K.S.R.M. COLLEGE OF ENGINEERING

(AUTONOMOUS)

Kadapa, Andhra Pradesh, India – 516 003

DEPARTMENT OF CIVIL ENGINEERING

Webinar on Importance of Geology In Civil Engineering

10th July 2021

REPORT

Speaker: Sri. DVS NARASIMHA RAO, Associate Professor & Ph.D. persuing in Gurunanak Institution Technical Campus.

Importance of Geology in Civil Engineering:

Geology provides knowledge about the site used in the **construction** of buildings, dams, tunnels, tanks, reservoirs, highways and bridges. **Geology** helps to identify area susceptible to failures due to **geological** hazards such as earthquake, landslides, weathering effects, etc. Civil Engineers use geologist to examine rocks for important metals, oil, natural gas and ground water.

The theme of the Webinar:

Geology Theme is split into the following sub-**themes**: **Geology**: provides basic knowledge about the physical properties and composition of **geologic** materials (rocks and sediments), their structure and their age as depicted in **geological** maps, as well as land forms. .

Poster of the event: Webinar on Importance of Geology in Civil Engineering.

Zoom link: .
https://us02web.zoom.us/j/81177222760?pwd=ZkphalIrV0Y2Zm1CSFBoeU5aRmdDUT09

Google link: https://meet.google.com/eaz-wtzx-pkc

About the Speaker:

Sri. DVS Narasimha Rao Working as Associate Professor since 10 years in Gurunanak Institution Technical Campus, HYDERABAD. His Qualifications are MSc, M.Phil. In Geology, and Perusing Ph.D.

He Worked as Geologist/Resource Person around 14 years. He published around 10 papers in International Research Journals. He attended Workshop on Remote Sensing and GIS at JNTUH. He attained First Rank at Common Entrance Test in Geology at Kakatiya University, Warangal.

He awarded Best Teacher Award at 2014 in Gurunanak Institutions Technical Campus. He worked on projects based on Forest Evaluation Survey, Remote Sensing Projects, Soil Survey, and Watershed development Projects at GEMS,RSI Companies Undertaking Govt.Projects. He works as Photogrammetric for around 4 years at Navya Group. .

The Sequence of the Webinar

The Webinar was arranged by Department of Civil Engineering for the B.Tech. Students and faculty of the department. The venue was organized thorough virtual mode using Zoom meeting pro application purchased by Department of Civil Engineering, KSRMCE. The webinar was planned on 10th July, 2021 in morning session from 11 AM to 12.45 PM and the sessions were hosted by Dr. Amaranath Reddy (HoD), Sri. Ch. Santosh Kumar. A total of 75 students and some of the faculty members of Department of Civil Engineering were actively participated in the webinar.

Welcome speech:

Sri. Ch. Santosh Kumar (Coordinator of the event), Assistant Professor, Dept. of Civil Engineering, KSRMCE expressed a very warm welcome to the HoD, faculty and students of the Civil Engineering Department. The coordinator introduced the guest of honors to the gathering; the brief of their education and professional experiences was read for the audience.

HoD's words:

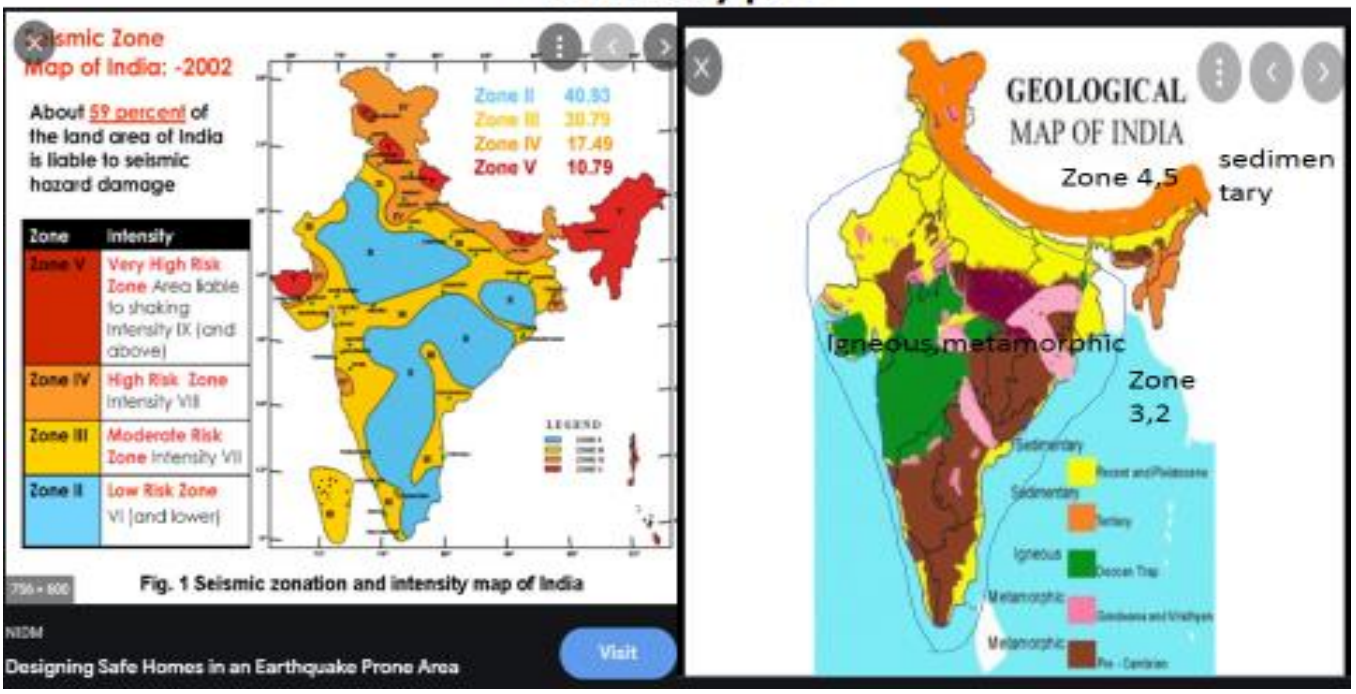
Dr. N. Amaranath Reddy, HoD & Associate Professor of the Dept. of Civil Engineering, KSRMCE addressed the gathering by welcoming the Guest DVS.NARASIMHA RAO to the event. HoD shared about the dedication towards work and capabilities of speakers as his students and how they evolved to stand in this position by continuous improvement.

Presentation by the Speaker:

Session (11 AM to 12.45 PM, 10th July, 2021):

The speakers explained one day plan of action of this webinar. Session is majorly concentrated on origin of Importance of Geology in Civil Engineering. It covers the importance of Geology in various engineering fields. This session gave brief idea on Where the Minerals and Rocks were found in India and how it is useful. The speakers explained about Earth Quake Zones Comparison with Rock type which are essential before going to work. The session ended with the explanation on Zone of intermittent saturation and unsaturated zone.

Earthquake zones Comparision with rock type



Plan of Webinar presented by speakers

BASALT ROCK AS FUTURE REPLACE OF STEEL IN CONSTRUCTION

Basalt as lava,in sea for millons of years rusted?

GEOGOLOGICAL PROFILE COUNTS IN CIVIL ENGINEERING

SIMPLON TUNNEL-SWITZ (BRIG)TO ITALY(CHAISSO)

