

## RESUME

- 1. Name** : **Dr. Anil Kumar Sinha**
- 2. Qualifications** : B.E. (Civil Engg.), M.Tech (Geo tech.)  
Ph.D (Geotech)
- 3. Post/Address** : HoD and Senior Principal Scientist,  
GE Division, CSIR-CRRI, New Delhi
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- 6. Employment details** :



| Sl. No. | Post                       | From | To        | Institute            |
|---------|----------------------------|------|-----------|----------------------|
| 1       | Research Fellow            | 1994 | 1995      | IIT, Roorkee         |
| 2       | JRF/SRF                    | 1997 | 1999      | CSIR-CBRI, Roorkee   |
| 3       | Scientist B                | 1999 | 2006      | CSIR-CRRI, New Delhi |
| 4       | Scientist C                | 2006 | 2010      | CSIR-CRRI, New Delhi |
| 5       | Senior Scientist           | 2010 | 2014      | CSIR-CRRI, New Delhi |
| 6       | Principal Scientist        | 2014 | 2019      | CSIR-CRRI, New Delhi |
| 7       | Senior Principal Scientist | 2019 | Till date | CSIR-CRRI, New Delhi |

**7. Areas of Specialization :**

- Waste materials (Fly ash, cinder, Ground granulated blast furnace slag, copper slag, steel slag, zinc slag, tailing, jarofix, jarosite, red mud, phosphogypsum, biomass, kimberlite, C & D waste, MSW etc.) for embankment and pavement layers.
- Ground improvement and soil stabilization with new stabilizers (Cement, Lime, RBI, Renolith, Fs emulsion, Geocrete, Novo Crete, Nano technology etc.)
- Landslide investigation and mitigation measures.
- Soil investigation, embankment, RE wall failure, and instrumentation.
- Pavement performance.

**8. Book/Code published**

- I. Design and construction methods of high embankment on soft soil by **A.K.Sinha**, V.G. Havanagi and S. Mathur. Published by CRRI, New Delhi.

- II. IRC-SP-132 (2022). Guidelines on use of Industrial wastes for Road embankment and subgrade construction. Published by Indian Roads Congress, New Delhi.

**9. Faculty of M.Tech/Ph.D : Advance Geotechnical Engineering, Training programmes**

**10. Awards/Certificates received**

- I. **IGS-Forensic Geotechnical Engineering award (2023)**  
Best project- Failure Analysis and Design of Remedial Measures for Beach Road, Kerala
- II. **CIDC Vishwakarma Award (2023)** Chairman commendation Trophy  
Title of Project- Design, Construction and Performance Study of Phosphogypsum Experimental Road at Paradeep, Odisha.
- III. **IGS Delhi Chapter Leadership Award (2020)**  
Excellence in Geotechnical Engineering.
- IV. **IRC Medal Award (2018)** The Best Paper Award  
For Publication of Research Paper entitled- Municipal solid waste in road embankment construction - a case study. Journal of Indian Road Congress, Vol. 78(2), pp 79-90.
- V. **SKOCH Order of Merit Award (2018)** Achievement award for the best project  
Title of Project- Copper Slag Solid Waste material for Road Construction
- VI. **CIDC Vishwakarma Award (2018)** Achievement award for Scientist
- VII. **CIDC Vishwakarma Award (2018)** Achievement award for the best project  
Title of Project- Jarofix Waste Material for Road Construction from Zinc Industry.
- VIII. **SKOCH Order of Merit Award (2017)** Technologies for Growth  
Title of Project- Jarofix Solid Waste Material from Zinc Industry for Road Construction - A Case Study.
- IX. **SKOCH Order of Merit Award (2016)** Achievement award for the best project  
Title of Project- Development and Application of Technologies for Sustainable Transportation (SUSTRANS).
- X. **IRC Commendation Certificate (2015)** Research Paper

For Publication of Research Paper entitled- Characterization of Jarofix waste material for the construction of road. Journal of Highway Research Board, Indian Road Congress, Vol. 6 (2), pp 35-43.

**XI. IRC Commendation Certificate (2015)      Research Paper**

For Publication of Research Paper entitled- Probable Causes and Corrective Measures of Landslides on Aizwal-Lunglei Road (NH - 54), Mizoram. Journal of Highway Research Board, Indian Road Congress, Vol. 6 (2), pp 44-51.

**11. Research Papers published**

**Journal Papers**

1. Vasant G. Havanagi, A.K.Sinha, A, Kumar and V K Kanaujia (2024). Ground granulated blast furnace slag as a soil stabilizer for road construction. Indian Highways, Indian Road Congress, Vol. 52 (4), pp 16-27.
2. **A. K. Sinha** and G. D. Vasantrao (2023). Recycle of zinc tailing waste material for rigid pavement concrete mixes. Indian Highway, Vol. 51(8), pp. 34-42.
3. Brajraj Kumar, **A K Sinha**, Somesh Kumar Nigam and Sushil Kumar Madan (2023). Cement Stabilized Zinc Tailing Waste Material for Subbase and Base Layers of Pavement. Highway research board, Indian Roads Congress, Vol. 12 (1), pp 26-39.
4. **A.K. Sinha**, V. G. Havanagi and A P Sinha (2023). Characterization of zinc tailing for bituminous road construction. Indian Highways, Indian Road Congress, Vol. 51 (7), pp 28 - 36.
5. Mariya Dayana, Parvathi G. S., and **A K Sinha** (2023). Investigation of Hillslope Failure and Mitigation- A Case Study of Sillewani Ghat, Chhindwara, India. Journal of the Geological Society of India. Vol. 99, pp 621-634. <https://doi.org/10.1007/s12594-023-2363-4>.
6. **A.K. Sinha**, V. G. Havanagi and J.T. Shahu (2022). Model tests on jarofix embankment subject to strip loading. Journal of Arabian Journal of Geosciences, 15, 1454. <https://doi.org/10.1007/s12517-022-10745-8>.
7. G.S.Parvathi, **A.K.Sinha**, Vasant G. Havanagi, and Mariya Dayana (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>.
8. Vasant G. Havanagi, **A.K.Sinha** and G.S.Parvathi, (2022). Failure investigation and design of remedial measures for reinforced earth wall - A case study. Indian Highways, Indian Road

Congress, Vol. 50 (7), pp 38 - 48.

