



1. NAME : **MARIYA DAYANA P J**

2. DESIGNATION : **Scientist**

3. OFFICE ADDRESS : Geotechnical Engineering Division
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4. AREAS OF INTEREST : Geotechnical engineering, Ground improvement techniques,
Slope stabilisation, Reinforced slope, Geotechnical investigations, Foundation design

5. EDUCATIONAL QUALIFICATION

Degree	Year	University/ Institute	Subject	CGPA / %
M. Tech	2016	NIT Surat	Soil Mechanics and Foundation Engineering	9.90 / 10 (Gold Medal)
B. Tech	2014	College of Engineering Trivandrum	Civil Engineering	8.66 / 10
HSC	2010	Kendriya Vidyalaya	Science	93.60 (School Topper)
BSc	Ongoing	IIT Madras	Programming and Data Science	-

5. PROFESSIONAL EXPERIENCE

Start Date	End Date	Position Held	Organisation
Feb 2021	Present	Scientist	CSIR-Central Road Research Institute

Start Date	End Date	Position Held	Organisation
Jan 2019	Feb 2021	Assistant Engineering Manager	Larsen & Toubro Transportation Infrastructure IC
July 2017	Dec 2018	Senior Design Engineer	
July 2016	July 2017	Post Graduate Engineer Trainee	

6. MEMBERSHIP IN PROFESSIONAL BODIES / TECHNICAL COMMITTEES

- Life Member of Indian Geotechnical Society
- Member of The Institution of Engineers (India)
- Member of IRC H4 sub-committee

7. HONOURS/ AWARDS/ SIGNIFICANT ACHIEVEMENTS

- Received 'Special Award' from L&T TI IC for contribution to the Construction of 70m high Reinforced Soil Slope in Kannur International Airport Ltd.
- Received Gold Medal for scoring the highest marks in all the semesters in Post-Graduation
- Awarded School Topper medal at HSC level
- Awarded 0.1 certificate for Mathematics from CBSE board in the year 2010

8. PROJECTS HANDLED IN CRRI

a) Research Projects

Sl. No.	Title of the Project	Role	Duration		Sponsoring Agency
			Start	End	
1.	Delhi Cluster- "Delhi Research Implementation and Innovation" (DRIIV), Theme Solid Waste Management, WP-6 Use of construction & demolition wastes, incinerated residues in road construction	Member	2020	Ongoing	IIT Delhi
2.	Recycling of Ghazipur Municipal Solid Waste for Road Embankment & Subgrade	Member	2021	2022	EDMC
3.	Utilization of Red Mud for Road and Structural fill applications	Member	2021	2022	Hindalco Industries
4.	Utilization of Municipal Solid Wastes for Road and Structural fill applications	Member	2021	2022	SDMC
5.	Hill Road Widening using Light Weight Geofoam Blocks-An alternative to earth cutting and filling.	Member	2020	Ongoing	NHIDCL

Sl. No.	Title of the Project	Role	Duration		Sponsoring Agency
			Start	End	
6.	Sustainable Geocomposite Drainage-Root Barrier	Member	2022	Ongoing	CSIR-CRRI

a) Industry-Sponsored Projects

Sl. No.	Title of the Project	Role	Duration		Sponsoring Agency
			Start	End	
1.	Failure Analysis and Design of Remediation Works for Silewani Ghat Hill Road	Co-PL	2021	2022	NHAI
2.	Feasibility Study of Red Mud waste material in the construction of Road and as a Structural fill	Member	2021	2022	Vendanta
3.	Extension of Geological and Geotechnical Specimen Gallery and databank (Phase –II)	Co-PL	2021	Ongoing	CRRI
4.	Feasibility Study for the Construction of Flyover/Underpass/Grade separator at three locations, Surat city, Gujarat	Member	2021	2021	Municipal Corporation of Surat
5.	Investigation on distressed Kolaghat Bridge in District Shahjahanpur, UP for its restoration	Member	2022	Ongoing	Shahjahanpur, Uttar Pradesh
6.	Geotechnical investigations, analysis and design the suitable remedial measures for protection of landslides and sinking zones on road from Nyu Sobla to Sela-Tedang, Uttrakhand	Member	2022	Ongoing	CPWD, New Delhi
7.	Design and Technical guidance for RCC Box pushing at rail chainage Km 1377/4-6 near Farah Railway Station on Mathura-Dholpur Section	Member	2022	Ongoing	RVNL, Agra, U.P.

