforced retaining walls”. The speaker presented various soil pressure models being used in analysis of a retaining wall. Figure 2 shows some snapshots of the session.

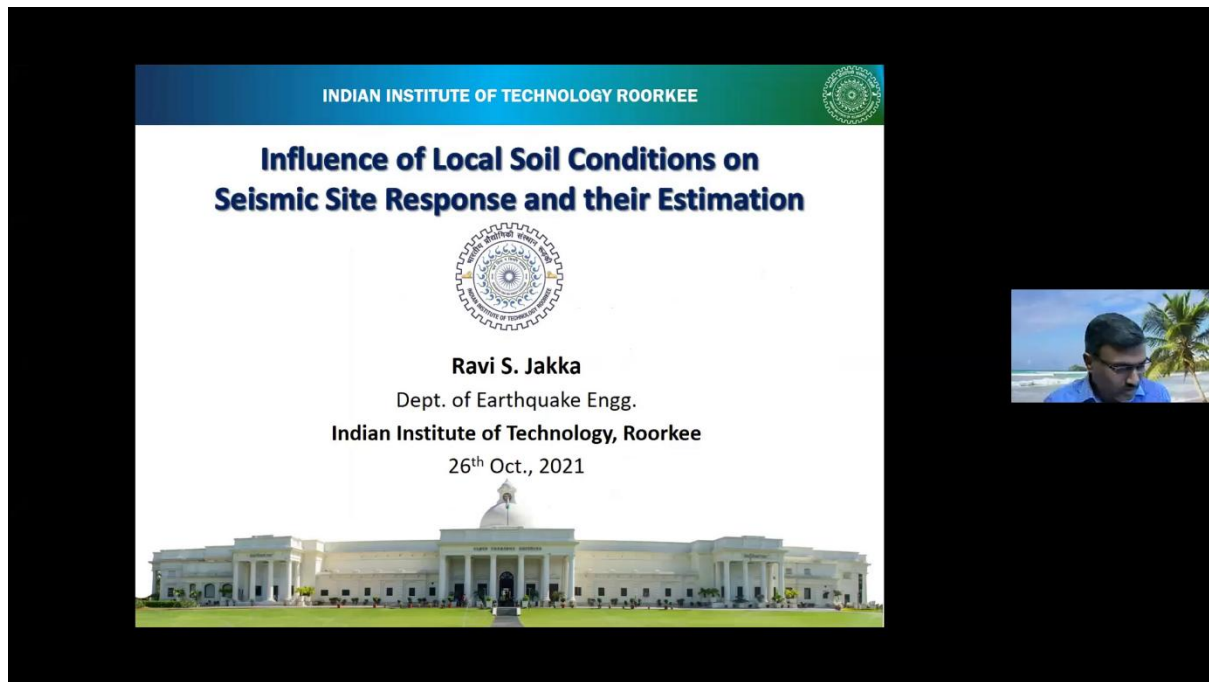


**Figure 2: Dr.MadhaviLathaGalisession**

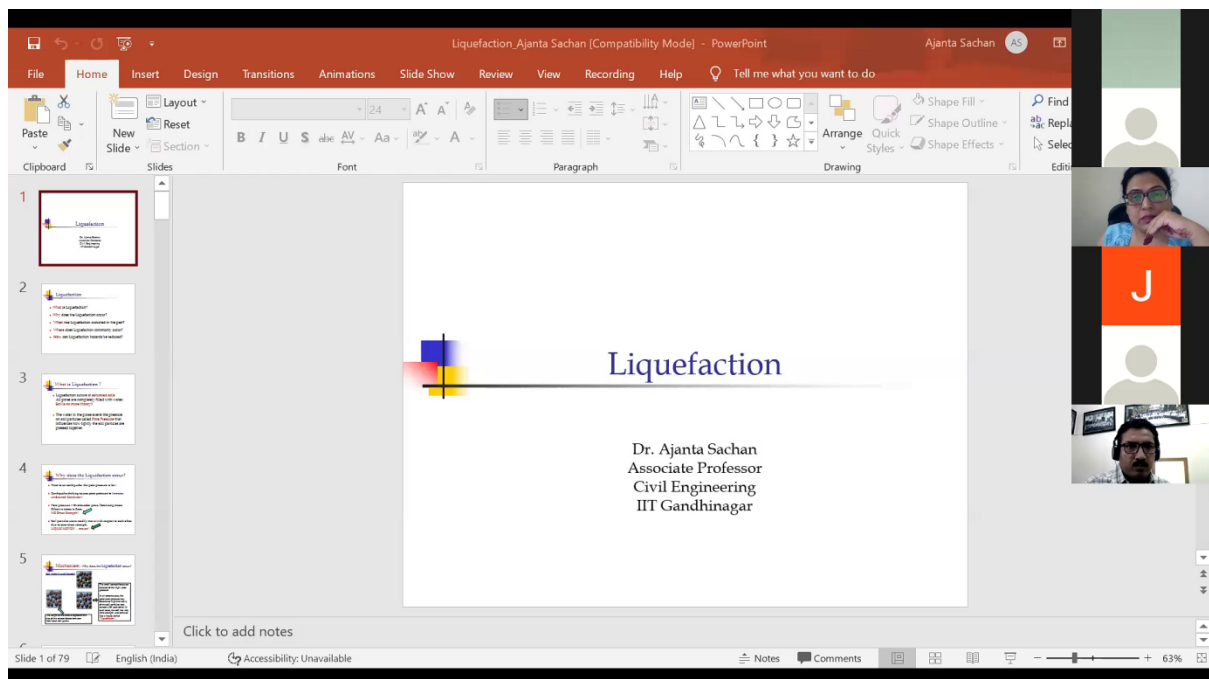
All the talks were concluded with a question answer session. During which the participants integrated with the experts and got enlightened with the knowledge and energy of the experts.

## Day 2

**Session 1:** The first session was addressed by Er. Ravi S. Jakka, Dept. of Earthquake Engineering, Indian Institute of Technology, Roorkee, India on the title “Influence of local soil conditions on Seismic Site response and their estimation”. He discussed the role of local soil conditions on the site response, methods of estimation of local soil effects and the challenges involved in its estimation. Case studies like Local site effects observed in - Mexico City due to Michoacan earthquake in 1985 and San Francisco Bay area during Loma Prieta earthquake in 1989 were discussed in detail. Later he explained “Response spectra for different types of soil”.



Session 2 : The second session was addressed by Dr. Ajanta Sanchan, Associate Professor, Civil Engineering, IIT Gandhinagar, Gujrat on the topic “ Liquefaction”. She discussed the following points related to liquefaction like What is liquefaction, Why does liquefaction occur, When has liquefaction occurred in the past, Where does liquefaction commonly occur and How can liquefaction hazards be reduced. The SPT correlations with CRR and Soil improvement techniques to overcome Liquefaction were explained in detail.



Session 3: The third session was addressed by Vishwas Sawant, Professor, IIT Roorkee on the topic “Pile foundation under dynamic loads”. He discussed ‘Static Pile load capacity’, ‘Pile foundation subjected to lateral loads’, Selection of parameters for analysis, Subgrade reaction approach and Finite difference method for its study. Later he discussed Piles subjected to lateral vibrations.



## PILE FOUNDATION UNDER DYNAMIC LOADS

Vishwas Sawant  
Professor, IIT Roorkee



### Day 3

**Session 1:** The first session was conducted by Dr. Vipul Prakash on topic “Influence of soil condition on design response spectrum”. He talked about soft soil condition and gravity load consideration for response spectrum method. Many case studies were discussed such as earthquake in northridge in 1994, imperial valley earthquake in 1979, Kutch earthquake in January 2001. He discussed about effect of time period on response spectra. He pointed out that more seismometer and accelerometers have been placed in seismic region. Lastly he discussed about the difficulties faced by researchers during research phases.

