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Dr Hash Kr. Verma, Scientist-G and Head of Section, Mining Science Research Group, CSIR-CIMFR Bilaspur Centre is having expertise in the domain area of rock excavation engineering and underground construction. Driven by his proficiency in geotechnical engineering, he has successfully completed more than 75 projects of national importance, particularly in the strategic, defence, mining, and civil infrastructure sectors.

Safe and successful demolition of the Supertech Twin Tower in NOIDA on August 28, 2022, showcased a classic and remarkable display of his expertise in use of controlled blasting techniques, garnering attention all across the globe. As a Project Leader of the CIMFR team, Dr Verma provided crucial guidance to the executing agency, ensuring safe blast designs and meticulous measures and instrumentation plan to prevent any structural distress to nearby buildings.

Dr Verma has completed number of sponsored and applied research projects which includes Grant-in-Aid Research Projects funded by the Ministry of Mines and Coal Ministry, Govt of India, major lab projects and over 100 projects sponsored by various industry and Govt departments/PSU. As an outcome of research works Dr Verma have obtained a patent (Patent Number 263217) for the development of a novel rock excavation Technique designed for underground coal mines. One of Research Project funded by Coal Ministry on explosive performance has been accepted as a reference book in the library of the International Society of Explosive Engineers (ISEE Library, USA). As a member of the expert committee constituted by the Hon'ble Supreme Court of India and National Green Tribunal, Dr Verma have comprehensively investigated various environmental impact-related issues of drill and blast system as well as Heavy Earth Moving Machineries (HEMM) on the structural integrity of Chittorgarh Fort Complex and housing structures nearby mine sites.

His noteworthy contributions also extend to the defence sector. A joint research project of DRDO, Project DHARASHTRA envisages development of technology for using DHARA (Earth) as ASHTRA (Weapon), is being led by him from CIMFR Team. A top-secret status classified project SP-01 is an ambitious defence project of Govt of India. Dr Verma contributed by proving optimized rock

excavation techniques for construction of the large size underground caverns for defence use.
DR Verma have contributed in various large infrastructure projects of national importance, spanning the domains of Hydropower, Highways, Railways, and Metro Projects. Noteworthy projects are Tehri-Underground Hydropower Complex, construction of the Kalvadevi and Budhwarpet Underground Metro Station Projects, India's longest 9.34 km long Shayama Prasad Mukherjee bidirectional highway tunnel and Z-Morh Tunnel of NHAI.

Presently Dr Verma is executing strategic projects such as development of Navi Mumbai International Airport Project, Navi Mumbai Rishikesh-Karnprayag Rail Line Project of RVNL, and Chardham Road Projects of NHAI. His contribution in the timely completion of the Shree Mandir Parikrama Project of Bhagwan Jagannath, Puri and development of Ekamra Kshetra Amenities and Monuments Revival Action (EKAMRA) project, Bhubaneshwar have earned appreciation from Shree Jagannath Temple Administration (SJTA), Puri.

In the academic sphere, as a Professor at the Academy of Scientific and Innovative Research (AcSIR) where He is actively supervising the research works of four PhD students. There are more than 90 research papers to his credit in the form of book books/book chapters, journal articles, and conference research papers.

Dr Verma is also Professor of Practice in IIT(ISM) Dhanbad, NIT Raipur and delivered invited lecture in IIT Roorkee, other International and national and forums. He has organized two international training program with IIT Roorkee and three national workshops/training. He is also member of BIS Committee CED 48 which defines codes for Tunneling and standards on Rock Mechanics for tunnel and underground construction. He has wide travel experience to countries US, Sweden, Singapore, Czech, Malaysia etc. Through impactful contributions, Dr have earned recognition and prestigious awards from both the industry and academia. Noteworthy accolades include the prestigious National Geoscience Award -2023 by given away by Hon'ble President of India, CSIR Technology Award 2018, Prof. H R Ani Reddy Memorial Golden Jubilee Award, the Best TechnicalPaper Awards by the Indian Society of Rock Mechanics and Tunneling Technology (ISRMTT) published in Journal of Rock Mechanics and Tunneling Technology, and the Indian Society of Engineering Geology (ISEG). Moreover, Elsevier and other international publishing houses have given commendation letters for his research acumen, recognizing his outstanding contributions to the review process of research papers. These acknowledgements reflect his significant impact in both the scientific as well as industry communities. More recently Dr Verma has been awarded by the TunnelTech 2026 award in presence of luminaries of tunneling industry.

Detailed education profile, research experience, patents and publications and major project completed by Dr Verma are as follows:

Education

Degree	Year of Passing	University/Instt.	Specialization
BE (Mining Engg.)	1999	Govt. Engg. College, Bilaspur	Mining Engineering
M.Tech.	2007	Visvaraya National Instt. of Technology Nagpur	Mining Engineering
Ph.D.	2015	Indian Institute of Technology, Roorkee	Civil Engineering

Employment Details

Grade/Post	From	To	Estt/Lab/Instt.
Research Fellow	Nov. 1999	Dec. 2001	National Institute of rock Mechanics, Kolar Gold Field (KGF), Bengaluru, India
Scientist	Dec. 2001	March 2004	Explosive & Explosion Laboratory, CIMFR Dhanbad, India
Sr. Scientist & Pr. Scientist	April 2004	Nov 2019	Centre of excellence in Underground Space Technology, CIMFR Regional Centre, Roorkee
Sr. PR. Scientist & Scientist-G	Dec 2020	Contd.	Mining Science, Underground Engineering, Tunnel Engg. at CIMFR Research Centre Bilaspur