- SIMPLON TUNNEL-SWITZ (BRIG)TO ITALY(CHAISSO),RAIL TUNNEL,19.3 KM LONGPASSING THROUGH GNEISS,LST,SHALES 2KM OF ALPS

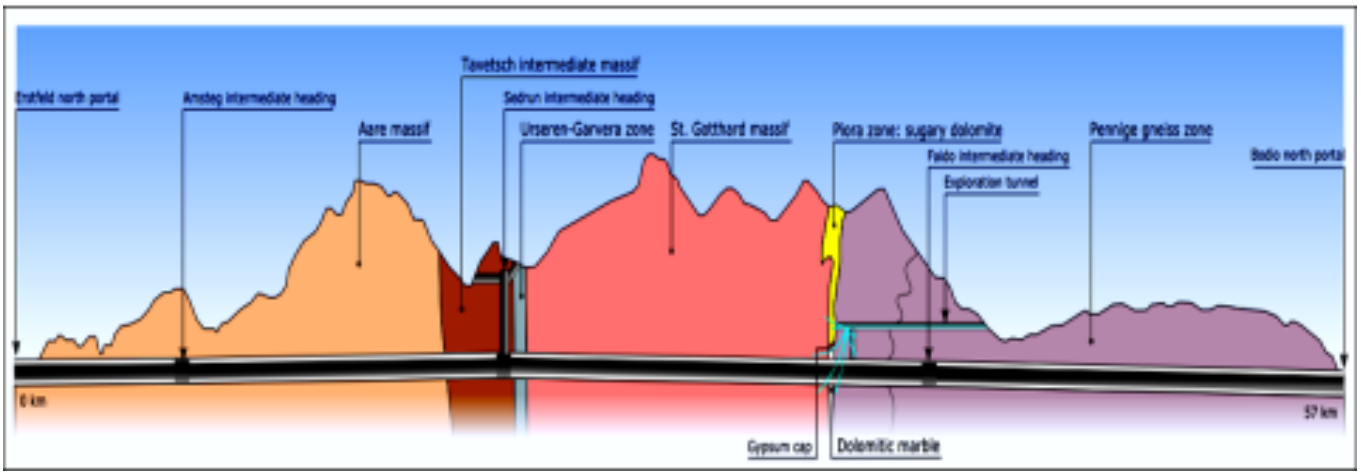
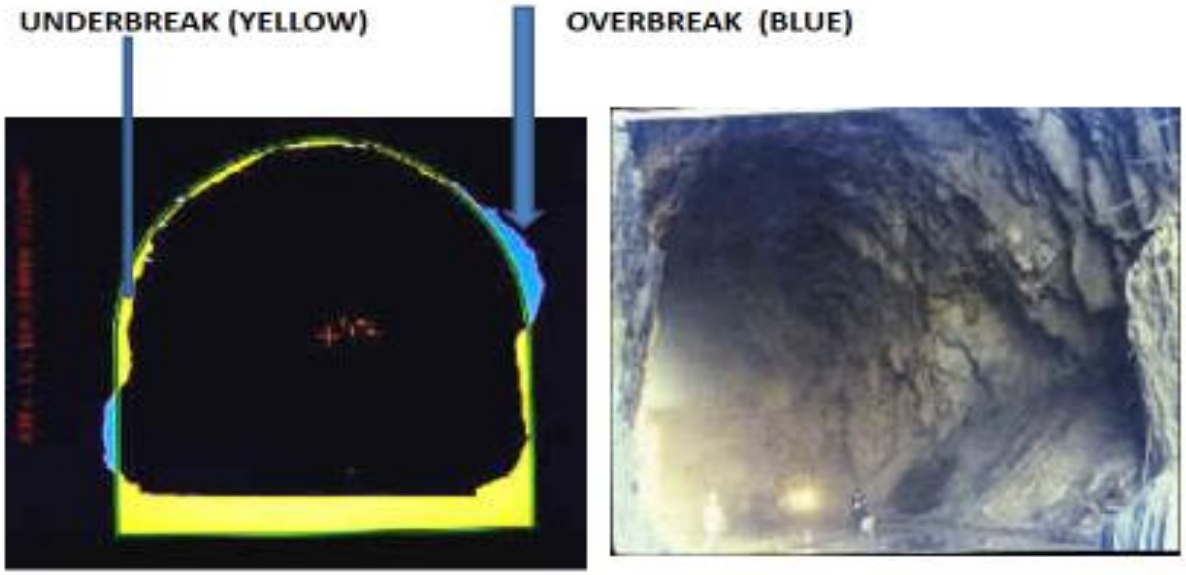


IMAGE PROCESSING TECHNIQUES CAN BE USED TO MEASURE OVERBREAK, AS IN THIS EXAMPLE FROM THE MEXICAN TUNNELS. THE MEASURED TUNNEL PROFILE IS OVERLAIN ONTO THE DESIGN PROFILE. OVERBREAK (BLUE) AND UNDERBREAK (YELLOW) ARE DEFINED OUTSIDE OF THE OF THE SPECIFIED TOLERANCE (GREEN) OF THE DESIGN..



OVERBREAK,OR UNDERBREAK STRUCTURAL RISK DUE TO GEOLOGY AND LOSS FOR CONTRACTOR?

- **Overbreak** of rock beyond the desgined periphery of a **tunnel** is a structural risk which more than occasionally results in filing of a claim by the contractor. It is difficult to estimate the **overbreak** risk at the time of tender with sufficient degree of accuracy because of the uncertainty associated with the geology, construction ...