### Effect on Spectra

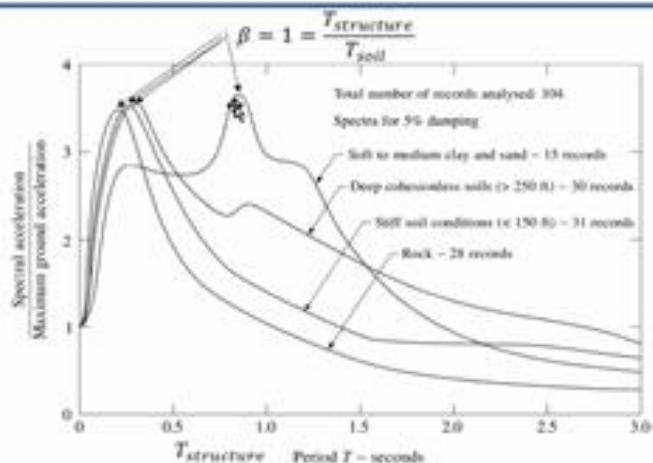


FIGURE 25-6  
84 percentile pseudo-acceleration spectra for different soil conditions (by Seed et al.).

Figure 1. Dr. Vipul Prakash Session



## Example 2: Imperial County Building



The Imperial County Services building, a six-story reinforced concrete building located 29 km (18 mi) northwest of the epicenter in El Centro, was built in 1971 when there were few other tall buildings in the area. The decision to equip the building with nine strong motion sensors in May 1976 was based on its size, structural attributes, and location in a seismically active area. Unusually detailed structural analysis was possible as a result of the building having been outfitted with the instrumentation. The 1979 Imperial Valley earthquake occurred on 15 October 1979 and destroyed it.

I I T ROORKEE

Figure 2. Dr. Vipul Prakash Session

**Session 2:** The second session was conducted by Dr.Amit Prashant on “Seismic Design of Slopes and Embankments”. He talked about factor of safety, seismic coefficient and wave travelling through slope. He explained deformation analysis stepwise with example. Makdisi-seed simplified procedure for estimating embankment earthquake-induced deformation( 1978) was explained. He talked about wave pattern motion through slopes. Long wavelength cause unstable zone to move in phase along the full height. For short wavelength the soil at two different locations in unstable zone may move in opposite direction.



Embankment dam

[https://en.wikipedia.org/wiki/Embankment\\_dam#/media/File:Tataragi\\_Dam01n4272.jpg](https://en.wikipedia.org/wiki/Embankment_dam#/media/File:Tataragi_Dam01n4272.jpg)



Temporary construction slope

(<http://www.martresources.com/news-media/photo-gallery/>)