PATENT: 01

Title : A method for solid blasting in underground coal mines

Patent Number : 263217

Application Number : 1538/DEL/2005

Issue Date : 2014-10-14

File Date : 2005-06-14

International Classification: E21C 37/14

National and International Awards:

i. Tunnel Tech Award 2026
ii. National Geoscience Award – 2023
iii. CSIR Technology Award 2018
iv. Prof H R Ani Reddy Memorial Award 2022
v. ISRM Best Paper Award (03)
vi. ISEG Best Paper Award (01)
vii. Appreciation Letters from THDC India Ltd., Rail Vikas Nigam Ltd. and L&T Chennai

PhD Supervision:

i. Mr. Somath, IIT Roorkee
ii. Mr. Pushpendra Patel, NIT Rourkela
iii. Mr. Rahul Verma, AcSIR/ DST-INSPIRE Fellow
iv. Mr. Shubham Singh, UPES Dehradun
v. Mr. Shashank Bhatnagar, Scientist, CSIR-CBRI Roorkee

National Programs Organised

i. National Workshop on Tunnel Engineering, 10-12 October 2018
ii. National Conference INDOROCK 2011, 13-15 October 2011
iii. Short Term Course on Underground Engineering, 15-17 Feb 2010

Publications Details

Books and Book Chapters

1. Verma, H K. (2024). Excavation Damage Zone in an Underground Opening, Proceedings of the 2nd International Conference on Geotechnical Issues in Energy, Infrastructure and Disaster Management, ICGEID 2024, January 18–20, IIT, Patna, India, Lecture Notes in Civil Engineering, LNCE, volume 475, ISBN 978-981-97-1759-0, Springer Singapore (Chapter: 01; 16 pages)

2. Murmu, S., Maheshwari, P and Verma, H K. (2019) Modelling of blast induced damage distance for underground Tunnel. Lecture Norte series in Civil Engg: GeoIndus: Proceeding of Indian Geotechnical Congress Series Vol. 133, (IGC-2019 Volume I), DOI: 10.1007/978-981-33-6346-5, Series ISSN 2366-2557, Springer Singapore (Chapter 01; 12 pages)

3. Singh, M. Samadhiya, N.K, Goel R. K., Dwivedi R D. and Verma, H. K. (2011). Proc. Nat. Conf. on 3rd Indian Rock Conf. INDOROCK 2011, Indian Society of Rock Mechanics and Tunneling Technology, ISRMTT India.(Proc. Volume Pages 434)

International (SCI) Journal:

1. Verma, H. K., Samadhiya, N. K., Singh, M. and Prasad, V. V. R. (2014) Blast Induced Damage to Surrounding Rockmass in an Underground Excavation, International Journal of Geological Resources and Engineering, Vol. 2, No. 1, pp. 13-19. DOI: 10.17265/2328-2193/2014.01.002. (I.F. – 2.9)

2. Rana, A., Kalla, P., Verma, H.K., Mohnot, J.K. (2016). Recycling of dimensional stone waste in concrete: A review, Journal of Cleaner Production 135 (2016) 312-331. (I.F. – 9.8)

3. Murmu, S., Maheshwari, P. and Verma, H.K. (2018). Empirical and Probabilistic Analysis of Blast-Induced Ground Vibrations, International Journal of Rock Mechanics and Mining Sciences, 103 (2018) 267–274. (I.F. – 7.0)

4. Verma, H.K., Samadhiya, N.K., Singh, M., Goel, R.K. and Singh, P.K. (2018). Blast Induced Rock Mass Damage Around Tunnels, Tunneling & Underground Space Technology, 71 (2018) 149–158. (I.F. – 6.7)

5. Singh, A.K.; Kundu, J.; Sarkar, K; Verma, H.K.; Singh, PK (2021) Impact of rock block characteristics on rockfall hazard and its implications for rockfall protection strategies along Himalayan highways: A case study. Bulletin of Engineering Geology and the Environment, 80: 5347–5368. (I.F. – 4.3)

6. Nath, S., Tripathi, A.; Singh, A. K., Verma, H. K., Rai, N. (2025). Blast damage induced degradation in rock mass parameters of Himalayan jointed rock slopes- A parametric study. Journal of Earth System Science. 134, 87. https://doi.org/10.1007/s12040-025-02542-0 (1.6)

7. Nath, S., Singh, A. K., Verma, H. K., Chaudhary, S., & Rai, N. (2024). Coupled effect of joint orientation and blast-induced damage zone on the stability of jointed rock slopes. Natural Hazards, 1-25. https://doi.org/10.1007/s11069-024-07080-4 (IF: 3.3)

8. Nath, S., Tripathi, J. N., Upadhyay, V., & Verma, H. K. (2024). Ground Water Potential Zone Estimation Using Vertical Electrical Sounding (VES) in Some Parts of Bundelkhand Region of Jhansi District of Uttar Pradesh, India. American Journal of Water Resources, 12(3), 77-85. (IF 2.6)

9. Verma, H.K., Singh, A.K., Patel, P. et al. Attenuation characteristics of mechanical vibrations and its effect on heritage structures of Chittorgarh Fort Complex, India. J Earth Syst Sci 134, 140 (2025). https://doi.org/10.1007/s12040-025-02582-6.

