RATNAKAR RAMESH MAHAJAN

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CAREER OBJECTIVE

A challenging and rewarding position in the field of Geotechnical Engineering.

EDUCATIONAL QUALIFICATION:

B. E. (Civil Engineering), J.T.M. College of Engg., Faizpur, 1999
M. E. (Geotechnical Engineering), Govt. College of Engg, Pune, 2001
Ph. D. (Geotechnical Engineering), I.I.T. Bombay, 2007

KEY EXPERIENCE

Good managerial skills with wide range of geotechnical expertise. Key experience is in the field of ground improvement, retaining structures, slope stability, soil reinforcement, geotechnical centrifuge modelling, instrumentation, pseudo-static earthquake analysis, river training, channel lining, and rockfall protection. Knowledge about Indian and International codes for Geosynthetics and geotechnical engineering: IS, MoRTH, IRC, BS, EN, SANS, FHWA etc. Extensively used following software for design and research: MSEW, ReSSA, AutoCAD, Gawacwin, MacStars, Macra1, Macra2, Macbars, Gram++, Geocops, MacFlow, MacBars and Slide. Familiar with: ABAQUS, Slope/W, Slope, Plaxis, PIGLET, Wallap, Matlab, MathCad, StaadPro. Developed programs for soil laboratory testing and geotechnical analysis uses Microsoft Excel.

PROFESSIONAL EXPERIENCE

1. Maccaferri Environmental Solutions Pvt. Ltd. (Since Jan 2007)

Designation: **Deputy General Manager** (Jan 2016 to till date)
Assistant General Manager (April 2013 to Dec 2015)
Division Manager – Technical (April 2010 to March 2013)
Senior Manager – Technical (Jan 2009 to March 2010)
Assistant Manager – Design (Jan 2007 to Dec 2008)

Responsible for technical subdivision of the company & Geosynthetics Business Unit. Annexure I present responsibilities handled at Maccaferri.

Design Engineer for Maccaferri South Africa
Visited Maccaferri South Africa and got familiar with their local requirement. Travelled major cities of South Africa. In three months designed 38 small and big projects.

MSEW validation – MSEW is program developed by Dr. D. Lehschensky for analysis and design of reinforced soil walls. MSEW program was validated by using Maccaferri in-house software MacStars. An excel sheet program was developed similar to MSEW with which hand calculations could be performed. These sheets are used for understanding of designs carried out by MSEW.

Optimum Colliery Mine – Optimum colliery mine needed to construct additional crushers for increasing the mining of coal in Gauteng province of South Africa. A 15m high crusher wall was required to be constructed in four months time. A Catapillar tipper exerting live load of 150 kPa was considered. Reinforced soil main wall and wing walls were designed as per SANS 207 / BS 8006. The concrete panels were designed as per limit state design. In order to meet the project deadline hybrid structure of concrete panel facia and Gabion facia walls were designed.

Klipsprit Colliery Mine – A 22m high vertical retaining wall was required to be constructed for crusher. The top 3m of foundation soil was weak. A 2m thick rubble soling was designed considering the bearing capacity, global slip and settlement analysis. Polymeric strip (ParaWeb) reinforced soil wall with concrete panel facing was designed for tip wall.

Upgradation & Rehabilitation of NH-25 to 4 Lane Configuration of Orai-Bhognipur from kM 170.000 to kM 220.000 in the state of Uttar Pradesh, Pkg. EW-II (U.P.-V)
The project consisted of VUP, Flyover and ROBs. The solid approached were proposed to be retained using reinforced soil wall. The soil investigation report showed clayey silt of low plasticity for the top 3.5m, followed by Sandy silt. Various options like: basal reinforcement, soil replacement, stone columns were discussed. Bearing capacity calculations were performed considering layered soil as per procedure laid down in Bowels.

ROB-15 under NF Railway in the State of Assam – The solid approaches was proposed to be retained using reinforced soil wall. Top 4m of soil was observed to be cohesive soil (CI) with low N values, followed by loose to medium dense fine silty sand. Ground improvement was required for avoiding global slip and minimizing the differential settlements. A geotextile layer was designed at the interface of native soil and replaced soil. Two layers of Polyester geogrid were designed as basal reinforcement.

