DEPARTMENT OF CIVIL ENGINEERING
V.R. SIDDHARTHA SCHOOL OF ENGINEERING
SIDDHARTHA ACADEMY OF HIGHER EDUCATION
(An Institution Deemed to be University)
(Under Section 3 of UGC Act, 1956)
Kanuru, Vijayawada – 520007, AP. www.vrsiddhartha.ac.in

in association with
IGS GUNTUR VR Siddhartha Engineering College Student Chapter

Field Visit Report on
Raft Foundation and Basement Retaining Wall of (Basement+G+10)

Year and Section
III/IV B.Tech, Section-B – Civil Engineering
Venue: New Admin Block (Basement+G+10), SAHE-DU

Organized by
Department of Civil Engineering,
V. R. Siddhartha School of Engineering, Vijayawada.

Faculty Coordinator
Dr. G. V. Rama Subba Rao

Objective of the Visit:

- To gain practical exposure to raft foundation design and execution in high-rise structures.
- To understand the structural and geotechnical aspects of basement retaining walls.
- To observe the role of construction materials such as crushed stone dust (CSD) in backfilling and drainage.
- To correlate theoretical knowledge of foundation engineering with real-time construction practices.

Activities During the Visit:

- Observation of beam and slab type raft foundation:
  - Beam depth: 6 feet
  - Slab thickness: 2 feet
- Inspection of basement retaining wall backfill using crushed stone dust (CSD) for drainage and stability.
- Interaction with site engineers regarding load transfer mechanisms, settlement control, and construction sequencing.
- Study of reinforcement detailing and concrete placement techniques in raft slabs and beams.


GPS Map Camera
Kanuru, Andhra Pradesh, India
Physical Department, Vrsec Entrance Rd, Tcr Colony,
Chalasani Nagar, Kanuru, Andhra Pradesh 520007, India
Lat 16.483344° Long 80.692248°
Friday, 31/07/2026 12:39 PM GMT +05:30
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Raft Foundation (Beam & Slab Type)

- A raft foundation spreads loads from columns and walls over a large area, reducing stress on soil.
- The beam depth of 6 ft provides stiffness against bending and shear, while the 2 ft slab thickness ensures uniform load distribution.
- Suitable for high-rise structures (Basement + G + 10) where heavy loads and settlement risks are significant.
- Acts as a combined footing system, integrating multiple columns into one continuous mat.

Basement Retaining Wall of 9 inch thick with CSD Backfill

- Retaining walls resist lateral earth pressure from basement soil.
- Crushed Stone Dust (CSD) is used as backfill to:
    - Improve drainage and prevent hydrostatic pressure buildup.
    - Reduce lateral thrust on the wall.
    - Provide economical and locally available material for stability.
- Ensures long-term durability and safety of basement structures.

Crushed stone dust (CSD) as backfill of basement retaining wall

Learning Outcomes:

- Acquired practical knowledge of raft foundation design and execution.
- Understood the integration of beams and slabs in raft systems for high-rise load distribution.
- Learned the importance of CSD backfill in enhancing retaining wall performance.
- Developed ability to connect classroom concepts of bearing capacity, settlement control, and earth pressure theories with on-site practices.
- Strengthened comprehension of construction sequencing, reinforcement detailing, and quality control measures in geotechnical works.

PROFESSOR & HEAD
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DEPARTMENT OF CIVIL ENGINEERING
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Siddhartha Academy of Higher Education
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One Day Workshop on " Design of Plastic Concrete Diaphragm Wall and Ground Improvement Aspects of the Polavaram Project – A Multi-Benefit National Project"

