Annual Report
2023-24

सीएसआईआर–केंद्रीय सड़क अनुसंधान संस्थान, नई दिल्ली (भारत)

CSIR-Central Road Research Institute, New Delhi (INDIA)

Annual Report

2023-24

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CSIR-Central Road Research Institute, New Delhi (India)

सीएसआईआर-केंद्रीय सड़क अनुसंधान संस्थान, नई दिल्ली

गुणवत्ता नीति

सीएसआईआर–केंद्रीय सड़क अनुसंधान संस्थान (सीआरआरआई) सड़क और सड़क परिवहन तथा सेतु एवं संरचना के क्षेत्र में व्यावसायिक उत्कृष्टता के लिए प्रयत्नशील है।

संस्थान निम्नलिखित के लिए प्रतिबद्ध है;

क. औद्योगिक के साथ–साथ सामाजिक अनुसंधान एवं विकास कार्यकर्मों, परामर्श सेवाओं एवं मानव संसाधन विकास कार्यकर्मों व व्यवसाय की विश्वस्तरीय तकनीकी आवश्यकताओं को पूरा करने के लिए

ख. संस्थान की गुणवत्ता प्रबंधन प्रणाली में निरंतर सुधार

ग. ग्राहक संतुष्टि, और

घ. सभी अनुप्रयोज्य आवश्यकताओं का अनुपालन करने के लिए।

मनोरंजन परिड़ा

प्रो. मनोरंजन परिड़ा
निदेशक
सीएसआईआर–सीआरआरआई

CSIR - Central Road Research Institute, New Delhi

QUALITY POLICY

The CSIR - Central Road Research Institute (CRRI) endeavours towards Professional Excellence in the area of Roads and Road Transportation including Bridges and Structures.

The Institute is committed to;

a. Accomplish Industrial as well as Societal Research and Development Programmes, Consultancy Services, HRD Programmes meeting technical needs of the profession globally

b. Continual improvement of Quality Management System of the Institute

c. Customer satisfaction, and

d. Comply with all applicable requirements.

MR

Prof. Manoranjan Parida
Director
CSIR-CRRI

Mandate

The scientific & technical objectives of CSIR-CRRI are:

- To develop specifications and manuals for construction of low cost roads for different regions of country.
- To carry out applied research for investigation, construction and maintenance of different type of roads and runway including studies on related materials such as aggregates, bitumen, cement, etc. with a view to effecting economy and achieving greater serviceability.
- To develop appropriate tools, machinery, equipment and instruments for adapting technologies as related to highway engineering and relevant to the country for indigenous use.
- To carry out research and development activities in all aspects of roads under varying climatic and traffic conditions.
- To carry out research and development in all aspects of road traffic and transportation engineering, including study of accidents, development of road safety measures, psychology of road users and transportation economics in relation to different forms of transport.
- To render technical advice and consultancy services to various organisations in roads and related fields to avoid import of foreign expertise.
- To train engineers through refresher courses, workshops and training programmes for wider application of indigenously developed technologies.
- To create and establish all the needed infrastructure, both equipment and expertise, in the various facets of highway and transportation engineering for investigation, planning, design, construction and maintenance as well as to achieve judicious solutions for special problems.
- To collaborate with other institutions for R&D studies concerning roads, road transportation and related practices particularly on regional problems.
- Publication of scientific and technical findings in journals, symposia, conferences, etc. devoted to research and development in related areas of highway engineering.
- Generation of intellectual property and its commercialization through technology transfer.

CSIR-CRRI ORGANISATIONAL STRUCTURE (as on 31.03.2024)

Research Council

Prof. Manoranjan Parida
Director

Management Council

R&D Divisions

Geotechnical Engineering (GE)
Dr. A. K. Sinha, Head

Flexible Pavements (FP)
Dr. Abhishek Mittal, Head

Rigid Pavements (RP)
Dr. Rakesh Kumar, Head

Pavement Evaluation (PE)
Dr. Pradeep Kumar, Head

Traffic Engineering & Safety (TES)
Dr. S. Velmurugan, Head

Transportation Planning & Environment (TPE)
Dr. Ch. Ravi Sekhar, Head

Bridge Engineering and Structures (BES)
Sh. J. K. Goyal, Head

R&D Management Divisions

Information, Liaison and Training (ILT)
Dr. Ravindra Kumar, Head

Planning, Monitoring & Evaluation (PME)
Dr. P. S. Prasad, Head

Computer Centre and Networking (CCN)
Dr. A. Mohan Rao, Head

Knowledge Resource Centre (KRC)
Ms. Lalita Jangpangi, Head

Engineering Services Division (ESD)
Dr. Rajeev Goel, Head
Sh. Jitendra Kumar Giri, Engineer-in-Charge, ESD

Mechanical and Transport (MAT)
Sh. Ashok Kumar Arora, Coordinator

Quality Management Division (QMD)
Dr. Niraj Sharma, Head

Maharani Bagh Staff Quarters (MBSQ) & Horticulture
Sh. G.K. Sahu, Head, MBSQ & Horticulture
Sh. Mukesh Kumar, Sectional Head, MBSQ Maintenance
Sh. Ashok Kumar, Officer- in-Charge, Horticulture

Administration

Ms. Beena Anupa Sequeira, Controller of Administration
Sh. Yatinder Chauhan, Sr. Controller of Store & Purchase
Sh. Rejimon M.J., Controller of Finance & Account
Sh. Santosh Kumar, Administrative Officer
Sh. Chander Kant, Section Officer
Ms. Priyanka Gupta, Section Officer
Ms. Nidhi Gupta, Section Officer
Sh. Anil Kumar, Section Officer
Sh. Sanjeev Kumar Yadav, Section Officer
Sh. Sanjay Roy, Section Officer
Sh. Sanjay Choudhary, Hindi Officer, Rajbhasha
Sh. Jitender K. Yadav, Manager, Guest House

भारतीय मानक ब्यूरो
मानकः पथप्रदर्शकः
BUREAU OF INDIAN STANDARDS
IS / ISO 9001
QMS

CONTENTS

From the Director's Desk

It is my pleasure to present the Annual Report of CSIR-CRRI for the last fiscal year 2023-2024. During the period, the Institute focused on capacity building and development of human resources in the area of road & transport sectors to undertake and execute roads, bridges and runway projects through technical and consultancy services to various user organizations in India and abroad.

During the last fiscal year, our scientists published 44 papers in renowned journals and 63 papers in conference proceedings and 25 articles in Books and Magazines apart from filing various patents. During this period, four patents were filed and three were granted while two technologies were transferred to the Industries. Besides these, six agreements, nine MoUs were signed for executing the various projects of national importance.

Despite a sharp fall in revenues in the first quarter, progressively strengthening demand for our services helped us stage a swift recovery during the rest of the year, helping clock full year External Cash Flow of ₹36.4 crore in FY 2023-2024.

Scientists of the Institute received many National and International recognitions, served as expert members on important National level committees and contributed in the preparation of Standards/ Codes of Practices/ Manuals/ Guidelines/ Specifications for Indian Roads Congress (IRC) / Bureau of Indian Standards (BIS) / Ministry of Road Transport and Highways (MoRTH), Govt. of India.

CSIR-CRRI hosted a number of events during this period. These include a series of Lectures / Conferences / Seminars / Workshops on various topics related to Roads, Bridges and Road Transportation. Also, the Audits of CSIR-CRRI as per IS/ISO 9001: 2015 requirements were conducted by the auditors of the Certification Agency i.e. Bureau of Indian Standards. The auditors were satisfied with the current system / procedure followed in CSIR-CRRI, which is a testimony to the quality standard maintained by the Institute.

Skill development of human resources by imparting training to the engineers of the user agencies / organizations is an integral part of the research and development programme of our Institute. Past fiscal year has again touched great heights for Vision Forward and the people we serve. CSIR-CRRI conducted eight regular, twelve customized training programs and three specialized MoRTH approved 15-day certification courses in the areas of Road Safety Audit. Customized training programs were organized for the engineers of National Highways & Infrastructure Development Corporation Limited; National Rural Infrastructure Development Agency, Govt. of India and Border Roads Organisation, Govt. of India. These regular and customized training programs including the certification courses were attended by 417 participants from various parts of India.

We undertook significant international engagement and worked closely with international organisations. It is my pleasure to share that many distinguished Scientists / Academicians both from India and abroad visited our Institute, delivered lectures, and held discussions with Scientists of the Institute during the year.

CSIR-CRRI also organized various interactive workshops / outreach programs as part of the JIGYASA programme and Atal Tinkering Lab (ATL) scheme under Atal Innovation Mission (AIM) of Govt. of India, for the students of Kendriya Vidyalayas (KVs) and other schools &

colleges in India. In the last fiscal year, around 5000 students along with their teachers from various KVs and other schools & colleges enthusiastically participated in these interactive workshops, lecture series and /or the quiz competitions.

Students of B. Tech / M. Tech from various Engineering colleges, NITs and IITs have a dream to work for their dissertation in CSIR-CRRI. During the period, 31 students were working for doctoral degree; 71 students completed their M. Tech dissertation / internship and 83 B. Tech students completed their internship / dissertation.

During the period, nine staff members transferred from CRRI and nine staff members joined the Institute from other laboratories while twelve staff members retired from CRRI.

I express my gratitude towards the Ministry of Science and Technology, CSIR Headquarter and our Research & Management Councils for the wholehearted support received from them. I extend my gratitude to our external experts who guided in our pursuit for excellence.

As I look ahead, I am more optimistic than ever of the enormous opportunity ahead of us. I would like to place on record here an appreciation for the contribution made by CSIR-CRRI staff members at all levels and students. Our consistent growth was made possible by their hard work, solidarity, cooperation and support.

Prof. (Dr.) Manoranjan Parida
Director, CSIR-CRRI

Advisory Council (Research Council and Management Council)

Research Council

The Research Council of the Institute (as on 31.03.2024) is as follows.

Chairman

Prof. Mahesh Tandon
Tandon Consultants Pvt. Ltd.
17, Link Road, Jangpura Extension, New Delhi 110014
Email: tandon@tcpl.com

Member

Prof. K. Sudhakar Reddy
Professor of Civil Engineering,
Indian Institute of Technology, *(IIT)*,
Kharagpur - 721302
Email: ksreddy@civil.iitkgp.ac.in

Shri A. Anbarasu
Principal Secretary,
Public Works Department *(PWD)*
Govt. of Delhi
12th Floor, MSO Building,
I.P. Estate, New Delhi – 110002
Email: pspwd@nic.in, Lk-advisor@gov.in

Prof.Lelitha Devi Vanajakshi
Dept. of Civil Engineering
Indian Institute of Technology, Madras
Chennai - 600 036
Email: lelitha@iitm.ac.in

Prof. R. Pradeep Kumar
Director,
CSIR - Central Building Research Institute *(CBRI)*
Roorkee-247 667
Uttarakhand
E-mail: director@cbri.res.in

Ms. Minimol Korula
Head, Strategic Projects,
M/s Maccaferri Environmental Solutions Ptv. Ltd.,
D40 MIDC Ranangaon, Tal-Shirur Dist., Pune-412220
Email: minikorulla@maccaferri-india.com

Shri Dharmanand Sarangi
Additional Director General *(R)*, MORTH,
Transport Bhawan, Parliament Street,
New Delhi – 110001.
Email: d.sarangi@nic.in

Prof. Manoranjan Parida
Director
CSIR - CRRI, New Delhi
E-mail: director.crri@nic.in

Shri Mayank Mathur
Chief Scientist,
CSIR - Central Planning Directorate *(CPD*)
Council of Scientific and Industrial Research, 2, Rafi Marg,
Email: mm@csir.res.in

RC Secretary: Dr S. Velmurugan
Chief Scientist & Head, TES Division and Secretary, RC
CSIR - CRRI, New Delhi-110025
E-mail: vms.crri@nic.in

Management Council

Management Council of the Institute (as on 31.03.2024) is as follows.

Chairman
Director,
CSIR-Central Road Research Institute, New Delhi, 110025

Member

Dr. Venu Gopal Achanta
Director,
CSIR- National Physical Laboratory, New Delhi, 110012

Dr. Pradeep Kumar
Senior Principal Scientist & Head, PED
CSIR-Central Road Research Institute, New Delhi, 110025

Dr. Ambika Behl
Senior Principal Scientist,
CSIR-Central Road Research Institute, New Delhi, 110025

Ms. G.S. Parvathi
Principal Scientist,
CSIR-Central Road Research Institute, New Delhi, 110025

Ms. Mariya Dayana P.J.
Scientist,
CSIR-Central Road Research Institute, New Delhi, 110025

Dr. Pardeep Kumar
Sr. Technical Officer (3),
CSIR-Central Road Research Institute, New Delhi, 110025

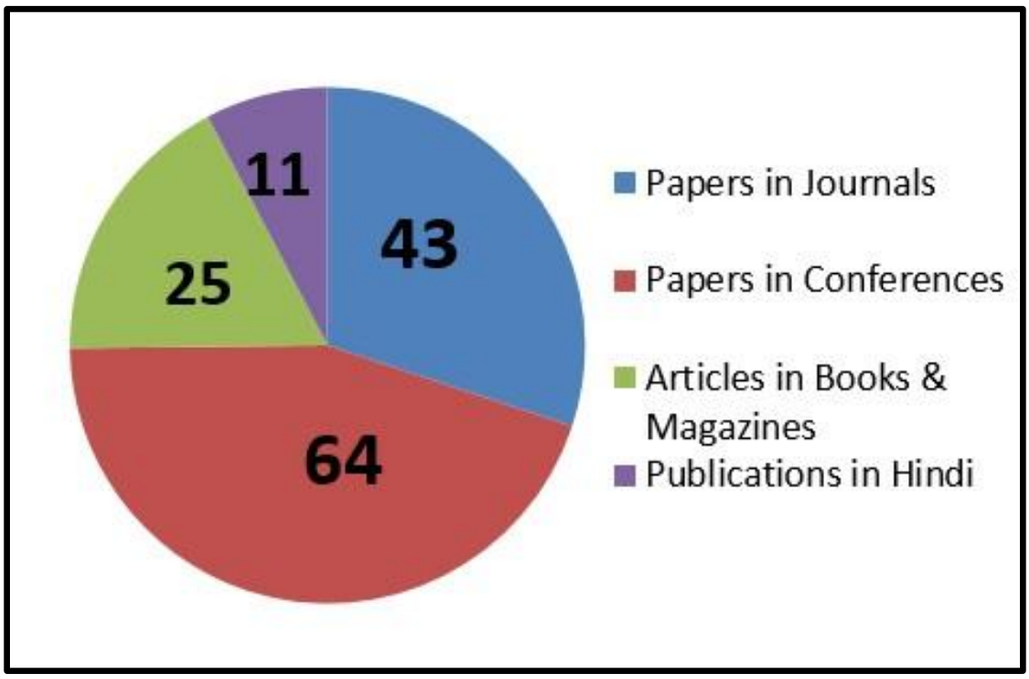
Dr.P.S. Prasad
Sr. Principal Scientist & Head, PME,
CSIR-Central Road Research Institute, New Delhi, 110025

CoFA / F&AO
CSIR-Central Road Research Institute, New Delhi, 110025

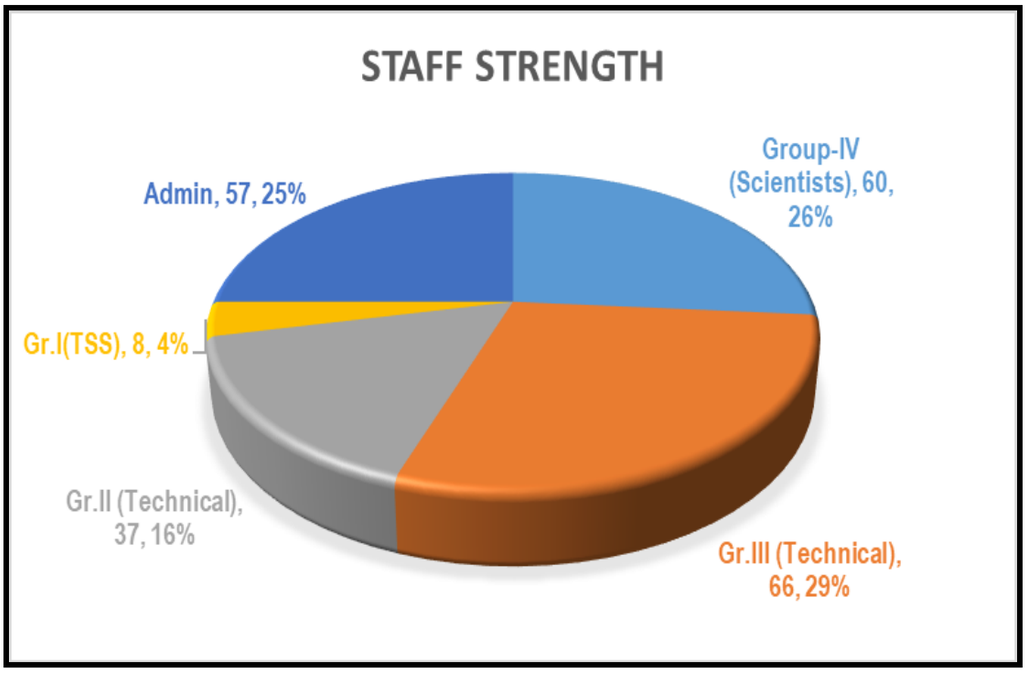
Member-Secretary
CoA / AO
CSIR-Central Road Research Institute, New Delhi, 110025

Performance Indicators

Papers Published in 2023-2024

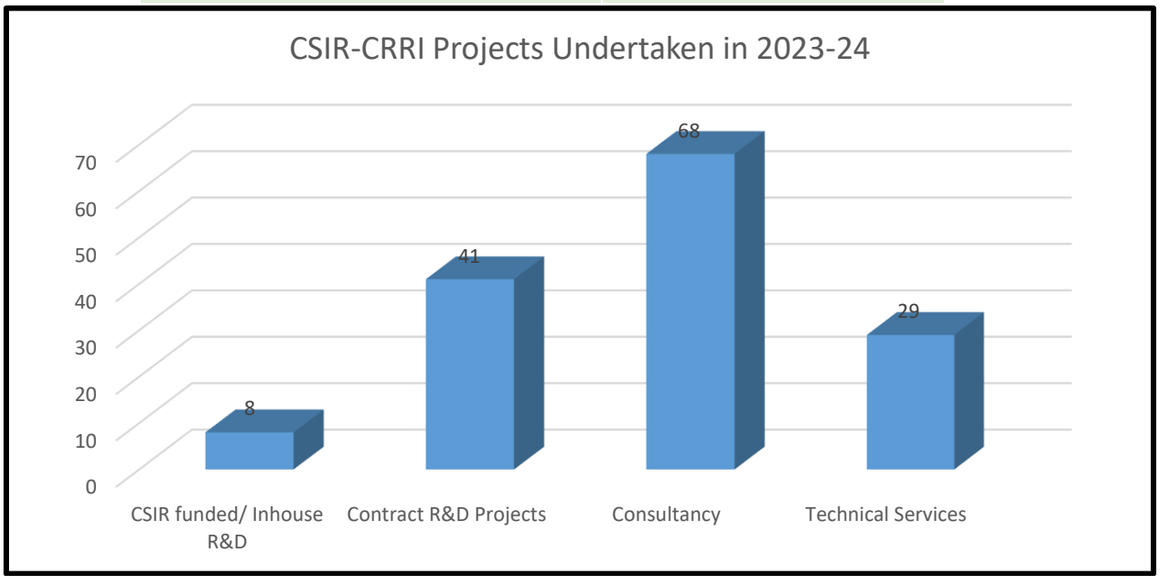


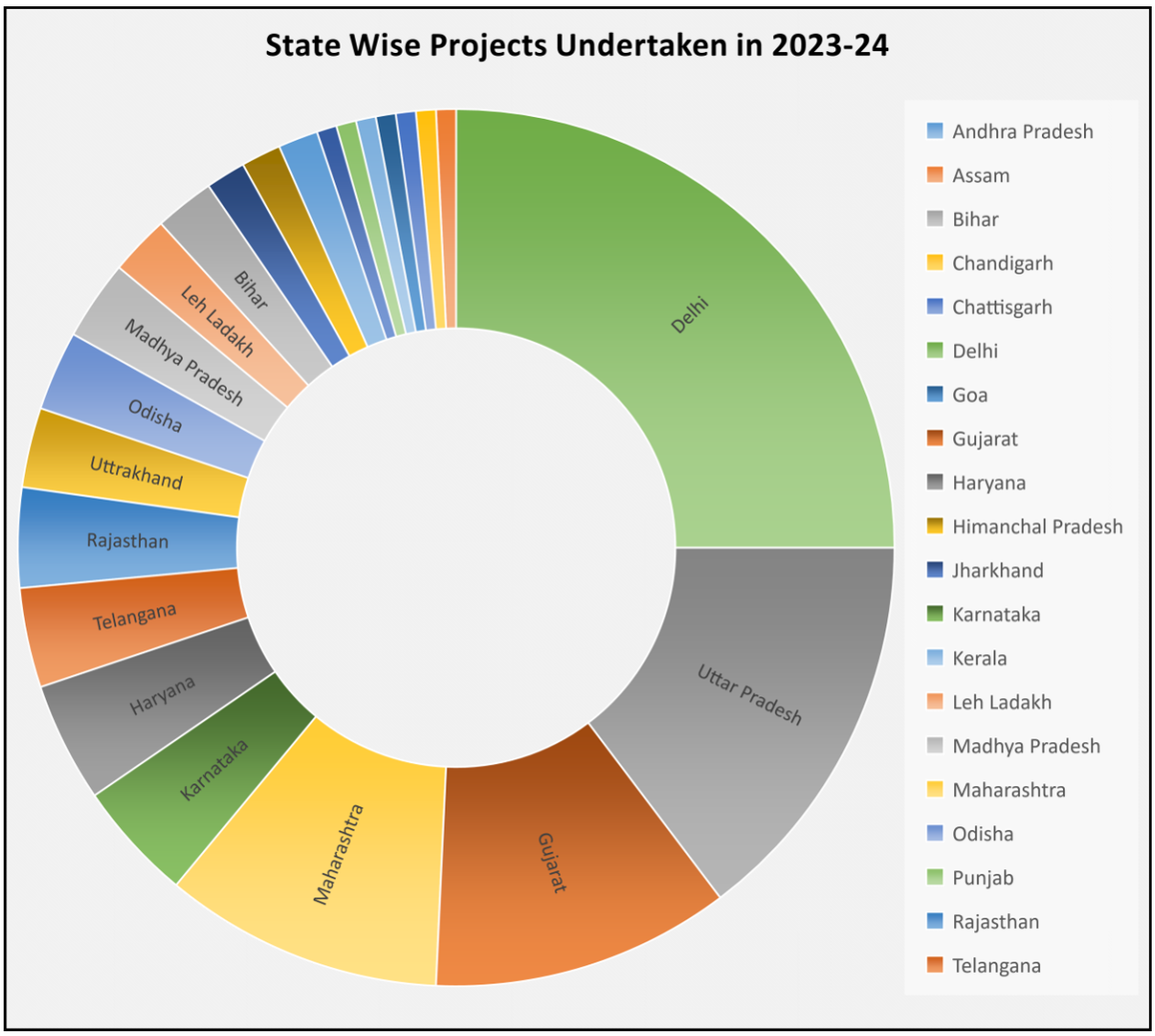
Staff Strength in 2023-2024



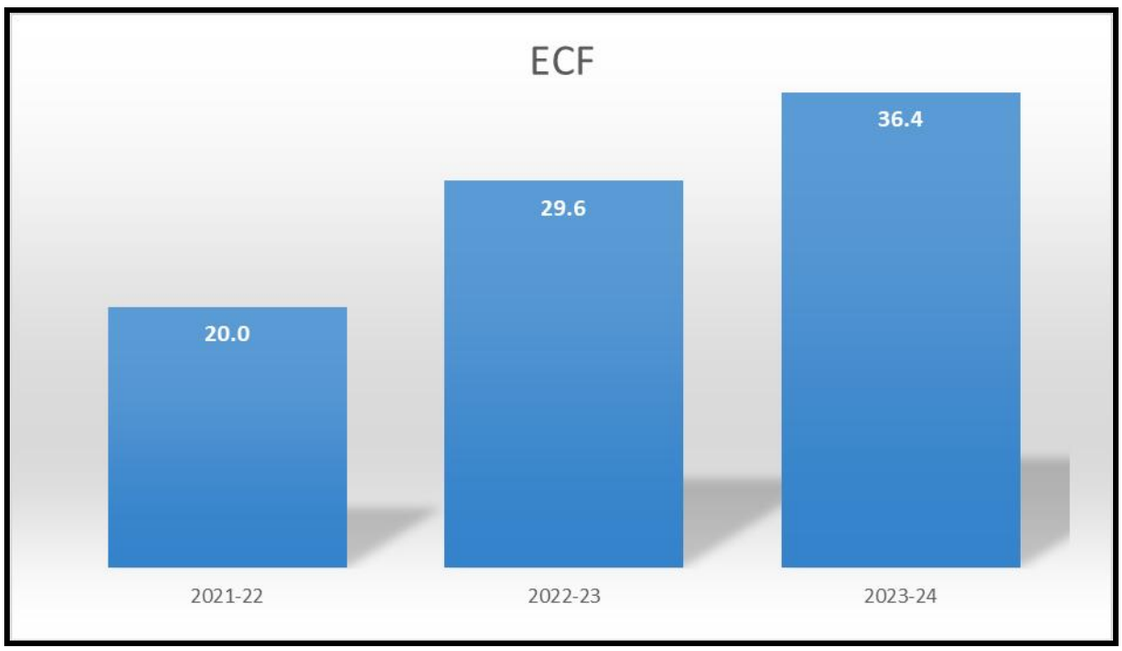
Projects Undertaken in 2023-2024

Project type	No of projects (2023-24)
CSIR funded/ Inhouse R&D	8
Contract R&D Projects	41
Consultancy	68
Technical Services	29