IMPACT OF STRUCTURAL GEOLOGY IN CE

Rock quality depends on joint characteristics

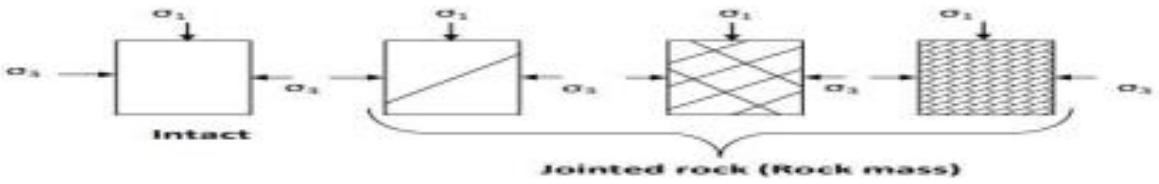


Figure 1.2: A typical view of rockmass encountered in the field

Rock Mass Rating (RMR)

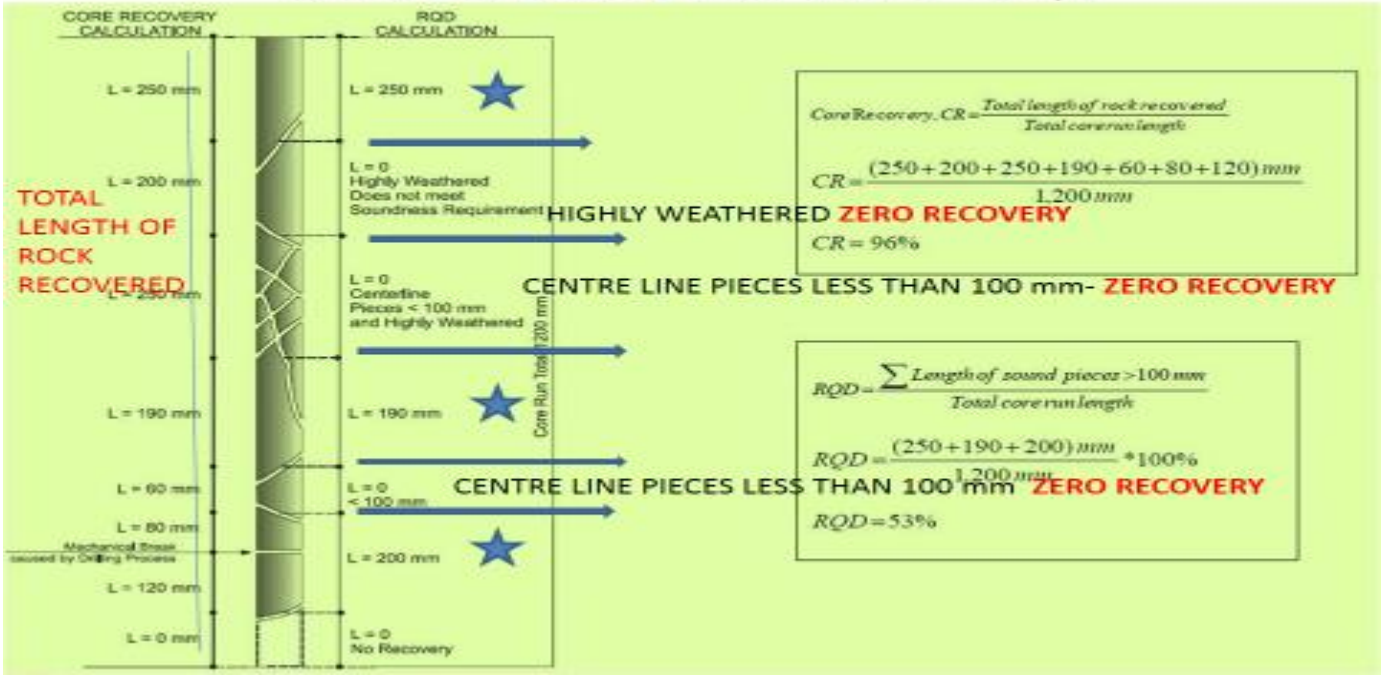
- The following six parameters are used to classify a rock mass using the RMR system
- Uniaxial compressive strength of rock material
- Rock quality designation (RQD)
- Spacing of discontinuities
- Condition of discontinuities.
- Groundwater conditions
- Orientation of discontinuities