9. INDUSTRIAL EXPERIENCE

Mariya Dayana was formerly a Geotechnical Design Engineer in L&T TI IC. She has multi-dimensional experience of 4.5 years in Airport, Railways, Road, and Elevated Corridor projects. She is experienced with knowledge of geotechnical investigation planning, interpretation of data, evaluation of pile capacity, shallow foundation design, slope stability analysis for embankments and deep cuts, reinforced earth wall design, reinforced soil slope design, soil nail wall design, shoring system for deep excavation and liquefaction assessment. She is also skilled in the preparation of BoQ

related to various geotechnical works. Apart from that, she has supervised the construction of a 70m high reinforced soil slope system as design coordinator for 2 years at KIAL, which involved 12 lakh cubic meters of earthwork. She has also monitored on-site engineering investigations for different projects. She is well versed with geotechnical engineering-related software's.

a) Major Project Specific Duties and Responsibilities Handled

i. Kannur International Airport Ltd. (KIAL), Kerala

- Contributed to the project as a Field Monitoring engineer for the execution of 70m height of Reinforced Soil Slope system (RSS).
- Preparation of detailed design drawings and detailed program schedule for RSS system construction.
- Monitored the quality of all aspects of construction and contributed towards a proper documentation scheme for the smooth progress and quality of work.
- Interactions with client & consultant.
- Identification and borrow soil mapping.
- On-site supervision of borehole investigation, Ground Penetrating Radar (GPR) Survey, Multichannel Analysis of Surface Wave (MASW) survey.

ii. Bangalore International Airport Ltd. (BIAL)

- In charge of preparing the Operation & Maintenance (O&M) Manual for civil, electrical, and mechanical systems.
- On-site supervision of borehole investigation.
- Computation and preparation of SBC and Pile capacity report for various buildings and tunnel locations.

iii. Delhi International Airport Ltd. (DIAL)

- Preparation of proposal for borehole investigation and trial pits at the airside and landside locations.
- Computation of pile capacity and safe bearing capacity for various important structures including tunnels, and buildings.

iv. Vadodara Mumbai Expressway

- Review of the geotechnical investigation report.
- Generalisation of the sub-surface soil profile for foundation design of various structures such as VUP, PUP, Minor Bridge, Fly Over, Major Bridge w.r.t to IS and IRC code.
- Preparation of detailed foundation design report.
- Identification of initial pile load test locations and monitoring of pile load test.

v. Dwarka Expressway

- Review of the geotechnical investigation report.

- Generalisation of the sub-surface soil profile for foundation design of various structures.
- Computation of pile capacity and preparation of detailed report for various important structures.
- Preparation of initial pile load test report.
- Computation of safe bearing capacity for various structures.
- Liquefaction assessment.

vi. Western Dedicated Freight Corridor (Railway Projects)

- Preparation of proposal for borehole investigation.
- Preparation of method statement for Ground investigation.
- Review of the geotechnical investigation report.
- Slope stability analysis for sections in cutting using SLOPE/W software.
- Design of Reinforced earth wall using MSEW software.
- Design of soil nail system up to 30m height using SLOPE/W software.
- Design of fascia system for soil nail wall and slope.
- Liquefaction assessment.
- Estimation of various earthwork-related quantities.
- Preparation of detailed drawings for various retention systems.

Apart from this, she has also contributed to the below-mentioned projects either during the bid stage or in the construction phase wherein the nature of the work varied from the design of high reinforced slopes to ground improvement techniques to soil/ rock slope stabilization and to foundation design.

- Mumbai-Ahmedabad High-Speed Rail Corridor;
- Mauritius Metro Rail Project;
- Eastern Dedicated Freight Corridor;
- Kalyani-Belghoria Road Project;
- Aurangabad Karodi Road Project;
- Pragati-Maidan Road Project;
- Mumbai Nagpur Road Project;
- Trivandrum Vilikuri Road Project;
- Mumbai-Vadodara Road Project;
- Delhi-Vadodara Road Project;
- Kerala Highway Road packages.

10. RESEARCH PUBLICATIONS

- a) G.S.Parvathi, A.K.Sinha, Vasant G. Havanagi, and **Dayana M** (2022). Failure analysis and mitigation of Shankumugham beach road, Kerala, India—a case study. *Arabian journal of Geosciences*, 15:1263. <https://doi.org/10.1007/s12517-022-10536-1>.

- b) **Dayana M**, Jain B, Sunkavalli SK, Subramaniam R (2021) Design and construction demeanor of very high embankment using geosynthetic reinforcement. *Advances in Transportation Geotechnics* 4:871-887.
- c) Anbazhagan P, Sheikh MN, Bajaj K, **Dayana M**, Madhura H, Reddy G (2017) Empirical models for the prediction of ground motion duration for Intraplate Earthquakes. *Journal of Seismology* 21(4):1001-1021.
- d) **Dayana M**, Jose P, Jose T, Jose N (2014) Study on the Attenuation Capacity of Amended Clay Liner. In: IGS Conference, Kakinada.
- e) **Dayana M**, Parvathi S, Sinha AK (2022) Investigation of Hillslope Failure and Mitigation- A Case Study of Sillewani Ghat, Chhindwara. (Under review).
- f) Parvathi S, **Dayana M**, Sinha AK, Havanagi VG (2022) 3-Dimensional finite element analysis of Shankumugham beach road due to rainfall-induced storm surge. (Accepted).