9. M. Vinoth, **A.K.Sinha**, U.K. Guruvittal and Vasant G.Havanagi (2022). Strength of stabilised waste foundry sand material. Indian geotechnical journal. Vol. 52 (3), 707-719.
10. **A.K.Sinha**, Vasant G. Havanagi, G.S.Parvathi and S Chandra (2022). Geotechnical Characterization of Zinc Tailing Waste Material for Road Construction. Gemechanics and Geoengineering, Vol. 17 (6), 1984-2004.
11. Alok Ranjan and **A K Sinha** (2021). Vibration Isolation with Infilled Trench. Indian Highways, Indian Road Congress, Vol. 49 (12), pp 43-49.
12. **A.K.Sinha**, M. Vinoth, Vasant G.Havanagi and S Chandra (2021). Potential Investigation of Stabilised Fuming Furnace Slag for Road Construction. International Journal of Solid Waste Technology and Management, Vol. 47 (3), 499-512.
13. **A.K. Sinha**, V. G. Havanagi and J.T. Shahu (2021). Stabilised jarofix waste material for road construction. International Journal of Pavement Engineering, Vol.22 (7), 882-893.
14. Suresh Badavath, **A.K. Sinha** and Shrabony Adhikary (2020). Geotechnical characterization of zinc slag waste material for embankment construction. Journal of Indian Roads Congress, Vol.81 (1), pp 12-23.
15. **A K Sinha**, R. Shankar, B. Kumar, and V G Havanagi (2020). Recycling of foundry sand waste material for construction of concrete road. Indian Highways, Indian Road Congress, Vol. 48 (8), pp 24-34.
16. **A.K. Sinha**, G D Vasantryao and V.G. Havanagi (2020). Strength and Performance of Fuming Furnace Slag Concrete for Road Construction. Indian Highways, Indian Road Congress, Vol. 48 (7), pp 9-15.
17. **A K Sinha**, M Vinoth, S Ravi Shanker and V G Havanagi (2020). Characterisation of Foundry Sand Waste Material for Road Construction. Journal of New Building Materials & Construction World (NBM&CW), New Delhi, Vol. 25(9), pp 74 – 85.
18. **A.K.Sinha**, V.G. Havanagi and G.S.Parvathi (2019). Utilisation of waste materials in road construction. Journal of New Building Materials & Construction World (NBM&CW), New Delhi, Vol. 25(3) pp 78-88.
19. **A.K. Sinha**, V. G. Havanagi and J.T. Shahu (2019). Construction and performance of jarofix waste material embankment. Proceedings of the Institution of Civil Engineers – Construction

materials. <https://doi.org/10.1680/jcoma.18.00003>.

20. G.S.Parvathi, **A.K.Sinha** and V.G. Havanagi (2019). Red Mud - Fly Ash Mix as an Embankment Fill Material. *Journal of Indian Road Congress*, Vol. 47 (3), pp 20-25.
21. G.S.Parvathi, V. G. Havanagi, V K Kanaujia and **A. K. Sinha** (2018). Ground improvement for the construction of road over Soft organic soil: a case study. *Journal of the Indian national group of the international association for Bridge and Structural engineering*, Vol. 48 (2), pp 70-80.
22. V. G. Havanagi, **A. K. Sinha**, G.S.Parvathi and S. Chandra (2018). Municipal solid waste in road embankment construction - a case study. *Journal of Indian Road Congress*, Vol. 79(1), paper No. 69, page 64.
23. **A.K. Sinha**, V. G. Havanagi and J.T. Shahu (2018). Characterization of jarofix for usage in geotechnical projects. *Proceedings of the Institution of Civil Engineers – Geotechnical Engineering*, 171(5), pp 439–450.
24. **A. K. Sinha**, V. G. Havanagi and V.K.Kanaujia (2018). Insitu investigation of cinder mound for building construction - a case study. *Journal of New Building Materials & Construction World (NBM&CW)*, New Delhi, Vol. 23(9) pp 144 – 158.
25. **A.K.Sinha** and V.G. Havanagi (2018). Soil stabilization by liquid based stabilizer. *Journal of Highway Research Board, Indian Road Congress*, Vol.46 (3), pp 11-22.
26. **A.K.Sinha**, V.G. Havanagi and V.K.Kanaujia (2017). Chrome slag in embankment and pavement construction. *Journal of Highway Research Board, Indian Road Congress*, Vol.8 (1), pp 45-54.
27. V. G. Havanagi, **A. K. Sinha**, G.S.Parvathi and S. Chandra (2017). Municipal solid waste in road embankment construction - a case study. *Journal of Indian Road Congress*, Vol. 78(2), pp 79-90.
28. **A. K. Sinha** and V.G.Havanagi (2017). Pavement construction over municipal solid waste dump. *Journal of Indian Highways*, Vol. 45(10), pp 11-20.
29. **A.K. Sinha**, V G. Havanagi, A. Ranjan and S. Das (2017). Cinder Waste Material for the Construction of Bituminous Pavement Layers. *International journal of current environmental engineering, Korea*, Vol.4(3), pp 221-227.
30. **A. K. Sinha** and V.G.Havanagi (2016). Construction and performance study of cement stabilised road - A case study. *Journal of Indian Highways*, Vol. 44(5), pp 27 - 38.