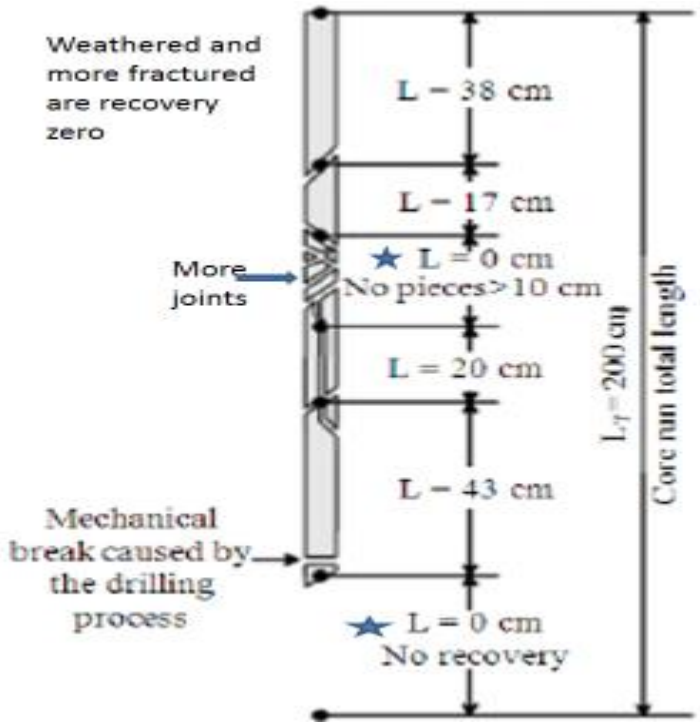
TYPE OF ROCK AND CS

Uniaxial Compressive Strength A measure of a material's **strength**. The **uniaxial compressive strength** (UCS) is the maximum axial **compressive stress** that a right-cylindrical sample of material can withstand before failing.		Ranges for some Common Rock Material
Term	Kg/cm^2	Schist, Silt stone VW-W, Sand Stone, Lime stone –VW-M,Granite, Basalt, Gneiss, Quartzite, Marble –MS-VS
Very Weak- VW	< 70	
Weak- W	70-200	
Medium Strong-MS	200-700	
Strong- S	700-1400	
Very Strong- VS	> 1400	

ROCK QUALITY DESIGNATION (RQD)

CORE RECOVERY AND RQD





$$RQD = \frac{\sum \text{rock pieces} \geq 10\ cm}{\text{Core run total length}} \times 100\ (\%)$$

$$RQD = \frac{38+17+0+20+43+0}{200} \times 100\ (\%)$$

RQD = 59% (FAIR)

RQD (%)	Geotechnical quality
<25	Very poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

Rock Sampling (Coring)

Core recovery parameters

- So Rock Quality Designation (RQD) is the percentage of rock cores that have length ≥ 10 cm over the total drill length (core run).
- RQD may indicate the degree of jointing or fracture in a rock mass. e.g. High-quality rock has an RQD of more than 75%.
- RQD is used in rock mass classification systems and usually used in estimating support of rock tunnels.

RQD	Rock Mass Quality
< 25	Very poor
25 – 50	Poor
50 – 75	Fair
75 – 90	Good
99 – 100	Excellent

