

BIO – DATA

1. Name: K. S. NANJUNDA RAO
2. Date and Place of Birth: 5th June 1960, Bangalore
3. Nationality: Indian
4. Present Postal Address: Department of Civil Engineering
Indian Institute of Science
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5. Educational Qualifications:

Degree/Diploma	Division/Grade	Year	Subjects taken	Name of the University/Institute
B.E.	First Class	1984	Civil Engineering	Bangalore
M.E.	First Class	1988	Civil Engineering	Bangalore
Ph.D	Degree by Research	1995	Civil Engineering (Structural Engineering)	Indian Institute of Science, Bangalore

6. Professional Experience:

Address of the Office, Firm or Institution	Post held	Duration		Specific experience: P.G. Teaching/Research/Industrial
		From	To	
Department of Civil Engineering, Indian Institute of Science, Bangalore	Scientific Assistant	October 1986	October 1992	Research experience in the areas of Ferrocement, Experimental Stress Analysis and Finite Element Analysis
Department of Civil Engineering, Indian Institute of Science, Bangalore	Scientific Officer Gr II	October 1992	December 1995	Research experience in the areas of Ferrocement, Experimental Stress Analysis, Finite Element Analysis and Composite Plate and Shell Structures

Department of Civil Engineering, Indian Institute of Science, Bangalore	Scientific Officer Gr I	December 1995	1 December 1998	<p>P.G. teaching experience since 1996. Subjects taught are Theory of Plates and Shells and Finite Element Methods for Engineers.</p> <p>Research experience in the areas of Experimental Stress Analysis, Composite Plate and Shell Structures, Masonry Structures and Finite Element Analysis</p>
Department of Civil Engineering, Indian Institute of Science, Bangalore	Senior Scientific Officer	December 1998	December 2004	<p>P.G. teaching experience. Subjects taught are Theory of Plates and Shells, Finite Element Methods for Engineers and Advanced Concrete (Plain, Reinforced and Prestressed)</p> <p>Research experience in the areas of Experimental Stress Analysis, Reinforced Concrete Structures with Fiber Reinforced Composite Rods as rebars, Repair and Strengthening and Concrete Structures, Composite Plate and Shell Structures, Earthquake Resistant Masonry Structures and Finite Element Analysis</p>
Department of Civil Engineering, Indian Institute of Science, Bangalore	Principal Research Scientist	December 2004	To date	<p>P.G. teaching experience. Subjects taught are Theory of Plates and Shells, Advanced Concrete (Plain, Reinforced and Prestressed) and Earthquake resistant design of structures.</p>

Research Interest:

Mechanics of composite plate and shell structures, Finite element analysis, structural masonry, Reinforced and prestressed concrete, Structural dynamics, Earthquake resistant design of structures and alternative building materials.

Awards

1. ACCE - NAGADI Award 2008 for best publication (book) K S Jagadish, B V Venkatarama Reddy and K S Nanjunda Rao (2007), " Alternative building materials and technologies", New Age International Publishers

7. Details of Published work:

In Refereed Journals:

1. B K Raghu Prasad, B R Srinivasa Murthy, A R Gopalakrishnan and K S Nanjunda Rao (1993), " Damage assessment and rehabilitation measures for R C C sewage digester tank", Jl. of Structural Engineering, Vol. 20, No. 2, pp 83-90.
2. K Chandrashekahar and K S Nanjunda Rao(1995), " Static analysis of a long and thick orthotropic circular cylindrical shell of revolution", Journal of Archiv of Applied Mechanics – Ingenieur Archive, Vol. 65, No. 6, pp. 425 – 436.
3. K Chandrashekahar and K S Nanjunda Rao(1996), " Analysis of a long and thick orthotropic circular cylindrical shell panel", Journal of Engineering Mechanics, ASCE, Vol. 122, No. 6, pp.575-579.
4. K Chandrashekahar and K S Nanjunda Rao(1997)," Approximate elasticity solution for a long and thick laminated circular cylindrical shell of revolution", Intl. Journal of Solids and Structures, Vol. 34, No. 11, pp 1327 – 1341.
5. K Chandrashekahar and K S Nanjunda Rao(1998), "Static analysis of an infinite laminated cylindrical shell panel", Journal of Aerospace Engineering, ASCE, Vol. 11, No. 1, pp 1-8.
6. K Chandrashekahar and K S Nanjunda Rao(1998), " Method of initial functions for the analysis of laminated circular cylindrical shells under axisymmetric load", Mechanics of Composite Materials and Structures: An International Journal, Vol. 5, No. 2, pp 187-201.
7. K S Jagadish, S Raghunath and K S Nanjunda Rao (2002), " Shock table studies on masonry building model with containment reinforcement", Journal of Structural Engineering, Vol. 29, No. 1, pp 9-17.
8. K S Jagadish, S Raghunath and K S Nanjunda Rao (2003), "Behaviour of masonry structures during the Bhuj earthquake of January 2001", Proc Indian Academy of Sciences (Earth and Planetary Sciences) Vol. 112, No. 3, September 2003, pp 431 – 440.
9. K S Gumaste, , B V Venkatarama Reddy, K S Nanjunda Rao and K S Jagadish (2004), "Properties of burnt bricks and mortars in India", Masonry International, Vol.17, No.2,pp 45-52
10. B. Saikia, J. Thomas, A. Ramaswamy and K.S.Nanjunda Rao (2005), " Performance of hybrid rebars as longitudinal reinforcement in normal strength concrete", Materials and Structures (Rilem), Vol. 38, pp. 857 – 864.
11. B.V.Venkatarama Reddy, Richardson Lal and K.S.Nanjunda Rao (2007), "Enhancing bond strength and characteristics of soil-cement block masonry", Jl. Mats. In Civil Engg. (ASCE), Vol. 19, No. 2, pp. 164-172.
12. B.V.Venkatarama Reddy, Richardson Lal and K.S.Nanjunda Rao (2007), "Optimum soil grading for soil-cement blocks", Jl. Mats. In Civil Engg. (ASCE), Vol. 19, No. 2, pp. 139-148.
13. K S Gumaste, K S Nanjunda Rao, B V Venkatarama Reddy and K S Jagadish (2007), " Strength and elasticity of brick masonry prisms and wallettes under compression, Materials and Structures (Rilem), Vol. 40, No. 2, pp. 241 – 253.
14. Biswarup Saikia, Phanindra Kumar, Job Thomas, K S Nanjunda Rao and Ananth Ramaswamy (2007), " Strength and serviceability performance of beams reinforced with GFRP bars in flexure", Construction and building materials, Vol.21, No. 8, pp 1709-1719.

15. K S Jagadish, K S Nanjunda Rao, S Raghunath and Biswarup Saikia (2008), "Improving seismic resistance of masonry buildings using containment reinforcement", *Journal of Structural Engineering*, Vol. 34, No. 6, pp 406-411.
16. B V Venkatarama Reddy, Richardson Lal and K S Nanjunda Rao (2009), "Influence of joint thickness and mortar-block elastic properties on the strength and stresses developed in soil-cement block masonry, Accepted for publication in *Jl. Mats. In Civil Engg. (ASCE)*.

In Conferences and symposia:

1. Prakash Desayi and K S Nanjunda Rao (1986), "A Bibliography on Marine Applications of Ferrocement", Workshop on Ferrocement and Marine Applications, Institute of Coastal and Offshore Research, Visakapatnam.
2. Prakash Desayi, K S Nanjunda Rao and Veerappa Reddy (1988), "Experimental roofing with pre-tensioned ferrocement elements", *Proc. 3rd Intl. Conf. on Ferrocement*, New Delhi, pp 405-413
3. S Raghunath, K S Nanjunda Rao and K S Jagadish (2000), "Studies on the ductility of brick masonry walls with containment reinforcement", *Proc. 6th Intl. Seminar on Structural Masonry for Developing Countries*, Bangalore, pp 241- 246.
4. K S Nanjunda Rao and K S Jagadish (2000), "Ferro-cement: Materials and Applications", *Proc. of the short term course on Alternative Building Methodologies for Architects and Engineers*, Organised by Centre for Continuing Education, IISc, Bangalore, 6-16 November 2000, pp. 45 – 75.
5. K S Jagadish, B V Venkataram Reddy and K S Nanjunda Rao(2000), "Ferro-concrete roofing systems", *Proc. of the short term course on Alternative Building Methodologies for Architects and Engineers*, Organised by Centre for Continuing Education, IISc, Bangalore, 6-16 November 2000, pp.100 – 119.
6. K S Jagadish, S Raghunath and K S Nanjunda Rao (2001), "Behaviour of masonry structures during the Bhuj earthquake of January 2001". *Intl Conf. on Seismic Hazard with Particular Reference to Bhuj Earthquake of January 26, 2001*. New Delhi pp. 141 – 143.
7. Likhar Sushant Kumar, Ananth Ramaswamy and K S Nanjunda Rao (2002) "Behaviour of GFRP reinforced SFRC beams in flexure and shear", *Proc. Intl. Conf. on Advances in Civil Engineering*, Vol. 2, IIT Kharagpur, pp. 1151 – 1157.
8. Biswarup Saikia, Phanindra Kumar, Job Thomas, K S Nanjunda Rao and Ananth Ramaswamy (2004), "A study on performance of beams reinforced with GFRP bars" *Proc. Of the Intl Conf on Fibre Composites, High Performance Concretes and smart Materials*, 8- 10 Jan 2004, Chennai, pp 465-474.
9. K S Nanjunda Rao, S Raghunath and K S Jagadish (2004), "Containment reinforcement for earthquake resistant masonry buildings", *13th World Conf on Earthquake Engineering*, 1-6 Aug 2004, Vancouver, B.C. , Canada.

Books/Reports/Monographs:

1. K S Jagadish, B V Venkatarama Reddy and K S Nanjunda Rao (2007), "Alternative building materials and technologies", New Age International Publishers
2. Prakash Desayi and K S Nanjunda Rao (1987), "Studies on post-tensioned ferrocement roofing elements", DST-FC-RR11, pp.141.
3. Prakash Desayi and K S Nanjunda Rao (1987), "Experimental tenement with precast pre-tensioned ferrocement roofing elements", DST-FC-13, pp. 41.
4. Ananth Ramaswamy and K S Nanjunda Rao (2002), Progress report on the project "Experimental and analytical study on the behaviour of fiber reinforced plastic (FRP) composite reinforcements in plain and fiber reinforced latex modified concrete beam elements", Report submitted to Department of Science and Technology, Govt. of India, pp. 124.

5. Proceedings of the "National workshop on alternative building methods", Editors: K S Jagadish and K S Nanjunda Rao, Organised by Department of Civil Engineering, IISc, Bangalore, 16 – 18 January 2002, pp. 185.

8. Research Guidance:

Has guided two students for award of Ph D degree and two students for the award of M Sc (Engg.) degree of Indian Institute of Science, Bangalore. Currently two students are working towards their Ph D. Titles of theses awarded degrees under my supervision are given below.

(a) M Sc(Engg.) degree

- (i) Failure studies of unreinforced brick masonry vaults.
- (ii) Characteristics of soil-cement blocks and soil-cement block masonry

(b) Ph D degree.

- (iii) Static and dynamic behaviour of brick masonry with containment reinforcement
- (iv) Studies on strength and elasticity of brick masonry walls.

9. Sponsored Research Projects and Industrial Consultancy Projects:

Titles of completed Research projects with funding agency are given below.

- (i) Experimental and analytical study on the behaviour of fibre reinforced plastic (FRP) composite reinforcements in plain and fibre reinforced latex modified concrete beam elements. (DST).
Investigators: Ananth Ramaswamy and K S Nanjunda Rao.
- (ii) Development and dissemination of roofing tiles from industrial and mine wastes. (DST)
Investigators: B V Venkatarama Reddy and K S Nanjunda Rao
- (iii) Shock table studies for earthquake resistant design of masonry buildings. (KCTU).
Investigators: B K Raghu Prasad and K S Nanjunda Rao

Have successfully completed several Industrial Consultancy Projects.