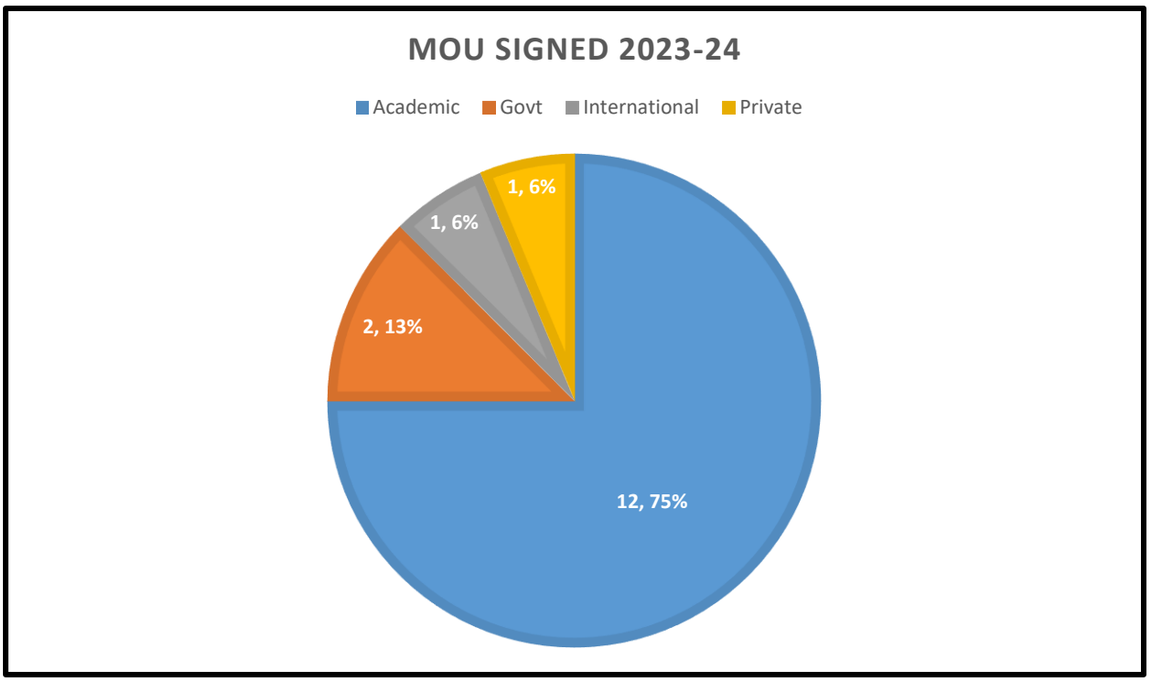




External Cash Flow (Rs. in Lakh) in 2023-2024



MoUs signed in 2023-2024



Research & Development Divisions

- Pavement Evaluation
- Bridge Engineering and Structures
- Flexible Pavement
- Rigid Pavement
- Geotechnical Engineering
- Traffic Engineering and Safety
- Transportation Planning and Environment

Pavement Evaluation

RESEARCH PROJECTS

Assessing the Suitability of Imperial Smelting Furnace Slag (ISFS) as a Construction Material in Flexible and Rigid Pavements

Funding Agency: CSIR-CRRI

Duration of the project: From March 2022 to June 2024

Broad Objectives: (a) Enhancing Flexible Pavement Performance Using Imperial Smelting Furnace Slag (ISFS).

(b) Improving Rigid Pavement Mix Design with Imperial Smelting Furnace Slag (ISFS).

The project focuses on developing innovative pavement materials by incorporating Imperial Smelting Furnace Slag (ISFS), a by-product of metal smelting that is traditionally considered waste. This approach addresses dual challenges: enhancing pavement performance and advancing sustainable construction practices.

For flexible pavements, the research explored the substitution of natural fine aggregates with ISFS in the bituminous mix layers, specifically Dense Bituminous Macadam (DBM) and Bituminous Concrete (BC). Laboratory tests confirmed that ISFS can significantly improve the structural and functional properties of flexible pavements while reducing environmental impact. Key evaluations included Marshall Stability, Indirect Tensile Strength, and Resilient Modulus tests, highlighting ISFS's potential to replace up to 50% of fine aggregates without compromising the pavement quality.

In rigid pavements, the focus shifted to concrete mixes, aiming to utilize ISFS in Paving Quality Concrete (PQC) and Dry Lean Concrete (DLC) layers. The study demonstrated that ISFS could replace natural fine aggregates in these layers, contributing to enhanced compressive, flexural, and split tensile strengths. Detailed analyses involved Mix Design, Workability, and Abrasion Resistance tests, which supported the feasibility of ISFS as a full-scale replacement for fine aggregates, offering environmental benefits and improved pavement durability. Figures 1–3 show the Scanning Electron Microscopy (SEM) analysis images along with the flexural strength and dynamic creep test setups.

Collectively, these initiatives not only promote recycling and efficient use of industrial by-products but also pave the way for more sustainable road construction methodologies, ensuring longer-lasting pavements and reduced ecological footprints.

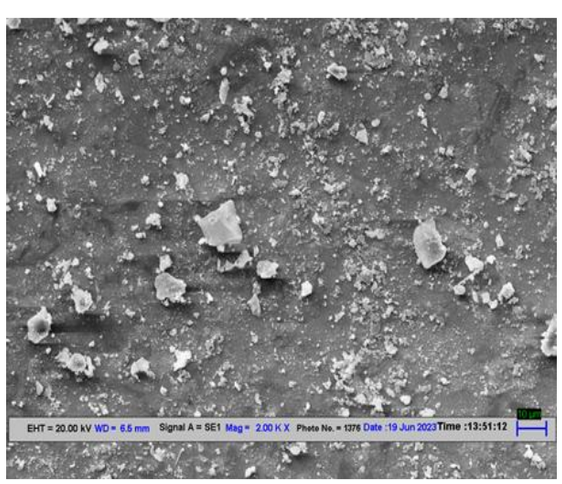


Figure 1: SEM image of ISFS

Figure 2: Flexural strength test

Figure 3: Dynamic Creep test for long-term deformation behaviour under repeated loading

Quality Control Supervision and Post Construction Assessment of the Wearing Course of the Race Track at Buddh International Circuit, Greater Noida

Funding Agency: Solitaire Engineering Corporation
Duration of the project: From August 2023 to May 2024
Broad Objectives: (a) Mix design and quality control during the resurfacing of the wearing course of the race track to meet international racing standards.
(b) To perform post-construction assessments to ensure the durability and performance of the track under high-speed conditions and various weather scenarios.

The project at Buddh International Circuit, Greater Noida, targets the resurfacing of the race track to accommodate the stringent demands of international motorcycle racing, specifically for the MotoGP event. The existing circuit, previously used for Formula One racing, requires significant modifications to its wearing course to address wear and enhance performance characteristics such as skid resistance and durability under various weather conditions.

The project involved a detailed examination and redesign of the asphalt mix, ensuring it is optimized for high-speed racing and meets international standards. The process includes the development of a job mix formula specifically tailored to the unique conditions of the circuit, taking into account factors like the asphalt's ability to provide sufficient grip, especially in wet conditions, and its long-term durability against the high stresses imposed by racing motorcycles. Techniques such as the British pendulum test employed to measure the skid resistance of the surface, guaranteeing that the track's safety and performance parameters are met. The project also encompasses a comprehensive post-construction assessment phase. This phase will evaluate the effectiveness of the new surface in enhancing the track’s overall performance. By utilizing

advanced testing and quality assessment methods, the project aims to not only extend the life of the track but also to uphold and enhance its reputation as a premier racing venue capable of hosting world-class events. Photographs of the racetrack and images from the sand patch and British pendulum methods are presented in Figures 4 and 5.

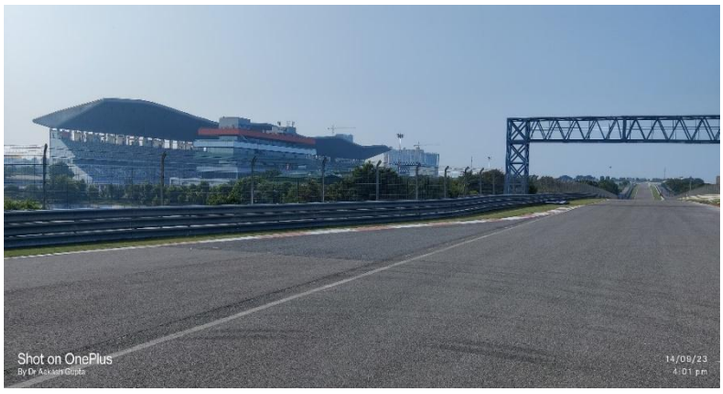


Figure 4: Test Track

Figure 5: Sand patch method (left) and British pendulum (right)

Study on Self-Healing Performance of Bituminous Mixes using Microcapsule Encapsulated Rejuvenators

Funding Agency: CSIR-CRRI
Duration of the project: From March 2022 to August 2024.
Broad Objectives: (a) To develop the microcapsules encapsulated with rejuvenators and to study their physical / chemical / thermal properties.
(b) To assess the suitability of microcapsules in bituminous mixes and to study the self-healing characteristics of microcapsule-encapsulated bituminous mixes

By collaborating with the National Chemical Laboratory, Pune, the Institute has achieved a remarkable feat in developing microcapsule encapsulated rejuvenators capable of withstanding mixing and compaction temperatures and loading demands during the construction phase (the compressive strength of the capsule is found to be 18N, and % loss in weight is less than 5% at mixing and compaction temperatures). Currently, laboratory experiments are underway to evaluate these rejuvenators' efficacy comprehensively. The ongoing experiments aim to assess various critical factors such as dosage optimization and mix performance under different conditions, including fatigue life, rutting life, and resistance to moisture damage. Additionally, we simulate

real-world scenarios by artificially aging the asphalt mix and subjecting it to simulated traffic loadings in the laboratory. Encapsulated rejuvenators and the compacted asphalt mix containing them are shown in Figure 6.

Figure 6: Microcapsule Encapsulated Rejuvenators (left) and Microcapsule embedded compacted asphalt mix (right)

Performance Evaluation of Road Constructed using Brick Aggregates in Sub-Base and Foam Bitumen in Base Layers

Funding Agency: National Highways & Infrastructure Development Corporation Limited, New Delhi.
Duration of the project: From March 2023 to March 2026.
Broad Objective: To conduct a performance evaluation of the NHIDCL road stretch constructed using Brick Aggregates for Base and sub-base course treated with Foam Bitumen.

The current research project aims to evaluate the performance of identified road sections constructed with marginal materials and foam bitumen mix. The road was constructed by National Highways and Infrastructure Development Corporation Limited (NHIDCL) under the guidance of CSIR-CRRI and consists of marginal materials (sub-base layer), including the use of new cold mix technology using foam bitumen (base layer). The construction was done by M/s Oriental Structural Engineers Pvt. Ltd. (OSEPL). The project road is a widened two-lane with a paved shoulder between the Udaipur and Sabroom Sections of NH- 8 (km 55.00 to km 128.72) in the state of Tripura. Figure 7 presents images from the axle load and roughness surveys.

Figure 7: CRRI Team carrying out Axle Load Survey at Udaipur (left) and Roughness Survey at Udaipur-Sabroom Section (right)

Development of GPR based Technique for Evaluation of Flexible Pavements

Funding Agency: CSIR-CRRI
Duration of the project: From March 2022 to February 2025
Broad Objective: Identification of different pavement layers and their thickness measurements Using GPR

Pavement layer thickness measurements are important input for maintenance and rehabilitation (M&R) decisions and vital parameter for Falling Weight Deflectometer analysis. Conventional layer thickness measurements are based on destructive testing using a finite number of cores taken from the pavement structure and test pit evaluations. Such approaches create localized weak zones and disturb the entire area surrounding the pit or core location. To overcome these limitations, a non-destructive tool for subsurface imaging called Ground-Penetrating Radar (GPR) has been employed. GPR is based on the principle of transmitting electromagnetic pulses into the probed material and detecting the reflected pulses as they confront any discontinuity with different dielectrics. The manner in which the radar energy will respond to any material would depend on center frequency of the antenna used, electrical conductivity and dielectric constant of the material. Pilot study using GPR has been conducted in CRRI campus for ascertaining layer thickness measurements. Cores have been extracted to get the actual measurement and error in the measurements have been recorded. For field study, number of road sections have been selected in NDMC area and GPR measurements have been recorded. Further data processing and analysis is being done to calculate the different pavement layer thicknesses. Figure 8 shows the GPR system at CSIR-CRRI.

Figure 8: GPR system at CSIR-CRRI

CONSULTANCY PROJECTS

Condition Assessment Using Modern Data Collection Techniques and Preparation of Annual Maintenance Plan of Odisha PWD Roads

Funding Agency: Works Department, Government of Odisha
Duration of the project: From 2023 to 2025
Broad Objectives: To develop Annual Maintenance Plan (AMP) for about 14000 kms of road network consisting of State Highways, Major District Roads and Other District Roads in all districts of Odisha using Modern Data Collection Techniques and Management Tools.

Road maintenance is a critical aspect of ensuring the longevity, safety, and efficiency of transportation infrastructure. To effectively manage road maintenance, it is crucial to adopt a scientific approach that integrates modern data collection technologies and management tools. This approach allows for informed decision-making, optimal resource allocation, and enhanced

road network performance. The road network comprising of State Highways, Major District Roads and Other District Roads managed by Odisha works Department is divided into 12 circles. The methodology for developing the Annual Maintenance Plan for 14000 km road network in these circles, integrates data collection using Network Survey Vehicle (NSV), Pavement Condition Index (PCI) evaluation, IRC guidelines adherence, Data collection using Falling Weight Deflectometer (FWD) for roads with PCI below 80, and analysis using Highway Development and Management Tool (HDM-4). This ensures a comprehensive approach to prioritize maintenance activities, allocate resources effectively, and enhance the longevity and usability of the road network. The photographs for field surveys using NSV and FWD are shown in figure 9.

Figure 9: NSV and FWD Surveys on Project Roads in Odisha

Technical Audit of Indore Gujarat Section of NH - 47 in MP State

Funding Agency: National Highways Authority of India
Duration of the project: From November 2022 to April 2023
Broad Objective: To perform the technical audit of the balance work of 4-Lanning of Indore-Gujarat/MP border road sections on NH-47, to identify the causes of distresses and to suggest remedial measures.

The project road on NH-47 is divided into four different sections. The traffic movement from Indore side to Gujarat Border is on Left Carriageway or LHS and from Gujarat Border to Indore side is on Right Carriageway or RHS of NH-47. Section-1 starts from km 106.210 and ends at km 115.250 (9.040 km). This section was upgraded to 4 lane divided carriageway during October 2022 to November 2022 upto Dense Bituminous Macadam Level for both Left and Right Carriageways of the road section. Section-2 starts from Km 121.740 to 127.140 (5.400 km). This section known as Machaliya Ghat Section was under construction. The forest section-3 starts from km. 149.800 and ends at km.150.850 (1.050 km). The progress of this section was upto CTSB level on LHS carriageway at the time of technical audit. Section- 4 starts from km. 158.250 and ends at km. 158.850. The LHS side of this section was completed upto Dense Bituminous Macadam Level. The RHS Side of this section was completed upto Wet Mix Macadam Level. With the above objectives, the scope of work included the following major activities:

1. Field investigations
   - Assessment of pavement surface distress by visual observations
   - Structural evaluation of pavement by Falling Weight Deflectometer
   - Test pit observations and material characterization
   - Extraction of bituminous cores

2. Assessment of riding quality on the existing pavement layer

3. Detailed laboratory investigations by studying the engineering properties of materials, retrieved from different layers of the existing pavement structure.

Section -1 (RHS, Existing DBM Surface) | Section-2 (Machaliya Ghat Section) | Section 3 (LHS, CTSB Surface) | Section-4 (RHS, WMM Surface)

Figure 10: Study sections

Based on the technical audit observations and road surface condition, the recommendations for restoration of all four study sections as shown in Figure 10 have been framed and are given in the report.

Evaluation of Internal NDMC Roads and Lanes for Determining Suitable Maintenance Measures

Funding Agency: New Delhi Municipal Council
Duration of the project: From June 2023 to March 2024
Broad Objectives: (a) Assessment of pavement surface condition on visual basis (covering the entire length of all project roads) to determine the current condition of project roads in terms of extent and severity of various types of surface distress / defects, along with Roughness measurements using Roughometer III.
(b) Recommendations/ Suggestions for suitable maintenance measures covering modern technologies like Cold Milling, Micro-surfacing, and conventional hot bituminous mixes.

The various activities / measurements that were taken up by CSIR-CRRI teams, during the field studies, included the following:

a) Visual Assessment of Pavement Surface Condition -The surface condition for all the project roads was assessed visually, through walk surveys, by experienced team having knowledge and understanding of different types of surface defects. Different types of surface distresses / defects, developed on the project roads, were noted down in terms of distressed area with respect to the total paved / surfaced area. The different types of distresses observed on the project roads include cracks (figure 11), raveling (loss of fines), depressions / settlements, patching and potholes.

b) Roughness Measurements using Roughometer-III
Based on the visual distress survey and road roughness data, the PCI values were computed as per IRC 82 (2023). Based on the results/ data obtained through field studies conducted on these roads, improvement/ remedial measures consisting of modern technologies such as cold milling, cold bituminous mixes (micro-surfacing) and conventional bituminous mixes (dense mixes) have been recommended.

Figure 11: Cracking observed on the study road

Mix Design for Granular and Bituminous Mixes for Runway Work at LEH

Funding Agency: Military Engineering Services
Duration of the project: From June 2023 to March 2024
Broad Objectives: To provide the mix designs required for the runway work at Leh (UT, Ladakh). This includes the mix design for DAC Grade 2 (using 4 modified binders of Grade PMB 76E-22), DBM Grade 2 (using 3 VG30 binders), SDAC (using 3 VG30 binders), WMM and GSB.

Mix design for Dense Asphaltic Concrete (DAC) grade 2 (using 4 modified binders of Grade PMB 76E-22), Dense Bituminous Macadam (DBM) Grade 2 (using 3 VG30 binders), Wet Mix Macadam (WMM), Granular Subbase (GSB) and Semi Dense Asphalt Concrete (SDAC) (using 3 VG30 binders) were carried out in the CRRI laboratory. The client required the results immediately due to the limited construction time available at Leh due to the challenging climatic conditions. Hence the results of the mix design as shown in figure 12 were sent to client on top priority.

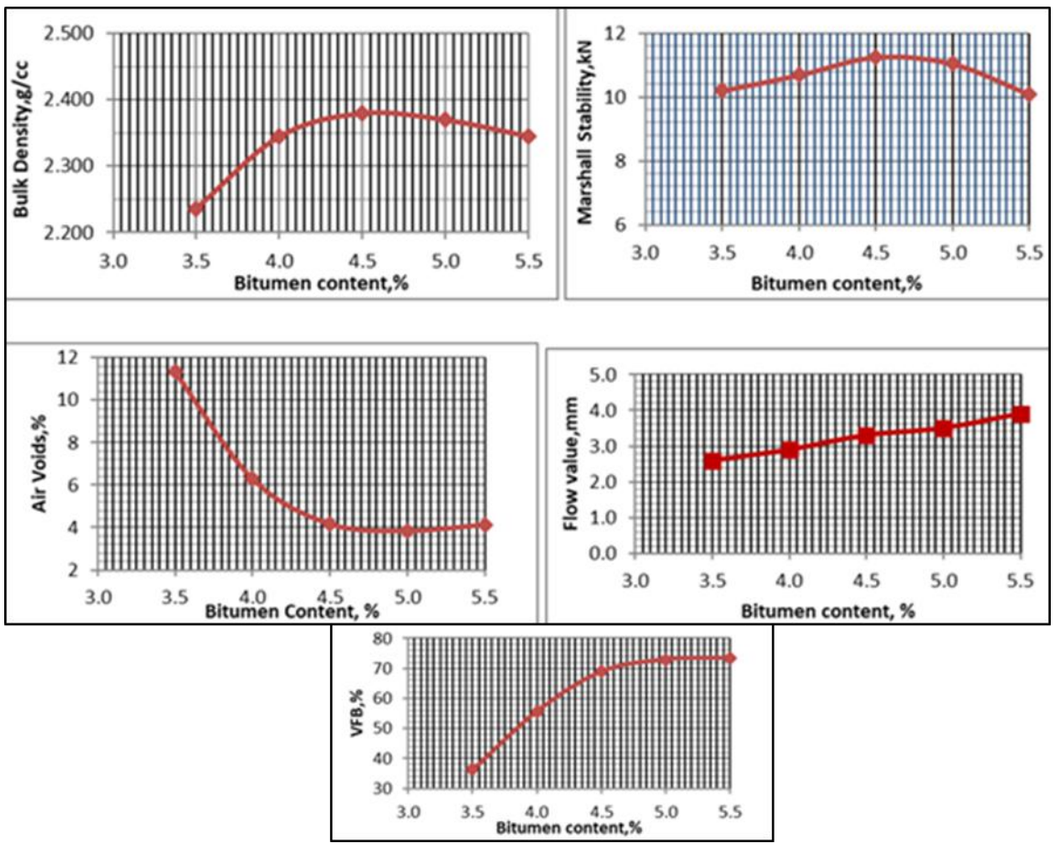


Figure 12: DBM Mix Properties corresponding to varying bitumen content

Bridge Engineering & Structures

RESEARCH PROJECTS

Development of Design Guidelines, Testing and Implementation Methodologies for Bridge Deck Water Proofing (BDWP) over Bridge Deck Overlays

Funding Agency: CSIR

Duration of the Project: From October 2022 to September 2024

Broad Objectives: (a) The present study aims to develop the design, test, and implementation methodologies for BDWP for Bridge decks and Overlays.