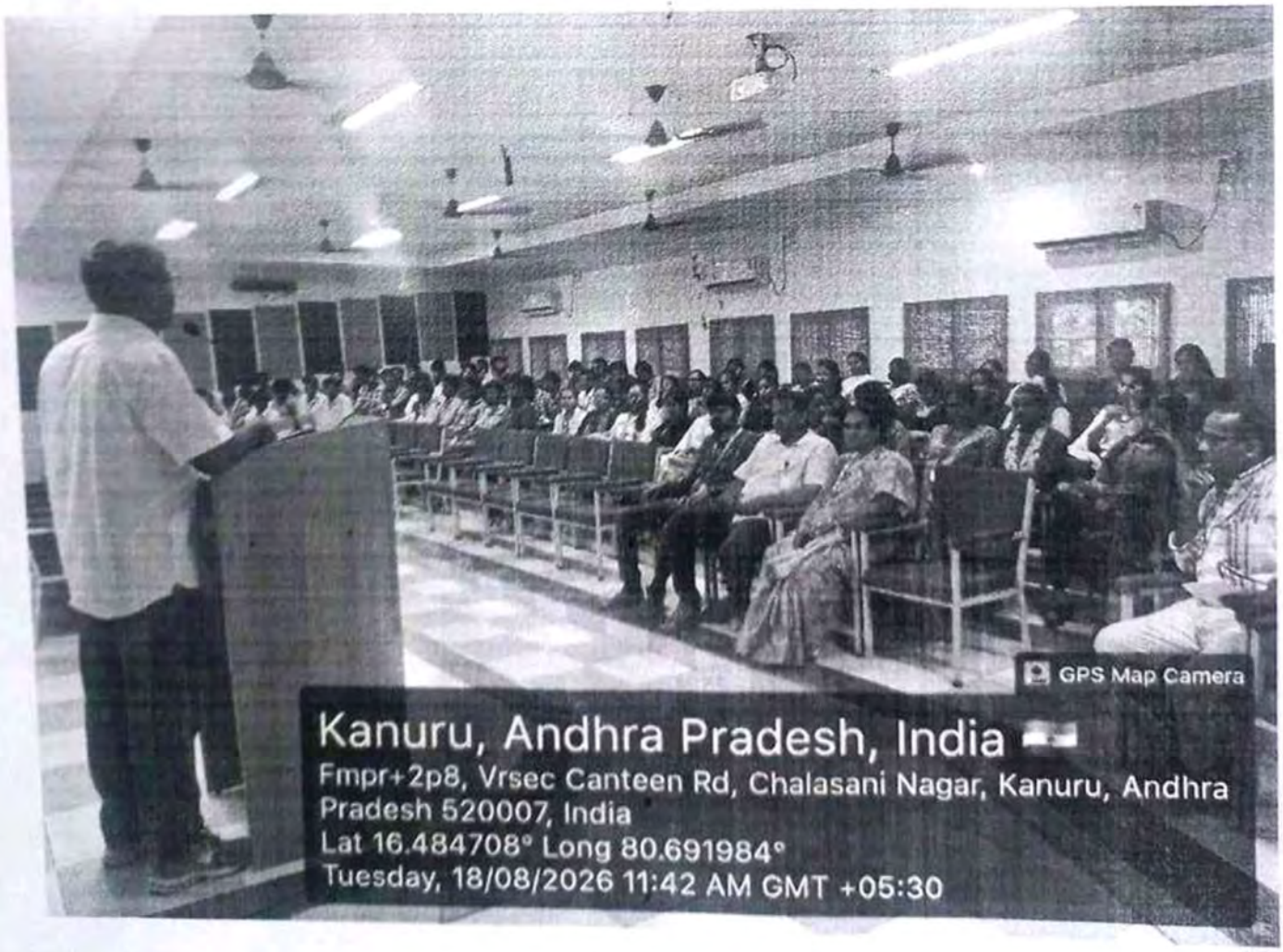
Event Type	Guest Lecture
Date	18-08-2026
Resource Person	Dr. B. Janaki Ramaiah, Associate Professor, Civil & Environmental Engineering Department, IIT Tirupati
Name of Coordinator	**Dr. G. V. Rama Subba Rao**, Associate Professor, CED-VRSEC
Target Audience	B.Tech – Final Year Students and Faculty members of Civil
Total no of participants	105 Students +Civil Faculty
Objective of The-event	The objective of the event was to provide students with a comprehensive understanding of advanced soil improvement techniques and seepage control measures in dam engineering. It aimed to introduce the concept of plastic concrete as a durable and flexible material for hydraulic structures, explain the construction and significance of diaphragm walls in seepage prevention, and demonstrate the process and benefits of vibro compaction in densifying sandy foundations. Through case studies of the Polavaram Project, the event sought to enhance students' practical knowledge, strengthen the academic-industry linkage, and encourage interactive learning by addressing queries on probe spacing, depth limitations, and monitoring systems. Ultimately, the session reinforced the importance of sustainable engineering practices in national infrastructure projects, bridging theoretical concepts with real-world applications.

Outcome of The-event	• Plastic Concrete
	  ○ Students understood its dual properties: ***low permeability*** and ***high flexibility***.
	  ○ Reinforced knowledge of its role in seepage control and adaptability under stress.
	  ○ Appreciation of its application in cut-off walls for dam foundations.
	• Diaphragm Walls
	  ○ Clear insight into slurry trench construction methodology.
	  ○ Recognition of diaphragm walls as indispensable seepage barriers in hydraulic structures.