Chakkai canal connecting NH by –pass and New International Airport Trivandrum.
The approaches of the bridge on airport side were designed with reinforced soil walls. The subsurface showed grey silty fine sand with N value ranging from 1 to 3 till 12.5m depth. The height of RS wall varies between 8.8 m to 1.6 m. As the edge of RS wall on the bank of canal global slip analysis was carried out. Stone column were designed for improving the foundation. After ground improvement soil investigation was carried out and bearing capacity calculations were checked.

ROB AT CH: 13+780 NORTH – 0+580 SOUTH on Proposed Road from Mundra connecting NH – 8A in the state of Gujarat. – The approaches of ROB were to be retained using reinforced soil walls having maximum height of 8.8m. The shear properties of foundation soil were weak and there would have been a major problem of bearing and global instability. The width of approach was 44m. A scheme of stone columns with high strength geogrid as basal reinforcement was designed. Special attention was provided to avoid differential settlement at the location of change in wall height. Number of slip joints were provided at regular internal.

Bridge approach across South Kasheli creek on Thane Bhiwandi Vadapa – In general, it is observed that the subsurface comprises of top 4 to 6m of very soft to soft dark grey

clay. From 7.5 m. to 10.00 m. soil constitutes of silty clay. This layer is followed by medium dense dark grey medium sand. As the structures are near creek ground water table is at top. Hence, soil replacement or simple basal reinforcement options were not feasible. In order to achieve the required global and bearing stability, ground improvement using basal reinforcement over piles was designed. The piles were designed as per IS code. The basal reinforcement over piles was designed as per BS 8006.

Development of Polymeric connection for Reinforced Soil Wall – A R&D project was undertaken to minimize the cost of reinforced soil wall solution. A polymeric connection was developed for reinforced soil walls. A rigorous analysis was carried out on Concrete panels and connections using STADD and ANSYS. Trial panels were casted using new connection and were tested. Finally the new connection is launched successfully.

Apart from this worked on four research and development project independently. I am part of Maccaferri Innovation Center representing India, Nepal, Bhutan and Bangladesh.

2. M/s Genstru Consultants Pvt. Ltd. (October 2012 to November 2012)*
Designation: Consultant

A small hydro power project of 2x4.5 Megawatt –Karai 13, Indonesia – I was resident engineer at hydro power project. Designed solutions for erosion control, cross drainage works, and slope stability. The natural streams were crossing the water way at various locations from sand trap to head pond. A scheme of collection chamber and cross drainage works was designed. Routinely monitored the construction activity and modified designs as per site conditions. Prepared reports on recommendations and measures for erosion control and cross drainage works for submission to funding agencies.

* - I was on sabbatical leave from October to November 2012 in Maccaferri.

3. Godavari College of Engineering, Jalgaon (Aug 2001 to Dec 2001)
Designation: Lecturer
Taught engineering mechanics course to undergraduate students

4. Indian Institute of Technology, Bombay (2002 – 2006)
Designation: Research Assistant to Dr. B.V.S. Viswanadham
Research Topic: “Centrifuge Model Studies on Geosynthetic Reinforced Soil Slopes”
Published six papers in peer- reviewed journals and conferences.

Details of Honors and Awards

- University rank holder at graduation level (Silver Medallist).
- Received scholarship for Ph. D. programme (July 2002).
- Awarded Best Event Co-ordinator Research Scholars' Forum, IIT-Bombay (2004).
- Awarded Special Award for worked as Linux system administrator (2004).
- Received Best Outgoing Inmate of the year 2005. Hostel -1, IIT Bombay.
- Awarded Best Leader award in Techno-Marketing Department. Maccaferri India (2009).
- Awarded Best Performance award in Techno Division. Maccaferri India (2011).
- Received certification of appreciation. Maccaferri India (2012).