(b) IRC specifications or implementation guidelines through MoRTH.

(c) A full range of testing facilities in CRRI.

Waterproofing for bridge decks is becoming an essential component in the design and construction of bridges and should be incorporated from the Detailed Project Report (DPR) stage itself. The selection of appropriate waterproofing systems needs to be made considering the structural configuration of the bridge and the prevailing local environmental conditions. The present study aims to develop design guidelines, testing facilities, and implementation methodologies for bridge deck waterproofing systems so that comprehensive and standardized practices can be established. The study will focus on formulating industry requirements based on product specifications and field conditions, along with the development of suitable test protocols, implementation methodologies, and strategies for wider adoption through established norms and practices. It also aims to facilitate the publication of standards, norms, and guidelines through agencies such as the Ministry of Road Transport and Highways (MoRTH) and the Indian Roads Congress (IRC). In addition, the study addresses the selection of appropriate waterproofing systems based on structural and environmental considerations, and will include a cost–benefit analysis taking into account the long-term overlay requirements of bridge decks. The development of a full range of testing facilities for evaluating waterproofing materials and systems is also envisaged. The key deliverables of the final report include the development of design guidelines for Bridge Deck Waterproofing (BDWP) systems, a comprehensive study of available Bridge Surface Waterproofing (BSWP) systems, and the formulation of suitable selection criteria for their application. The report also cover the development of test facilities along with standardized testing procedures and tools, establishment of performance criteria for waterproofing materials, and recommended implementation methodologies along with necessary precautions during application. Finally, the study present conclusions and recommendations aimed at improving the durability and long-term performance of bridge decks through effective waterproofing practices.

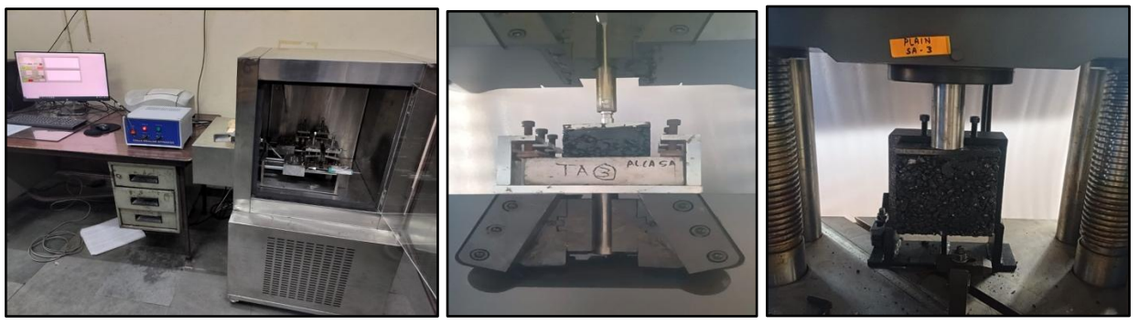


Figure 1: Development of Test Set Up for (a) Crack Bridging Test (b) Tensile Strength Test (c) Shear Adhesion Test

Figure 2: The Setup Prepared for High Temperature Effect on Waterproofing Membrane

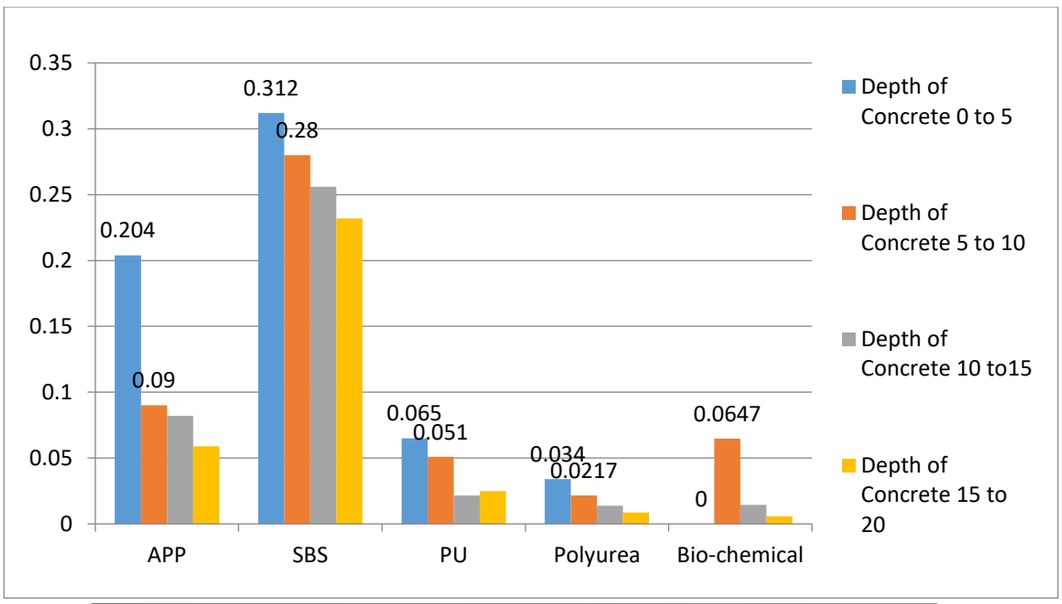


Figure 3: Results of Chloride Contents (%) Penetration in Concrete Slab coated with Waterproofing Membrane

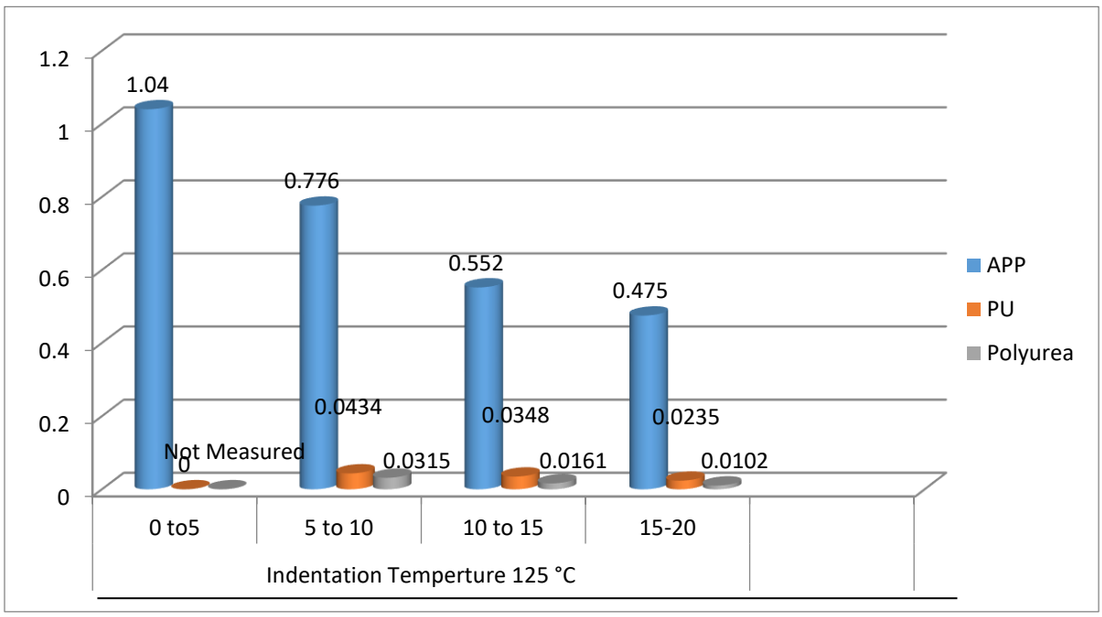


Figure 4: Results of Chloride Contents (%) Penetration after Aggregate Indentation Test

Development of a Customized Remotely Piloted Aerial Vehicle (RPAV) for Smart Applications in the Field of Remote Inspection and Monitoring of Bridges.

Funding Agency: CSIR-CRRI

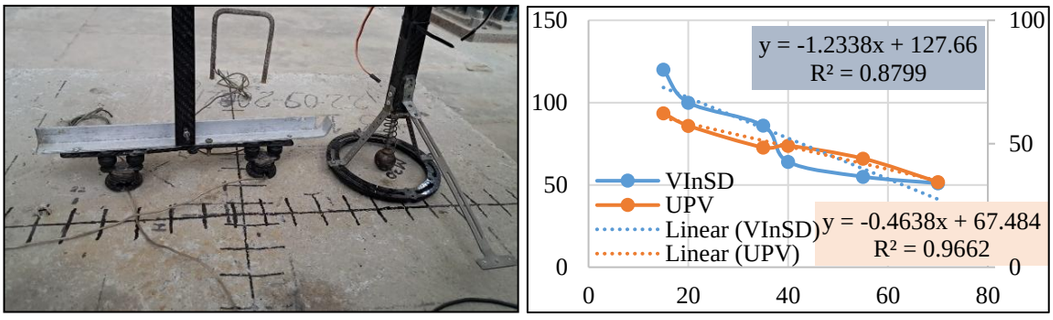
Duration of the Project: From April 2018 to March 2025

Broad Objective: To develop a customized RPAV for smart applications in the field of remote inspection and monitoring of bridges

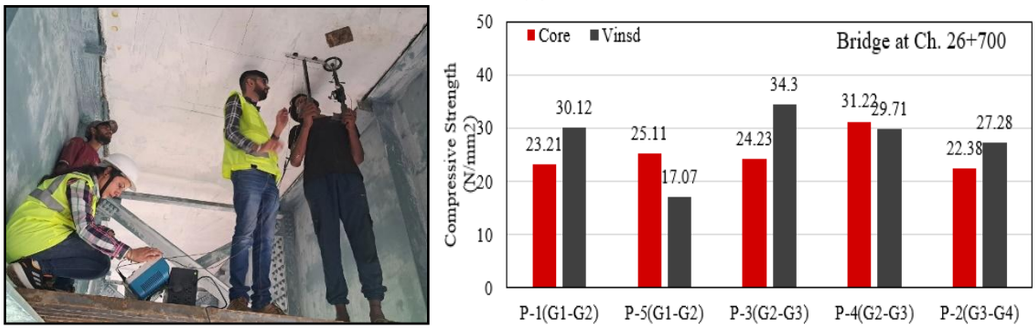
A digital device based on RPAV (Remotely Piloted Aerial Vehicle) and digital imaging technology is proposed for measuring bridge dimensions and detecting surface distress. The system captures high-resolution geo-referenced images, which are processed using stereo photogrammetry in Bentley software to generate a 3D reality model of the bridge. This model enables measurement of bridge geometry and supports condition assessment.In view of the above, it is aimed to develop a customized RPAV-BMS as shown in Figure 5, which will be a handy and smart device for quick and accurate bridge monitoring and inspection.

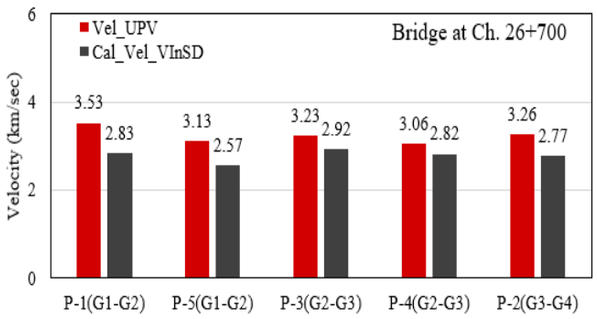
Figure 5: Bridge Monitoring using RPAV

Work Done: A skew RCC bridge with five spans on the Western Peripheral Expressway, Padheni, Haryana, was chosen for the study. It was a. In stage 1, high-resolution geo-referenced aerial images of the bridge structure were captured using the RPAV. The 3D Reality Model of the Bridge was generated in the Bentley software using the Stereo Photogrammetry Processing technology. Various dimensions of the bridge can be measured in this model. A maximum error of 10% was observed when the actual measurements were compared with those obtained from the 3D model. Thus, achieving its set objectives successfully finishes Phases I and II of the project (*Phase I has already finished*). The Phase III involves forensic investigations, which require attaching sensors and their data acquisition system in order to estimate the concrete strength and homogeneity. The sensor named Vibro-Integrity Sensing Device (VInSD) has been successfully fabricated, and a patent has been applied for it. Calibration of the same in the lab is shown in Figure 6(a). Validation in the device in real-life field conditions is shown in Figure 6(b). The results highlight the good correlation of the VInSD results when compared with conventional techniques.



(a)





(b)

Figure 6:(a) Calibration of the VInSD in the Lab, along with Results, (b) Validation of VInSD in the Field, along with Results

Research Scheme to Study the Corrosion of Various Reinforcement Bar Materials /Structural Steel, including Anti-Corrosion Coatings, Concrete Treatment with Surface Coating under Different Environmental Exposure Conditions.

Funding Agency: Ministry of Road Transport and Highway (MoRTH)
Duration of the Project: From September 2018 to September 2024
Broad Objective: To assess the relative performance of various reinforcement bar materials /structural steel, including anti-corrosion coatings, concrete treatment with surface coating under different environmental exposure conditions, vis-à-vis the conventional TMT reinforced bars.

Corrosion is an irreversible process affecting metals like steel, driven by electrochemical reactions. In concrete, steel reinforcement corrodes due to chloride ions, carbon dioxide, moisture, and oxygen. The concrete's pore structure influences the onset of corrosion. This leads to steel peeling, reduced bond strength, concrete cracking, spalling, and a shorter lifespan for structures. In India, many concrete structures, including highway bridges, suffer from corrosion of reinforcement, resulting in significant economic losses. Mitigation methods include surface modification, protective coatings, and using corrosion-resistant steel, though debates on their effectiveness persist, particularly concerning coating-induced issues.

Scope: This project evaluates the corrosion performance of concrete specimens with different types of reinforcing steel and protective coatings under accelerated environmental exposure conditions. The materials studied include Galvanized steel, Zinc-Aluminum coated bars, Fusion Bonded Epoxy Coated Reinforcement (FBECR), Cement Polymer Composite Coated (CPCC) steel, TMT steel, Corrosion Resistant Steel (CRS), Stainless Steel, and coated concrete systems such as Silane-coated and Crystalline compound-coated concrete with TMT reinforcement.

Results: Representative test set up and results are shown in Figure 7. Stainless steel bars demonstrated the greatest elongation (40%) and the highest tensile strength compared to other steels. Zn-Al and hot-dip galvanized (HDG) bars showed no significant changes during field exposure, while TMT bars developed blisters. FBEC bars lost adhesion when bent, unlike Zn-Al and HDG bars, which remained intact. Zinc-Aluminum coating is not typically used for concrete reinforcement, though FBEC is common in India, particularly in marine environments. Corrosion-resistant steel (CRS) bars rusted when exposed to the atmosphere. Zn-Al, CRS, and FBEC bars showed lower bond strength in both two-point loading and pull-out tests, while HDG and stainless steel bars had bond strength equivalent to TMT bars. Weight loss in concrete cubes was greater under HCl exposure than under H_2SO_4. CRS and TMT bars corroded more in salt spray tests, and coated bars cracked during bending tests. Water absorption tests showed coated specimens had reduced water absorption in M35 and M40 concrete mixes.

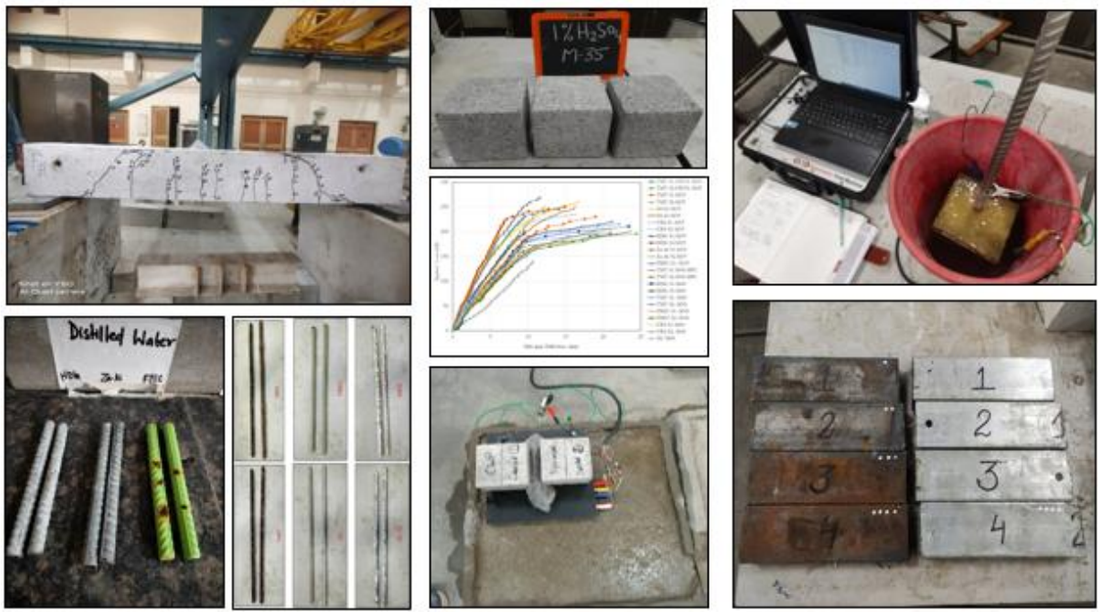


Figure 7: Representative Test Setup and Results

Study of the Nature of Ground Waves and Protection of Important Structures against Vibration

Funding Agency: CSIR-CRRI

Duration of the Project: From November 2021 to October 2024

Broad Objective: To solve the road/runway construction problem of problematic areas subjected to dynamic loads and to compare the flow of surface waves on the open ground and through the piles placed in a row (holography) before an important structure to be isolated against the vibration.

The work plan consists of constructing a trench of known dimensions through a hit-and-trial approach to study the propagation of stress waves in soil. The ground is struck very near the trench and the movement of stress waves on the other side of the trench is recorded. By striking the ground at two or three different locations and recording the wave movement beyond the trench, the wavelength of the ground wave can be determined. This can also be obtained by repeating the attenuative property determination experiment, where the wavelength is identified from the peaks of the recorded signals. The experiment will be repeated using different types of infill materials, as shown in Figure 8, to observe the behaviour of the waves. The set of experiments will also be conducted under different climatic conditions and by varying the depth of the trench. By changing the pattern of isolation, a platform will be created for a mechanical oscillator to generate waves through the trench at different known frequencies. The behaviour of these waves will be studied and compared with waves of known frequencies as well as with earlier observations under varying arrangements of the vibrating source. The problem of vibration isolation has been defined and the need for the present study has been established, along with the identification of its original contributions. A brief overview of wave propagation in an elastic half-space medium and vibration isolation using wave barriers has been presented. Geotechnical characterization of the infilled materials has been carried out to evaluate their suitability for the experiments. The field experimental work, as shown in Figure 9, including site investigations, testing procedures, and an innovative approach to constructing the trench wall, has been completed. The protective effectiveness of both open and in-filled trench barriers and the influence of barrier geometry and location from the source of disturbance, as shown in Figure 10, have also been investigated. In addition, the finite element method will be used to simulate wave propagation in soil using three-dimensional time-domain models in PLAXIS-3D. The results demonstrate that both open and in-filled trenches can significantly reduce vibration levels, with softer infill materials improving the practical applicability of in-filled trench barriers.

Sawdust Rice husk Crumbed tyre rubber

Figure 8: Three Types of Infilled Materials used in Trench Wave Barriers for Vibration Screening

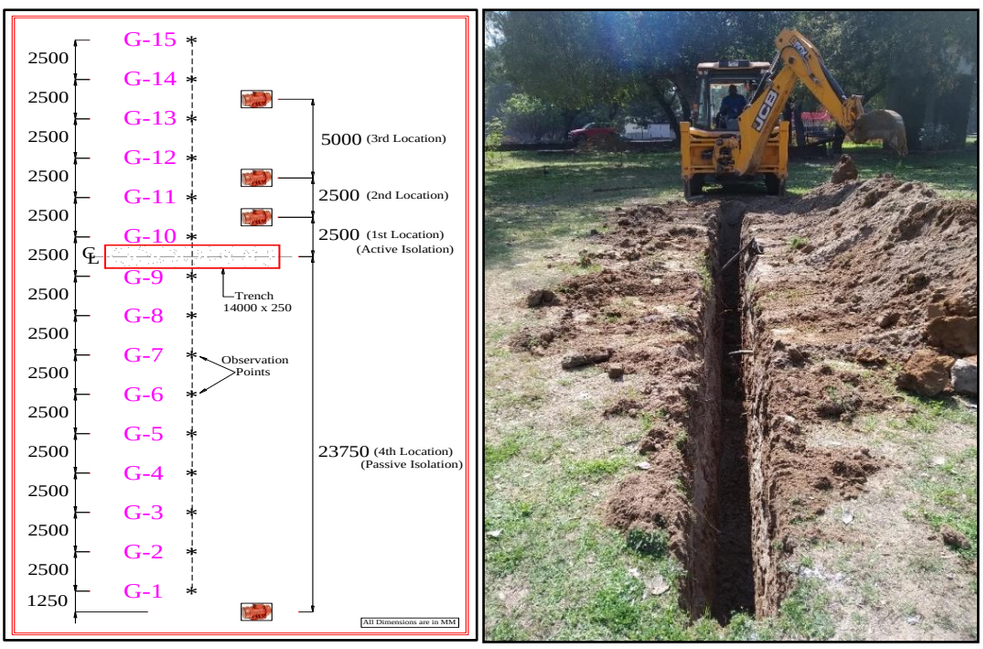


Figure 9: Layout for Experimental Work and Formation of Trench

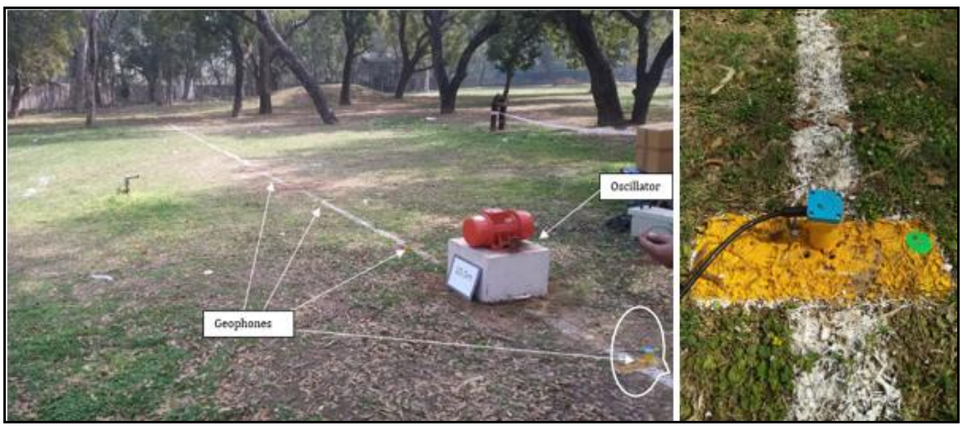


Figure 10: Instrumentation Setup showing Placement of Oscillator and Installed Geophones

Creation of National Test Facility for Bridge Expansion Joint at CSIR-CRRI

Funding Agency: Ministry of Road Transport and Highway (MoRTH)

Duration of the Project: From November 2005 to December 2024

Broad Objectives: CSIR-Central Road Research Institute (CRRI), New Delhi, is creating a Test Facility at its premises for Testing and Evaluation of Bridge Expansion Joints, for which the following tests are to be conducted in accordance with IRC: SP:69-2011.