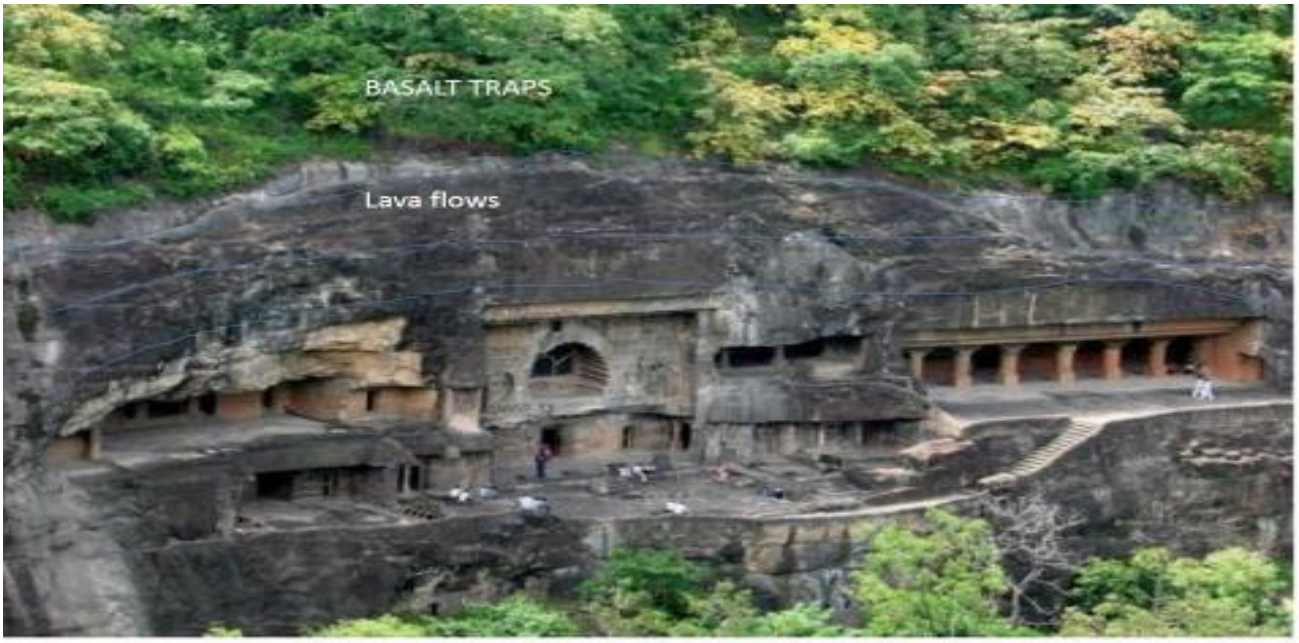
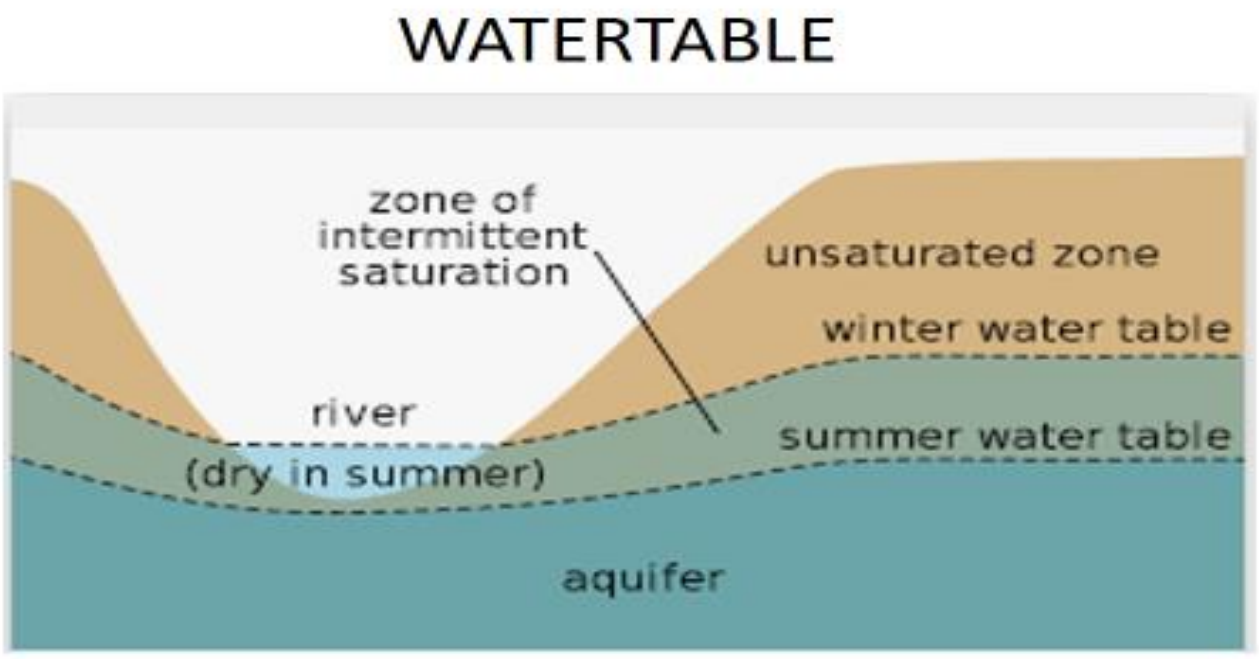