31. A. Ranjan, R K Swami, **A K Sinha** and K. Singh (2016). Use of liquefiable materials for vibration isolation. *STM journal of Geotechnical Engineering*, Vol. 3(3), pp 33-36.
32. V.G. Havanagi, **A.K.Sinha** and A. Ranjan. (2015). Fine copper slag as an alternative marginal material for road construction. *Journal of Indian Highways*, vol. 44(1), pp 25-33.
33. **A.K.Sinha**, V.G. Havanagi, A. Ranjan, S. Mathur and V K Kanaujia (2015). Stabilised cinder waste material for construction of pavement layers. *Journal of Indian Highways*, Vol. 31(3), pp 43 - 49.
34. **A.K.Sinha**, V.G. Havanagi, V. K. Arora, A. Ranjan and S. Mathur. (2013). Characterization of Jarofix waste material for the construction of road. *Journal of Highway Research Board, Indian Road Congress*, Vol. 6 (2), pp 35-43.
35. Pankaj Gupta, **A.K.Sinha**, V.G. Havanagi and S. Mathur. (2013). Probable Causes and Corrective Measures of Landslides on Aizwal-Lunglei Road (NH - 54), Mizoram. *Journal of Highway Research Board, Indian Road Congress*, Vol. 6 (2), pp 44-51.
36. **A.K.Sinha**, V.G. Havanagi, A. Ranjan and S. Mathur. (2013). Steel slag waste material for the construction of road. *Journal of Indian Highways*, Vol. 41(10), pp 15-22.
37. V.G. Havanagi, **A.K.Sinha**, V K Kanaujia, A. Ranjan and S. Mathur. (2013) Cinder waste material for the construction of road. *Journal of Indian Highways*, vol. 41(4), pp 69-72.
38. **A.K. Sinha**, V G. Havanagi, V K Arora and S. Mathur (2012). Design, Construction & Evaluation of Jarofix Embankment and Sub Grade Layers. *International Journal of Environment Engineering Research*, vol. 1(3) pp 97-103.
39. **A.K.Sinha**, V.G. Havanagi, V.K.Arora, A. Ranjan and S. Mathur. (2012) Recycling Jarofix waste as a construction material for embankment and sub grade. *International Journal of Solid Waste Technology and Management*, vol. 38(3), pp 169-181.
40. **A.K.Sinha**, V.G. Havanagi, V.K.Arora and S. Mathur (2012). Construction of embankment and sub grade using Jarofix (Zinc ore waste) – A case study. *Journal of Civil Engineering and Construction Review (CE&CR)*, Vol. 25(3), pp 98-103.
41. V. G. Havanagi, **A. K. Sinha**, V. K. Arora and S. Mathur (2012). Design and Stability analysis of copper slag embankment. *Journal of Indian Highways*, vol. 40(10), pp 17-23.

42. V G. Havanagi, **A.K. Sinha**, V K Arora and S. Mathur (2012). Waste materials for construction of road embankment and pavement layers. International Journal of Environment Engineering Research, vol. 1(2) pp 51-59.
43. V. G. Havanagi, **A. K. Sinha** and S. Mathur (2012). Design and structural evaluation of pond ash embankment. Journal of Indian Highways, vol. 40(7), pp 39-48.
44. V G.Havanagi, **A K Sinha**, P Gupta and S Mathur(2011). Investigation and remedial measures of Hnathial landslide, Mizoram. Journal of National Institute of Disaster Management Vol. 5(2) pp 201-212.
45. V. G. Havanagi, **A. K. Sinha** and Sudhir Mathur (2011). Use of geosynthetic material for reinforced earth wall construction. Journal of New Building Materials & Construction World (NBM&CW), New Delhi, Vol. 17(3) pp 232 – 243.
46. **A.K.Sinha**, V. G. Havanagi and Sudhir Mathur (2010). Powder based inorganic stabiliser for construction of sub-base and base layers of road pavement. Journal of Indian Highways, IRC publication, Vol. 39(1) Feb. pp 33-44.
47. **A.K.Sinha**, V. G. Havanagi and Sudhir Mathur (2009). An approach to shorten the construction periods of high embankment on soft ground improved with PVD. Journal of Geotextiles and Geomembrane, Vol. 27(6) Dec. pp 488-492.
48. **A.K.Sinha**, V. G. Havanagi and Sudhir Mathur (2007). Inflection point method for predicting settlement of PVD improved soft clay under embankments. Journal of Geotextiles and Geomembrane, Vol. 25, Dec. pp 336-345.

**International / National Conference Proceedings**

49. Syeda Sabina Yashmin and **A K Sinha** (2023). Resilient Modulus of red mud as a subgrade material. Indian Geotechnical Conference, at Roorkee, India.
50. Syeda Sabina Yashmin and **A K Sinha** (2023). Characterisation of Red Mud as an Embankment Material for High-Volume Utilizations. International Conference on Creative and Innovative Solutions in Civil Engineering, 11 August, MNIT, Jaipur, Rajasthan.