	○ Case study of Polavaram Project highlighted integration of plastic concrete for durability. • Vibro Compaction ○ Students grasped the mechanism of densifying loose sands and gravels using Vibroflot. ○ Learned its impact on *relative density (70–85%)*, *bearing capacity*, and *liquefaction resistance*. ○ Understood its specific application in sandy foundations of Polavaram Project. • Interactive Session ○ Students raised practical queries on probe spacing, depth limitations, and monitoring systems. ○ Comparative discussion clarified that vibro compaction suits *clean sands*, while diaphragm walls are vital for *seepage control*. ○ Enhanced comprehension of advanced soil improvement techniques.
Feedback / Suggestions	Students and faculty actively engaged with the resource person, asking questions about probe spacing, depth limitations, monitoring systems, and the comparative advantages of diaphragm walls and vibro compaction. Dr. Ramaiah clarified that vibro compaction is most effective in clean sands and gravels, while diaphragm walls are indispensable in seepage control for dam foundations.

Photos:


GPS Map Camera
Kanuru, Andhra Pradesh, India
Fmpr+2p8, Vrsec Canteen Rd, Chalasani Nagar, Kanuru, Andhra Pradesh 520007, India
Lat 16.484708° Long 80.691984°
Tuesday, 18/08/2026 11:42 AM GMT +05:30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Dr. G. V. Rama Subba Rao
Associate Professor,
CED-VRS SE, Coordinator
ICI-VRSEC-Student-Chapter

Dr. V. Mallikarjuna
Professor & HoD,
Department of Civil Engineering
VRS SE

Brief Biodata

Dr. B Janaki Ramaiah

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Dr. Janaki Ramaiah is an Associate Professor in Dept. of Civil and Environmental Engineering at Indian Institute of Technology Tirupati (IIT Tirupati), India. He has teaching and research experience of close to 10 years. He obtained his PhD degree and Master degrees from IIT Delhi in the field of Geotechnical and Geoenvironmental Engineering.

His research areas of interest include:

- Ground improvement & Geosynthetics
- Geoenvironmental Engineering
- Climate adaptation technologies for geoinfrastrucutre
- Solid & Hazardous Waste Landfills, Ash Ponds & Mine Tailing Storage Facilities
- In-situ Testing
- Soil Dynamics & Geotechnical Earthquake Engineering
- Volarization of industrial solid waste materials in Civil Engineering Applications

Dr. Ramaiah guided 3 PhD scholars, 1 MS by Research, and 22 graduate students in Geotechnical and Geoenvironmental Engineering. He is currently guiding 4 PhD scholars and 1 MS by research. He has published 40-plus papers in peer-reviewed journals and international conferences. He is a reviewer for over 20 journals of international repute.

Dr. Ramaiah has handled/ handling sponsored research and industrial projects, to the tune of 5.5 crores. He has been a consultant to several Govt. Organisations and Industries in the areas of Geotechnical and Geoenvironmental Engineering and has been involved with several national-level projects. He is a member of the Bureau of Indian Standards (BIS) for the revision of the IS code for Cone Penetration Testing.

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One-Day Workshop on

Design of Plastic Concrete Diaphragm Wall and Ground Improvement Aspects of the Polavaram Project, a Multi-Benefit and National Project

(August 18, 2026)

in association with

IGS GUNTUR VR Siddhartha Student Chapter

LIST OF PARTICIPANTS

S.No.	Name of the Participant	Signature
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03.	T. Noorendra	
04.	U. Sivamani	
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06	A. Avinash (238W1A0102)	
07	P. Jagadeesh (238W1A0136)	
08	K. Ramesh	
09	K. Kiran Babu	
10.	R. Arun.	
11	R. Mathews	
12	R. Raviteja	
13	P. Mohith Baji	
14	M. Vinayak	
15.	N. prasad	
16.	B.V.D. Abhiram	
17.	I. Candy	
18.	L. Eswar Mouli	
19.	P. Chitti babau	
20.	Sumalatha. G	
21.	U. Sravani	
22.	K. Bhuvaneswari	
23.	K. Tejasri	
24.	A. Maheswari	
25.	G. Divya	
26.	B. Kavya	

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31	238W1A0151 Y. Sahithya	Y. Sahithya
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33	248WSA0118 T. Satya	T. Satya
34	248WSA0117 S. Likitha	S. Likitha
35	248WSA0120 V. Thanmayee	V. Thanmayee
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57	238W1A0173	K. Prasanth	
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85	238W1A0155 A. Bhanu prakash	
86	248W5A0107 M.N.G. Verma	
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100	P. Azeem Khan (238W1A0187)	P. Azeem Khan
101	T. Rohith (238W1A0193)	T. Rohith
102.	Dr. Ch RV Prasad — Assoc. Prof	Chrp
103.	Dr. Lakshmi Keshav.	
104.	Dr. B. Venkat Rao	BVR
105	Dr. Ram Teja	RT