

Brief Bio-data

1. Name: Dr. Aditya Rana

2. Age: 32 Years

3. Current Position and Address:

Scientist, Rock Excavation Engineering, CSIR-CIMFR, Barwa Road Campus, Dhanbad, 826001. Email: adityarana@cimfr.nic.in; Mob: +919694641232, Tel: 0326-2296029

4. Educational qualifications: (Graduation and above)

S. No.	Degree	Year of Passing	University/Institute	Subject
1	Ph.D.	2017	MNIT Jaipur	Civil Engineering
2	M. Tech	2013	MNIT Jaipur	Transportation Engineering: Roadways, Railways, Tunnels, Ports, Harbours and Airports Construction
3	B.E.	2011	RGPV Bhopal	Civil Engineering

5. Work experience:

Designation	Institute/company	From	To	Nature of Work
Scientist	CSIR-CIMFR	April 2016	Till Date	Research in Rock Blasting
Research Associate	CDoS Research Chair/MNIT Jaipur	April 2013	March 2016	Research/Industrial applications
MHRD Teaching Assistant	MNIT Jaipur	April 2011	March 2013	Assisted in teaching of transportation engineering subjects at the institute

6. Work Area(s)/ Specialization: Rock Blasting, Highway/Railway Engineering

7. Major contributions: Border Roads Organisation has credited his blast designs for enhancement in the progress of formation cutting (hard rock) of strategically important defence roads. DG, Council of Scientific and Industrial Research cum Secretary, Department of Scientific and Industrial Research has also appreciated his technical know-how and scientific expertise on designing blasts for enhanced progress in rock excavation without compromising safety. His studies enabled State of Himachal Pradesh in resolving land use conflict with project affected persons of Sawra Kuddu Hydel Project. His investigations contributed in widening/stabilization of accident-prone rail network in Eastern Central and Konkan Railway.

8. No. of Research Publications:

- Papers in Journals: 12
- In conference proceedings: 08
- Invited lectures delivered at (a) XVII Corps Panagarh, (b) XXXIII Corps Siliguri, (c) Commissioner of Industries, Udyog Bhawan, Government of Rajasthan

- List of recent 05 publications:

1. Aditya Rana, "Expediting the Construction of Himalayan Border Roads", Vijnana Bharti, Science India, 2021, Vol.19 Issue 59, pg 33-34. (Article specially invited and published by Editorial Board of Science India, Vijnana Bharati)
2. Aditya Rana, Siddharth Singh, N.K. Bhagat, M.M. Singh, G.P. Jadaun, P.K. Singh, "Evaluating the sustainability of a hydropower project in the Himalayas: A case study for resolving legal disputes in tribunals", Renewable Energy, 2021, Elsevier, 174, 894-908.
3. Aditya Rana, N. K. Bhagat, G. P. Jadaun, S. Rukhaiyar, A. Pain, P. K. Singh. "Predicting Blast-Induced Ground Vibrations in Some Indian Tunnels: a Comparison of Decision Tree, Artificial Neural Network and Multivariate Regression Methods", Mining, Metallurgy & Exploration, 2020, Springer, 37, 1039–1053.
4. N.K. Bhagat, Aditya Rana, AK Mishra, MM Singh, A Singh, PK Singh, "Prediction of fly-rock during boulder blasting on infrastructure slopes using CART technique" Geomatics, Natural Hazards and Risk, 2021, Taylor & Francis, 12 (1), 1715-1740.
5. N. K. Bhagat, A. K. Mishra, M. M. Singh, Aditya Rana, P. K. Singh. "Innovative Directional Controlled Blasting Technique for Excavation of Unstable Slopes along a Busy Transportation Route: a Case Study of Konkan Railway in India", Mining, Metallurgy & Exploration, 2020, Springer, 37 (3), 833-850.

9. List of 5 Major Contract R&D Projects (as Project Leader/Co-Project Leader):

- Designing of safe and efficient blast design patterns for rock excavation works of different strategic roads of Border Roads Organisation. (2018- till date)
- Study and advice on blast-induced ground vibration due to excavation of additional adit to HRT, Sawra-Kuddu HEP, Hatkoti, HPPCL. (2017-18)
- Excavation and flattening of slopes at Bordave, Ukshi Yard, Agave and Shirasawane cuttings using controlled blasting under the jurisdiction of DGM/SW/RN in Ratnagiri Region, Navi Mumbai. (2019- till date)
- Studying the effects of quarry blasting on Krishnarajasagar Dam. (2021- till date)
- Monitoring of controlled deep hole blasting at Magadh mines. (2021-till date)

10. Name of Patents/Copyrights:

CSIR-CIMFR Blast Guide Mobile Application for Android Smartphones; Easy slope stabilization and monitoring technique using geo-synthetic concrete cement mat and IOT devices.

11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received: K.N Sinha Award 2017; Recognitions from ADG-BRO and DGCSIR for enhancing the progress of strategic defence roads, Fellowships from MHRD and CDoS for M.Tech and PhD studies and a member of The Indian Science Congress Association, The Institution of Engineers and Indian Roads Congress.

12. Societal Contributions:

- i. Acceleration of construction of strategic defence roads.
- ii. Declination of the accident-mortality rate of BRO troops.
- iii. Minimisation of the accidents at Konkan and East Central Railway.
- iv. Resolving the land-use conflict of Sawra-Kuddu hydel project causing an annual revenue loss of 115 Crores to exchequers due to non-generation of 386 million units.
- v. Exploitation of the coal/minerals within the danger zone.