51. Pankaj Bhatt, **A. K. Sinha** and Murtaza Hasan (2023). Strength and Deformation Behaviour of Zinc Tailing Waste Material for Embankment Construction. International Conference on Creative and Innovative Solutions in Civil Engineering, 11 August, MNIT, Jaipur, Rajasthan.
52. Somesh Kumar Nigam, **A. K. Sinha** and S.K Madan (2023) Characterisation of Stabilized Red Mud Waste Material for Road Infrastructure. Materials Today: Proceedings Elsevier, <https://doi.org/10.1016/j.matpr.2023.06.229>.
53. आलोक रंजन, **अनिल कुमार सिन्हा** और विजय कुमार कनौजिया (2023). भूमि की तरंगों की प्रकृति. सड़क शोध पत्र संकलन, सीएसआईआर-केंद्रीय सड़क अनुसंधान संस्थान, नई दिल्ली, पेज 28-34.
54. Parvathi G. S., Mariya Dayana, **A.K.Sinha**, and Vasant G. Havanagi (2022), 3-Dimensional Finite Element Analysis of Shankumugham Beach Road Due to Rainfall- Induced Storm Surge. Proceedings of the Indian Geotechnical Conference, Kochi, 13-15th December 2022
55. Somesh Kumar Nigam, **A. K. Sinha** and S.K Madan (2022). Stress - Strain Behaviour of Red Mud Waste Material for Road Construction. National conference on structural and geotechnical engineering (NCSGE-2022) 16-16 October, NIT Jamshedpur, Jharkhand.
56. Brajraj kumar, **A K Sinha** and Saraswati Setia (2022). Cement stabilised zinc tailing waste material as subbase and base course in road construction. Proceeding of Indian geotechnical conference, Kochi, 13-15th December.
57. **A K Sinha**, M Vinoth, S. Ravi Shanker, V G Havanagi (2020). Coimbatore Foundry Sand Waste Material for Road Construction. Proceedings of Geoenvironment, conference on geoenvironment & sustainability, pp 198-206, 17-19<sup>th</sup> February, Delhi.
58. विजय कुमार कनौजिया, डॉ अनिल कुमार सिन्हा और डॉ पी एस प्रसाद (2019). ब्लॉकट समविय ं के वमक्स वडजाइन की जांच और समीक्षा करना. सड़क दपपण, सीएसआईआर-केंद्रीय सड़क अनुसंधान संस्थान, नई वदल्ली, अंक (18), पेज 11-14.
59. V. G. Havanagi, **A. K. Sinha** and G.S.Parvathi (2018). Characterization of phosphogypsum waste for road construction. Proceeding of Indian geotechnical conference, Bangalore.
60. **A.K.Sinha** and V.G. Havanagi (2018). Jarofix Waste Material in Embankment Construction. International symposium on geotechnics of transportation infrastructure, New Delhi.



61. V. G. Havanagi, **A. K. Sinha**, G.S.Parvathi and S. Chandra (2017). Characterization of municipal solid wastes for road embankment construction. National conference on New Technology for Road Construction, Lucknow, India, pp 64-78.
62. **A.K.Sinha** and V.G.Havanagi (2015). Carrier oriented pedagogy of geotechnical education. Proceeding of Indian geotechnical conference, Pune.
63. **A.K.Sinha**, V.G.Havanagi and V. K. Arora (2015). Stress – strain behaviour of stabilised jarofix waste material. Proceeding of Indian geotechnical conference, Pune.
64. **A.K.Sinha** and V.G.Havanagi and K. Kumar (2015). Causes and remedial measures of malin landslide, Maharashtra. Proceeding of Indian geotechnical conference, Pune.
65. V.K.Kanaujia, **A.K.Sinha**, V.G. Havanagi and U.K.Guruvittal (2015). Investigation and stability analysis of embankment bund. Proceeding of Indian geotechnical conference, Pune.
66. **A.K.Sinha**, Vasant G Havanagi and U K Guruvittal (2015). Instrumentation and monitoring of embankment on soft soil. Proceeding of national symposium on advances in instrumentation, geo monitoring and validation, July, organised by Central board of irrigation and power, New Delhi.
67. आलोक रंजन, **अनिल कुमार सिन्हा** और पाणिग्रही (2015). सापेक्षवाद का सिद्धांत. सड़क दर्पण, सीएसआईआर-केंद्रीय सड़क अनुसंधान संस्थान, नई दिल्ली, अंक (12), पेज 33-35.
68. **A.K.Sinha**, V.G.Havanagi, P. S. Prasad and K. Kumar (2014). Stabilisation of tunnel muck yard at Jammu & Kashmir rail link. Proceeding of Indian geotechnical conference, Kakinada, pp 2033 - 2037.
69. **A.K.Sinha**, V.G.Havanagi and V. K. Arora (2014). Experimental study of jarofix embankment model. Proceeding of Indian geotechnical conference, Kakinada, pp 1469-1474.
70. V. K. Kanaujia, **A.K.Sinha**, P. S. Prasad and V.G.Havanagi (2014). Design of capillary cutoff for rural road. Proceeding of Indian geotechnical conference, Kakinada, pp 1155 - 1158.
71. V.K.Arora, V.G. Havanagi and **A. K. Sinha** (2013). Characterisation of copper slag and jarofix waste materials for road construction. Proceeding of international conference on world academy of science and technology. International science index issue 84, Melbourne, Australia, pp 1353-1358.
72. **A.K.Sinha**, V.G.Havanagi, and S. Mathur (2013). Construction of Cement Stabilized Road at Amritsar. Proceeding of Indian geotechnical conference, Roorkee, pp 1-5.