10. Singh, S., Nayak, N., Aggarwal, A., & Verma, H. (2025). Role of remote sensing and geotechnical studies in assessing the landslide vulnerability in the Chamoli region of Uttarakhand, India. Discover Applied Sciences, 7. https://doi.org/10.1007/s42452-025-06498-0.

11. Singh, S., Nayak, N. P., Aggarwal, A., & Verma, H. K. (2025). A Technical Evaluation of Landslide Vulnerability Using Analytical Hierarchy Process (AHP) and the Frequency Ratio (FR) Methods for Chamoli Region of Uttarakhand, India. Geological Journal, n/a(n/a). https://doi.org/10.1002/gj.70045

12. Singh, S., Nayak, N.P. & Das, P.K. (2026). Preliminary assessment of landslide vulnerability of road-cut slopes along the Garhwal Himalayas, using landslide possibility index (LPI) approach. Interactions 247, 57 (2026). https://doi.org/10.1007/s10751-026-02396-y

13. Singh, S., Nayak, N. P., Aggarwal, A., Verma, H. K., Singh A.K. & Das, P.K. (2026). Comparative Multi-method Evaluation of Rock Slope Stability along a Himalayan Transportation corridor in the Chamoli district of Uttarakhand, India – Geology and Geotechnical Journal (Communicated)

Journals (Scopus / UGC-care listed)

1. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R., and Goel, R.K. (2011). Quality Assurance in Construction Blasting, Journal of Engineering Geology, Vol. 37, Nos. 1-4, pp. 373-381.
2. Verma, H. K., Goel, R. K., and Prasad, V. V. R. (2013). Assessment and Mitigation of Blast Induced Vibration and Overbreak in Kol Dam Hydroelectric Power Project, India – A Case Study, Journal of Rock Mechanics and Tunnelling Tech, Vol. 19 No. 1, pp. 47-59.
3. Verma, H. K. and Thote, N. R. (2013). Investigation of Delay Time Precision in Pyrotechnic Detonators, Journal of Rock Mechanics and Tunnelling Technology, Vol. 19 No. 1, pp. 19-29.
4. Verma, H. K. (2014). Controlled Blasting Techniques for Development of Road Infrastructures in Hilly Region, Hydro-Tech, Vol. 4, No. 1, pp. 43-50.
5. Verma, H. K., Samadhiya, N. K., Singh, M. and Prasad, V. V. R., (2014) Investigation of Excavation Damage Zone in Himalayan Tunnel, Jr. of Mines, Metals and Fuels, Vol. 62, No. 7, pp. 196 – 200.
6. Verma, H.K. Samadhiya, N.K., Singh, M. and Goel, R.K. (2015). Extent of rock mass damage induced by blasting, Int Golden Jubilee Conf Engineering Geology in New Millennium EGNM-2015, Special Issue of Journal of Engineering Geology, October, New Delhi, pp.946-958.
7. Verma, H.K., Samadhiya, N.K., Singh, M. and Prasad, V.V.R., and Goel, R.K. (2015). Investigations of Rock Mass Damage Induced by Blasting in Tunnelling, Journal of Rock Mechanics & Tunnelling Technology (JRMTT), Vol. 22, No. 1, pp.49-61.
8. Verma, H. K. (2015). Controlled Blasting Techniques for Development of Road Infrastructures in Hilly Region. J. of Hydro-Tech, Vol. 4, No. 1, pp. 43-50.
9. Verma, H. K., Singh, K., Rana, S. and Singh, O. (2016). Deterioration in rock mass properties due to blasting operations in underground excavations, Journal of Hydro-Tech, Vol IV, No. II, pp. 15-24.
10. Verma, H K., Patel, P. and Singh S. (2021) Application of controlled blasting techniques for development of stable slope- A case study, 2021, Journal of rock mechanics and tunneling technology (JRMTT), ISRMTT India, Vol. 27, No. 2, pp. 103 -119*

    (*This paper has been adjudged as a Best Technical Paper for the year 2021 under Rock Blasting and Rock Dynamics category by the Indian Society of Rock Mechanics and Tunneling Technology).
11. Verma, H. K. (2022) Investigation of blast-induced damage zone in rock mass around underground openings, Civil Engineering & Construction Review, India, Vol. 35, No. 1, pp. 44-52.
12. Verma, R., Verma, H. K., Singh, A.K (2022), Hazard analysis of rockfalls from high wall slopes in opencast mines - a case study of Dadam Quartzite Mine, Haryana, India, The Indian Mining & Engineering Journal, India, Vol. 61, No. 09, pp. 12-17

13. Verma, H. K. (2023), Characterisation of Excavation Damage Zones around an Underground Opening, Civil Engineering & Construction Review, India, Vol. 47, No. 1, pp. 27-35
14. Nath S, Singh A. K., Kundu J, Verma H.K., Dwivedi RD, Rai N (2023) Correlating textural parameters with joint roughness for Himalayan Schist and Gneissic rocks. Journal of Rock Mechanics and Tunnelling Technology, 29 (1): 49-66
15. Verma, H.K. (2023) Assessment of damage potential of vibration induced by HEMM used in construction of Shree Mandir Parikrama Project, Puri, The Indian Mining & Engineering Journal, India, Vol. 62, No. 01, pp. 23-30
16. Verma H.K. (2024) Assessment of structural cracks in houses near tunnel construction: Case study of the Singoli-Bhatwari Hydroelectric Project in the Himalayas. Tunnel Times India, Vol. 1(2): 96-106.

