

STRUCTURAL ENGINEERING



सी.एस.आई.आर.-केन्द्रीय भवन अनुसंधान संस्थान

रुड़की-247 667, उत्तराखण्ड, भारत

CSIR-CENTRAL BUILDING RESEARCH INSTITUTE

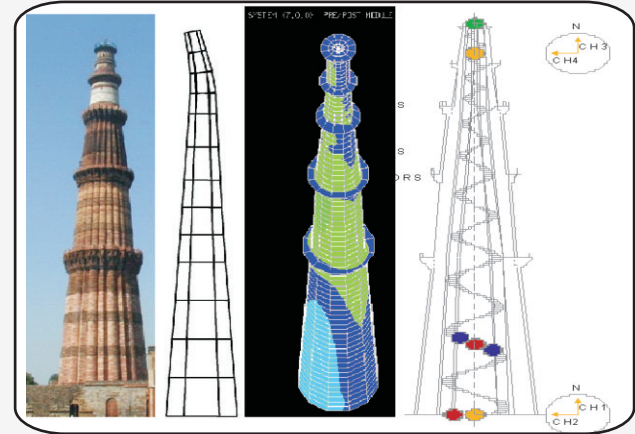
ROORKEE-247 667, UTTARAKHAND, INDIA





STRUCTURAL ENGINEERING GROUP

The Group is engaged in research & development in different areas of structural engineering namely distress diagnosis & strengthening of buildings, heritage/monumental buildings, natural disaster mitigation with special reference to earthquakes, concrete technology, analysis and design of structures etc. The Group has also made significant contribution in drafting standards related to structural engineering for Bureau of Indian Standards.



EXPERTISE AVAILABLE

- Analysis & design of buildings & structures
- Constitutive modelling & non-linear finite element analysis of structures
- Health monitoring of structures
- Distress diagnosis & strengthening of structures
- Vulnerability assessment of buildings due to earthquake, wind, impact and environment
- Design of high performance, fibre reinforced, high volume Fly ash concrete
- Durability studies on building structures
- Service life prediction & reliability analysis of structures
- Experimental investigations on components & structures
- Design of prefabricated buildings

INFRASTRUCTURE & TESTING FACILITIES

The Group is equipped with facilities for testing under the four laboratories as mentioned below

Heavy Testing Laboratory

- Heavy duty test floor 8.5m X 18.3m size with testing frames of capacity 400 tons and reaction wall
- Loading facilities up to 400 tons
- System for online measurement of strains and deformations
- 500 tons and 200 tons capacity compression testing machines
- 300 tons universal testing machine for static and dynamic loading

Building Dynamic Laboratory

- Servo hydraulic actuators (Capacity 10 tons & 50 tons)
- FFT Analyser
- Accelerometers, vibration meters, LVDTs
- Wireless sensor system
- System identification facilities
- Impact load testing facilities



NDT Laboratory

Impact Echo System, Corrosion monitoring instruments, Half-cell potential surveyor, Ultrasonic concrete testers, Schmidt Rebound Hammers, Mechanical strain measuring instrument, Rebar locator, Core cutting machine, Crack measuring gauge, flat jack system.



Concrete laboratory

Rapid chloride permeability Apparatus, Auto-titrator, Concrete permeability (air and water) apparatus, Carbonation chamber, Accelerated durability test apparatus, Concrete slicing machine, Guniting Machines (wet & dry types), Temperature Controlled curing tank, Accelerated curing tank, vibrating tables, Mixers etc.

RESEARCH & SPONSORED PROJECTS (recently completed / on going)

Vulnerability assessment of buildings due to earthquake & wind

1. Seismic vulnerability assessment of building in Jabalpur (M.P.) (Sponsored by DST, New Delhi)
2. Estimation of seismic vulnerability of building in Delhi: An approach towards building damage scenario (Sponsored by DST, New Delhi)
3. Estimation of seismic vulnerability of buildings in hilly town of Almora City, Uttarakhand (Sponsored by DST, New Delhi)
4. Vulnerability assessment of Microwave Towers Subjected to wind effects (In-house R & D)
5. Experimental investigation of masonry buildings under quasi-static conditions (Sponsored by DST, New Delhi)



Seismic improvements & retrofitting of structures

1. Cultural Heritage Buildings (under EU-INDIA economic cross cultural programme, Sponsored by European Commission and University of Minho, Guimaraes, Portugal)
2. Experimental Investigation on efficacy of various materials & techniques used for seismic retrofitting of structures under quasi-static conditions (Sponsored by DST, New Delhi)
3. DDA Mega Housing Project, Vasant Kunj, New Delhi (Sponsored by DDA, New Delhi)
4. ONGC Buildings at Dehradun (Sponsored by ONGC, Dehradun)
5. Life-line Buildings at Dehradun

