

Brief Bio-data

1. Name : Narayan Kumar Bhagat
2. Date of Birth : 26th February 1975
3. Current Position and Address : Sr. Technical Officer, Rock Excavation Engineering
Email ID: nkbhagat@cimfr.nic.in/
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4. Educational qualifications: (Graduation and above)

Sl. No.	Degree	Year of Passing	University/Institute	Subject
01	Ph.D. Thesis submitted	-	IIT(ISM)	Controlled Blasting
02	Degree in Mining Engineering (AMIE)	2010	IE(I)	Mining
03	Diploma in Mining & Surveying	1998	SBTE Patna	Mining, Surveying

5. Work experience:

Designation	Institute/company	From	To	Nature of Work
Gr. III(1)	CSIR-CIMFR (erstwhile CMRI)	18.07.2002	17.07.2007	R&D assistance in the field of Rock Blasting in mining and civil construction projects.
Gr/ III(2)		18.07.2007	20.07.2010	
Gr/ III(3)	CSIR-CIMFR	21.07.2010	20.07.2013	
Gr/ III(4)		21.07.2013	Till date	

6. Work Area(s)/ Specialization: Rock blasting in mining and civil construction projects, controlled blasting near railway track, advanced blast-induced vibration control, Fragmentation analysis, Explosive quality evaluation and Machine learning techniques in blasting.

7. Major contributions: (Max. 100 words):

- a. Worked to stabilise 55 unstable slopes of Konkan Railway using controlled blasting technique from 2004 - 2021 to achieve accident free railway section between Roha to Mangalore.
- b. Worked at Tala (Bhutan), Tehri, Baglihar, Vishnuprayag, Karchham-Wangtoo, Parbati, Sawra-Kuddu, Karchham-Songtong, Chuzachen, Tista and PakalDul Hydro-electric projects for safe and faster excavation of rock.
- c. Modified the traditional solid blasting technique to achieve 2.2 m pull and 40 tons coal from underground coal mine.
- d. Worked at many Limestones, Iron ore, Coal and other mines for extraction of minerals within danger zone (50 to 500 m from public structures).

8. No. of Research Publications:

1. Papers in Journals: 17 (**6 SCI**)
2. In conference proceedings: 15
3. Invited lectures delivered: 02 (For training of executives of Border Roads Organisation (BRO) at IIT (ISM) Dhanbad)
4. List of best 05 publications
 - a. **N. K. Bhagat**, A. K. Mishra, M. M. Singh, A. Rana, P. K. Singh (2020) 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*. Vol. 36(3), pp. 833-850.

- b. **N. K. Bhagat**, A. K. Mishra, M. M. Singh, A. Rana, S. Tewari, P. K. Singh (2020) Blasting technique for stabilizing accident-prone slope for sustainable railway route. *Current Science*. Vol.118 (6), pp. 901-909.
- c. **N. K. Bhagat**, A. Rana, A. K. Mishra, M. M. Singh, Atul Singh, P. K. Singh (2021). Prediction of fly-rock during boulder blasting on infrastructure slopes using CART technique, *Geomatics, Natural Hazards and Risk*. Vol. 12(1), 1715-1740.
- d. A. Rana, **N. K. Bhagat**, G. P. Jadaun, S. Rukhaiyar, A. Pain, P. K. Singh (2020) Predicting Blast-Induced Ground Vibrations in Some Indian Tunnels: a Comparison of Decision Tree, Artificial Neural Network and Multivariate Regression Methods. *Mining, Metallurgy & Exploration*. Vol. 36(4), pp.1039-1053.
- e. A. Rana, S. Singh, **N. K. Bhagat**., M. M. Singh, G. P. Jadaun, P. K. Singh (2021). Evaluating the sustainability of a hydropower project in the Himalayas: A case study for resolving legal disputes in tribunals. *Renewable Energy*, 174, pp. 894-908.

5. Books/Chapters authored/edited:NA

9. List of 5 Major Contract R&D Projects:

- a. Excavation and flattening of slopes at Bordave, Ukshi Yard, Agave and Shirsawane cuttings using controlled blasting under the jurisdiction of DGM/SW/RN in Ratnagiri Region, SSP/435/2019-20 (*Project Cost-Rs.94.62 Lakh*).
- b. Scientific study for safe and economical open and underground excavation of rock using DBM at Pakal Dul Dam Project, J&K, SSP/367/2019-20 (*Project Cost-Rs.127.44 Lakh*).
- c. Scientific study for safe blast based on the monitoring of blasts event at Gagal Limestone Mine of M/s ACC Ltd., SSP/308/2018-19 and SSP/407/19-20 (*Project Cost-Rs.62.54 Lakh*).
- d. Designing of controlled blasting for rock excavation to set-up Wagon Tippler, Conveying Tunnels & Transfer point site at NTPC, Talcher, Odisha, SSP/173/2016-17 (*Project Cost-Rs.55.56 Lakh*).
- e. Study to Identify measures for dampening of vibration effects during blasting, Satluj Jal Vidduyut Nigam Limited, CLP-59/2015-16 (*Project Cost-Rs.17.46 Lakh*).

10. (a) Name of Patents/Copyrights applied /granted/commercialized: Nil

(b) Technologies/Products /knowhow/Services developed :Nil

11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received: Received appreciation letters from Konkan and Eastern Railways, ADG BRO, JaiPrakash Associates Limited, JK Cements Limited and Government of Bihar.

1. Member of the Institution of Engineers (I)
2. Life Time Member of the Mining, Geological and Metallurgical Institute of India
3. Life Time Member of the Mining Engineers Association of India
4. Life Time Member of the Indian Mining & Engineering Journal

12. Societal Contributions: Worked at various projects related to community safety and facilities improvement (dismantling of unstable boulders at Gaya, Konkan and other Railways, doubling of railway track in hilly terrain and land development for construction of a new international airport in Navi Mumbai).