73. **A.K.Sinha**, V.G.Havanagi, A Ranjan, S. Mathur and B K Singh (2013). Characterization of Jarosite Waste Material for Road Construction. Proceeding of Indian geotechnical conference, Roorkee, pp 1-4.
74. V G Havanagi, **A K Sinha**, U K Guruvittal, S Mathur (2013). Utilization of Fly Ash for Road Construction-CRRI Experiences. Proceeding of national seminar on Utilisation of Fly Ash in Geotechnical Structures, Bhubaneswar, Odisha, pp 85-103.
75. **A.K.Sinha**, V.G.Havanagi, A Ranjan and S. Mathur (2012). Steel slag waste material used in the construction of embankment and sub grade. Proceeding of Indian geotechnical conference, New Delhi, Vol.2, pp 874-877
76. V.G.Havanagi, **A.K.Sinha**, A Ranjan and S. Mathur (2012). Characterisation of super fine copper slag for construction of embankment. Proceeding of Indian geotechnical conference, New Delhi, Vol.2, pp 878-881.
77. V.K.Kanaujia, V.G.Havanagi, **A.K.Sinha** and S. Mathur (2012). Design of capillary cutoff using locally available granular materials. Proceeding of Indian geotechnical conference, New Delhi, Vol.1, pp 416-419.
78. V.G. Havanagi, **A.K.Sinha**, V.K.Arora and S. Mathur (2012). Waste materials for construction of road embankment and sub grade. Seminar on cement concrete roads and white-topping (need of the hour for a scintillating tomorrow), CSIR-CRRI, August, Sovenier, pp 35-40.
79. V.G.Havanagi, **A.K.Sinha**, A Ranjan, V.K.Kanaujia and S. Mathur (2012). Super fine copper slag waste material for embankment construction. Published in CSIR-CRRI diamond jubilee conference, Vol. 1, pp 50-52.
80. V.K.Kanaujia, V.G.Havanagi, **A.K.Sinha** and S. Mathur (2012). Suitability of granular materials for capillary cutoff. Published in CSIR-CRRI diamond jubilee conference, Vol. 1, pp 106-109.
81. **A.K.Sinha**, V.G.Havanagi, A Ranjan and S. Mathur (2012). Recycle of steel slag waste material in the construction of road. Published in CSIR-CRRI diamond jubilee conference, vol. 1, pp 90-93.
82. **A.K.Sinha**, V G Havanagi, P S Prasad, Kishore Kumar and Sudhir Mathur (2012). Design of tunnel muck yard at Jammu & Kashmir rail link. Published in national conference and field study on landslide management, Nainital, Uttrakhand.

83. **A.K.Sinha**, V.G. Havanagi, V.K.Arora, Alok Ranjan and S. Mathur (2011). Feasibility study of Jarofix waste material for road construction. Indian geotechnical conference, Kochi, Vol.1, Pp 685-688.
84. V. G. Havanagi, **A.K.Sinha** and Sudhir Mathur (2011). Construction of embankment using copper slag waste material. International conference on reducing the carbon footprint in road construction, Delhi, India. Published by Indian Road congress, New Delhi, 5/ 99-106pp.
85. V. G. Havanagi, **A.K.Sinha** and Sudhir Mathur (2011). Design and stability analysis of pond ash railway embankment. Indian geotechnical conference, Kochi, Vol.1 Pp721-724.
86. V G Havanagi, **A.K.Sinha**, P Gupta and S Mathur (2011). Investigation of Hnathial Bazar Veng landslide at 173.5 km Aizwal-Lunglei road, Mizoram. Proceedings of National conference on 'Landslide hazards-consequences & challenges', Roorkee, India, Vol. 1. pp 204-207.
87. **A.K.Sinha**, Vasant G Havanagi and Sudhir Mathur and U K Guruvittal (2010) Investigation and design of pond ash road embankment. 2<sup>nd</sup> International conference on CPT 10, May California, USA.
88. **A.K.Sinha**, Vasant G Havanagi and Sudhir Mathur (2009). Settlement of soft clays with prefabricated vertical drain. International symposium on ground improvement technologies and case histories, Singapore, pp 345-351.
89. Vasant G Havanagi, **A.K.Sinha**, P.S.Prasad, Sitaramanjaniyulu and Sudhir Mathur (2009). Copper slag as an alternative material for road construction. Proceeding of 24<sup>th</sup> International Conference on Solid Waste Technology and Management, Philadelphia, USA, pp 133- 144.
90. Jai Bhagwan, **A.K.Sinha**, Sudhir Mathur (2009). Ground improvement techniques development of road infrastructure. Proceeding of the national seminar on emerging trends in ground improvement, Kolkata, pp 67-73.
91. **A.K.Sinha**, Vasant G Havanagi and Sudhir Mathur (2008). Feasibility study on the use of cementation material in road construction – A laboratory investigation. Proceeding of National Geosymposium on Geoenvironment, Geohazards, Geosynthetic and Ground Improvement- Experience and Practices (4G) CSMRS, New Delhi, pp 107-115.
92. **A.K.Sinha**, V. G. Havanagi and Sudhir Mathur (2008). Continuous stage construction of high embankment on soft ground improved with PVD. Proceeding of National symposium on Engineering of ground and environmental geotechniques, Hyderabad, pp 192-197.

93. V. G. Havanagi, **A.K.Sinha** and Sudhir Mathur (2008). Quality control of compacted fill by sand replacement method using unstandard pouring materials. Proceeding of Indian geotechnical conference Bangalore.
94. Vasant G Havanagi, **A.K.Sinha** and Sudhir Mathur (2008). Feasibility study on the use of zinc slag wastes in embankment and pavement construction Proceeding of National Geosymposium on Geoenvironment, Geohazards, Geosynthetic and Ground Improvement-Experience and Practices (4G), CSMRS, New Delhi, pp 213-217.
95. V. G. Havanagi, **A.K.Sinha**, Sudhir Mathur and Prema Prasad (2008). Experimental study on the use of copper slag wastes in embankment and pavement construction. Proceeding of National symposium on Engineering of ground and environmental geotechniques, Hyderabad, pp 259-264.
96. U.K.Guruvittal, P.S.Prasad, N.K.Sharma, **A.K.Sinha**, Vasant G Havanagi and Sudhir Mathur (2008). Designing ground improvement techniques in soft clay areas. Proceeding of National Geosymposium on Geoenvironment, Geohazards, Geosynthetic and Ground Improvement-Experience and Practices (4G), CSMRS, New Delhi, pp 350-356.
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99. **A.K.Sinha** and Sudhir Mathur (2005). Strength and deformation behaviour of remoulded cured fly ash. Proceeding of International Conference on Fly ash Utilisation Programme New Delhi, Vol. VIII, pp 19.1–19.8
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106. U.N.Sinha, S.Karthigeyan and **A.K.Sinha** (2000). Shear strength characteristics of compacted fly ash used as geomaterial for the construction of embankment. Proceeding of 2<sup>nd</sup> International Conference on Fly ash Disposal and Utilisation, New Delhi, Vol. 2, pp VII-9, 70-76.
107. **A.K.Sinha** and V.K.Arora (1999). Experimental study on reinforced earth retaining wall. Proceeding of Indian Geotechnical Conference, Calcutta, Vol. 1, pp 257-259.
108. U.N.Sinha, S. Karthigeyan, P.Kumar, S.N.Bhargwa, A.K.Sharma and **A.K.Sinha** (1999). Influence of thickness and asperities of infilled material in discontinuous rock mass using direct shear box. Proceeding of Indian Geotechnical Conference, Calcutta Vol. 1, pp 9-12.