Analysis & design checking of buildings & structures

1. Various buildings/ facilities of HNB Central University, Srinagar
2. Airport buildings of Aurangabad
3. Kasturba Gandhi Balika Vidyalaya (KGBVs) in Uttarakhand
4. 35m high Watch Tower and 6 imageries platforms in Runn of Kutch, Gujarat
5. 10 microwave towers located in U.P (Sponsored by Koshika Telecom Ltd., Lucknow)

Quality assurance & quality audit of buildings & structures

1. Common Wealth Games village, sponsored by the DDA, New Delhi
2. Civil Construction Works of Doon University at Kedarpuram, Dehradun
3. Construction of HRDI building at Mandi, Gopeshwar
4. Various office buildings in Dehradun region
5. Kasturba Gandhi Balika Vidyalaya (KGBVs) in Uttarakhand
6. Sarva Shiksha Abhiyan Project of Uttarakhand State
7. HNB Central University, Srinagar
8. Quality assurance of Sanskrit University, Haridwar
9. Health Care Buildings in Uttarakhand under UAHS DP programme

Distress diagnosis & strengthening of RC & heritage structures

1. Deen Bandhu Chhoturam Thermal Power Project Colony, Yamuna Nagar, Haryana
2. Old PGIMS hospital building, Rohtak
3. IGIB Building, New Delhi
4. Administrative block & G.O.'s Mess of ITBP, Mussoorie
5. Jawahar Vyapar Bhawan, STCI, New Delhi
6. Faridabad Thermal Power Station Residential Colonies, Faridabad





7. ISBT, Kashmere Gate – Link & Departure Blocks, New Delhi
8. Quadian Mosque Building, Amritsar
9. Rashtrapati Niwas, Shimla
10. Sun Temple, Konark
11. Raj Bhawan, Goa
12. Raj Niwas, Delhi

Post fire investigations & rehabilitation of structures

1. Oil Bhawan, IOCL, Noida
2. Digboi refinery, IOCL, Digboi
3. Anusandhan Bhawan, CSIR, New Delhi
4. ALTTC, Ghaziabad
5. Hotel Siddharth, New Delhi
6. PGI, Chandigarh
7. NFL, Panipat
8. Mathura Refineries, Ordinance Factory, Dehradun, Auditorium of NPL, New Delhi



Design & development of high performance, fibre reinforced, high volume Fly ash concrete

1. Use of high volume fly ash concrete in construction
2. Performance of synthetic fibre reinforced concrete
3. Performance evaluation of micro-polyester fibre in structure

Health monitoring of structures

1. Health assessment of multi-storied buildings under ambient & forced vibration, CSIR network project
2. Health monitoring of MCD flyovers and suggesting rehabilitation measures, Delhi
3. Health monitoring of buildings using wireless sensor network

Constitutive modelling & non linear finite element analysis of structures

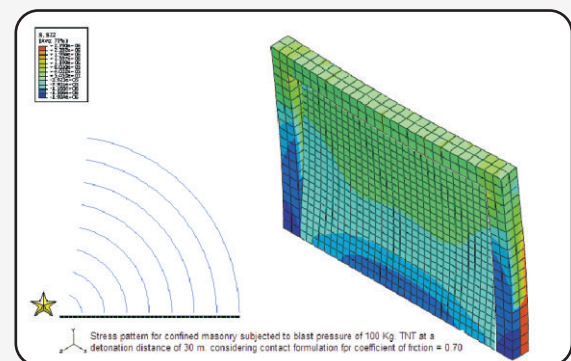
Experimental and theoretical study of masonry walls subjected to blast loading

Service life of prediction & reliability analysis of structures

1. Studies on durability of FRP wrapped concrete structure in marine exposure conditions
2. Remaining life assessment of RCC structural components subjected to combined action of weathering and other loads
3. Life prediction of RC structures in aggressive environment, Network project sponsored by Nodal Lab NML, Jamshedpur (T E CA Project)
4. Studies on the design, development and repair of RC near surface repositories for disposal of radio active wastes, sponsored by BARC, Mumbai

Testing of models and prototype structural elements

1. Evaluation of 3-S prefabricated system to establish behaviour of various joints under all design loads on full scale two storied building sponsored by BG Shirke Const. Tech., Pune
2. Experimental Investigation of masonry buildings under quasi-static conditions, sponsored by DST, New Delhi



~: For further details, please contact :-

Director

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