International Conference

1. Nath, S; Verma, H.K.; Singh, A.K.; Rai, N (2024) Blast-damage induced degradation in rock mass parameters of Himalayan jointed rock slope- A parametric study. Presented in 4th European Regional Conference of IAEG for Richard-Walter Prize Competition 2024, 8-12 October 2024, Dubrovnik, Croatia.
2. HK Verma, AK Singh, P Patel, R Verma, N Kumar, CK Sharma (2023) Engineering rock blasting operations for construction of tunnels with thin rock ledges in poor rock masses. In: International Conference on Sustainable Development of Pumped Storage Hydro Power Projects – Geotechnical Challenges, EGCON 2023, Noida, India.
3. S Nath, HK Verma, AK Singh, N Rai (2023) Microscopic characteristics of blast-induced damage zones in rock masses. AGU Annual Meeting 2023, San Francisco, USA.
4. Nath, S; Verma, H.K.; Singh, A.K.; Rai, N (2023) Study of Blast-Induced Damaged Impact on Weak Rock Mass Stability. In: proceeding of 9th Indian Rock Conference- Indorock-2023, CSMRS, New Delhi, India.
5. Nath, S; Singh, A.K.; Verma, H.K.; Rai, N (2023) Effect of blast damage zones on the stability of a Himalayan highway cut-slope _ continuum modelling approach. In: 15th International ISRM Congress 2023 & 72nd Geomechanics Colloquium, Salzburg, Austria.
6. Ghosh, P.; Verma, H.K.; Singh, A.K.; Patel, P.; Kansal, A. (2022) Excavation of large underground surge shaft of Tehri Pump Storage Project, India. In 9th Asian Mining Congress & Exhibition (IME) 2022, Kolkata, India.
7. Kansal, A; Ghosh, P; Verma, R; Singh, A.K.; Patel, P; Verma, HK (2021) Blast design optimization for construction of large tunnels near operating hydromechanical equipment: A case study of THDC-PSP Tehri Project. In E-proceeding: International Conference on Recent Advances in Geotechnics (EGCON)-2021, pp. 419.
8. Verma, H. K., Singh, P. K., Swarup, A. Arora, H. L. and Singh D. V. (2018). Overbreak in Underground Excavations - Some Key Insights, Proc. Intl. Conf. FRAGBLAST-12, 11-13 June, Lulea, Sweden,
9. Verma, H.K., Singh, P. K., Bhardwaj, A. and Sharma, V. (2018). Impact of blasting on surrounding rock mass properties, Proc. Intl. Conf. FRAGBLAST-12, 11-13 June, Lulea, Sweden, pp. 189-199.

10. Singh, S. K and Verma, H. K. (2019) Underground constructions in urban-built environment- some key insights, Proc. Intl. Conf. Energy and Environment: Challenges and Opportunities (ENCO- 2019), Organised by CSIR- Central Institute of Mining and Fuel Research, New Delhi, Vol. 2, pp. 898-907.

11. Verma, H. K., Tiwary, R K, Roy, P. P., Swarup A., Singh P. K. and Singh, S. K. (2019) Impact of mining operations on surrounding environment and structural health of monuments., Proc. Intl. Conf. Energy and Environment: Challenges and Opportunities (ENCO- 2019), Organised by CSIR- Central Institute of Mining and Fuel Research, New Delhi, Vol. 1, pp. 346-357.

12. Verma, H. K., Pandey, Y. and Roy P Pal (2016). Mining Near World Heritage Site – A Case Study of Limestone Mining Near Chittorgarh Fort Complex, Proc. 6th Asian Mining Congress organized by The Mining Geological and Metallurgical Institute of India (MGMI), 23 – 26 February 2016, Kolkata, India, pp. 265-274.

13. Verma, H. K., Dwivedi, R. D. Roy, P. Pal and Singh, P. K. (2016). Underground Excavations: Causes, Impact and Control of Overbreak, Int. Conf. on Recent Advances in Rock Engineering (RARE-2016) to be organised by National Institute of Rock Mechanics during 16 – 18 November 2016, pp. 29-34doi:10.2991/rare-16.2016.4

14. Verma, H.K., Samadhiya, N.K., Singh, M. and Prasad, V.V.R., and Goel, R.K. (2015). A Simple Correlation to Compute Extent of Rock Mass Damage Induced by Blasting in Tunnelling, Intl. Sym. on Rock Fragmentation by Blasting, FRAGBLAST-11, 24-26 August, Sydney, Australia.

15. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R. and Goel, R.K. (2014). Blast Induced Damage Assessment in Underground Construction, Proc. World Tunnel Congress – 2014, May 9 -15, (Iguassu Falls – Brazil) Foz do Iguaçu, Brazil, South Africa, pp. 260 -269.

16. Verma, H. K., Prasad, V. V. R. & Sinha A. (2013). Investigation of cracks in the Domestic Houses in Hilly Terrain, Proc. Intl. Conf. 39th Annual Conference on Explosives & Blasting Technique, February 10-13, Texas, CA USA

17. Mohnot. J., K. and Verma, H., K., (2013). Blast Design Optimisation for construction of Large Desilting Chambers- A case study. Proc. Intl. Conf. on Tunnelling Asia' 2013, 26-28 Feb. 2013, CBIP, New Delhi, pp. 164-176.