Since the knowledgebase within our Country pertaining to the Type, Configuration and Specifications of Equipment for the Testing of Bridge Expansion Joint Assemblies and their

Components was limited, a High Powered Advisory Committee was constituted by CRRI to identify various Test Equipment, their Specifications, and Procurement to assist CRRI for the Creation of Comprehensive Testing Facilities (including Fatigue Testing Facilities) for Bridge Expansion Joints Assemblies and their Components. The requirement of guidance of the above Advisory Committee is also mentioned in the TOR of the Ministry. The work for the Creation of the National Test Facility is divided into (i) Mechanical System Package-1, (ii) Hydraulic and Electrical System Package-2, and (iii) Instrumentation and Control System Package-3. Evaluation of Bridge Expansion Joints consists of the following tests to be conducted in accordance with IRC: SP:69-2011.

- Opening Movement Vibration (OMV) Test and Seal Push-out (SPO) Test.
- Cyclic Motion Test, Debris Expelling Test, and Pull-out Test.
- Fatigue Test.

These tests shall be carried out at ambient temperature. For conducting these tests, the following three Test Rigs are to be fabricated:

- Test Rig-1: For conducting Opening Movement Vibration (OMV) Test and Seal Push-out (SPO) Test.
- Test Rig-2: For conducting Cyclic Motion Test, Debris Expelling Test, and Pull-out Test.
- Test Rig-3: For conducting Fatigue Test.

Work Progress: Fabrication of the three Test Rigs under Package-1 (Mechanical System) and Package-2 2 (Hydraulic and Electrical System) has been completed and supplied to CSIR-CRRI, and Installation and Commissioning work is in progress. Instrumentation and Control System Package-3 items have been supplied by the vendor, and mounting of control panels and installation of Sensors will be completed soon. The Project is in the advanced stage and is supposed to be completed by December 2024 under the supervision of CRRI's Consultant, Dr. Amitava Dasgupta, M/s Vector Designs, Kolkata. Progress is shown in Figures 11-13.

Figure 11: Showing the Installation of Test Rigs and Power Pack in Progress

Figure 12: Showing PDI of PKG2 Electrical Panels and PDI of PKG-3 Control Panels

Figure 13: Showing the Visit of DG, MORT&H at CRRI to see the Progress of the Project

Condition Assessment and Suggestions for Remedial Measures of Major and Minor Bridges of Odisha Road Network using Modern Test Procedures of Bridges under Public Works Department, Govt. of Odisha in the State of Odisha.

Funding Agency: PWD, Govt. of Odisha.

Duration of the Project: October 2023 to September 2025

Broad Objective: The Condition Assessment of 304 minor and major bridges, either in the distressed stage or more than 30 years old, in the Odisha Road network under the Public Works Department in the State of Odisha, and suggestions for remedial measures along with Bill of Quantities of individual bridges. The work covers all 31 Civil Divisions of PWD in the state of Odisha.

The Public Works Department (PWD), Government of Odisha engaged CSIR-CRRI to conduct condition assessment and recommend remedial measures for 304 major and minor bridges in the Odisha road network. These bridges, located across 31 Civil Engineering Divisions, are either more than 30 years old or in distressed condition. In the first phase, the CRRI team carried out preliminary inspections in the Nayagarh, Bhanjanagar, Ganjam-II, Khurda, and Puri divisions between 31 October and 4 November 2023. The purpose was to identify site requirements for detailed inspections (such as Mobile Bridge Inspection Unit, man lifter, boats, and ladders), identify critical bridges requiring urgent attention, and plan further studies according to IRC guidelines (IRC: SP-18 and IRC: SP-35). Subsequently, detailed inspections and condition assessments of bridges in Nayagarh and Bhanjanagar were conducted from 15–21 March 2024. The inspections revealed cracks in structural components such as pier heads, girders, deck slabs, abutment heads, and bearing pedestals, along with water leakage through drainage spouts and expansion joints in many bridges. During 2023–24, preliminary inspections of 60 bridges and detailed inspections of 40 bridges were completed. Based on the findings, bridge-specific

recommendations for repair, rehabilitation, retrofitting, and BOQs were prepared and submitted to the client

Figure 14: Inspection of (a) Sulia Bridge using a Man lifter on Nayagarh-Odagaon-Laukhala Road at Ch. 4.770 in Nayagarh(R&B) Division. (b) Rushikulya Bridge in Purushottampur-Jagannathpur Road at Chainage 2.700 Km in the Ganjam-II Division.

Figure 15: A Typical View of (a) Inspection of Superstructures of HL Bridge over Dhanei River in Budhamba-Buguda road at Chainage 8.988 Km in the Bhananagar Division using MBIU. (b) NDT on the Deck Slab of the Bridge over Local Nalla on Koilama-Brundabanpur Road at Ch-6.200 in Nayagarh(R&B) Division.

Figure 16: A Typical View of (a) Severely Exposed Reinforcement Observed on the Deck Slab of the Paiki Nallha Minor Bridge on Bhanjanagar- Tillisingi -Tarasingi Road at Ch. 29.550. (b) Erosion of the Apron of the Kotibaradi Bada Sankh Nallha Bridge on Bhanjanagar Tillisingi Tarasangi Daspalla Road at Ch. 9.580 Km in Bhanjanagar Division (c) Exposed Reinforcement on the Abutment of the Sulia Bridge in Nayagarh-Odagaon-Laukhala Road at Ch. 4.770 in Nayagarh(R&B) Division.

Structural Safety Audit of Major Bridge over River Yamuna at Benda Ghat in the Raebareli–Banda Section of NH-232 in the state of Uttar Pradesh

Funding Agency: NHAI, Govt. of India.
Duration of the Project: From April 2023 to March 2025.
Broad Objectives: (a) Detailed Visual Inspection of the major bridge at Bendaghat
(b) Review of the available reports/documents of the bridge.
(c) Random Non-destructive testing on the various structural members at randomly selected locations
(d) Condition Assessment and Suggestions for strengthening measures.

The National Highways Authority of India requested CSIR-CRRI, New Delhi, to determine the causes of failure and remedial measures of repeated damage in the deck slab of the Major Bridge over the river Yamuna at Benda Ghat. Accordingly, the CRRI team visited the bridge from 23rd April to 28th April, 2023. The bridge was constructed in the year 1980. The superstructures comprise simply supported spans with Gap Slabs (6.85m) on the Pier Heads. The carriageway width is 7.50m, and there is no footpath on either side. The main span has a 2-girder system along with seven diaphragms, and the gap slab comprises a 2-girder system along with three diaphragm walls. The main spans are supported at one end on the Rocker bearings and on the other end on the Roller cum rocker bearings. It seems that the gap slabs were also supported on the Rocker and Roller at the beginning. However, in the past, on the gap slabs, the Roller bearings had been replaced with elastomeric bearings by raising the bearing pedestals.

This project work deals with the Detailed Visual Inspection, Non-Destructive Test, Carbonation Test, Core Test & Laboratory Tests etc and remedial measures for the distressed members of the bridge as per prevailing guidelines of IRC: SP-18, IRC: SP-35, IRC: SP-40 and other related codes of IRC, MORTH, ACI 562-21 and EN-1504 etc. Figures 17 to 20 shows the condition of the various components of the Yamuna Bridge at Bendaghat.

Cracks have been seen on the deck slab of the Super Structure in several spans of the bridge. There are also cracks observed on the diaphragm walls, cantilever supporting pier heads at various locations. Rehabilitation measures have to be adopted in piers, abutment and superstructures of the bridge. There is also a need for replacement of drainage spouts, some of the bearings, and all expansion joints of the bridge.

On the basis of Visual Inspection, Distress Mapping, Non-Destructive Test, Laboratory Test, etc, repair/rehabilitation/strengthening methodology and recommendations for remedial measures along with BOQ for all the distressed/deficient members were provided to the clients.

Figure 17: General View of Span Arrangement of Yamuna Bridge at Bendaghat and Inspection through Mobile Bridge Unit of Yamuna Bridge at Bendaghat.

Figure 18: A View of Partially Repaired Gap Slab Span at Pier head of Pier P20 near Span P20-P21 (b) Bottom View of the Previously Partially Repaired Gap Slab at Pier Head of Pier P-20 between Cross Diaphragm C2-C3 of Yamuna Bridge at Bendaghat.

Figure 19: A Typical View of the Crack Observed on Girder G2 in the Suspended Gap Span at Pier P-7 of Yamuna Bridge at Bendaghat. (b) Severe Cracks observed on Cantilever Supporting Bracket below Girder G-2(RHS) at Pier Head of Pier P17 in the Span P17-P18 of Yamuna Bridge at Bendaghat.

Figure 20: Typical Views of the Temporary Support not Removed on Roller cum Rocker and Rocker Bearings of Yamuna Bridge at Bendaghat.

Pre-Opening Structural Safety Audit after Rehabilitation of Major Bridge over River Yamuna at Benda Ghat in the Raebareli –Banda Section of NH-232 in the state of Uttar Pradesh

Funding Agency: NHAI, Govt. of India.

Duration of the Project: From January 2024 to June 2025.

Broad Objectives: (a) Detailed Visual Inspection of the rehabilitated major bridge at Bendaghat

(b) Review of the report of the executed Rehabilitation work

(c) Random Non-destructive testing on the various structural members at randomly selected locations

(d) Random Load Test on the two spans of the bridge
(e) Suggestions for strengthening measures if required
(f) Suggestion for opening of the bridge with or without load restriction

National Highways Authority of India requested CSIR-CRRI, New Delhi, for “Pre-opening Structural Safety Audit of the Rehabilitated Major Bridge over the river Yamuna at Bendaghat”. The CSIR-CRRI team, along with the Mobile Bridge Inspection Unit (MBIU), carried out inspection and testing of the Yamuna Bridge at Bendaghat from 21–26 January 2024. The bridge, constructed in 1980 by PWD Uttar Pradesh, consists of 23 simply supported spans (29 m each) with gap slabs, a 7.5 m wide two-lane carriageway, and no footpaths. The superstructure includes girder systems with diaphragm walls, supported through bearings placed on extended cantilever arms, which act as critical load-bearing components.

Earlier, CRRI conducted a detailed inspection and NDT in April 2023, and the report was submitted to NHAI in May 2023. Based on this report, NHAI appointed a rehabilitation agency in July 2023 to carry out repair and strengthening works.

During the January 2024 visit, the CRRI team observed that several rehabilitation measures had been implemented, including crack sealing, pressure grouting, jacketing, FRP laminates, CFRP wrapping, and recasting of severely distressed deck slab panels. Additionally, old bearings were replaced with POT-PTFE bearings, expansion joints were replaced with strip seal joints, and bituminous wearing course with mastic asphalt was being laid. Replacement of drainage spouts was also underway.However, rehabilitation work was still pending in several spans and substructure components such as pier bottoms, abutments, and well caps. In some areas, the rehabilitation agency extended the scope of work based on actual site conditions.

The CRRI team also conducted load testing on two spans (P1–P2 and P22–A2) and inspected the repair and strengthening measures. A comprehensive report covering visual inspection, non-destructive testing, load testing, and evaluation of rehabilitation works was submitted to the client.

Figure 21: A View of Inspection through Mobile Bridge Inspection Unit of under Rehabilitation Yamuna Bridge at Bendaghat.

Figure 22: A Typical View of Load Test on Span P1-P2 of Yamuna Bridge at Bendaghat.


Figure 23: A View of Joint Inspection of Officials of NHAI, CRRI, Authority Engineer and Implementing Agency during Load Test of Yamuna Bridge at Bendaghat.

Condition Assessment, Structural Evaluation, and Suggestion for Remedial Measures/Strengthening of Two Bridges, namely Chahal Bridge and Warm Bridge, at Rihand, STPP of NTPC Ltd

Funding Agency: Sponsored by NTPC, Govt. of India.
Duration of the Project: From January 2024 to June 2025.
Broad Objectives: The Condition Assessment of two bridges, namely Chahal Bridge and Warm Bridge at Rihand under NTPC Limited in the State of UP, and suggestions for remedial measures along with Bill of Quantities of individual bridges.

The CSIR-CRRI team inspected Chahal Bridge and Warm Bridge from 27 January to 2 February 2024. Both bridges are more than 35 years old, with a carriageway width of 4.30 m and utility width of 5.15 m. Warm Bridge consists of a deck slab supported on three RCC girders with cross diaphragms, while Chahal Bridge has a solid slab multi-span box cell structure. No major strengthening measures have been carried out since their construction.

The assessment included detailed visual inspection, non-destructive testing (NDT), carbonation tests, core tests, and laboratory tests, following guidelines such as IRC: SP-18, IRC: SP-35, MORTH, ACI 562-19, and EN-1504. The inspection revealed that Girder G-6 in span P3–P4 of

Warm Bridge is severely distressed, with cracks extending into the deck slab, making the girder irreparable and unserviceable. It is therefore recommended that the entire superstructure of span P3–P4 (girders and deck slab) be demolished and replaced with a new RCC superstructure. Other issues include expired elastomeric bearings, non-functional expansion joints, and the need for pier strengthening. As an immediate safety measure, heavy vehicles should be prohibited from using Warm Bridge, traffic should be diverted through alternate routes, and warning signboards and barricades should be installed until reconstruction and rehabilitation works are completed. Priority strengthening is also required for piers, abutments, girders, and deck slabs, along with replacement of bearings, drainage spouts, and expansion joints. For Chahal Bridge, the 70–100 cm fill over the deck slab should be removed, and proper slope and curvature at bridge approaches should be provided to ensure safe and smooth vehicle movement.

Figure 24: A Typical View of (a) Inspection and (b) Cracks Observed on Girder G-6 In Span P2-P3 of Warm Bridge of the NTPC at Rihand.

Figure 25: Typical Side View of the Chahal Bridge at STPP of NTPC, Rihand (b) A Typical View of Inspection of Crust Thickness of Road

Figure 26: A Typical View of Non-Destructive Testing of the Deck Slab of Span A1-P1 and P2-P3 of Chahal Bridge of the NTPC at Rihand.

Flexible Pavement

RESEARCH PROJECTS

Development of High Strength and Fast Curing Cementitious Stabilized Base Layer

Funding Agency: NHAI
Duration of the project: From April 2021 to March 2024
Broad Objectives: The aim of the study is to develop a high-strength and fast-curing cementitious-based stabilizer for the construction of the base layer.

Construction of four-laning of Kanpur-Kannauj section under NHAI is being carried out by PNC Infratech Ltd., during which a CSIR – Central Road Research Institute (CRRI) team visited the site from 2nd February to 5th February 2024 for a pilot study on the construction of the stabilized sub-base layer. The CRRI team supervised the successful laying of a trial section of a stabilized sub-base using a polymer-cement stabilizer, jointly developed by CSIR-CRRI and M/s Somani Ecobuild Products LLP. The trial section of approximately 400 m long was laid on RHS between Km 422 and Km 423 of the Kanpur-Kannauj section near Mandhana in Bilhaur Tehsil. Testing of the trial section is also being carried out using a Light Weight Deflectometer (LWD) on the laid trial stretch of CTSB on the Kanpur-Kannauj section. Figure 1(a) and 1(b) show the laying and compaction of the stabilized sub-base layer and testing using LWD, respectively.

Figure 1(a): Laying and Compaction of the Stabilized Sub-Base Layer in Uttar Pradesh

Figure 1(b): Testing using LWD

Performance Evaluation of Pavement Constructed with Ferro Chrome Slag as Alternative to Natural Aggregate

Funding Agency: M/s TATA Steel Ltd
Duration of the project: From November 2021 to November 2024
Broad Objectives: The objective is to evaluate the performance of pavement constructed with ferrochrome slag as an alternative to natural aggregate

The study is conducted in two phases i.e., slag incorporated mix design as applicable according to existing pavement design and construction, followed by performance evaluation. Supervision during construction and periodic performance observations will be conducted using established methods. Performance evaluation, on a six-monthly basis for two years after construction, will include data on condition assessment, structural and functional evaluations, and laboratory tests on materials/mixes, as given below (Figure 2). Collaboration with the Works Department, Odisha was undertaken, and a 500 m trial section was laid using ferrochrome slag as an alternative to natural aggregate from Sailong to Rosala Road, Ghatagaon, Odisha. Details of the laid section along with instrumentation are presented in Figure 3.

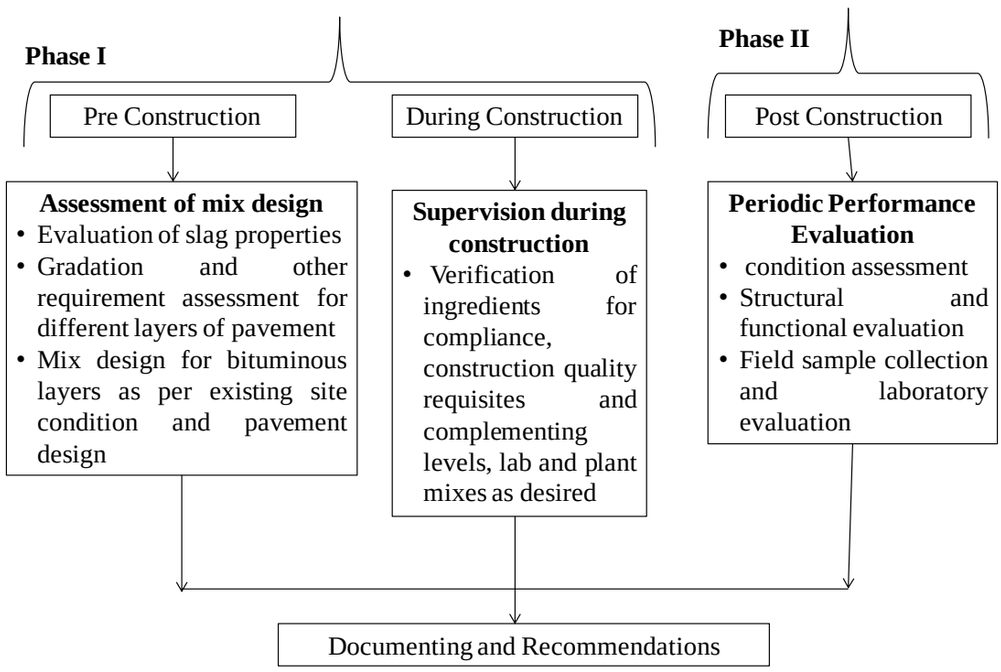


Figure 2: Methodology for mix design, construction, and performance evaluation

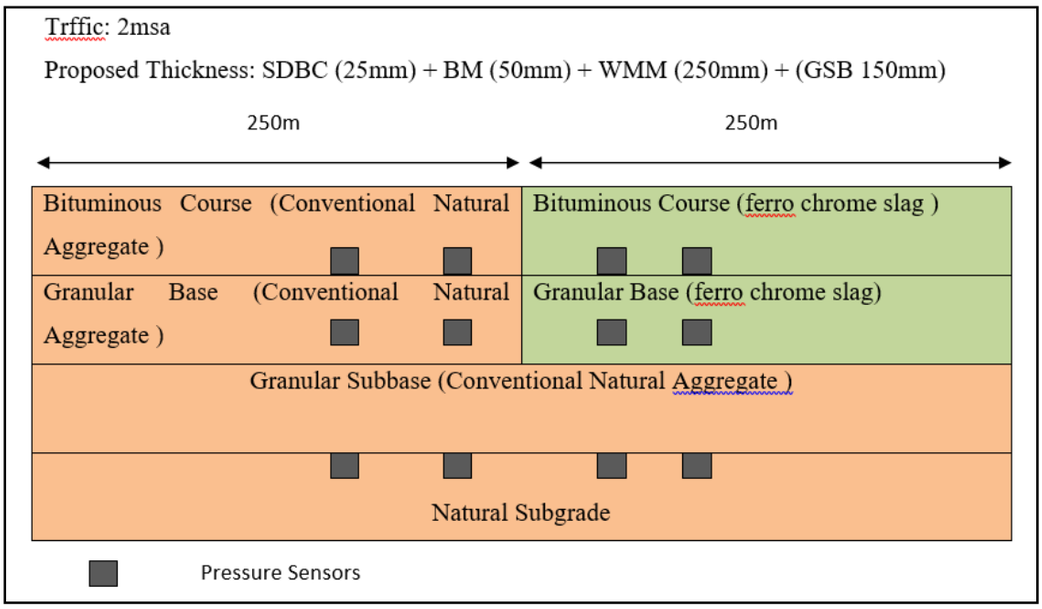


Figure 3: Proposed Layout for Trial Section

Development of Instrumented Benkelman Beam for Structural Evaluation of Flexible Pavements

Funding Agency: CSIR-CRRI

Duration of the project: From August 2021 to July 2023

Broad Objectives: (a) Customization of Benkelman Beam equipment with suitable sensors and data acquisition system.

(b) Back-calculation analysis of deflection data obtained from IBB and FWD to develop correlations.

(c) Development of Deflection Bowl Parameters (DBPs) for easy and fast interpretation of deflection data.

A prototype of the proposed Instrumented Benkelman Beam (IBB) was developed in collaboration with an industry partner. The fabrication of the central housing unit and placement of different sensors were carried out for continuous recording of distance and corresponding deflection under loading. The final prototype was tested on the campus after installation of the sensors. Trial readings were taken, and the required modifications were implemented to obtain the target dataset. Thereafter, three field sections were identified for data collection through the developed IBB

equipment along with the FWD equipment. The collected data was examined through a detailed computational analysis. Moreover, the FWD deflection data was also collected on the same sections, and a comparative analysis will be performed to develop the correlation factors.

