

## Education

| Degree    | Institution                           | CPI/% | Year        |
|-----------|---------------------------------------|-------|-------------|
| MTech     | IIT Gandhinagar                       | 8.06  | 2022 - 2025 |
| B.E       | CEG, Anna University                  | 8     | 2017 - 2021 |
| Class XII | SKV Higher Sec School, Thiruchengode  | 93.08 | 2016 - 2017 |
| Class X   | Our Lady's Higher Sec School, Chennai | 98.4  | 2014 - 2015 |

## Work Experience (Completed Projects)

### • Teaching Assistant

#### Focus School on Geotechnical Infrastructure Design, IIT Gandhinagar

[Jan-Apr 2024]

Taught design and analysis concepts based on manual calculation and analysis software like geo5, geo studio, MSWE, and ERT guided infrastructure geotechnical projects:

- Design of **shallow foundations** for a substation building, ensuring stability and load-bearing efficiency.
- Geosynthetic-reinforced soil (**GRS**) retaining wall design, optimizing reinforcement layout, and facing stability.
- **Earth dam** design with geosynthetics, incorporating seepage control measures and stability analysis.
- Flexible pavement design for expressways, focusing on layer composition, material selection, and stress distribution.

### • Project Associate

#### Design of Grouted Soil Nails for Stabilizing Distressed GRS Walls, Palanpur

[Jul - Oct 2023]

- Developed a conceptual stabilization plan to address distress in geosynthetic-reinforced soil (GRS) walls in a railway overbridge project.
- Proposed pullout tests to evaluate soil-nail interaction and assess bonding strength for optimal reinforcement.
- Designed and submitted detailed layouts, technical specifications, and execution plans for the soil nailing process.

#### Suggestions for Sustainable utilization of ash dyke area and seepage control at ash dyke II of SGTPS, Birsinghpur;

[Oct 2023-Jan 2024]

Conducted a **structural stability** and safety assessment of Ash Dyke II as per the request from SGTPS and provided technical recommendations for sustainable utilization, including:

- **Slurry disposal point** layout optimization to enhance efficiency.
- Water recirculation system design to improve sustainability.
- Provision of divider bunds, **stone columns**, and blanket drains for seepage control and long-term stability.

#### Soil Site Investigation by Non-Destructive Methods MASW And ERT, Deshnok Rajasthan;

[July – Sept 2024]

- Conducted geophysical site investigation using Multichannel Analysis of Surface Waves (MASW) and Electrical Resistivity Tomography (**ERT**) for a Public Health Engineering Department (PHED) project in Nokha.
- Identified two large **cavity zones** in 2 out of 5 profiles, providing critical insights into subsurface stability.
- Delivered engineering recommendations to stabilize the soil strata, ensuring the safety and reliability of future infrastructure developments.

### • Project Staff,

#### Alumni Relations Office, IITGN;

[Aug-Dec 2022]

- Managed alumni data, including academic records and engagement history.
- Organized homecoming events and networking sessions to strengthen alumni relations.

## Projects

### • Developing optimized ERT forward modeling and inversion for Pavement data using MATLAB

[Thesis]

- Developed MATLAB-based code for performing iterative forward modeling using the finite element method and Gauss-Newton inversion to obtain accurate model parameters for forward modeling.
- Developed structured mesh using MATLAB, used 3 noded CST elements with structured mesh; each node had one DOF (electric potential).
- Performing ERT experiments on pavement using plates and drilling to obtain pavement characteristics like layer thickness information
- Optimizing the Tomograph using a developed inversion algorithm and applying noise-reducing techniques.

### • Analysis and design of Raft foundation with and without piles, IITGN

[Mar 2023]

- As a part of the coursework, rigid beam analysis was used for the given column load; the contact pressure, bending moment, and shear force distribution were performed for the raft without piles. Further, the same

analysis was performed with piles, considering rafts as pile cap.

- Modelled foundations on elastic soils using Abaqus and compared hand calculation with ABAQUS models.
- **Design of prefabricated vertical drains on soft clays, IITGN** [Mar 2023]  
Done as part of the course, involves Safe bearing capacity calculation and shear strengths with PVDs with consideration of radial and vertical degrees of consolidation by assuming soil parameters and stratification.
- **Advanced soil mechanics and foundation laboratory** [Aug 2022- Apr 2023]  
Completed a 2-credit lab course on:
  - Comparative analysis of Geotechnical properties of various soil types (grain size distribution, LL, PL, SL, UC, UU, CU, CD, DS, consolidation tests) and,
  - Geotechnical behavior of problem soils ( soft clay, dispersive, organic, and expansive soils).
  - Liquefaction analysis using SPT, CPT, and shear wave velocity.
- **Slope stability analysis and seepage analysis** using manual calculation and comparison with geo5 and GeoStudio.
- **Foundation design and analysis using MATLAB and material models** [Apr 2023]
  - Developed solution algorithm to predict load-deformation curve and settlement for a foundation placed at 3 different depths using MATLAB.
  - Developed solution algorithm for calculation vertical stress distribution on horizontal and vertical planes at different depths and plotted isobars of stress for different intensities.
- **Pile design for underpinning structures** [Mar 2023]
  - Based on the soil parameters given for pile casting calculated lateral deflection and resistances of piles using IS2911 Codal provision.
  - The load capacity of pile ground and single pile was calculated to determine the efficiency of the group pile.
  - Determined number of piles and spacing based on the calculation.
- **Construction of berthing structure by dredging followed by underwater piling** [Mar 2023]
  - The project included dredging of the portion up to a specific elevation, and slope stability analysis of the portion was done.
  - Estimated quantity of fill for piling work for the portion of the preload height till the rear pile end
  - Further, I designed the retaining wall at the rear pile end for the surcharge at the rear pile row and checked for sliding stability.
  - Followed by Indian codal provision-based design.
- **Land reclamation and shore protection (bunds)** [Feb 2023]
  - Design of bund at 3 different water depth sections assuming different wave types used geo5 to calculate settlement of bund.
  - The design plan for the location of the column for G+1 story cottages for the resort in the reclaimed land is prepared.
  - Design of foundation for the columns and calculation of the bearing capacity of foundations and settlement by assuming soil properties was performed and Liquefaction analysis was performed.
- **Analysis of subsurface profile using 2D ER surveys and laboratory methods, IITGN** [Apr 2024]  
Analyzed the variation in the soil strata using non-destructive testing ERT and validated the ERT data with laboratory sampling data. utilized RES2DINV to subsurface profiling
- **An approach in the evaluation of deformation in flexible pavements and analysis of its structural behavior using ABAQUS, IITGN** [Apr 2023]  
Done as part of FEM course, Utilized Abaqus static structural model, constructed asphalt, subgrade sub base with corresponding material properties 8 node brick elements with reduced integration used to get large deformations, performed a convergence study for stress and deformation in the pavement.

### Skill Summary

**Languages:** MATLAB

**Tools:** ABAQUS, AutoCAD, ANSYS, Revit, MS project, Geo5, GeoStudio, RADAN7, Res2dinv, MSEW, RESSA, IITPAVE, python libraries for geophysical modeling and data analysis

**Relevant courses:** Finite element methods, near-surface geophysics, Advanced foundation engineering, slopes and retaining structures, Geosynthetics

### Positions of Responsibility

- Placement Representative for the Civil Engineering department in CEG, Anna University
- Team Leader, CEG civilization symposium
- Volunteer, Homecoming Event 2022, IIT Gandhinagar

### Extra-Curricular Activities

Some of my hobbies include playing badminton, sketching, and playing the piano/guitar. I am passionate about learning new things and studying law/administration subjects in my free time.