## **12. Project completed/Report prepared**

1. Report (2023). Recycling of Ghazipur Municipal Solid wastes for Road embankment and subgrade construction. Sponsored-Principal scientific Advisor, Govt. of India, New Delhi.
2. Report (2023). Utilization of Municipal Solid wastes for Road and structural fill applications. Sponsored - South Delhi Municipal Corporation.
3. Report (2023). Design, construction, supervision and pavement performance evaluation of road constructed by using red mud. Sponsored by Hindalco Industries Limited, Mumbai.
4. Report (2023). Structural Safety Audit of Bridges at Km12, Km14 and Km16, Jauligrant-Thano-Raipur Motor Road, Dehradun, Uttarakhand (Geotechnical Engg. -- Part A) Sponsored by PWD, Dehradun, Uttarakhand
5. Report (2023). Investigation of Causes of Foundation Settlement and Remedial Measures for P3 Pier at Galgalia-Bahadurganj, Bihar Sponsored by G R Infra projects Limited, New Delhi.

6. Report (2023). Quality audit of structures of six-laning of nh-8 from shamlaji to motachiloda, Ahmedabad, Gujarat Sponsored by National Highways Authority of India, Ahmedabad, Gujarat
7. Report (2023). Delhi Research Implementation and Innovation (DRIIV); WP-6 Use of construction and demolition waste, Incinerated residues in Road construction. Sponsored by Principal Scientific Advisor (PSA), Government of India, Lead Co-ordinator IIT Delhi.
8. Report (2023). External technical / quality audit of Dwarka expressway of approaches of flyover/ESR. Sponsored by NHAI, New Delhi.
9. Report (2023). Investigation and Design of Remedial Measures of RE Wall at km 137+300 on Delhi-Vadodara, Bharatmala Pariyojana, Rajasthan (Pkg.-5). Sponsored by Project Director, Project Implementation Unit (PIU), NHAI, Sohna, Gurugram.
10. Report (2023). Recycling of Ghazipur Municipal solid wastes for Road embankment and sub-grade construction. Sponsored by Office of Principal Scientific advisor (PSA), Government of India & Invest India, New Delhi.
11. Report (2022). Utilization of red mud for road and structural fill application. Sponsored by Hindalco Industries Limited, Mumbai.
12. Report (2022). Feasibility study of red mud waste material in the construction of road and as a structural fill. Sponsored by Vedanta Limited, Lanjigarh, Kalahandi, Odisha.
13. Report (2022). Ground granulated blast furnace slag as a soil stabilizer for road construction. Sponsored by JSW Cement Limited, Mumbai.
14. Report (2022). Utilization of municipal solid wastes for road and structural fill applications. Sponsored by South Delhi Municipal Corporation.
15. Report (2021). Feasibility study for the construction of Flyover/Underpass/Grade separator at three locations, Surat city, Gujarat. Sponsored by Municipal Corporation of Surat, Gujarat
16. Report (2021). Design, construction and performance monitoring of phosphogypsum experimental road at Paradeep, Odisha. Sponsored by Paradeep phosphate limited (PPL), Paradeep, Odisha.
17. Report (2021). Failure analysis and design of Remediation works for Silewani Ghati Hill road-Chhindwara, (MP). Sponsored by NHAI, New Delhi
18. Report (2021). Feasibility Study of Dredged Sand from the Catchment of Banganga River and Its Tributaries. Sponsored by Water Resources Department, Jaipur, Rajasthan
19. Report (2021). Design and stability analysis of red mud disposal pond sponsored by Hindalco Industries, Mumbai.
20. Report (2020). Construction and performance study of a mixes of jarofix-slag and jarofix-soil as a retained fill in reinforced retaining wall. Sponsored by M/s Hindustan Zinc Limited, Chittorgarh, Rajasthan.
21. Report (2020). Design of road remediation and erosion protection works of Shangumugam beach road, Thiruvananthapuram, Kerala. Sponsored by PWD, Kerala.