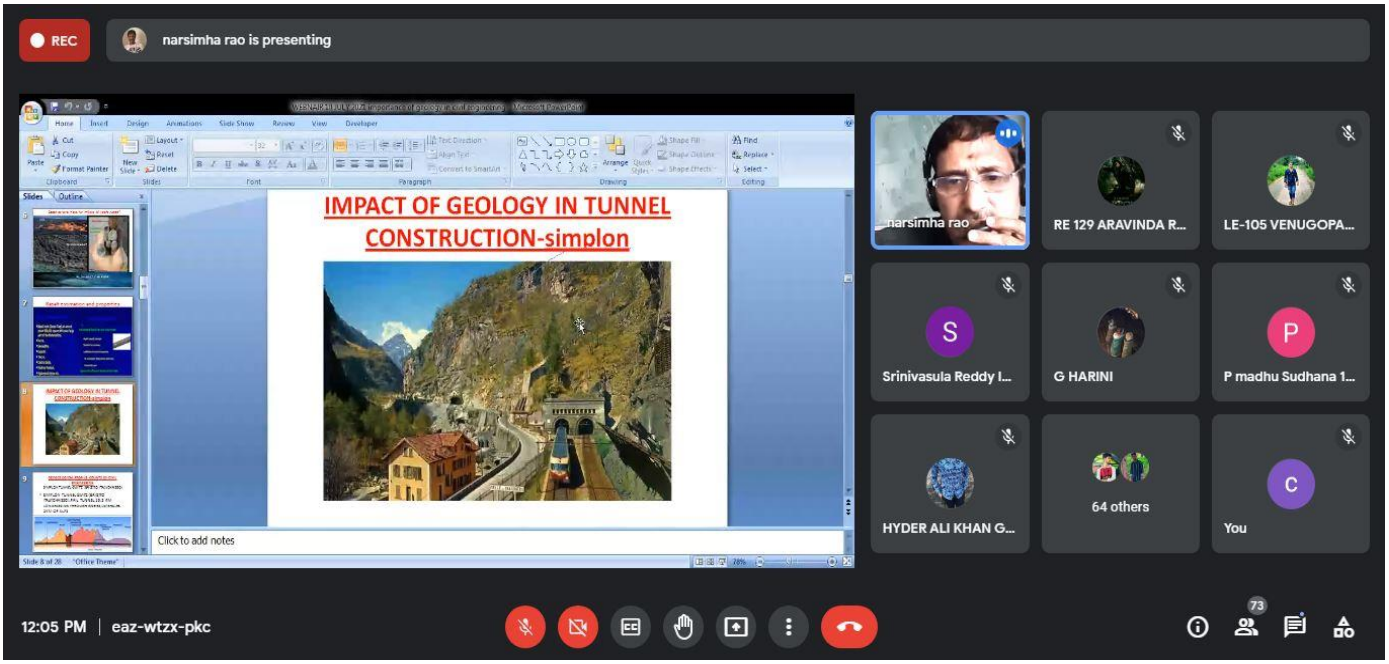
Figure 5: Ajanta cave, Aurangabad, India.

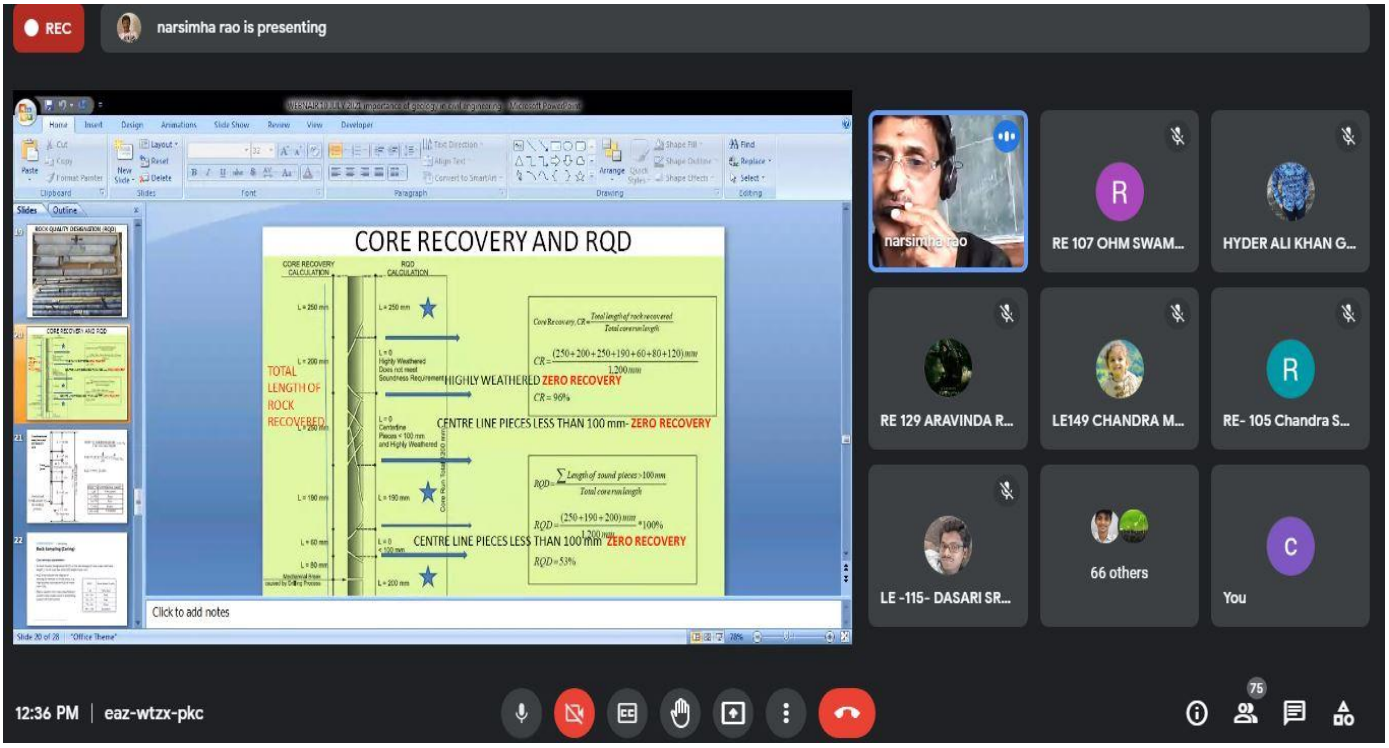
Tab.1. Geological factors of the environment and environmental-geologic conditions of a territory