18. Prasad, V. V. R., Verma, H. K., Goel, R. K., Dwivedi, R. D., Swarup, A. and Roy, P. P. (2013). Impact of Tunnel Blast Vibration on Domestic Houses along Head Race Tunnel of Singoli-Bhatwari Hydroelectric Power Project in Himalaya, India, Proc. 12th Intl. Conf. on Underground Construction 2013, Prague, Czech Republic, 22-14 April 2013, ISBN 978-80-260-3868-9, pp. 71.

19. Verma, H. K., Goel, R. K.& Prasad, V. V. R. Dutta, S., Bhardwaj, A., Upadhyay, K. C. (2012). Investigation of Cracks in Domestic Houses near Construction Project in the Himalaya, India - A case study, Proc. Intl. Conf. Rock Fragmentation by Blasting (Fragblast 2012), Organised by Central Institute of Mining and Fuel Research, Dhanbad, New Delhi, India

20. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R. and Goel, R.K. (2011). Quality Assurance in Construction Blasting, Proc. Intl. Conf. of Underground Space Technology (ICUST- 2011), Bangaluru, Jan. 17-19, Organized by NIRM, India, pp. ME (02), 1- 9.

21. Verma H.K., Samadhiya, N.K. Singh, M. and Prasad, V.V.R. (2011). Pre-Split Economics and Practices in Kol Dam Hydroelectric Power Project, India – A Case Study, Proc. Intl. Conf. of Underground Space Technology (ICUST- 2011), Bangaluru, Jan. 17-19, Organized by NIRM, India pp., pp ME (08) 1-12.

22. Verma H.K., Samadhiya, N.K. Singh, M. and Prasad, V.V.R. (2011). Application of Controlled Blasting Techniques in Kol Dam Hydroelectric Power Project, India – A Case Study, Proc. Intl. Conf. 37th Annual Conference on Explosives & Blasting Technique, February 6 - 9, San Diego, CA USA

National Conference

1. Verma H.K, D. S. Rajpurohit, Pravin, P. K., Kumar M. and Prasad, V.V.R., (2011). Influence of road construction activities using explosives on landslide hazard. Proc. Nat. Conf. on Landslide Hazards-Consequences & Challenges, Central Building Research Institute, Roorkee, India, Feb 10-12.
2. Verma H. K, Pravin, P. K., Rajpurohit, D. S. and Prasad, V.V.R., (2011). Advances in Blast Initiating Devices. National Conference on Advances in Mine Production and Safety, Central Institute of Mining and Fuel Research, Dhanbad, India, April 15-16.
3. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R. and Goel, R.K. (2011). Practical Approaches for Reducing Blasting Complaints and Blast Induced Damage, Proc. Third Indian Rock Conference-INDOROCK-2011, 13-15 October, IIT Roorkee, Roorkee, India.
4. Verma H.K. and Prasad, V.V.R. (2011). Human Response and Blasting Complaints, Proc. Nat. Conf. On Mining Technology for Sustainable Development - "MineTECH'11" November 18-19, National Institute of Technology, Raipur, India.
5. Verma H K. (2011). Developments in blast hole geometry, initiation sequence and flyrock control, Workshop on Drilling and Blasting for Surface and Underground Excavation, August 11-12, CBIP, New Delhi, India
6. Verma H K., (2012). Construction Blast Vibration - Measurement, Assessment and Control, Proc. Nat. Conf. on Geotechnical Challenges in Water Resources Projects, organized by CBIP, 19-20 January 2012, Dehradun (Uttarakhand), INDIA
7. Verma H K., (2012). Advances in Blasting Techniques for Underground Excavations. Proc., Training Course on "Rock Engineering and Tunnelling", organized by Indian Society for Rock Mechanics and Tunnelling Technology (ISRMTT) and CSMRS, New Delhi, October, 03 – 05,
23. Verma, H. K., Thapliyal, A., Singh, D., Verma, A., Goel, R. K. and Prasad, V.V.R., (2012). Excavation Techniques for Development of Road Infrastructures in Hilly Terrain, Proc. 28th National Convention of Civil Engineers and National Seminar on Role of Infrastructure for Sustainable Development (RinforSD- 2012), The Institution of Engineers (India) Roorkee Local Centre IIT Campus, Roorkee 247 667 (Uttarakhand), October 12-14, 2012, pp. 102-111
8. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R. and Goel, R.K. (2013). Blast Induced Damage to Surrounding Rock Mass in an Underground Excavation, Proc. of Indian Geotechnical Conference, December 22-24, 2013, IIT Roorkee, Roorkee, India.
9. Roy P Pal, Verma, H. K., & Pandey, Y. (2014). Mechanical Mining Near World Heritage Site - Important Issues, Proc. Intl. Conf. on Environmental Management and Current Practices in Mining and Allied Industries, (EMPM – 2014), Feb. 13- 15, IIT(BHU), Varanasi, India, ISBN 978-81-87760-20-7, pp. 577-589.
10. Verma, H. K., Samadhiya, N.K., Singh, M., Prasad, V.V.R. (2014) Excavation damage Zone in an Underground Excavation, Proc. Vth Indian Rock Conference INDOROCK-2014, CSMRS New Delhi, Nov. 12-14, pp. 120 – 129
11. Verma, A., Singh, K., Rana, S., Keshwanand and Verma H.K. (2014). Improving productivity and Safety by Blast Design Optimization at Ratle Hydroelectric Power Project, Proc. Vth Indian Rock Conference INDOROCK-2014, CSMRS New Delhi, Nov. 12-14, pp. 130 – 141.
12. Verma, H. K., Swarup, A. and Dwivedi, R. D. (2015). Controlled blasting techniques for development of road infrastructures in hilly terrain, Proc of Seminar on RR and CSR Impact on Mining, Institution of Engineers, 01-02 Dec., Shillong.