Laboratory Mix Design and Performance Evaluation of Micro-Surfacing Mixtures with Reclaimed Asphalt Pavement

Funding Agency: CSIR-CRRI

Duration of the project: From April 2022 to March 2024

Broad Objectives: (a) The modified laboratory mix design will be developed based on finding the maximum and minimum bitumen emulsion content for RAP and without RAP.

(b) The performance of control micro-surfacing for practical application (mixing condition, moisture susceptibility, shear resistance, and skid resistance) will be evaluated.

Micro-surfacing, which has been used in Germany, Spain, and France since 1976, was introduced to the United States in 1980, and in India during 1999-2001. As described by ASTM and ISSA, the methodology of mix design for Micro-surfacing clearly states that the methods for mix design should be used only as a guide. The two methods, "Laboratory method of mixing and curing Micro-surfacing mixtures (TxDOT, 2004)" and "A Laboratory Investigation on Bitumen-Emulsion Mixes" (Tipnis and Pandey, 2001), have been tried in the laboratory. To promote Micro-surfacing in India, IRC published IRC: SP: 81-2008, titled "Tentative Specifications for Micro-surfacing", after successful trials in various locations in India by CRRI. NHAI has also issued a circular recommending Micro-surfacing for the renewal of the wearing course for the maintenance of National Highways. Micro-surfacing has also been included in the 5th revision of the MORT&H specifications for road construction and maintenance. IRC has further published IRC: SP: 100-2014 for cold mix technology, in which Micro-surfacing has also been recommended for renewal courses for unlimited traffic. As per IRC: SP: 81-2008, the range of residual asphalt content by aggregate weight is 6.5 to 10.5% and 5.5 to 10.5% for Type II and Type III grades, respectively. The mix design report shall clearly show the proportions of aggregate, filler, water, and residual bitumen content based on the dry weight of the aggregates, and the additive usage (if any). The design criteria for Micro-surfacing mixture are specified in Table 1.

Table 1: Design criteria for Micro-surfacing mixture

Requirements	Specifications	Test Method as given in IRC: SP: 81
Mix Time, minimum	120 s	Appendix-1
Consistency, maximum	3 cm	Appendix-3
Wet Cohesion, within 30 min, minimum	12 kg.cm	Appendix-4
Wet Cohesion, within 60 min, minimum	20 kg.cm	Appendix-4
Wet stripping, Pass %, minimum	90	Appendix-5
Wet track abrasion loss (one hour soak), maximum	538 g/m^2	Appendix-6

In the present study, a modified mix design will be developed for Indian conditions. The performance of micro-surfacing mixtures with and without RAP, under practical application conditions (mixing condition, moisture susceptibility, shear resistance, and skid resistance) will be evaluated.

Assessing the Suitability of Micro-surfacing as Periodic Maintenance for Rural Roads over Bituminous and Cement Concrete Surfaces

Funding Agency: National Rural Infrastructure Development Agency (NRIDA)
Duration of the project: From March 2022 to March 2024
Broad Objectives: (a) Mix design and laboratory evaluation of the Micro-surfacing layer by varying the filler type and content.
(b) Selection of sites (concrete, bituminous top surface) based on Pavement Condition Index of the pavement surface

Evaluation of the proposed emulsion and bitumen properties, gradation, and mix design has been carried out in the laboratory. The flowchart of the laboratory mix design and performance of micro-surfacing is shown in Figure 4.

It is proposed to undertake this demonstration project to construct micro-surfacing over different pavement surfaces at a location along the approved NRRDA project in northern India (Figure 5). Supervision during construction and periodic performance observations using established methods will be carried out. The performance evaluation will include the collection of data on condition assessment, roughness measurement, BBD/FWD testing, coring, and laboratory tests on cores. A periodic evaluation may be done on a six-monthly basis for one year after construction.

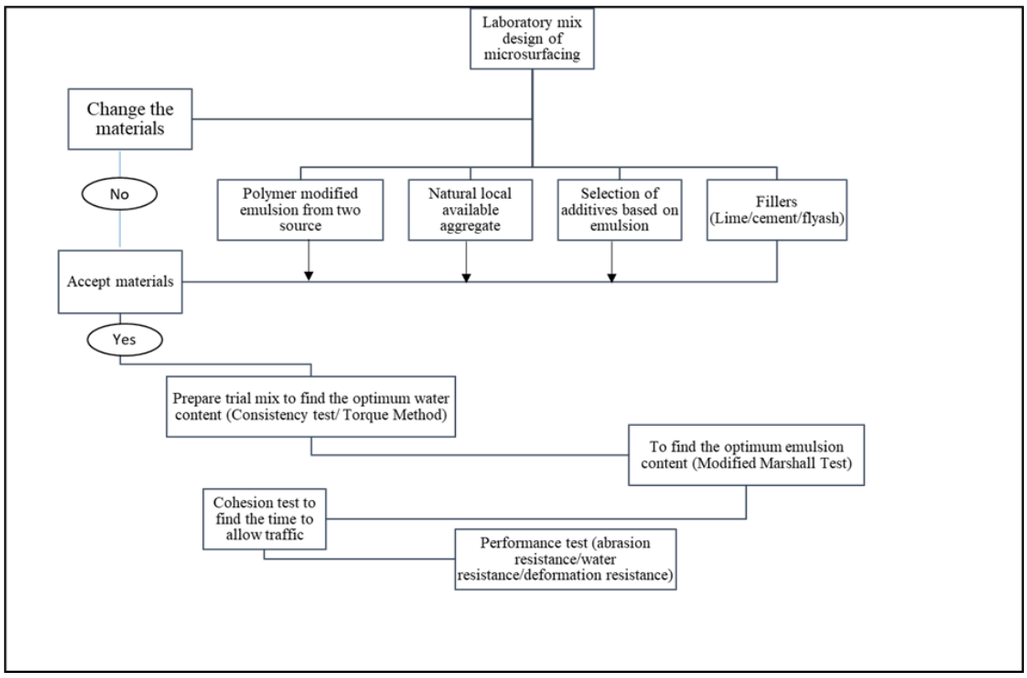


Figure 4: Flowchart of the laboratory mix design of the micro-surfacing test section

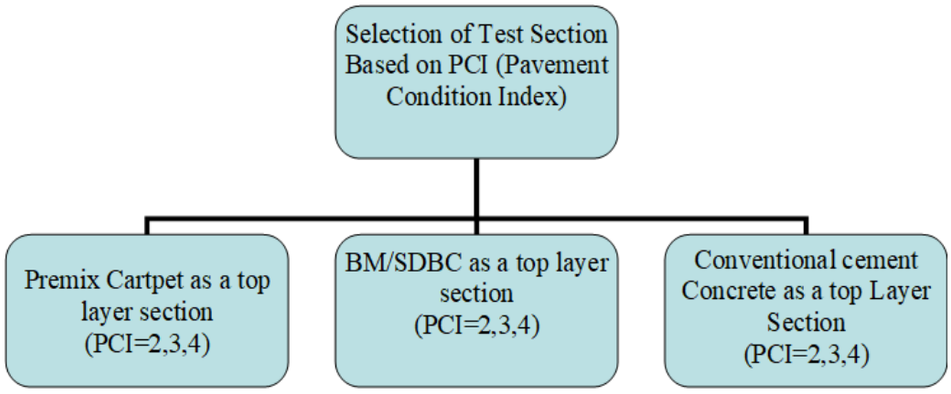


Figure 5: Flow chart of the test section

The test section will be selected based on the pavement condition index (PCI). In this study, three types of test sections will be selected from the rural roads. The section selection will be based on

the top layers, such as premix carpet, bituminous macadam/SDBC, and cement concrete layer (cell-filled concrete, panel concrete, or other types of cement concrete pavement). The PCI values 2, 3, and 4 implies road condition is good, fair, and poor, respectively.
The performance of micro-surfacing in the field and a comparative study will be done based on PCI values and the type of surface course.

Testing of Cellulose Fiber Pallets and Design of SMA Mix using Cellulose Fiber Pallets (TOPCEL)

Funding Agency: M/S ORGANO CHEMICAL INDUSTRIES
Duration of the project: From February 2023 to September 2023
Broad Objectives: (a) Testing of fibers (b) Mix the design of SMA

Stone Matrix Asphalt (SMA) consists of a coarse aggregate skeleton and a high binder content mortar. It has been used to provide better rutting resistance and to resist the pavement wear caused by tyres with studs during winter time. SMA has also shown high resistance to plastic deformation under heavy traffic loads with high tyre pressures. and good low-temperature properties. The materials used to prepare the SMA mix are bitumen, coarse aggregate, fine aggregate, mineral filler, and stabilizer additive. As per IRC: SP: 79/MoRTH 2013, only pelletized cellulose fibers shall be used as the stabilizer additive. The dosage rate for cellulose fibers is 0.3% minimum by weight (on a loose fiber basis) of the total mix. The dosage rate shall be confirmed so that the bitumen drain down does not exceed 0.3% when the designed mix is tested as per ASTM D6390 (Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures).

The cellulose fibers to be used in pellet form shall meet the following requirements:

- Maximum fiber length - 8mm
- Ash content - maximum of 20% non-volatile
- Oil Absorption - more than 4 times the fiber weight
- Moisture content - less than 5 % by weight

Development of Cement-Asphalt Mortar for Application as a Damping Material

Funding Agency: CSIR-CRRI
Duration of the project: From March 2022 to February 2024
Broad Objectives: The broad objective of this study is to develop cement-asphalt (CA) mortar (based on available chemicals, cement, and emulsion) for the application as a damping material, which is suitable for Indian environmental conditions.

To achieve the study goal the specific tasks are as follows:

- Evaluation of the physical properties and chemical composition of the Ordinary Portland Cement in accordance with IS 269:2015.
- Evaluation of the basic physical properties of anionic and cationic bitumen emulsions by following the IS 3117:2004 and IS 8887:2004, respectively.
- Preparation of CA mortar with different proportions of A/C, W/C, and S/C based on available materials.
- Determination of the heat of hydration of the cement-asphalt binder using an isothermal calorimeter.
- Evaluation of the microstructure of hardened cement-asphalt paste using an environmental scanning electron microscope.
- Evaluation of different physical and mechanical properties of CA mortar, such as compressive strength, damping potential, etc.

Development of Bio-binder for Construction of Flexible Pavements

Funding Agency: CSIR (FTT Project)- Collaborative Project: CSIR-CRRI and CSIR-IIP
Duration of the project: From September 2022 to September 2024
Broad Objective: Development of Bio-binder for construction of Flexible Pavements

India is primarily an agricultural economy and also has forest cover. The presence of renewable organic carbon can be used as an alternative option to produce the crude-derived fractions. The residues obtained after crop harvesting and waste from forestry activities are good source of lignocellulosic biomass. Lignocellulose biomass is the most suitable option to supplement the fossil-based resources in the journey towards decarbonisation, especially for decentralized/local applications. Considering the major advantages of bio-binders and the increasing environmental issues, the current study focuses on implementing the use of bio-oils in bituminous binder production. The use of bio-binders in flexible pavements is rapidly gaining interest and momentum within the asphalt community as a means to substitute petroleum-based materials for asphalt mixtures. Such bio-binders can act as bitumen replacement as well as enhance the performance characteristics of flexible pavements under various severe climate and loading conditions. CSIR-IIP and CSIR-CRRI have jointly developed a process for the preparation of bio-bitumen from agricultural residues. The bio-bitumen has been tested for its applicability and feasibility and compared with the conventional fossil-based bitumen for flexible pavements. The results are very good and suitable for bituminous road construction.

Figure 6: Bio-mass

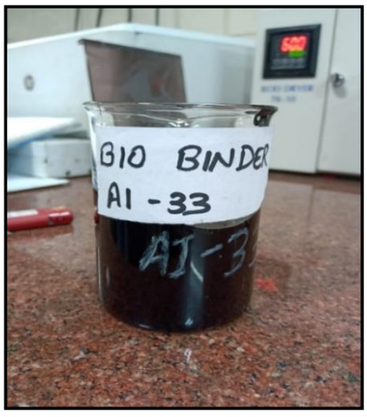


Figure 7: Bio-Binder

Proposal for Modernization and Infrastructure Upgradation of R&D Facilities in Flexible Pavement Division

Funding Agency: CSIR-CRRI
Duration of the project: From February 2022 to January 2025
Broad Objectives: (a) To upgrade/modernize the R&D infrastructure facilities through the procurement of equipment/software in the flexible pavement division
(b) Operation, upkeep, and maintenance of various equipment available in the Flexible Pavement Division.

Laboratory and Field Evaluation of the Bituminous Mix/Soil Stabilization Using ANT Organic Stabilizer

Funding Agency: Linkcon and Dignity Infraprojects JV
Duration of the project: From September 2022 to September 2024
Broad Objective: Laboratory and field evaluation of the bituminous mix/ soil stabilization using ANT organic stabilizer

Full-depth recycling (FDR), also known as full-depth reclamation, has been adopted as a road rehabilitation technique in many countries. The FDR process is employed to construct economical

and long-lasting new pavements by recycling existing flexible pavements with a wide range of distresses. FDR is defined as a pavement rehabilitation and upgradation technique in which a predetermined thickness of bituminous and underlying pavement layers are excavated, pulverised, blended with a binder, and compacted to act as a bound or hardened base course of the new pavement. This method can be used on both distressed bituminous and granular pavements. Even though different layers of the existing pavement are recycled, they are thoroughly mixed with a binder and recycled to lay a single new layer of stabilised material. The main objective of the present study is to evaluate the ANT modifier as a stabilizer and its ability to improve the performance characteristics of pavement materials. To check the field performance, a trial section was laid in the state of Andhra Pradesh with a length of 7.8 km.

Figure 8: Road condition before FDR

Figure 9: Road condition After FDR

CONSULTANCY PROJECTS

Mix design for BC and DBM for Rut Resistance in the Udaipur-Chittorgarh section (NH-48) in the State of Rajasthan

Sponsoring Agency: Uchit Expressways Private Limited
Duration of the project: From November 22 to May 2023
Broad Objectives: The objective of the project is to provide a mix design/job mix for BC and DBM for Rut Resistance in the Udaipur-Chittorgarh section.

To achieve the project objective, the scope of work included laboratory evaluation and comprised the following surveys/activities/tasks:

- Evaluation of physical properties of aggregate, and physical and rheological properties of the binder
- Evaluation of volumetric properties of bituminous mixes and determination of the optimum binder content
- Evaluation of the mechanical properties of the BC and DBM bituminous mixes
- Recommendations for mix design for rut resistance, for condition improvement and strengthening requirements for the roadway.

The job mix formula was prepared, and based on the laboratory testing, the optimum binder content for DBM-II and BC-I, obtained corresponding to a median air void content of 4%, was 4.5% and 5.0%, respectively, by weight of the total mix, and were recommended.

Rigid Pavement

CONSULTANCY PROJECTS

Design of Campus Roads of National Academy of Coastal Policing at Okha, Gujarat

Sponsoring Agency: MMbp Engineers
Project Duration: June 2023 to September 2023
Broad Objective: The objective of the study was to design of campus roads of the National Academy of Coastal Policing at Okha, Gujarat

MMbp Engineers is developing a new National Academy of Coastal Policing at Okha Gujarat. MMbp Engineers has planned to construct a conventional concrete road in the National Academy of Coastal Policing at Okha. The widths of the roads to be constructed are 3 m, 6 m, and 9 m, respectively. The roads will carry a typical city traffic comprising cars and buses. However, during the construction and development phase few trucks carrying construction materials are also expected. In this regard, Conventional concrete pavement is being recommended by CRRI for the long-lasting, durable, and cost-effective solution for the National Academy of Coastal Policing roads.

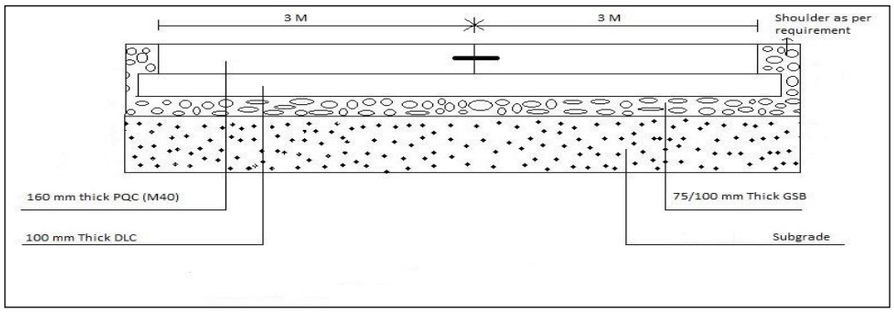


Figure 1: Cross Sectional details of 3 m x 6 m conventional concrete pavement

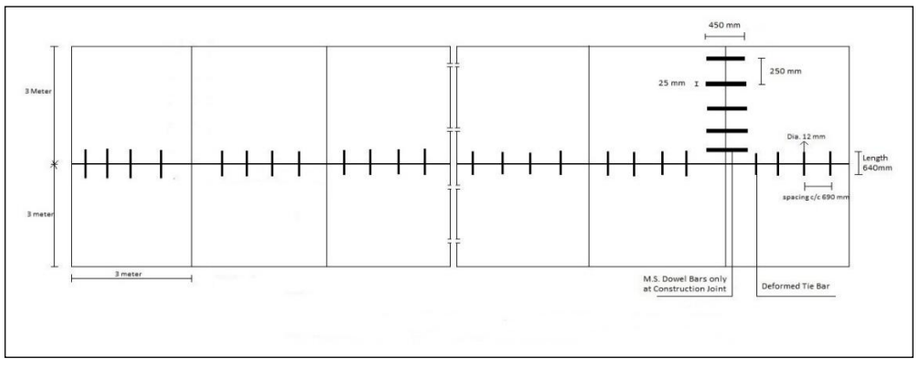


Figure 2: Plan of 3 m x 6 m conventional concrete pavement

Design of Thin White Topping (TWT) Pavement in Continuation with Existing Nagpur – Amravati Road of NH-53 (Wadi Road) (From km 2+250 to 5+100 and km 8+360 to km 10+300) in Nagpur City

Sponsoring Agency: T & T Infra-Altis (JV) Pvt. Ltd., Pune
Project Duration: January 2023 – March 2023
Broad Objective: The main objective of the project is to design and submit a technical report (the PQC slab thickness, slab panel dimensions, details of dowel bars, and tie bars) for the construction of a thin white topping road (rigid pavement) over the existing bituminous road sections.

The project road starts from km 2+250 to km 5+100, and from km 8+360 to km 10+300, on the Nagpur -Amravati Road (NH-53) in Nagpur City. It was further decided that the white topping shall be overlaid in the whole available road width. A white topping overlay (thin or conventional)

is a very old technique for strengthening, rehabilitation, or both, of distressed existing roads carrying moderate to heavy traffic, as well as for upgrading to pothole-free roads, parking lots, colony roads, and city roads. It is mostly adopted to improve road performance in terms of durability (longevity) and riding quality, as well as for environmental benefits such as lower demand for external lighting, reduced road surface elevation, and reduced maintenance work. The thickness of the concrete overlay varies depending on the existing pavement condition, anticipated traffic, desired life, concrete strength, and other similar factors.

Evaluation of the Existing Pavement

A proper evaluation of the existing pavement condition is critical for a white topping overlay design. The characterization of the existing pavement, i.e., evaluation of the pavement condition and distresses such as cracks, potholes, problematic locations, etc., was carried out thoroughly through visual inspection and other details such as the composition of the existing road crust, layers, and their thickness were obtained from pit observation. The test result was submitted by the client to the CRRI.

Figure 3: A typical photo showing the existing condition of the pavement

Figure 4: Thickness measurement of the existing bituminous road crust layers in progress

Rehabilitation and Upgradation of 2-Lane to Paved Shoulder from Section Amdi-Saoner km 226/140 to km 265/724 of NH753

Sponsoring Agency: NHAI Division, Nagpur

Project Duration: June 2023 – March 2024

Broad Objectives: (a) To investigate and ascertain the reasons behind the development of cracks in the PQC slab and other distresses, such as lane-to-lane separation.

(b) Overall construction quality assessment.

(c) Recommendation of appropriate methodology/ies.

On the LHS carriageway, there are more than **626** concrete pavement slab panels in different locations with longitudinal crack/s requiring full-depth reconstruction. At some locations, reconstruction is required from beneath the layers, even from the subgrade. On the RHS carriageway, there are **740** concrete pavement slab panels at different locations with a longitudinal crack requiring full-depth reconstruction. At some locations, reconstruction is required from beneath the layers, even from the subgrade. At least **1366** pavement slab panels shall be reconstructed. At some locations, reconstruction shall begin from the underlying layers up to the subgrade.

Based on the nature of the distresses, such as continuous longitudinal crack/cracks, transverse crack/cracks at mid and near joints, lane-to-lane separation, depth of in-situ slab, lane-to-lane fault, longitudinal crack with fault, etc. Remedial measures involved major reconstruction of the concrete pavement slab not only from the PQC slab but also from the bottom layers of the pavement at a few stretches.

Figure 5: Investigation of distress in PQC, propagation of crack depth to PQC and DLC layer

Expert Opinion on Maintenance Work for the Baleshwar to Kharagpur Section of NH-60

Funding Agency: State Bank of India
Duration of the project: From February 2023 to June 2023
Broad Objective: To provide expert opinion on maintenance works for the categorization of different types of cracks in the Baleshwar to Kharagpur Section of NH-60. To achieve the above objective, the relevant data, i.e, the concession agreement, O&M agreement, and other related documents, were studied

Baleshwar to Kharagpur is a four-lane rigid pavement (NH-60) constructed under the National Highway Development Programme (NHDP) Phase I during the year 2003 - 2006. The highway is 119 km long and runs through the states of Orissa and West Bengal. The highway experienced devastating floods in 2008 and 2013, resulting in major cracks. Baleshwar Kharagpur Expressway Limited (BKEL) was awarded a concession by NHAI for Construction of New bridges/ structures, repair of existing four lane highway from Baleshwar to Kharagpur section of NH-60 (km 0.000 to km 119.300) in the state of Orissa and West Bengal and its Operation & Maintenance under NHDP Phase-I being executed as Build, Operate, Transfer (BOT) (Toll) on Design, Build, Finance, Operate and Transfer (DBFOT) pattern for a concession period of 24 years. State Bank of India requested CRRI to provide an opinion, based on the site visit and data provided by the client, on the maintenance work to be classified, i.e., Routine Maintenance or Major Maintenance. Based on the site facts observed and BKEL's reports on the nature of cracks and the rehabilitation work, CRRI concludes that major maintenance work is required, not routine maintenance.

Based on the site visit and the client's data, i.e., Routine Maintenance or Major Maintenance. Based on the site facts observed and BKEL's reports on the nature of cracks and the rehabilitation work, CRRI concludes that major maintenance work is required, not routine maintenance.