22. Report (2020). Investigation and design of landslide remediation measures in Nilambur - Gudalloor road, Kerala. Sponsored by PWD, Kerala.
23. Report (2020). Evaluation of AggreBind (Styrene polymer compound) stabilizer in soil stabilization for road construction. Sponsored by M/s Telemachus Infra Private Limited, New Delhi.
24. Report (2020). Technical Evaluation of Enzyme based solution for stabilization in Road construction. Sponsored by Virentiatech Pvt. Ltd., New Delhi
25. Report (2020). Feasibility study of zinc tailing for road construction. Sponsored by M/s Hindustan Zinc Limited, Udaipur, Rajasthan.
26. Report (2020). Pavement performance study of experimental phosphogypsum waste material road. Sponsored by Paradeep Phosphate limited, Paradeep, Odisha.
27. Report (2020). Investigation, Design and Remedial Measures for protection of slopes at Bailey bridge, Pambai Valley. Sponsored by CPWD New Delhi.
28. Report (2019). Quality assurance of construction of structures of inner ring road (phase-II) from Fatehabad to Devari road in Agra, (UP). Sponsored by Agra development authority, Agra, UP.
29. Report (2019). Technical Audit of NH Ludhiyana to Talwandi, Ludhiyana, Punjab. Sponsored by NHAI. New Delhi.
30. Report (2019). Feasibility of reducing the existing road level of Rajpath starting from Vijay Chowk to North and South Block, upto President House. Sponsored by PWD Delhi.
31. Report (2019). Sub soil investigation for the construction of box culvert, vup and flyovers at Agra inner ring road phase II (UP).
32. Report (2019). Feasibility study of fuming furnace slag in road construction. Sponsored by Hindustan Zinc Limited, Udaipur, Rajasthan.
33. Report (2019). "Feasibility study of zinc slag waste materials for road construction". Sponsored by Hindustan zinc limited, Udaipur, Rajasthan.
34. Report (2012-2017, 12<sup>th</sup> FYP). "*Landslide investigation and remedial measures of Maithana landslide*". Submitted to BRO, New Delhi.
35. Report (2012-2017, 12<sup>th</sup> FYP). "*Development and Application of Technologies for Sustainable Transportation*". Network Project, sponsored by CSIR, New Delhi
36. Report (2017). "*Soil investigation and remedial measures of approaches of four flyovers*" Sponsored by Housing & Urban Development Corporation, Kolkata.
37. Report (2017). "*Feasibility study of foundry sand in the construction of road.*" Submitted to The Institute of Indian Foundrymen, New Delhi.
38. Report (2017). "*Design and construction of embankment using municipal solid waste (Varanasi)*". Submitted to NHAI, New Delhi.

39. Report (2016). *"Sub soil investigation for the construction of box culvert, PUP, VUP and fly over"*. Submitted to Agra development authority, Agra.
40. Report (2016). *"Design and construction of embankment using municipal solid waste (Ghaziipur)"*. Submitted to NHAI, New Delhi.
41. Report (2016). *"Feasibility of chrome slag in Embankment, Subgrade and sub base layers of Road construction"*. Submitted to Balasore Ispat Ltd. Orissa.
42. Report (2016). Vetting of pavement design proposed with geocrete stabilized layer. Sponsored by Public Works Department, Kanpur Dehat, Uttar Pradesh.
43. Report (2015). *"Construction of road over municipal solid waste dump"*, Submitted to यूपी हाउसिंग एवं विकास परिषद, वसुंधरा कॉम्प्लेक्स, सैक्टर - 16ए, वसुंधरा, गाजियाबाद.
44. Report (2015). *"Pavement design proposed with geocrete stabilized layer"*. Submitted to PWD, UP.
45. Report (2015). *"Design and construction of phosphogypsum road at Paradeep"*. Submitted to Paradeep phosphate Ltd. Orissa.
46. Report (2015). *"Ground Improvement measures over soft organic soil"*. Submitted to NIT Manipur, Langol, Imphal.
47. Report (2013-2015). *"Quality assurance of construction of structures of inner ring road (phase-1) from Kuberpur to Fatehabad road in Agra, (UP)"*. Submitted to Agra development authority, Agra, UP.
48. Report (2014). *"Distress evaluation of Calicut Runway"*. Submitted to International Airport Calicut, Kerala.
49. Report (2013). *"Feasibility study of phosphogypsum waste material in road construction"*. Submitted to Paradeep Phosphate Pvt. Limited, Orissa.
50. Report (2013). *"Pavement performance study of experimental test track using Jarofix waste material"* Submitted to the M/s Hindustan zinc limited Chittorgarh, Rajasthan.
51. Report (2013). *"Electro-mechanical density gauge equipment"*. Submitted to CSIR-CRRI, New Delhi.
52. Report (2013). *"Design of capillary cutoff and improvement of sub grade layers for the construction of Thanesar dhand to Khanouri road"*. Submitted to PWD Kaithal, Haryana.
53. Report (2012). *"Quality/Technical audit of Lucknow-Muzaffarpur National Highway project (8 contracts)"*. Sponsored by NHAI, New Delhi.
54. Report (2012). *"Suitability of sand material for Capillary cutoff"*. Submitted to Provincial Division, PWD, B&R, Jhajjar (Haryana).
55. Report (2012). *"Geotechnical study of Jugasalai cinder Dump area for building construction"* Submitted to the M/s Tata steel Jamshedpur, Jharkhand.