13. Verma, H. K., Pandey, Y. and Chauhan P K S (2016). Evaluation of Damage Potential of Ground Vibration Induced by HEMM, Proc. Nat. Conf Recent Practices and Innovations in Mining Industry, NIT Raipur, Chhattisgarh, India, Feb. 19-20, pp 439 - 446.

14. Verma, H. K. (2016). Developments in Blast Design, Initiation Sequence and Charge Patterns for Underground Excavation, Workshop on Advances in Drilling & Blasting and Support System and Applications in Tunneling & Cavern Projects. Organized by Engineering Staff College of India, Hyderabad, March 21-24, pp. 30-47.

15. Verma, H. K. (2016). Tunnel Blast Design and Blast Performance Evaluation in Underground Excavation, Workshop on Advances in Drilling & Blasting and Support System and Applications in Tunneling & Cavern Projects. Organized by Engineering Staff College of India, Hyderabad, March 21-24, pp. 47-69.

16. Verma, H.K., Singh, S.K., Dutta, S.K., Bhardwaj A., Upadhyay, K.C., & Chakraborty, P. (2016). Influence of Blast Design Parameters on Rock Mass Damage in an Underground Excavation, Proc. INDOROCK 2016, JUNE 17-18, IIT Bombay, Mumbai, pp.1079-1094.

17. Pandey, Y., Verma, H K., Chourasia, A. and Chauhan, P. K. S. (2016). Investigation of Blast Loading on Heritage Structures– A Case Study of Chittorgarh Fort Complex, Proc. Nat. Conf. Advance in Repairs and Rehabilitation, Sept. 22-23, CSIR-CBRI Roorkee, pp. 285-298.

18. Verma, H K., Roy, P. Pal, Tiwary, R. K. and Pandey, Y. (2017). Investigations of Impact of Mining Activities on Heritage Structures - A Case Study of Chittorgarh Fort Complex. Proc. Intl Conf. Next Generation Technologies for Mining and Fuel Industries, Vigyan Bhavan, New Delhi, organised by CSIR-CIMFR Dhanbad, Feb. 15-17, pp. 785-796.

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37. रमाधर द्विवेदी, रजनीश गोयल, अनिल स्वरूप एवं हर्षवर्मा (2015). सुरंगो पर भूकम्प का प्रभाव : ऐतिहासिक मामलों की समीक्षा।आवास प्राकृतिक आपदा एवं जलवायु परिवर्तन की चुनौतियाँ नाम संगोष्ठी की कार्यवाही संकलन, संपादक: प्रदीप चौहान और सुबीर सिंह, 10-11 दिसंबर, सी. बी. आर. आई. रुड़की।
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Major R&D and Industry Sponsored Research Projects

Title of the Project	Category Grant-in-aid, Sponsored, Collaborative, Consultancy, etc. (Project Code)	Project Cost (Rs. Lakh)	Role
Projects of National Importance/ (Strategic and Defense Sectors)			
Project DHARASHTRA: Rock mass characterisation and numerical modelling of slopes subjected to blast loading	Grant-in-Aid GAP-7040/20-21	19.46	Project Leader
Review of Implosion Techniques for **Safe Demolition of Supertech Twin Towers, NOIDA**	Sponsored Research Project (SSP/B/806/23-24)	24.50	Project Leader
Scientific study on controlled blasting operations and supervision of blast induced ground vibration during rock excavations for U/g Construction Project Site at Vishakhapatnam, Andhra Pradesh (**Classified SP-01 Project, Vishakhapatnam)**	Sponsored Research Project SSP/R/414/19-20	184.93	Project Leader
Design and supervision of blasting operation for land development project at **New Mumbai International Airport Project**, CIDCO, Mumbai.	Sponsored Research Project SSP/769/23-24	223.32	Team Member
Advice on Tunnel supports and application of controlled blasting technique for construction of new Saranda Tunnel Between the Mumbai-Howrah Line of the Indian Railway.	Consultancy (CNP/R/4665/2017-18)	36.25	Project Leader
Geotechnical Investigations of **Rishikesh- Karnprayag Rail Link Project**	Sponsored Research Project (SSP/R/242/2017-18)	44.13	Team Member
Advice on the Design of **Z-Morh Highway Tunnel** in the State of Jammu & Kashmir	Consultancy (CNP/R/4668/17-18)	50.34	Team Member
Design of **Chenani-Nashri Highway Tunnel** of NHAI in the State of J&K	Consultancy (CNP/R/4008/14-15)	71.91	Team Member
Project in Hydropower and Renewable Energy Sector			
Evaluation of blast-induced damage by monitoring of blasting vibration and optimisation of controlled blast design parameters during underground excavation in THDC Underground hydropower complex of Tehri-PSP Project of THDC India Ltd	Sponsored Research Project (SSP/B/589/21-22)	86.63	Project Leader
Study on Optimization of Controlled Blast design parameters for construction of underground structures at Vishnugaad Pipalkoti Hydroelectric Power Project, Pipalkoti, ,Joshimath, Uttarakhand	Sponsored Research Project (SSP/B/471/20-21)	38.39	Project Co-Ord.
Assessment of engineering behavior of underground structures of THDC Hydropower complex by geotechnical instrumentation.	Consultancy (CNP/R/4515/16-17)	14.10	Project Leader
Evaluation of blast-induced ground vibration & air overpressure (AOP) and their influence on surrounding structures during excavation of head race tunnel of Singoli-Bhatwari Hydro-Electric Project	Consultancy (CNP/R/3511/12-13)	20.08	Project Leader
Blast design Optimisation and supervision of blasting operation for rock excavation (Surface and Underground excavations) during construction Greenko's Pinnapuram PSP Project, Kurnool, Andhra Pradesh	Sponsored Research Project (SSP/B/588/21-22)	52.03	Project Leader
Assessment and Mitigation of blast-induced ground vibration and Optimization of Controlled Blast design parameters during rock excavation of Desilting Chamber at Vishnugaad-Pipalkoti Hydroelectric Power Project, Pipalkoti, Joshimath, Uttarakhand (Five Phase during 2014 – 2023).	Sponsored Research Project (SSP/B/755/23-24)	119.07	Project Leader