Figure 6: Typical photos showing the existing condition of the pavement at different locations

Field Study and Suggestion for Economical Design of Pavement for Strengthening of the Existing Truck Parking Area at ICD Dadri, U.P.

Funding Agency: Container Corporation of India

Duration of the project: From January 2023 to April 2023

Broad Objectives: To determine the economically cost-effective pavement design for strengthening of the existing truck parking area

Based on the field investigations carried out, i.e, Visual inspection of the existing distressed (Figures 19 & 20) truck parking area, test pit for determining the crust thickness of the existing pavement, Traffic data, axle load data, and analysis of data, suitable recommendations for the strengthening of the truck parking area were suggested. An economic analysis based on the net present value method, i.e., the net present value of total construction and maintenance costs over the 20-year analysis period, was carried out for flexible and block pavements. Based on life-cycle cost considerations, Block Pavement was recommended as the most suitable pavement type for the truck parking area at ICD Dadri. An economic analysis based on the net present value method, i.e., the net present value of total construction and maintenance costs over the 20-year analysis period, was carried out for flexible and block pavements. Based on life-cycle cost considerations, Block Pavement was recommended.

(a) (b)

Figure 7: **(**a) A view of the existing distressed truck parking area used by Multi axle container trucks, (b) A view of the large potholes developed in the existing pavement

Repair and Restoration of Expansion Joints of Runway at VSS Airport, Jharsuguda

Duration of the project: April 2022 to July 2023

Broad Objectives: (a) To investigate the causes of opening of expansion joint in runway;
(b) To suggest repair and restoration techniques for the expansion joint in runway.

Assistant General Manager (Engg-Civil), Airport Authority of India (AAI) approached CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, to take up the work for repair and restoration of the expansion joint of the runway at VSS airport, Jharsuguda, and provided

suggestions for suitable recommendations for improvement of the existing runway. The total length of the runway is 2391 m, and the width is about 45.0m, made of concrete. Blowing up of the expansion joint was observed at many locations along the runway. A number of field tests and surveys were undertaken to assess the condition of the expansion joints and determine the quality of the runway construction materials in various pavement layers, including concrete, granular, and subgrade. Based on the field and laboratory data, full-depth replacement of the expansion joint panel was suggested as the remedial measure for the runway.

Figure 8: Deteriorated condition of the repaired expansion joint

Figure 9: Expansion joint repaired with different repair materials

Geotechnical Engineering

RESEARCH PROJECTS

Design, Construction, Supervision and Pavement Performance Evaluation of Road Constructed by Using Red Mud

Funding Agency: Hindalco Industries Ltd. Mumbai
Duration of the project: From March 2023 to July 2026
Broad Objectives: (a) Methodology for the construction of embankment/subgrade using red mud as per MoRTH specifications.
(b) Monitoring of performance of constructed road for a period of at least two monsoon seasons.

A pilot study was conducted based on a laboratory experiments on red mud. Development of the six-lane Kaliagura–Baunsaguar section of NH-130 road is proposed from 249+000 to 293+000 under the Raipur-Visakhapatnam economic corridor in the state of Odisha. Red mud experimental sections were constructed in the loop road of flyovers. In the first section, red mud was used to construct the subgrade, and in the second section, red mud mixed with fly ash (75:25) was used in the embankment. The third section was constructed with conventional materials. The details of the experimental sections and the control section are given in Table 1. Fig. 1 shows the line diagram of the pavement cross-section. Fig. 2 shows the compaction of the subgrade using a roller.

During construction, density, dynamic modulus, and static modulus were determined using the sand replacement method, LWD, and plate load test. Analysis of data and performance monitoring are being carried out as the project is continuing.

Table 1- Location and other details of experimental sections

Location	Section	Length, m	Layer of construction	Material	Type of section
290+915 MC00	I	110	Subgrade	Red mud	Experimental section
	II	120	Embankment	Red mud+ Fly ash (75:25)	Experimental section
	III	80	Embankment	Soil	Control Section

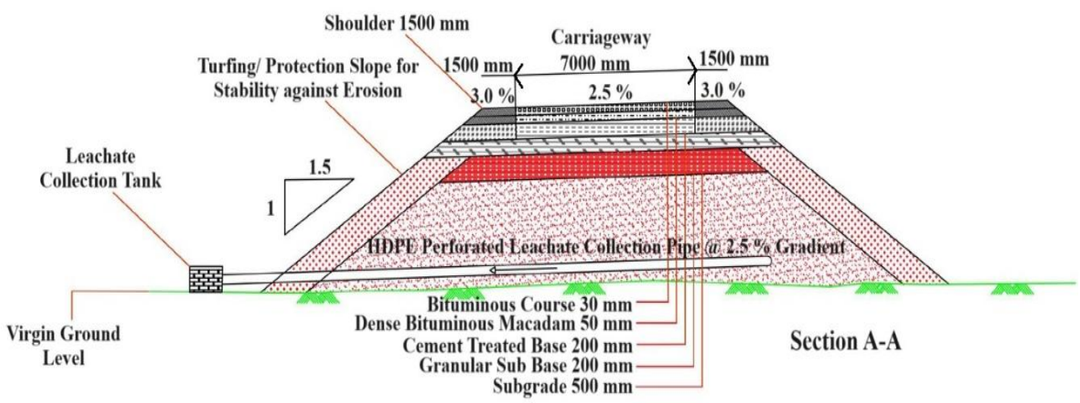


Figure 1: Cross-section of the red mud subgrade layer

Figure 2: Compaction of the subgrade using a roller

External Technical/Quality Audit of 16- Lane Carriageway of UER-II (NH-344M & NH-344N) and Dwarka Expressway (NH-248BB) for 8 Nos. Construction Packages Under NHAI, PIU, Dwarka, New Delhi

Funding Agency: NHAI, New Delhi
Duration of the project: From August 2023- to July 2025
Broad Objectives: (a) Visual inspection-survey along the entire RE wall.
(b) Investigation of causes of failure of RE wall and mitigation.

The Dwarka Expressway and UER II projects consist of eight packages. Some packages have been completed, while others are still under construction. Currently, traffic is not allowed on the road. However, bulging panels have been observed at the site, and this issue may worsen once traffic is permitted. Fig. 3 shows a panel dislocated from the joints at the corner. Given the traffic and the already bulging panels, there is a risk of increased bulging or failure of the RE wall panels. The construction methodology and the quality of backfill used were poor, so the suggested remedial measures will only serve as preventive actions. Proper strengthening of the bulged panels is necessary, and soil nailing is recommended for this purpose.

Figure 3: Panel dislocated from the joints at in the corner

In areas where soil nailing is not feasible behind the abutment/dirt wall, horizontal RCC/Girder beams should be connected to the abutments to control the lateral displacement of the panels. Even after implementing remedial measures, monitoring wall movement is essential for long-term

performance. Additionally, the existing measures adopted for the rehabilitation of the MSE wall need to be monitored simultaneously.

NHAI Constructed Eight Lane Carriageway Starting from km 115+700 Junction SH-44 to km 151+840 (Kesopura Junction) Road Section of Delhi Vadodara Green Field Alignment (NH-148) on EPC Mode Under Bharatmala Pariyojna in the State of Rajasthan (Pkg-5)

Funding Agency: PIU, Sohna, NHAI
Duration of the project: From August 2023 to August 2024
Broad Objectives: (a) To investigate the causes of distress in the crash barrier and MSE walls.
(b) To design of suitable remedial measures and construction methodology for rehabilitating the crash barrier and MSE wall.

The NHAI constructed an eight-lane carriageway from km 115+700 (junction SH-44) to km 151+840 (Kesopura junction) of the Delhi-Vadodara Greenfield Alignment (NH-148) on EPC mode under Bharatmala Pariyojna in the state of Rajasthan (Pkg-5) in January 2022. It was opened for traffic on February 12, 2023. After the first rainy season, distress in the MSE wall at chainage km 137+300 occurred towards the RHS (Delhi end) on the Delhi-Vadodara Expressway. The Project Director, NHAI, PIU Sohna, requested the Director of CSIR-CRRI, New Delhi, to examine the distress in the MSE wall and suggest suitable remedial measures. Accordingly, a preliminary site visit was carried out jointly by the teams from CSIR-CRRI, NHAI, consultants, and the concessionaire to finalize the project scope.

Figure 4:(a) Intersection of SH at Km 137+300 on Vadodra–Delhi Expressway

Figure 4:(b) Bulging of panels (RHS)

Figure 5:(a) Tilting of MSE wall crash barrier towards the road surface

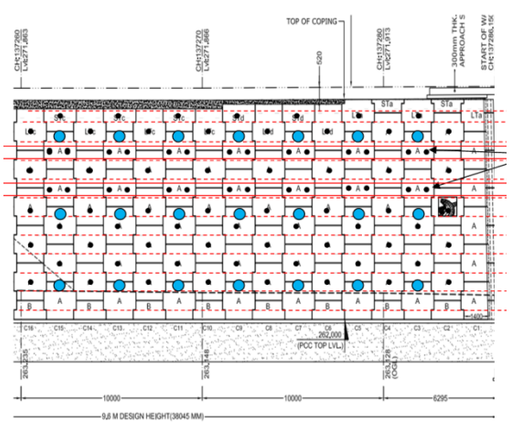


Figure 5:(b) Soil Nailing with drainage system as well as girder support were suggested as remedial measures

The site is located at chainage km 137+300 on the Delhi-Mumbai Expressway, where the Rajgarh-Makroda road crosses as a vehicular underpass (VUP) (Fig. 4a). Both ends of the Delhi-Mumbai Expressway towards the RHS sides were constructed with mechanically stabilized earth (MSE)

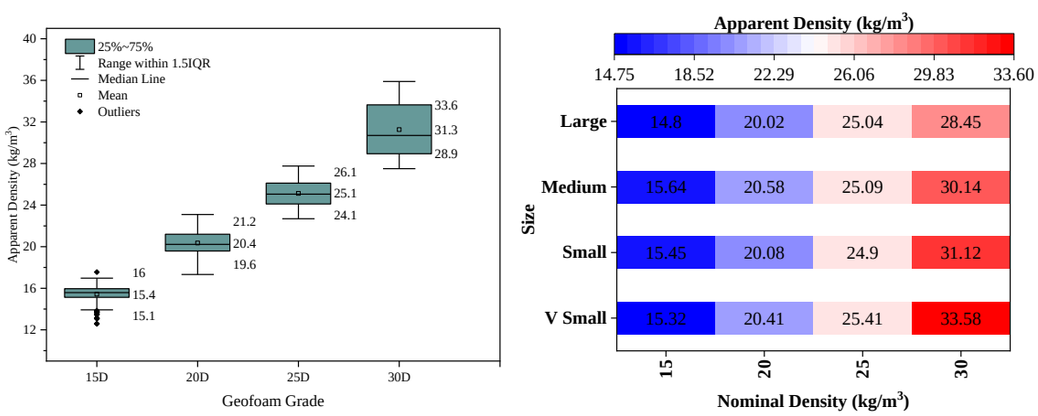
walls. Distress or bulging of the MSE wall occurred towards the Delhi end, RHS on the Delhi-Mumbai Expressway. The MSE wall towards the Delhi end experienced lateral displacement (bulging) over approximately 20-30 meters in length (Fig. 4b). As mentioned earlier, the road was opened for traffic in February 2023, and the bulging was noticed by NHAI just after the first rainy season. The close wall towards the Delhi end (behind the abutment) also experienced bulging. It was reported by NHAI and concessionaire engineers that surface drain pipes were installed after water accumulated on the expressway. These drain pipes were erected by drilling holes in the crash barrier (Fig. 5a). However, the MSE wall face towards the Mumbai side (RHS) was already supported by earth, providing a passive force. Soil nailing with a drainage system as well as girder support was suggested as a remedial measure (Fig. 5b). After detailed investigation, the report was submitted to the client containing details of the field tests, observations, causes of distress, analysis, and design of remedial measures.

Hill Road Widening Using Lightweight Geofoam Block Fills

Funding Agency: National Highways and Infrastructure Development Corporation Ltd. (NHIDCL).
Duration of the project: From January 2021 to December 2023
Broad Objectives: Development of a design and construction methodology for hill road widening using Geofoam block fills.

Widening roads in hilly terrains is challenging, often requiring hill cutting or valley-side filling, which can cause slope instability. This study explores using expanded polystyrene (EPS) geofoam, which is significantly lighter than conventional materials, for embankment filling to mitigate these risks. The research involves an extensive investigation into the physical, mechanical, and interface properties of EPS geofoam.

The initial phase includes detailed physical characterization of various geofoam grades, examining microstructural aspects like cell size and density variations (Fig 8a and 8b). Mechanical properties such as compression, flexural strength, and shear resistance are evaluated using 2D digital image correlation (DIC) analysis to study strain distribution within the geofoam. The study finds that the compressive behaviour (Fig. 9a and 9b) of geofoam is significantly influenced by homogeneity, which changes with microstructure and apparent density. Parametric evaluation shows that apparent density, cell size, and ambient temperature critically control compressive stresses in geofoam.



(a) (b)

Figure 8: **(a)** Variation of apparent density with nominal density; **(b)** Contour plot of the apparent density variation with size

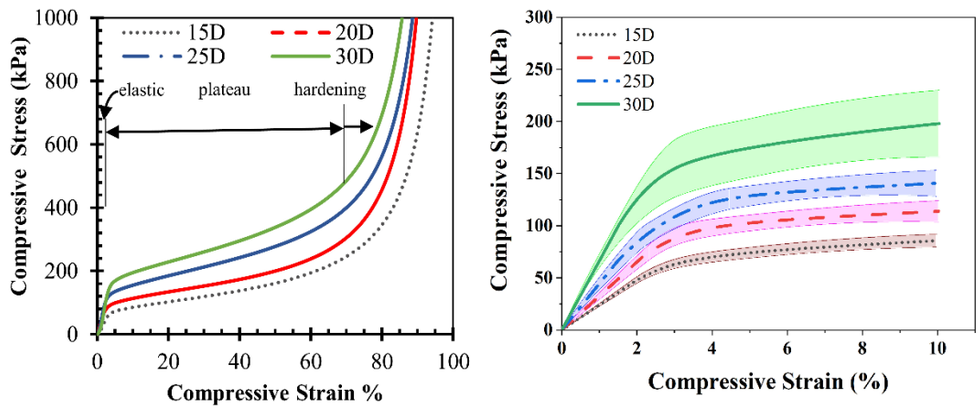


Figure 9: Unconfined compressive stress-strain behaviour of geofoam; (a) Typical stress-strain response, **(b)** Repeatability with variation bands

Interface tests examine shearing mechanisms at various geofoam interfaces (geofoam-sand, geofoam-geofoam, geofoam-concrete). These tests assess the effects of geofoam density, sand particle size, applied stress, and sand saturation. The roughness of the geofoam is modified by adding ledges of different sizes and shapes. Empirical correlations for predicting friction coefficients based on interface roughness are developed, with DIC analyzing strain distribution during shearing.

The study concludes with finite element simulations of a geofoam embankment for valley-side road widening. These simulations indicate a 25% improvement in slope stability compared to conventional fills. The results suggest that stresses and deformations within geofoam embankments are similar to traditional fills. Interface stresses at varying depths are also evaluated. A quick-selection chart for geofoam grades and cost estimation for different slope angles is provided, offering economic insights. This research guides design engineers in selecting appropriate geofoam grades and design parameters for road widening projects in hilly terrains.

Suitability of NovoCrete Additive as a Soil Stabilizer

Funding Agency: NovoCrete India Pvt Ltd
Duration of the project: From March 2024 to April 2025
Broad Objectives: Laboratory characterization of stabilized soil/reclaimed materials & performance of stabilized soil with chemical additive

Stabilization is the process of blending and mixing materials (cement, lime, or fly ash) with soil to improve its properties. Adding stabilizers to soil in the proper quantity enhances its engineering characteristics such as strength, texture, workability, and plasticity. Optimum stabilization can be achieved by adding an appropriate percentage of cement, lime, or fly ash, sometimes in combination with chemical stabilizers, to the soil. The type and quantity of additive depend on the soil classification and the degree of improvement required.

The main objective of this study is to evaluate the performance of Novocrete as a chemical stabilizer for constructing cement-treated base (CTB). Tests were conducted to explore the use of reclaimed materials in constructing a cement-stabilized base through the full-depth reclaimed (FDR) process, using both conventional cement and chemical stabilizers. FDR samples are collected from the site and stabilized with cement and the Novocrete additive in different combinations to estimate the optimal dosage. Test specimens are prepared for strength and durability tests. The project started in March 2024. The tests are ongoing, and once completed, the suitability of the chemical additive will be reported.

Evaluation of LCR/MIF Value of MacGrid EG 30S (i.e. Biaxial Extruded Polypropylene Geogrid) for Pavement Design of Dantiwara-Piper-Merta City Section of SH-21, Rajasthan

Funding Agency: Maccaferri Environmental Solutions Private Limited, Pune, Maharastra.
Duration of the project: From January 2023 to March 2024
Broad Objectives: Evaluation of LCR/MIF Value of MacGrid EG 30S (i.e. biaxial extruded polypropylene geogrid).

Based on dynamic loading tests carried out on unreinforced and reinforced sections with MacGrid EG 30 (a biaxial extruded polypropylene geogrid) base layer overlying granular subbase and subgrade conditions, the LCR/MIF value was evaluated. The LCR/MIF value is used in the design of geogrid reinforced pavement.

CONSULTANCY PROJECTS

Investigation of Causes of Settlement and Remedial Rehabilitation Measures for the Foundation Settlement at Pier P3 and Visual Inspection of Structural Components of Major Bridge at km 24+461 of Galgalia-Bahadurganj of NH-327E (Package-I), Bihar

Funding Agency: GR Infra Projects Limited
Duration of the project: From July 2023 to December 2024
Broad Objectives: (a) Analysis of the existing condition of foundation and evaluation of the causes of failure.
(b) Design of remedial measures for strengthening of foundation at P3 location.

The Galgalia-Bahadurganj section of NH-327E is an under-construction highway project in the state of Bihar. In June 2023, the MJB at KM 24+461 experienced foundation failure due to the settlement of the pile cap by approximately 700 mm at the P3 pier location. The investigation findings were as follows:

- The borehole investigation conducted before and after the settlement of P3 revealed a predominantly sandy strata composition, with SPT N values showing an increasing trend with depth.
- The pile capacity assessment at the P3 location indicated a vertical capacity of 550T, which is below the recommended capacity of 580T for a scour depth of 8.4m.
- Temporary fills were created on the riverbed for construction activities from the A2 to P4 location, reducing the effective waterway width from 210.5m to 68.6m (P2-P3-P4) for the river discharge. When the flash flood occurred, the pile group settlement might have occurred either due to excessive scour of the riverbed or due to a soft toe/insufficient pile length to withstand the loads from the superstructure under those conditions.
- The bridge is located in a meandering zone, and the revised scour depth was calculated as 12m at the P3 location. Accordingly, the pile capacity has been re-evaluated and recommendations have been made.

Based on the findings, it is recommended that new pile groups with appropriate pier shaft arrangements be constructed, considering the increased scour depth of 12m.

Performance Study of a Mix of Jarofix-Slag as a Retained Fill in Reinforced Retaining Wall

Sponsoring Agency: HZL, Chittorgarh, Rajasthan
Duration of the project: From September 2019 to December 2024
Broad Objectives: (a) To supervise the construction of leachate collection system under the base of jarofix/soil/jarofix-zinc slag at all 15 locations.
(b) To monitor the performance of constructed road for a period of at least two monsoon seasons and observation will be taken at an interval of 6 months.

The upgradation of the lane-divided National Highway (NH-76) from Bhilwara to Udaipur is being carried out under the NHDP Phase V (Package III) program in the state of Rajasthan. Fifteen structures (flyovers/VUPs/PUPs) were constructed between Medikheda Phatak and Dabok village. An industrial waste material, jarofix, was chosen as a retained fill for constructing the approaches of these structures due to its suitability for road construction. However, jarofix had not been previously studied as a retained fill for such applications.

Jarofix mixed with Zinc Slag (30:70) was used as a retained fill for the construction of the approaches, and its performance was proposed to be evaluated over two monsoon seasons. The first set of pavement performance studies was conducted in November 2021 along the fifteen approaches of the flyovers/VUPs/PUPs and was reported as Interim Report II, following Interim Report I, which detailed the construction methodology and quality control during construction. The second set of performance studies was carried out in October 2023 and documented in Interim Report III, which includes a visual condition survey, deflection characteristics, and roughness parameters of pavement performance.

The overall condition of all fifteen locations using jarofix retained fill is free from potholes, cracks, and raveling. Fig. 10 shows a pictorial view of the pavement.

Figure 10: Pictorial view of jarofix retained fill approach flyover

Investigation and Design of Remedial Measures for Stabilization of Soil Slope to Protect the Abutment of Bridge No.34 on Kota Bina Rail Line Near Kota

Funding Agency: Rail Vikas Nigam Limited (RVNL), Kota, Rajasthan
Duration of the project: From March 2023 to February 2024
Broad Objectives:(a) To check the stability of the embankment while excavating the embankment soil slope for the construction of the retaining wall.
(b) To design suitable ground improvement techniques for protecting the lateral movement of soil slope during the construction of retaining wall.
(c) To design suitable river protection measures towards the upstream side for improving the stability of the rail embankment.

Rail Vikas Nigam Limited (RVNL) recently completed the doubling of the rail line between Bhonra-Bijora and Kota-Baran-Guna-Ashok Nagar-Bina to improve connectivity between these cities. The down (DN) rail line was commissioned on April 9, 2021, in the West-Central Railway. According to RVNL, the UP track (single line) was constructed in 1908. This railway line is crucial for coal transport, power generation, and other industrial developments in Rajasthan and Madhya Pradesh, making it a lifeline for both states. Railway and RVNL authorities have stated that this track is designed to handle a 25-tonne axle load at a speed of 110 km/h, making track stability of utmost importance. This track must remain operational and maintain the required standards.

This rail section crosses the river Kali Sindh at rail bridge No. 34, with Abutment-1 located towards the Kota side (Figure 11a). The UP rail track was erected a few years ago, and its Abutment-1 and approach were constructed with silty soil on a 13.5m high rail embankment (Figure 11b). The embankment slopes were supported by "toe and wing walls" constructed with random rubble stone masonry and founded on hard rock (Basalt rock mass) (Figure 11c). Due to excessive rainfall in recent years (2019-22), the Kali Sindh riverbank towards the Kota and Bina ends has eroded significantly, necessitating large-scale regular maintenance. The erosion towards the UP track's Kota end is increasing, affecting the stability of the rail embankment near Abutment-1 (Figure 11d).

The Chief Project Manager of RVNL requested CSIR-CRRI to evaluate the stability and propose solutions, including suitable construction methodologies for extending the existing retaining wall towards the river and implementing appropriate bank protection measures.