Annexure

Responsibilities handled at Maccaferri

- To manage timely completion of designs for Indian projects.
- Coordinating design requests from clients, area managers and consultants.
- To monitor receipt of valid input data from area managers, contractors, and consultants.
- Standardization, design optimization and efficient turnaround time for design.
- Providing design & drawing services to Maccaferri South Africa subsidiary, which involves conceptualization of solution and detailed design related to the Geotechnical and Hydraulics Sectors. Major applications are Retaining walls, Channel Lining Works, River Bank Protection works, Weirs and Basal Reinforcement.
- Guiding and mentoring design teams of Maccaferri India, South Africa & USA subsidiary
- Prepare/review/modify technical literature for India.
- Managing the new application sector design activities to increase varied product sales and diversification.
- To upgrade engineering skills through presentations, notes, discussions, lectures for self and team members in order to develop strong design team.
- Formulate R&D budget for the year in consultation with CTO and Top Management. Indianisation of products as per need of market.
- Review & approve of technical specification with suitable PQ criteria for various products & solutions.
- Incorporate Maccaferri products in SOR/department approvals.
- Frequent Monitoring of the quality of project execution at site for both EPS & EPC projects through weekly reports.
- Utilizing Budget for priority jobs and getting maximum benefits out of it.

NUMBER OF PAPERS PUBLISHED:

Refereed International Journal Papers

- ✓ Mahajan, R. R. and Viswanadham, B.V.S. (2007) *"Deformation behaviour of geotextile reinforced sand slopes"*, Geosynthetic International.

Peer-reviewed International Conferences

- ✓ Mahajan, R. R. and Viswanadham, B.V.S., *"Modelling of Geotextile Reinforced Highway Slopes in a Geotechnical Centrifuge"*, GeoTrans 2004, ASCE, 2004: 637-646.
- ✓ Mahajan, R. R. and Viswanadham, B.V.S., *"Testing of geotextile reinforced sand slopes in a large beam centrifuge"*, Int. Conf. on Geosynthetics and Geoenviornmental engg., Mumbai, 2004: 472-477.
- ✓ Mahajan, R. R. and Viswanadham, B.V.S., "*Centrifuge Modelling of Geotextile Reinforced Slopes"*, Indian Geotechnical Conference, Ahmedabad, 2005: 225-228.
- ✓ Mahajan, R. R. and Viswanadham, B.V.S., *"Deformation behaviour of geotextile reinforced sand slopes"*, Int. Conf. on Physical Modelling in Geotechnics 2006, Hong Kong, 2006: 367-372.
- ✓ Viswanadham, B.V.S, Mahajan, R.R., and Khachane, S.C., *"Some Studies*

on centrifuge modelling of reinforced slopes", Indian Geotechnical Conference, 2006 Chennai.

- ✓ Iyer, A., Mahajan, R. R., and Korulla, M., *"Haryana Canal Lining- Cost Benefit Analysis of Geocomposite System adopted For multiple functions - A case study"*, Geosynthetics Asia 2012, 5th Asian Regional Conference on Geosynthetics, 2012 Thailand.

National Conferences

- ✓ Mahajan, R. R., Iyer, A., and Korulla, M., *"Performance of Wire Mesh Crates in River Engineering Applications"*, Seminar on Technologies for River Erosion Control & Use of Gabions and Geosynthetics, Bureau of Indian Standards, 2007: 52 - 65.
- ✓ Chinawalkar, T. P., Patil, S. N., and Mahajan, R. R., *"Suitability of Aggregates – A case study of selected Deccan Trap quarries of Jalgaon district, Maharastra"*, Proc. ISGE National Symp. HREGE'99, Bhopal Jour. Engg. Geo. Vol. XXVII No. 4, 2009: 231-235.

Professional Affiliation

Indian Road Congress (IRC), ASCE student member, Indian Geotechnical Society

Language Proficiency: English, Hindi, Marathi

DECLARATION

I do hereby declare that the information furnished above is true and complete to the best of my knowledge and belief

Place: Pune

Ratnakar R. Mahajan