Assessment and Mitigation of Blast-induced Ground Vibration & Air Overpressure and Implementation of Controlled Blasting Technique (SFT, Dam and Barrage Package) at Tapovan Vishnugad Hydro Electric Power Project for Construction Package of RPPL)	Consultancy (CNP/R/4265/15-16)	29.52	Project Leader
Evaluation of Damage Potential of Blast Induced Ground Vibration and Air Overpressure at Ratle Hydro Project, Drabshala, Kishtwar, J&K	Sponsored Research Project SSP/R/16/13-14	16.35	Project Leader
Scientific Study of Blast Vibration Study & Controlled Blast Design Pattern for Rock Excavations of 240 MW JSW-Kutehr Hydro Electric Project, Chamba, HP	Sponsored Research Project (SSP/B/590/21-22)	14.73	Project Leader
Evaluation of Blast-induced Ground Vibration and Air Overpressure at Kishanganga Hydroelectric Power Project, Bandipora, J&K.	Consultancy (CNP/R/3450/12-13)	5.75	Project Leader
Design of Controlled Blasting Techniques for Excavation of Head Race Tunnel of Tapovan Vishnugaad Hydro-Electric Project.	Consultancy *CNP/R/3683/2013-14*	13.30	Project Leader
Evaluation of Blast-induced Ground Vibration and Air Overpressure during Rock Excavation at Lata-Tapovan Hydro-Electric Project	Consultancy (CNP/R/3777/13-14)	13.96	Project Leader
Scientific Study on Control Blasting Techniques for Rock Excavation in Spillway Channel of RSP Project, Rudri, CG.	Sponsored Research Project (SSP/B/700/22-23)	21.54	Project Leader
Highway/ Railway and Metro Projects			
Scientific Study for Construction of Underground Kalvadevi Metro Station using NATM Approach for UGC-02 Package of HCC-MMS JV for Mumbai Metro Line-3	Sponsored Research Project (SSP/B/477/20-21)	102.13	Project Leader
Scientific Study and Advice on Controlled Blasting Techniques for NATM Excavation of Budharwarpet Metro Station of Pune Metro Project	Sponsored Research Project (SSP/B/633/22-23)	10.04	Project Leader
Study on Optimization of Controlled Blast Techniques for Construction of Kalvadevi Metro Station of Mumbai Metro Line 3	Sponsored Research Project (SSP/B/631/22-23)	65.31	Project Leader
Design Methodology for Excavation in 5th and 6th Railway Line between Thane and Diva Section of Central Railway	Consultancy (CNP/R/3518/12-13)	43.27	Co-Project Leader
Assessment and design of seepage control measures in Parsik Tunnel of Central Railway, Mumbai	Sponsored Research Project (SSP/R/201/2017-18)	4.99	Team Member
Study on Optimisation of Controlled Blast Design Parameters for Rock Excavation Works during Construction of NHAI-Bharatmala Highway Project, Dhamtari (CG)	Sponsored Research Project (SSP/B/791/23-24)	15.54	Project leader
Stability analysis of tunnels in Panvel-Karjat double railway line corridor using numerical approach	Sponsored Research Project SSP/R/424/2019-20	34.22	Team Member
Study on the treatment of seepage and block failure problems in Tunnel No.-23 on Koraput-Rayagada BG Line of East Coast Railway	Sponsored Research Project SSP/R/987/24-25	9.98	Team Member
Sponsored and Applied Research Projects in Mining Sector			
Scientific Study on Characterization of Flyash and Flyash Dump Stability in Harad Mine out Void within Jamuna Open Cast Mines of SECL	Sponsored Research Project (SSP/B/793/23-24)	19.75	Project Leader