Figure 11: (a) Kali Sindh River Rail Bridge No. 34 on Kota - Beena UP rail track

Figure 11: (b) The approach to Abutment-1 is constructed on 13.5m high embankment

Figure 11: (c) Toe wall is connected with Pier-1

Figure 11: (d) Site Showing the Rail Embankment, RRM wall Abutment and Pier-1 towards Kota End

Based on field and geotechnical investigations and data from RVNL, the stability analysis of the 13.5m high embankment was carried out for three different scenarios (Figures 12a and 12b): (i) Existing condition, (ii) Prior to and after excavation towards the steps side, and (iii) Connection of the new retaining wall to the old retaining wall towards the river side, as indicated in the report. Since the stability of a 10-12m high vertical soil slope cut is required to construct the RCC wall foundation, a suitable arrangement of SOLDIER PILES with soil nailing was analyzed and designed. The soldier pile, made from a 200mm I-section girder (heavy duty), will be anchored by

driving or drilling a 450mm diameter borehole into the rocky formation to a depth of 2m. Intermediate wallers or lagging walls will be connected with the girders during the excavation stages, 28 days after the completion of anchoring. A horizontal shore/strut will be connected to the old wall. Grouted soil nails (100mm diameter, 7m in length, with 25mm diameter @ 2m c/c) were suggested to provide intermediate support to the girders during excavation near the junction of the old wall and new RCC wall. A proper dewatering system was recommended for implementation during execution. The embankment slope should be covered with a revetment mattress, adequately protected by zinc and PVC coatings. This mattress should be a double-twisted hexagonal mesh made from zinc-coated steel wires protected by a polyvinyl chloride (PVC) coating.

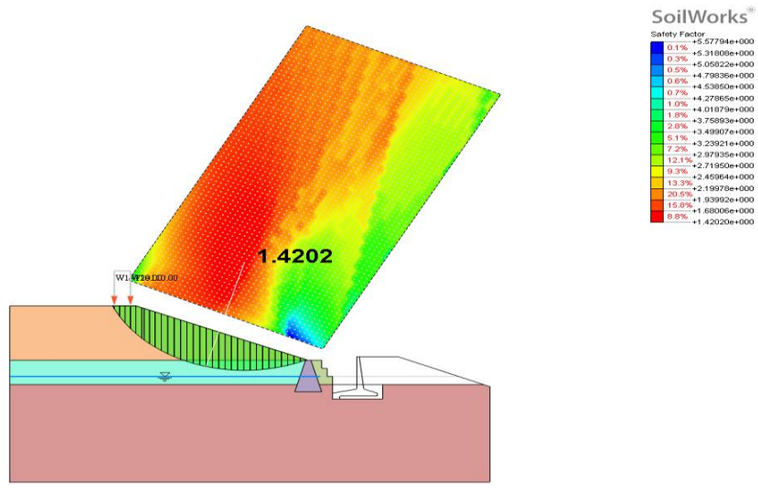


Figure 12: (a) Stability analysis result for step cut

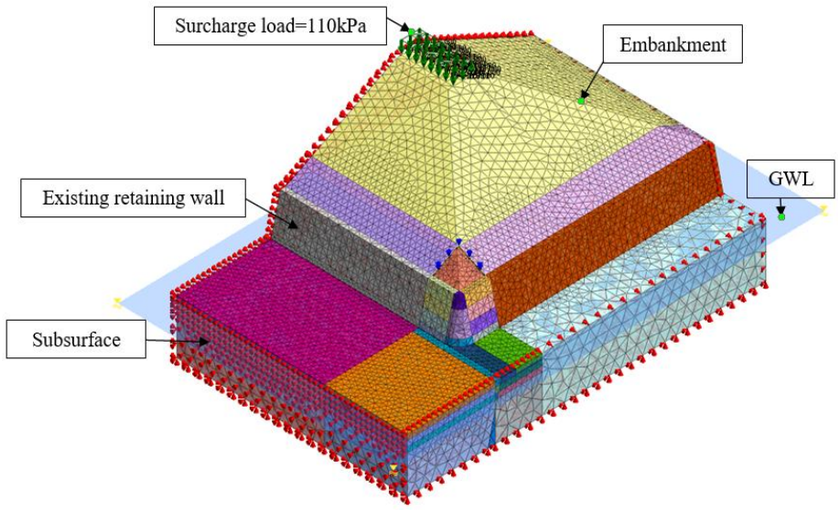


Figure 12: (b) Model view (3D) of railway embankment Kota-Beena UP line track

The report submitted to the client contains details of the field observations, probable causes of failure, analysis, and design of remedial measure

Traffic Engineering and Safety

RESEARCH PROJECTS

Effectiveness Evaluation of the Speed Calming Measures using Thermal Sensor Technology through Artificial Intelligence

Funding Agency: Pixuate (Cocoslabs Innovative Solutions Pvt. Ltd.)
Duration of the project: From March 2024 to March 2025
Broad Objectives: (a) Examination of the speed patterns exhibited by vehicles (classified by category) both prior to and following the introduction of a speed calming system at the project location.
(b) Assessment of alterations in users' behaviour subsequent to the presentation of speed violation measures.

The study focuses on two identified blackspot locations where both in-person questionnaire surveys and spot speed surveys were conducted. The preliminary findings reveal that vehicles, particularly larger cars such as SUVs, frequently exceed the posted speed limits, especially as they approach the blackspot locations. This over speeding behaviour underscores the need for preventive measures, such as the installation of rumble strips and variable speed limit signs, to enhance road safety at these critical points. From the questionnaire responses, it was observed that most drivers adopt a conservative approach when driving. A significant portion of the population, approximately 64%, reported that they tend to slow down their vehicles upon encountering a rumble strip or speed limit sign. Additionally, 62 % of the respondents expressed that road safety is a crucial concern for them. Overall, the study emphasizes these two aspects—actual speed profiles of road users and their attitudes towards road safety and speed violations. These insights are invaluable for decision-makers, providing a deeper understanding of driver behaviour and facilitating the implementation of effective measures to improve road safety (refer Figure 1 and 2).

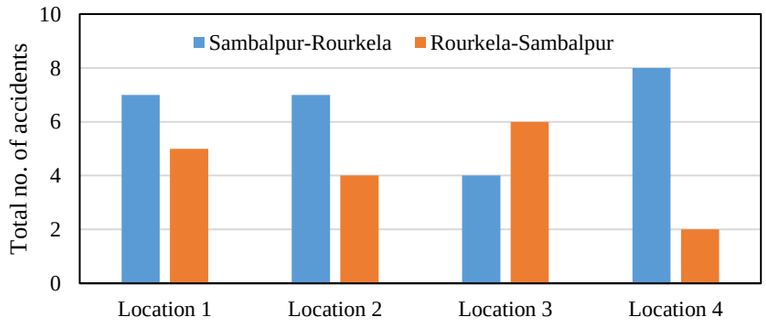


Figure 1: Number of Road Crashes at the identified Blackspot (Both directions)

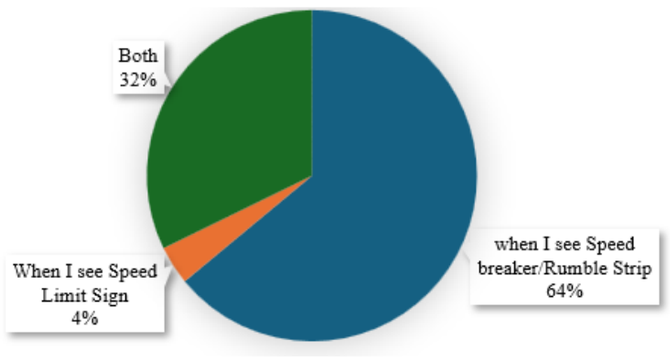


Figure 2: Distribution of respondents based on their reaction to speed limit sign boards

Intelligent Solutions for Road Safety through Technology & Engineering (iRASTE) for Nagpur

Funding Agency: Council of Scientific and Industrial Research (CSIR)
Duration of the project: From June 2021 to May 2024

Preamble

Looking at the historical crash data in the city of Nagpur, it was observed that the number of road crashes between 2008 to 2020 was ranging between 1200 to 1500 which roughly translates to 60 crashes per 1 lakh population. The fatality rate was found to be 10 victims per lakh of the population. The above number is somewhat on the higher side for a city like Nagpur which necessitates the need for devising appropriate engineering solutions coupled with technological interventions. Out of the above, pedestrians and two-wheelers *(including some minor proportion of bicyclists)* account for 85 % and 59 % of road crashes in urban and rural areas of the city respectively which implies the fact that there is a lack of adequate infrastructure to ensure the safe commute for the above category of vulnerable road users in the city. To address the above issues, **Intelligent Solutions for Road Safety through Technology & Engineering *(iRASTE)*: Nagpur** a pivotal pilot project was inaugurated under the august presence of the **Hon'ble Minister of Road Transport and Highways of India, Shri Nitin Gadkari** on 11th September 2021 which is executed by a consortium headed by CSIR - CRRI consisting of other consortium partners namely, International Institute of Information Technology *(IIIT)*, Hyderabad as well as Artificial Intelligence Centre *(INAI)* at IIIT, Hyderabad, M/s. Intel, Mahindra & Mahindra. This pilot project is aimed at least 50 % reduction of fatalities / serious injuries in Nagpur by the end of 2023 through the implementation of a holistic Safe Systems Approach by addressing the three vectors namely, vehicle safety *(which encompasses driver safety)*, infrastructure safety and mobility safety which is outlined in the objectives and scope.

Objectives and Scope

- **Vehicle Safety:** Improve safety of public fleet leveraging AI.
- **Infrastructure safety:** Development of remedial measures ***i.e. countermeasures*** for the identifiedblackspots and continuous monitoring of road assets.
- **Mobility Safety:** Perform proactive identification of potential road crash prone locations ***i.e. grey spots*** using the above ADAS and road geometric data and develop grey spot models.

A unique attempt is made to operate beyond traditional approaches to address road safety by leveraging the power of AI as the predictive insights generated via AI can help to prevent road crashes. To address the same, for the first time, AI is acting as a force multiplier to transform road safety engineering by addressing the three vectors namely, driver safety, mobility aspects and infrastructure safety in an integrated manner. An illustration of CAS installed in a NMC bus along with typical live detection of motorized two wheelers spotted in the blind spot of the bus during driving in the form of PCW is depicted in Figure 3 whereas Figure 4 presents the various alerts generated as part of Advanced Driver Assistance System *(ADAS)*. As illustrated above in Figure 3, both the video and audio warnings are generated as part of ADAS / CAS.

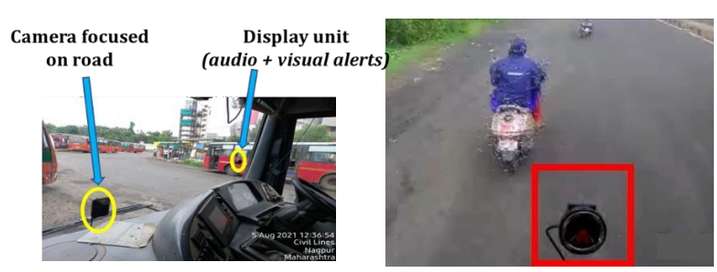


Figure 3: CAS unit installed in a bus; Typical Illustration of PCW warning generated due

to 2-wheeler

Figure 4: Illustration of various Alerts

Deliverables Achieved

The results deduced under the *vehicle safety vector* are highly encouraging with 90 % drivers on an average demonstrated improvement in safe driving behavior based on CAS data. Similarly, *under the infrastructure vector* detailed Geometric Design Plan *(GDP)* have been conceived for all the 38 locations along with the conduct of the economic benefit analysis for 4 typical black spots. The model developed to identify the grey spots developed *(till now)* is given below:

$$\text{Severity Index } (SI) = (0.144\,\eta_{FC} + 0.144\,\eta_{LD} + 0.144\,\eta_{PC}) + (1.438\,\eta_{3arm} + 1.735\,\eta_{4arm} + 1.779\,\eta_{roadlen})$$

A Glimpse of Accomplishments

Vehicle Safety:

- **150** vehicles are equipped with CAS devices, 1100 drivers trained in Defensive driving & ADAS.
- **60 %** of drivers in ADAS-enabled buses have shown sustained improvement in safe driving behavior.
- **41 %** reduction in road crashes observed in the lead operator

Infrastructure Safety:

- All 38 DPRs submitted
- Before and After Videos for 2 spots, Economic Impact Assessments for 4 spots

Mobility Analysis:

- Identified 20 Greyspots_*(Potential future blackspots)* based on AI data insights

Awareness:

- Eye camp & spectacle distribution conducted for 600 NMC drivers
- Completed Pilot awareness programs at Greyspot and Blackspot.
- Initiated Sustained Social Media Campaign.

CONSULTANCY PROJECTS

Traffic Management Plan and Improvement proposals for Shalimar Bagh Intersection, New Delhi

Sponsoring Agency: Public Work Department, GNTD, Delhi
Duration of the project: From December 2023 to June 2024
Broad Objectives: (a) To study the traffic characteristics, operational problems and site conditions at the intersection through field surveys and survey data analyses.
(b) To evaluate the alternative proposals and recommend the most appropriate feasible development proposal for implementation.

It is observed that the above candidate intersection is catering to a total daily traffic volume of about 57000 PCUs during the day, which is dominated by light fast vehicles comprising of 91 %

followed by slow moving vehicles (7%) while heavy fast vehicles are only 2 %. It may be of interest to note that the peak hour traffic volume during the morning peak hour *i.e. 10:00 to 11:00 am* and evening peak hour *i.e. 2:00 pm to 3:00 pm* are observed as 4983 PCUs and 5037 PCUs respectively.

Based on the results of the analyses of the base year traffic data, horizon year traffic has been estimated. Thereafter, by taking on board Right of Way availably (including the constraints at the study location), the development proposal of roundabout (proposed and approved to be developed along with Railway-Under-Bridge) at the above intersection was evaluated. Eventually, *two new alternatives intersection improvement proposals* have been proposed for implementation viz. Alternative1-Twin Roundabout Intersection and Alternative 2-Twin Signalized Intersection. It is recommended to implement Alternative-1/ (Twin Roundabout Intersection) layout design of the intersection at the site initially and upgrade it to Alternative-2/ (Twin Signalized Intersection) layout design depending on traffic situation within 3 to 5 years when warranted *(refer Figure below).*

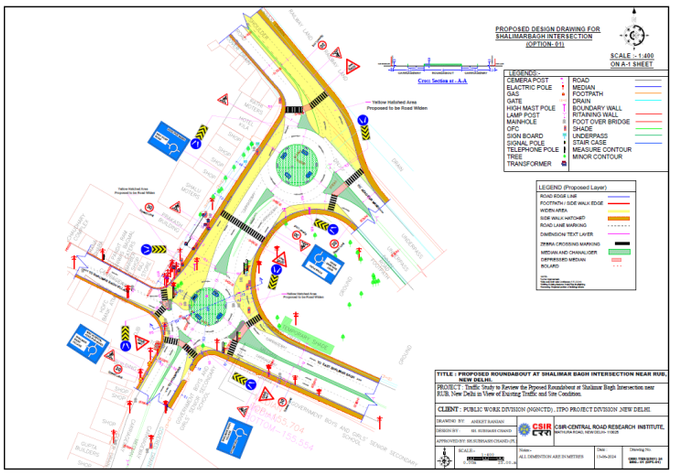


Figure 4: Geometric Layout Design of the recommended Design

Assessment and Improvement of Road Network and Traffic Management Plan of the Existing and the Proposed Expansion of Tinplate Plant of Tata (TCIL), Jamshedpur in view of road safety and traffic problems

Sponsoring Agency: TATA Steel Limited Jamshedpur, Jharkhand
Duration of the project: From May 2023 to April 2024
Broad Objectives: (a) To study the traffic characteristics, operational problems and site conditions at the intersection through field surveys and survey data analyses.
(b) To evaluate the alternative proposals and recommend the most appropriate feasible development proposal for implementation.

Tinplate Plant of Tata (TCIL), Jamshedpur has planned expansion of its existing plant. The existing traffic management/circulation plan of the TCIL plant is having a number of points of complex hazardous conflicts between heavy goods traffic, passenger vehicle traffic and pedestrian. There are bottlenecks in the road network, blind curves/corners with inadequate turning radii and lack of sight distance at many locations. There is lack of parking and pedestrian facilities, road side furniture and safety measures. Site visits were made to appreciate the existing traffic management plan and transport infrastructure and the associated problems. Field surveys were conducted to collect relevant traffic and geometric data at critical locations. Data were analyzed to assess traffic demand / problems / characteristics and different operational parameters of traffic and transport infrastructure *(refer Figure below).*

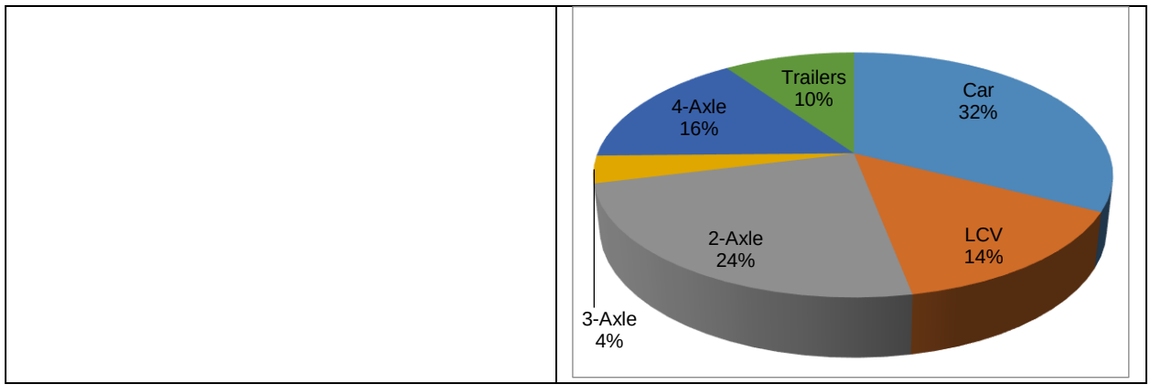


Figure 5: Typical Composition of Traffic Observed within the Plant Premise

Accordingly, alternative traffic management plans and development proposals were evolved taking into consideration the field conditions and projected traffic due to the above proposed expansion plan of the plant. Alternative proposals were evaluated with reference to efficiency and safety and were discussed with the stake holders in order to select most appropriate and feasible proposal. Detailed traffic management plan and transport infrastructure improvement plan for the final proposal were worked out and developed for all the seven critical zones of the plant in Auto Cad software along with details of road marking, road signs and other traffic management and safety measures *(refer Figure below)*.

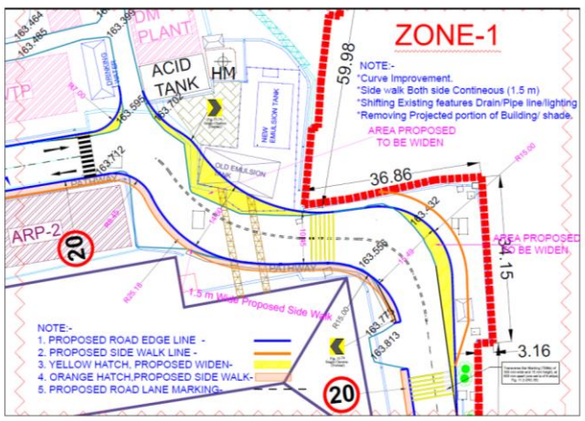


Figure 6: Proposed Infrastructure Improvement Proposal at Zone-1

Safety Assessment of Speeding Vehicles on J.P. Ganga Path near A1-P1 Span of J.P. Setu (Rail-cum-Road Bridge) at Digha, Patna in the State of Bihar

Sponsoring Agency: BSRDCL, Bihar
Duration of the project: From February 2024 to April 2024
Broad Objectives: (a) To propose remedial measures containing the various forms of Traffic Control Devices like the Road Signs, Road Markings to improve traffic safety near the designated location.
(b) To conduct road safety assessment of Jai Prakash (JP) Ganga Path near the A1-P1 Span of the J.P. Rail Bridge, Bihar

To enhance safety and reduce the risk of impact of collision of speeding vehicles of road crashes on the J.P. Ganga Path near J.P. Setu crossing, the action plans outlined in Section 3 shall be implemented. A summary of these plans is provided below for clarity in implementation:

- **Extension of Double Layer Crash Barrier/Roller based Crash Barrier:** Due to the vertical drop measuring approximately 1.5 meters on the left side of the corridor beneath

the J.P. Setu, it is proposed to extend the double layer crash barrier on the left-hand side of the road from the existing location up to chainage 0-100 meters. This extension aims to ensure additional safety and prevent vehicle runoff in the event of a road crash. Alternatively, roller-based crash barrier which are capable of absorbing shocks and thus prevent fatality could be installed at the designated location as detailed in Section 3.

- **Delineation in Curved Portions:** Delineators should be installed in curved portions to effectively guide vehicles during night time.
- **Single Chevron Signs:** Single Chevron Signs should be installed on both sides of the carriageway to guide traffic safely while negotiating horizontal curves. These signs will conform to the radius of the curve.
- **Installation of Warning Signs:** Warning signs such as 'curve ahead' or 'series of bends' ahead signs, as well as chevron signs along the periphery of the curves, should be installed. Additionally, regulatory signs, including speed limit signs based on IRC:67 (2012), will be installed in both directions at designated locations.
- **Road Markings:** Road markings should be done according to IRC:35 (2015) standards to further enhance safety measures.

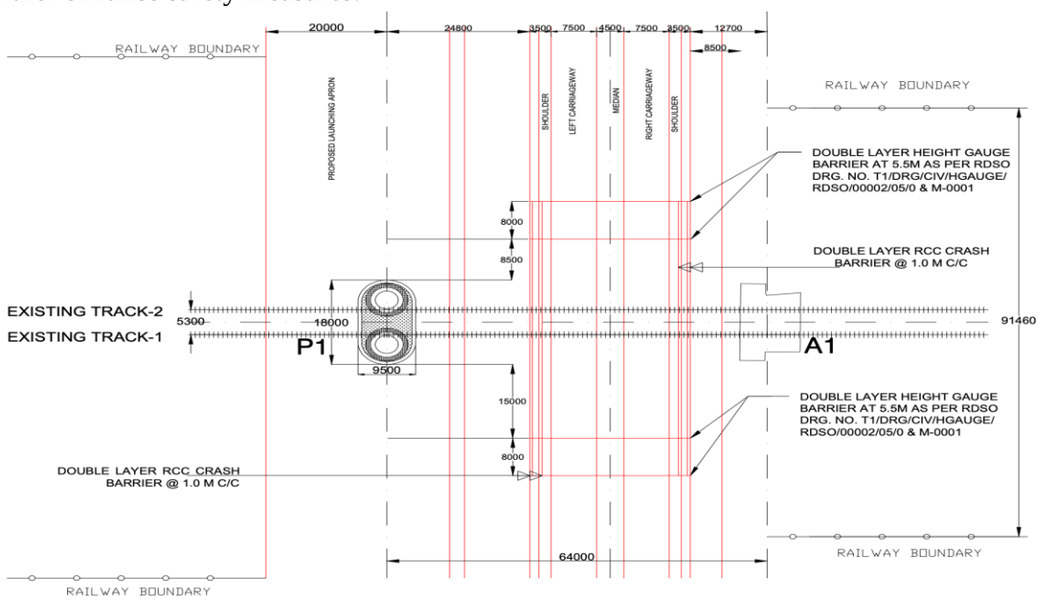


Figure 7: Plan at Ch. 0+000 for section A-A

Road Safety Audit of 6668.104Kms of selected State Highways and Major District Roads, Development of Detailed Geometric Design Plan (GDP) for 49 Vulnerable Stretches i.e. Black Spots and Review of present level of road safety in the 2500 Km road length of SH and MDR in the state of Odisha

Funding Agency: OWD, Odisha
Duration of the project: From 01/04/2023 to 31/03/2026 (Ongoing)
Broad Objectives: (a) Conduct of Road Safety Audit on 6668.104 Kms covering the entire state of Odisha. Out of which, 4106.492 Kms of State Highways and 2561.612 Kms of Major District Roads (MDR).
(b) Review/Safety Evaluation of the present level of road safety on the 2500 Km road length subsequent to RSA conducted in the years 2016 and 2017 by CSIR - CRRI and its implementation by OWD.