Geological potentials	Suitable condition for construction	Available resources of groundwaters	Available resources of mineral raw materials	Phenomena useful in health service, tourism and recreation	Environmental geologic condition of the territory
	ROCK TYPE,STRUCTURAL GEOLOGY				
Geological barriers	Landslides Earth flows Avalanches	Pollution of groundwaters	Subsidence and sagging of the surface	Sheet erosion Wash out erosion	

The best way how to express environmental-geologic conditions of a territory is to compile a map. In Slovakia, there are geoenvironmental conditions usually depicted in maps of geofactors of the environment. The maps consist of several map sheets covering practically environmental aspects of all branches of geology mainly engineering geology, hydrogeology, geochemistry, economic geology, geophysics and pedology. Regarding the great amount of the maps, as well as the high degree of specialisation of some of them, a simplify comprehensive Map of significant geofactors is compiled for purposes of land-use planning and environmental protection. This map contains only some geofactors (taken over from the







Students were conveying regards to the Department of Civil Engineering in online

HoD's words at end of the Event:

At the end of the webinar, Dr. N. Amaranath Reddy, HoD, Dept. of Civil Engineering, KSRMCE expressed his regard to the speakers for sharing his knowledge with the students. HoD whished the speakers to get a better position in future and also asked the speakers to give more Presentations to students of KSRMCE.

Vote of thanks:

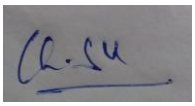
Sri. Ch. Santosh Kumar (Coordinator of the event) delivered vote of thanks by thanking the students for their participation, faculty members for their active participation, (Especially for Sri. I Sreenivasula Reddy and HoD) for providing zoom online platform and Google Link to conduct such events and organization of KSRMCE for encouraging to conduct such events.

A total of 75 members containing students and faculty of Department of Civil Engineering, KSRMCE participated in this event

Suggestion / Comments about the webinar:

- Nice Lecture
- Easily understand
- It is really good experience for attending the webinar.
- Thank you sir, for giving these kind of information. Please provide these kind of sessions more.
- We are interested more to participate in webinars
- It's very useful to us
- Thanks for helping all to understand the subject in easy mode
- It was very helpful to us thank you so much your valuable lecture sir.
- We people from 3rd year should briefly understand the topic covered in this webinar,
- Very good teaching
- It's is very useful to us they explained a well on this really it is very interested and that more ever it is very useful to us for second year ,third year and Final year students.

- Tq so much sir conducting this webinar.
- Waiting for more webinars like this
- Thank you sir for conducting
- It is very useful for use
- Excellent sir
- Easily understanding sir
- Thanks Team
- Very useful lectures
- Good for students



Ch.Santosh Kumar
Coordinator

Dr. N. Amaranath Reddy
(HoD, Civil Engg.)