Tin and soil heap

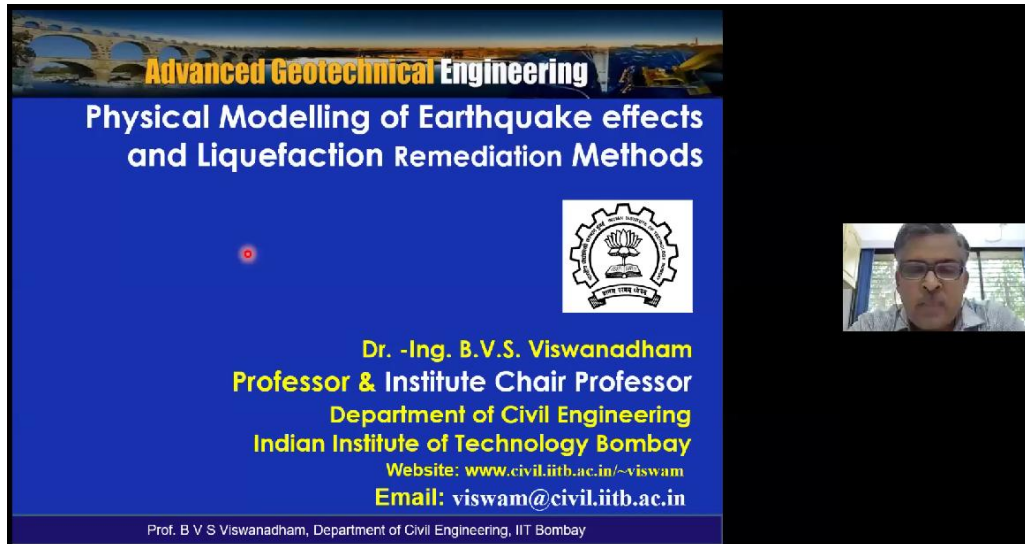


Hillside and valley

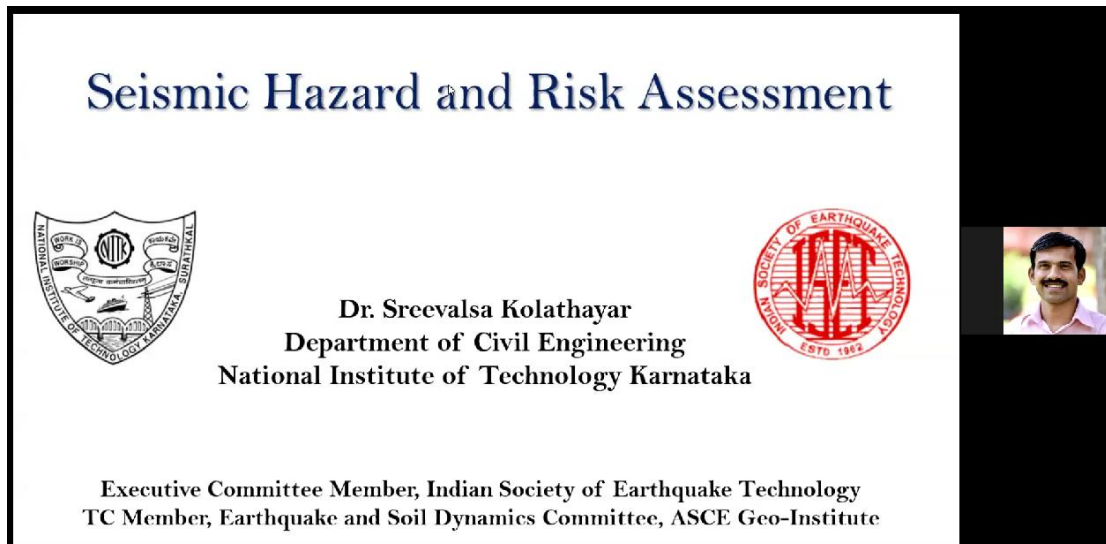
Figure 2. Dr. Amit Prshant Session

## Day 4

On the 4<sup>th</sup> day of STTP, morning session was conducted by Dr. B.V.S. Viswanadham, Professor & Institute chair Professor in IIT Bombay. He delivered a talk on Physical Modelling of Earthquake effects and Liquefaction Remediation Methods. He briefly discussed different modelling techniques in geotechnical engineering. He also explained techniques for ground improvement against liquefaction.



The second session delivered by Dr.SreevalsaKolathayar from NIT, Karnataka on the topic “Seismic Hazard and Risk Assessment”. Dr.Sreevalsa explained different methods for evaluation of Seismic Hazards. He also discussed methodologies for assessing liquefaction hazard.



## Day 5

**Session 1:** The first session was addressed by Dr. Sachin M. Pore (Professor, DBATU Lonere) at 11:15 am on the title “Modelling of elements for analysis”. During the talk speaker has highlighted various important aspects of Structural Engineering such as Analysis, Design, Execution and Review of performance by co-relation with Human Anatomy. One of the snapshot of the session is shown in the Figure 1.

Shall aim at providing or enhancing comfort in human living

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**Session 2:**The second session was addressed by Dr. Uttam B. Kalwane (Professor, MIT-E, CED, Aurangabad and BYS, Divisional Head, Yoga Teacher, Aurangabad)from 12:15 pm onwards on the topic “Stress Management through Yoga”. The speaker focused on today’s Lifestyle of people, which plays important role for Stress Management in day to day life. He also addressed that always have positive attitude to live a better life and for the well being of society.

A man with glasses and a white shirt is speaking. Behind him is a blackboard with the text: "SUNSHINE MARATHON INSTITUTE OF TECHNOLOGY, KUNGLAND DEPARTMENT OF CIVIL ENGINEERING". To the right, there is a small display case containing a photograph of a person.

**Figure 2: BYS Yoga Teacher Dr. Uttam B. Kalwane session**

After the ending session of STTP, Feedback about STTP were shared by participants from various institutes and organizations. Lastly, The IGS STTP was concluded with Vote of Thanks by Prof. S. G. Quadri.

CO- CONVENOR

Dr. R. S. Jakka,  
Secretary, Soil Dynamics  
forum, ISET.

Dr. S.M. Pore,  
Professor, DBATU, Lonere.

CONVENOR

Dr. Manish S. Dixit, HCED,  
MIT & Hon. Secretary, IGS  
Aurangabad Chapter