56. Report (2012). "*Feasibility study of cinder waste material in the construction of road*" Submitted to the M/s Tata steel Jamshedpur, Jharkhand.
57. Report (2012). "*Pavement performance evaluation of experimental test track using copper slag*". Submitted to M/s Sterlite Industries Tuticorin Tamil Nadu.
58. Report (2012). "*State of the art report for mitigation of land slide*". Submitted to CSIR-CRRI under Supra institutional project.
59. Report (2012). "*Pavement performance study of experimental test track section of cement stabilized road*" Wagha border, Amritsar, Punjab.
60. Report (2012). "*Feasibility study of super fine copper slag in land filling and road construction*" submitted to the M/s Birla copper, Hindalco Industries Dahej, Gujrat.
61. Report (2011). "*Feasibility study of Jarosite in the road construction*" Submitted to the M/s Hindustan Zinc Limited Chittorgarh and Udaipur, Rajasthan.
62. Report (2011). "*Design, construction & evaluation of experimental test track using Jarofix*". Submitted to the M/s Hindustan Zinc Limited Chittorgarh, Rajasthan.
63. Report (2011). "*Feasibility study of Nanostad polymer stabilizer*" submitted to the M/s U B Engineering Ltd. Pune.
64. Report (2011) *Pavement performance of Experimental test track construction of PMGSY roads using Jute Geotextiles*. Submitted to NRRDA, New Delhi.
65. Report (2011). "*Design of filter material for capillary cut-off and assessment of suitability of soil for embankment and subgrade*", Submitted to PWD, B&R, Fatihabad, Haryana
66. *Field experimental test track construction using construction and demolition waste at New Delhi*.
67. Report (2010). "*Feasibility study of steel slag in the construction of Road*" submitted to the M/s Goa Pollution control Board, Goa.
68. Report (2010) "*Quality and audit of DMRC roads approaching to Stations*" submitted to the M/s DMRC, New Delhi.
69. Report (2009). "*Design specifications for construction of experimental test tracks using copper slag*". Submitted to M/s Sterlite Industries Tuticorin. Tamil Nadu
70. Report (2009). "*Protection of unstable cut slopes along approach roads and railway lines and stabilization of the proposed dumping muck yard sites at Jammu and Kashmir*" submitted to the M/s IRCON, Mumbai.
71. Report (2009). "*Design details and technical specifications for construction of 6m high retaining wall at CRRI staff quarter*", Maharani Bagh.
72. Report (2009). "*Feasibility study of Jarofix in the road construction*". Submitted to the M/s Hindustan zinc limited Chittorgarh, Rajasthan
73. Report (2008). "*Design of coal ash Railway embankment*". Submitted to M/s NTPC, NOIDA.

74. Report (2008) “*Ground improvement measures for widening of industrial bye pass road Visakhapatnam*”. Submitted to Visakapatnam Port trust, Visakapatnam.
75. Report (2008) Technical Audit of Golden Quadrilateral roads. Submitted to CAG, Indian Government, New Delhi.
76. Report (2008).“*Supervision of pile construction and pile load tests for the construction of bridge superstructure*”, NTPC, Faridabad. Submitted to PWD, Haryana.
77. Report (2007). “*Feasibility study of RBI 81 cementations material for road construction*”. Submitted to M/s Legend innovative Pvt. Ltd., New Delhi.
78. Report (2007). “*Instrumentation and monitoring on PVBD improved soft clay under embankment*”. Submitted to Port Trust, Visakapatanam.
79. Report (2007). “*Feasibility study on the use of imperial smelting furnace zinc slag as fine aggregate for construction of embankments, granular sub base, cement concrete and bituminous layers*”. Submitted to M/s Hindustan zinc limited Chittorgarh, Rajasthan.
80. Report on (2007). “*Feasibility study on the use of waelzkiln zinc slag as fine aggregate for construction of embankments, granular sub base, cement concrete and bituminous layers*”. Submitted to M/s Hindustan zinc limited Chittorgarh, Rajasthan.
81. Report (2007). “*Feasibility study of F.S Technology emulsion cementations material for road construction*”. Submitted to M/s. FS Roads Consulting Private Limited, New Delhi.
82. Report (2007). “*Technical audit of NHAI GQ highway project, Kishangarh to Jaipur*”. Submitted. to CAG, New Delhi.
83. Report (2006). “*Soil investigation and design of high embankment on soft ground*” (Kalindi Kunj bye pass road). Submitted to M/s DDA, New Delhi.
84. Report (2006). “*Feasibility study on the use of copper slag wastes in road and embankment construction*”. Submitted to M/s Sterlite Industries Tuticorin, Tamil Nadu
85. Report (2006). “*Investigation and recommendation for landslide/subsidence at km 173.5 km on Aizwal-Lunglei road (NH-54)*” near Aizwal, Mizoram. Submitted to BRO, Mizoram.
86. Report (2005) “*Design of embankment using hydraulic fill for widening of M.B.bridge road*” ( ITO chungi to Yamuna bridge). Submitted to M/s DDA New Delhi.
87. Report(2005). “*Design and super vision of pond ash embankment for widening of marginal bund road*”, (GT road to Khajuri chawk). Submitted to M/s PWD, New Delhi.
88. Report (2005) *Remedial measures for improvement to high embankment slopes of pond ash, NOIDA-Greater NOIDA expressway.*
89. *Technical Audit of PMGSY roads (2003) at CRRI.*

### **13. Other Information**

Countries of Work Experience: Deputed to Singapore for presentation of Research paper on ‘Settlement of soft clays with prefabricated vertical drain. International symposium on ground improvement technologies and case histories, Singapore, December 2009.

- I. **PEER REVIEWER** - International journal of Geotextile and Geomembrane.
- II. **PEER REVIEWER** - International Journal of Physical Modelling in Geotechnics.
- III. **PEER REVIEWER** - International KSCE Journal of Civil Engineering.
- IV. **PEER REVIEWER** - International Journal of Engineering and Technology Research.
- V. **PEER REVIEWER** - Journal of National Institute of Disaster Management, New Delhi.
- VI. **PEER REVIEWER** - Journal of Indian Road Congress, New Delhi.
- VII. **GUEST FACULTY** - Indian Academy for Highway Engineers (IAHE), MORTH, India.
- VIII. **SECRETARY/EXECUTIVE MEMBER** – Involved in organizing different workshops/conferences/symposium under Indian Geotechnical Society, Delhi chapter.

**14. Membership in organizational / national / international committees.**

| <b>Member of Professional Bodies</b>                              | <b>Class of Membership</b> |
|---|----------------------------|
| H-4 committee of IRC on –Ground improvement, Embankment, Drainage | Subcommittee member        |
| Indian Geotechnical Society, All India                            | Life Fellow                |
| Indian Geotechnical Society Delhi chapter                         | Life member                |
| Indian Road Congress  | Life Member                |

डॉ अनिल कुमार सिन्हा  
वरिष्ठ प्रिन्सिपल वैज्ञानिक