Scientific study to control and minimize Ground Vibration, Fly rocks and associated hazards during blasting for Grant of Environment Clearance for M/s National Lime Stone Company (ML No 259/94), Jaipur (Rajasthan)	Sponsored Research Project (SSP/B/758/23-24)	5.72	Project Leader
Optimisation of the Blast Design Parameters and Blast Vibration Study at Dadam Mine of M/s Goovardhan Mines and Minerals, Khanak, (Hisar) Haryana	Sponsored Research Project (SSP/B/632/22-23)	12.62	Project Leader
Scientific Study on Evaluation of Blast-induced Ground Vibration & Air Overpressure at Bahali Limestone Mine (Ml. No. 613/90 & Ml No. 301/90), Alwar, Rajasthan	Sponsored Research Project (SSP/B/692/22-23)	5.07	Project Leader
Scientific Study on Environmental Impact of Blasting and its Mitigation Measures for Mine Lease No. 150/2006 at Odhiyakheda, Bhilawara Distt., Rajasthan.	Sponsored Research Project (SSP/B/701/22-23)	5.07	Project Leader
Advice on the optimization of blast design parameters and design of slope geometry at Khanak stone mine of M/s HSIIDC, Haryana	Consultancy (CNP/R/4676/17-18)	41.74	Project Leader
Scientific Study on Characterization of Flyash and Flyash Dump Stability in Harad Mine out Void within Jamuna Open Cast Mines of SECL	Sponsored Research Project (SSP/B/792/23-24)	19.75	Project Leader
Study and evaluation of trial blast with SME explosives at Sonadih Limestone Mine (ML-1) of M/s Nuvoco Vistas Corp. Ltd. and subdequent optimization of blast design parameters to improve safety and productivity.	Sponsored Research Project (SSP/B/812/23-24)	9.91	Project Leader
Scientific Study on Stability of Pit Slopes at Guda Clay Mine (ML No. 07119931of M/s Associated Soapstone Dist. Co. Pvt. Ltd.	Sponsored Research SSP/B/900/2024-25	8.82	Project Leader
Characterization of Flyash and Evaluation of Flyash Dump Stability for Two Abandoned Coal Mine Void of Minni OCM under Jamuna and Kotma Area of SECL.	Sponsored Research SSP/B/902/2024-25	39.50	Project Leader
Project related to Damage assessment of Heritage Structure and Demolition,			
Scientific Study on Assessment and Mitigation of Ground Vibration Induced by Heavy Earth Moving Machineries used during Construction Works of Shree Mandir Parikrama Project, Puri, Orissa	Sponsored Research Project (SSP/B/673/22-23)	24.70	Project Leader
Evaluation of Ground Vibration induced by Heavy Earth Moving Machines (HEMM) used in Mines near Chittorgarh Fort Complex vis-à-vis its Impact on the Structural Distress of the Heritage Structures	Consultancy *CNP/R/3671/12-13*	11.23	Project Leader
Evaluation of Blast-induced Ground Vibration and Air Overpressure/Noise Level in Mines near Chittorgarh Fort Complex vis-à-vis its Impact on the Structural Distress of the Heritage Structures.	Consultancy *CNP/R/3810/13-14*	23.97	Project Leader
Investigation on Attenuation Characteristics and Damage Potential of Ground Vibration induced by Construction Equipment at Ekamra Kshetra Development Project, Bhubaneshwar, Orissa.	Sponsored Research Project SSP/B/901/24-25	13.76	Project Leader
Mega Coal Quality Projects (Sponsored Research Project)			
Scientific study for quality evaluation of coal for its optimum utilization in power generation for Associated Power Ltd (APL_L-PH-II)	SSP-8216	83.52	Project Leader

Scientific study for quality evaluation of coal for its optimum utilization in power generation for Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (RRVUNL) PH-IV	SSP-8217	272.23	Project Leader
Scientific study for quality evaluation of coal for its optimum utilization in power generation for loading end of Lanco Amarkantak Power Limited-Stage 1 & Stage II	SSP-8218 & SSP-8219	54.52& 59.64	Project Leader
Scientific study for quality evaluation of coal for its optimum utilization in power generation for ADANI Dahanu Thermal Power Station (PH-IV)	SSP-8220	125.17	Project Leader
Scientific study for quality evaluation of coal for its optimum utilization in power generation for SECL Loading ends of NTPC KORBA (PH-X)	SSP-8241	298.00	Project Leader
Scientific study for quality evaluation of coal for its optimum utilization in power generation for DB Thermal Power Station (PH-IV)	SSP-8246	81.44	Project Leader

Delivered Invited Lectures at IIT Roorkee and IIT(ISM) Dhanbad

i. Lecture in a QIP Short-Term Course on "Advances in Rock Excavation Techniques using Drilling and Blasting" sponsored by AICTE and Organised by Civil Engg. Dept., IIT Roorkee from Dec. 26 to 30, 2006.

ii. Lecture on Rock Excavation during four-week course on GEOLOGICAL AND GEOTECHNICAL INVESTIGATION (27th July – 20th August, 2011) at IIT Roorkee)

iii. Lecture on Rock Excavation during Four-Week Training on T-823 Foundation Treatment for Dams and Reservoirs for eleven participants from the Islamic Republic of Afghanistan (September 22, 2011 to October 16, 2011) at IIT Roorkee

iv. NHPC Executive Training Program during 18- 20th March 2013: Tunneling technology with special reference to Blasting Technology, IIT(ISM) Dhanbad.

v. Industry Expert lecture on Impact of Rock Blasting on Slope Stability to graduate/ post-graduate students and Research scholars of Applied Geology Deptt at IIT(ISM) Dhanbad

Members of Professional bodies: I am member of following national and international professional bodies

i. Bureau of Indian Standard (BIS: CED 48)
ii. Institution of Engineers (I)
iii. Indian Geotechnical Society (IGS)
iv. Mining, Geological and Metallurgical Institute (MGMI)
v. Indian Society of Rock Mechanics and Tunneling Technology (ISRMTT)
vi. Mining Engineers Association of India (MEAI)
vii. Tunnelling Association of India (TAI)
viii. International Society of Explosive Engineers (ISEE), and
ix. International Society of Engineering Geology (ISEG)