- At locations, where designated Pedestrian Crossings are provided on the Project Corridor green studs shall be provided on Zebra Crossings. Moreover, the designated pedestrian crossing earmarked along the project road shall be illuminated using Solar

Paneled Street lighting system / normal electrification, which can help in enhancing safety for the commuting pedestrians.

- All the horizontal curves on the project corridor shall be studded with red coloured road studs.
- In the case of hair pin bend curves either located in hilly / rolling terrain roads or in plain terrain roads passing through sharp horizontal curves, consider providing Concave Lens on the farther side of the road which would enable to visualize the traffic emerging from the opposite direction of travel with ease.
- In the case of summit or valley curves on the corridor *(if any)*, along with the all the safety measures consider providing solar amber blinker lights to enhance road safety.
- All the minor intersections located along the Project Corridor shall be illuminated by providing minimum of 20 to 30 lux to enhance the safety of road users. In the case of major intersections, high mast lighting of 40 Lux or more is essential to enhance the safety of road users.
- It is recommended to prune the trees which are obstructing the sight distance on the horizontal curves as well as obscuring the sign boards.
- At many locations, construction or household debris are lying on the roadside or drying of food grains are observed for which immediate action is required by the OWD in coordination with local police for enforcing the same.
- Place the Emergency Telephone numbers like the Police Helpline, Ambulance Number, nearest Hospital numbers, *etc.* on the Project Corridor at every 5 Kilometer interval.
- All the kilometer stones are to be painted in white conforming to IRC 8: namely, "Type Designs for Highway Kilometer Stones" *i.e., White Paint should be used for MDRs.*
- Integration of Metal Beam Crash Barrier with the Cement Concrete Crash Barrier *(approach side)* is required (refer Figure 8).

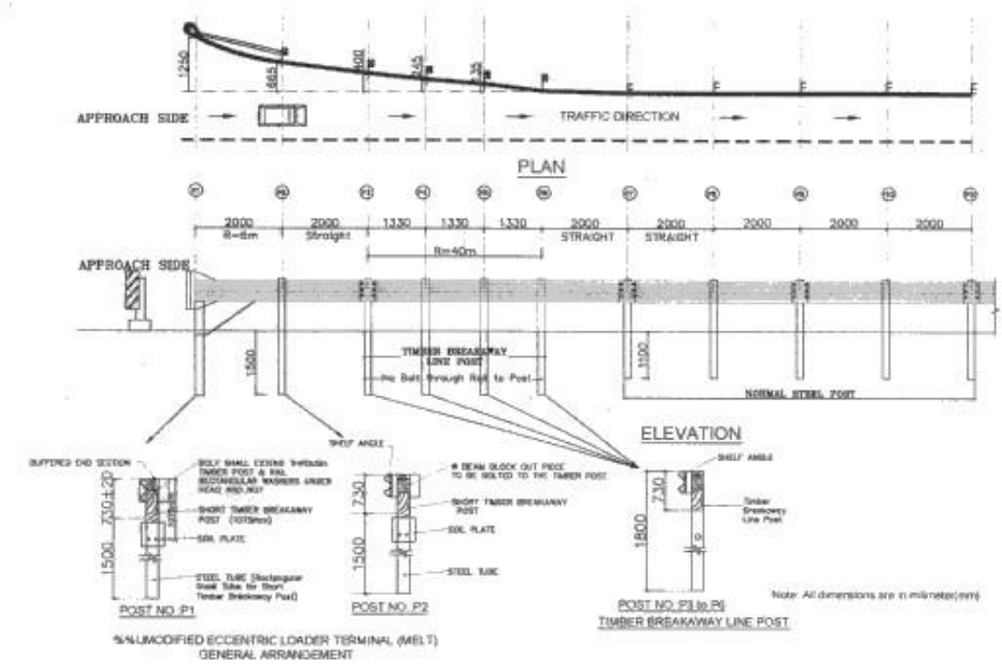


Figure 8: Modified Eccentric Loader Terminal (MELT) Arrangement for Approach Side of the Metal Beam Crash Barrier

Transportation Planning and Environment

RESEARCH PROJECTS

Identification of the Most Critical Locations Having the Highest Impact on Traffic in Case of Vehicular Breakdown

Funding Agency: Petroleum Conservation & Research Association (PCRA), Ministry of Petroleum and Natural Gas

Duration of the project: From July 2022 to January 2024

Broad Objectives: To identify the most critical locations which has the highest impact on traffic in case of vehicular breakdown.

The study, funded by the Petroleum Conservation & Research Association (PCRA), Ministry of Petroleum and Natural Gas, was carried out from July 2022 to January 2024 with the primary objective of identifying the most critical locations that experience the highest traffic disruption in the event of vehicular breakdowns. Vehicular breakdowns on busy urban roads not only affect the stalled vehicle but also create cascading impacts on overall traffic flow, leading to congestion, increased travel time, and environmental consequences. The magnitude and duration of these impacts vary based on road characteristics, traffic conditions, and the location and duration of the breakdown. Therefore, estimating both the spatial spread (zone of influence) and temporal impact is essential for prioritizing quick removal strategies and improving traffic management.

The study focused on midblock and intersection locations, considering breakdowns involving cars and buses under varying traffic volumes (−30% to +30% of observed conditions) during peak morning hours. A comprehensive methodology was adopted, beginning with the development of a detailed database including road network geometry, intersection characteristics, traffic volume, composition, and speed profiles. This database was used to build a simulation environment where multiple breakdown scenarios were tested across different locations such as midblocks, intersections, and flyovers. Scenarios varied by breakdown duration (10, 30, and 60 minutes) and lane position (left, middle, and right lanes), enabling a comparative assessment of impacts on speed, traffic flow, emissions, man-hours lost, and recovery time.

Key findings reveal that 2-lane midblocks are more vulnerable than 3-lane roads, with right-lane breakdowns causing the most severe disruptions. At intersections, particularly those with flyovers and underpasses, breakdowns on slip roads can reduce speeds by up to 90%, while central intersection breakdowns lead to 80–88% speed reductions. Recovery time increases proportionally with breakdown duration, and bus breakdowns result in nearly 1.5 times longer recovery compared to cars. Significant socio-economic impacts were observed, including up to 150 man-hours lost and substantial increases in fuel consumption and CO_2 emissions (3–30%). The findings provide a clear prioritization framework for managing breakdown incidents. The outcomes were disseminated through a workshop held on 11th September 2024 at CSIR-Central Road Research Institute, with participation from key stakeholders across academia, industry, and government.

Figure 1: Glimpses of the workshop in the presence of the host institute Director, Prof.Manoranjan Parida, Chief guest, Sh. Dinesh Kumar Gupta (IPS) and the guest of honor, Sh. R. C. Agrawal, Executive Director, CHT

Figure 2: Dissemination workshop held on September 11, 2024 at the Council Hall of CRRI

Noise and Vibration Control, Light Proofing (Privacy Control) for Wildlife, and Noise Barrier Design with Guidelines for IRC

Sponsoring Agency: National Highway Authority of India (NHAI)

Duration of the project: From October 2022 to October 2024

Broad Objectives: (a) To develop and recommend effective noise barrier designs considering different land-use patterns, environmental conditions, and materials, ensuring eco-friendliness and wildlife privacy.

(b) To create comprehensive guidelines for noise and vibration mitigation during highway construction and operation, aligning with IRC standards.

The study, sponsored by the National Highways Authority of India (NHAI), was undertaken from October 2022 to October 2024 with the objective of developing effective noise barrier designs and comprehensive mitigation guidelines for noise and vibration impacts associated with highway infrastructure. Transportation-induced noise pollution poses significant challenges to human health, wildlife habitats, and environmental quality, particularly across varied land-use contexts such as urban, suburban, rural, and forested regions. This project, executed by CSIR-Central Road

Research Institute (CRRI), addresses these concerns by focusing on innovative, eco-friendly, and context-sensitive solutions aligned with Indian Roads Congress (IRC) standards.

The methodology involved extensive field data collection, including noise and vibration measurements at representative locations such as Nainital, Hyderabad, and ecologically sensitive forest areas. These datasets were used to develop predictive noise models for a 20-year horizon, with periodic updates every five years to capture future traffic growth and environmental changes. Based on the analysis, multiple noise barrier designs were developed using materials optimized for high Noise Reduction Coefficient (NRC) and Sound Transmission Class (STC). The designs included conventional absorptive barriers, solar panel-integrated barriers for energy generation, and nature-based solutions such as dense vegetation buffers. Structural stability of these barriers was ensured through load testing under wind, seismic, and vehicular impact conditions.

Special emphasis was placed on wildlife protection and ecological sensitivity. Light-proof and visually adaptive barriers were proposed to minimize disturbance to fauna, particularly in forest corridors and near water bodies. Additionally, sustainable approaches such as solar-powered barriers were introduced to integrate environmental protection with renewable energy generation. The study also addressed vibration impacts on sensitive structures, including heritage sites, recommending advanced techniques such as diamond rock cutting to minimize structural damage.

The key recommendations emphasize the need for location-specific and multi-functional noise mitigation strategies tailored to different land-use conditions. Considerations such as durability, low maintenance, and resistance to vandalism were highlighted to ensure long-term effectiveness. Overall, the project provides a robust framework for NHAI and IRC to implement scientifically grounded, sustainable, and context-responsive solutions for noise and vibration mitigation. The outcomes contribute significantly to improving livability, protecting ecosystems, and achieving a balanced integration of infrastructure development with environmental conservation.

Figure 3: Recommended Diamond Rock Cutting method for the protection of Chandpur-Jhansi ancient monuments from vibration

Methodology to Optimize Composite Transport Sustainability Index for a typical Indian City

Sponsoring Agency: CSIR-CRRI

Duration of the project: From Apr 2022 to Mar 2024

Broad Objectives: (a) To assess the transport sustainability index (TSI) at a city level by taking into consideration appropriate pillars and indicators of transport sustainability
(b) To suggest assessment of TSI of any other Indian city, simply by considering an appropriate indicator set for the city
(c) To propose a methodology for estimation of the optimum value of TSI, holistically

The study, sponsored by CSIR-Central Road Research Institute (CSIR-CRRI), was conducted from April 2022 to March 2024 with the objective of developing a comprehensive framework for assessing and optimizing the Transport Sustainability Index (TSI) at the city level. The project aimed to (i) evaluate TSI by incorporating a wide range of sustainability indicators across multiple pillars, (ii) enable its application to other Indian cities through a flexible and adaptable indicator framework, and (iii) propose a robust methodology to determine the optimal TSI value rather than an impractical maximum. Recognizing that urban transport sustainability extends beyond traditional environmental, social, and economic dimensions, the study also integrates technological, institutional, and operational efficiency aspects to provide a holistic assessment.

The TSI is conceptualized as a composite index ranging from 0 to 1, representing the cumulative weighted performance of normalized indicators across all sustainability pillars. While the theoretical maximum value of unity indicates ideal performance across all indicators, achieving such a level is unrealistic and resource-intensive for cities. Therefore, the study emphasizes the need for identifying an optimal TSI value that balances performance improvement with efficient resource utilization. A mathematical optimization framework was developed, where TSI is expressed as a weighted aggregation of indicators and pillars, subject to normalization and constraint conditions. The model incorporates multiple influencing variables, indicator weights, and pillar weightages to reflect real-world complexities in urban transport systems.

Using Delhi as a case study, the research applied this methodology to 29 carefully selected transport sustainability indicators, based on data spanning a 30-year period (2000–2030). The generalized reduced gradient (GRG) non-linear programming technique was employed to estimate the optimal TSI. The results indicate that while the current TSI for Delhi (2023–24) stands at 0.51, the optimal achievable value is 0.66. This gap highlights the potential for targeted interventions without over-investment. Importantly, the findings demonstrate that pursuing an optimal TSI rather than a theoretical maximum can lead to significant efficiency gains, with an estimated notional saving of approximately 54% in infrastructure and resource allocation. The study thus provides a practical decision-support tool for policymakers to guide sustainable, cost-effective urban transport planning across Indian cities.

Noise Mapping, Identification of Hot Spots and Mitigation plan for Control of Noise Pollution for Jaipur

The study titled *"Noise Mapping, Identification of Hot Spots and Mitigation Plan for Control of Noise Pollution for Jaipur"* was conducted by CSIR–Central Road Research Institute, New Delhi, to address rising concerns about traffic-induced noise pollution in urban areas. With increasing traffic congestion, air pollution, and accidents, noise has emerged as a significant environmental and public health issue, particularly affecting residents living near busy roadways.

The study involved comprehensive noise monitoring at 145 locations across Jaipur. Among these, 12 key intersections were selected for continuous 24-hour noise monitoring, conducted simultaneously with classified traffic volume and turning movement surveys using videographic methods. The remaining locations were assessed through instantaneous noise measurements during three time periods: morning (8 AM–12 PM), lean hours (12 PM–4 PM), and evening (4 PM–8 PM).

QGIS software was used to develop noise maps. Noise contours were generated using Triangular Interpolation Network (TIN) with 2 dB intervals for higher precision. These contours formed the basis for preparing heat maps representing spatial noise distribution across different time periods. Statistical analysis revealed that mean noise levels were slightly higher in the morning, with the highest recorded noise level being 90.5 dB at ESIC Model Hospital and the lowest 58.1 dB during lean hours at Chatrala Circle. Variability was also highest in the morning, with a standard deviation of 4.47 dB.

The study identified noise hotspots and proposed mitigation strategies categorized into short-term, medium-term, and long-term measures. Short-term measures include minor geometric improvements, traffic calming, signage, pedestrian segregation, and no-honking zones. Medium-term measures involve major intersection redesign, improved road geometry, and enhanced pedestrian and non-motorized transport (NMT) infrastructure. Long-term strategies focus on grade-separated interchanges, road widening, elevated corridors, and installation of noise barriers. These noise barriers, typically constructed using materials such as concrete, metal, acrylic, or vegetative buffers, are designed to absorb or deflect traffic noise, particularly along elevated roads and high-traffic corridors. Properly designed barriers can significantly reduce noise levels for nearby residential areas, thereby improving urban livability and environmental quality.

Figure 4: Location of Noise data measurement in Jaipur

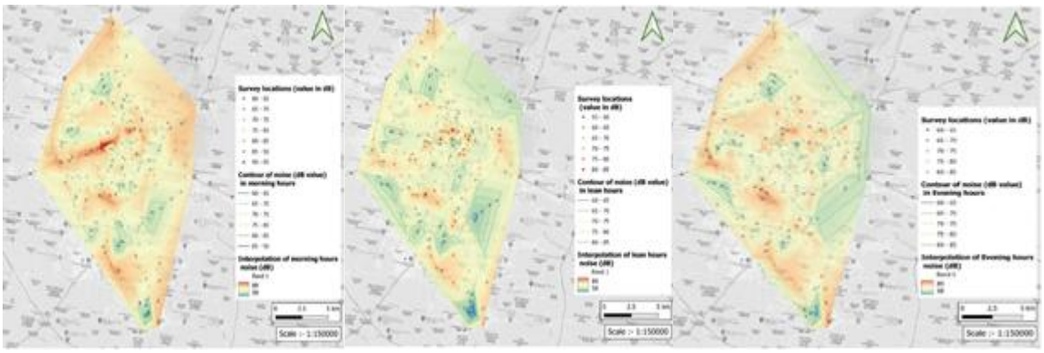


Figure 5: Noise Heat Map of Jaipur Morning, Afternoon and Evening Hours

Noise Mapping, Identification of Hot Spots and Mitigation plan for Control of Noise Pollution for Kota

The study titled *"Noise Mapping, Identification of Hot Spots and Mitigation Plan for Control of Noise Pollution for Kota"* was undertaken by CSIR–Central Road Research Institute, New Delhi for the Rajasthan State Pollution Control Board (RSPCB) to assess and address traffic-induced

noise pollution in Kota . Rapid urbanization, expansion of road infrastructure, and increasing vehicular movement have led to a noticeable rise in environmental noise levels, particularly near major intersections and densely developed urban areas.

The study involved comprehensive traffic and noise data collection across the city. Classified traffic volume and turning movement surveys were carried out at seven major intersections, including Keshavpura Chauraha, CAD Circle, and DCM Circle, using videographic methods for continuous 24-hour duration . These surveys helped in determining traffic characteristics such as peak hour flow, directional distribution, and traffic composition. In parallel, noise monitoring was conducted at 63 locations through instantaneous measurements, along with detailed observations at key intersections. Critically high noise levels were recorded at locations such as Barrage Road–Dadabari intersection (92.9 dB) and CAD Circle (84.2 dB), indicating the presence of significant noise hotspots .

For spatial analysis, QGIS software was employed to develop noise maps of the city. Noise contours were generated using the Triangular Interpolation Network (TIN) technique, allowing precise representation of spatial variation in noise levels. Based on these contours, heat maps were prepared for different time periods of the day to capture temporal variations. Statistical analysis of the noise data was also performed to understand the distribution, variability, and extent of deviation from permissible limits.

Based on the analysis, major noise hotspots were identified and suitable mitigation measures were proposed under short-term, medium-term, and long-term categories. Short-term measures include traffic regulation, improved signage, and pedestrian segregation. Medium-term measures involve geometric redesign of intersections and better traffic management infrastructure. Long-term strategies focus on capacity enhancement through road widening and development of grade-separated interchanges. Additionally, installation of noise barriers along high-traffic corridors and sensitive zones has been recommended. These barriers, made from materials such as concrete, metal, acrylic panels, or vegetation, help in absorbing and deflecting noise, thereby reducing its impact on nearby residential areas and improving overall urban environmental quality.

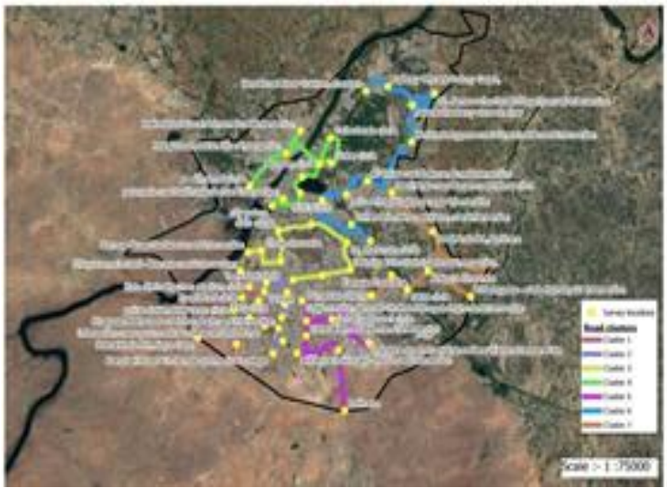


Figure 6: Location of Noise data measurement in Kota

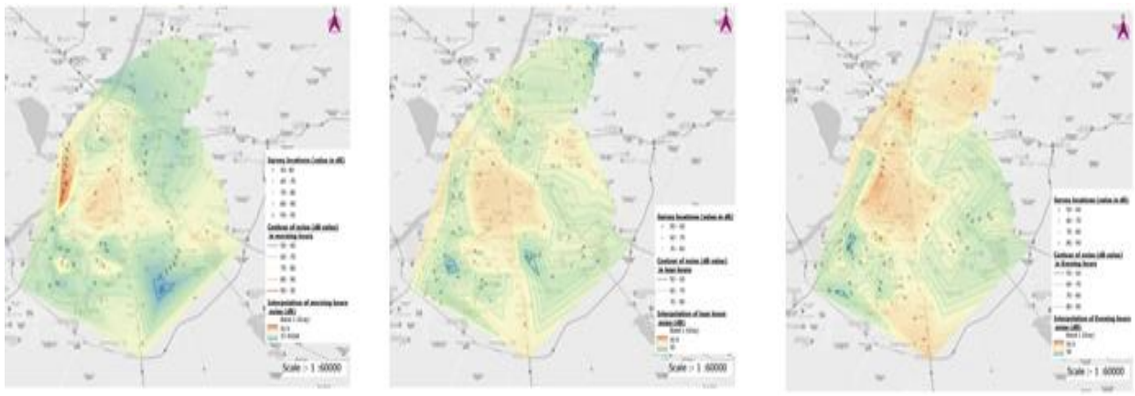


Figure 7: Noise Heat Map of Jaipur Morning, Afternoon and Evening Hours

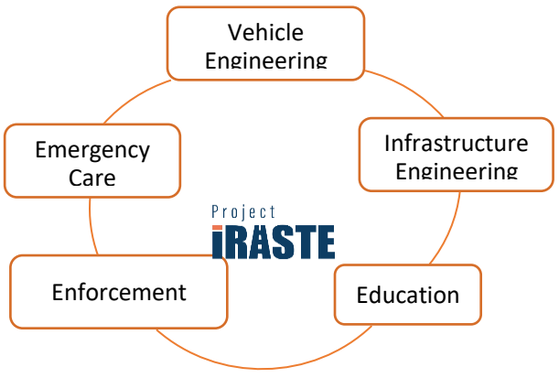
Project iRASTE (intelligent solutions for RoAd Safety through Technology and Engineering) - Telangana

Background:

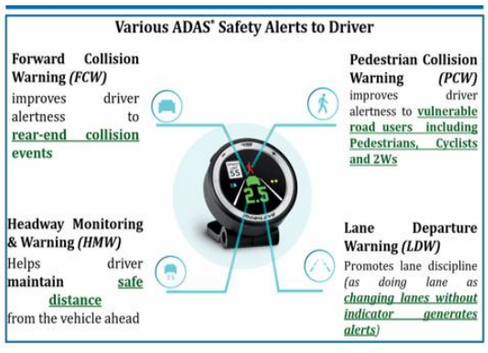
Project iRASTE-Telangana, inspired by the successful Nagpur initiative, was launched in July 2022 to enhance road safety using Artificial Intelligence (AI) and engineering solutions under the Safe Systems Approach, focusing on high-risk interurban corridors, NH-65 and NH-44 corridors through multi-stakeholder collaboration of government, academia, and industry.

Aim of the Project:

This project aims to reduce road crashes and fatalities by up to 50% using AI-based Advanced Driver Assistance Systems (ADAS) and Driver Monitoring Systems (DMS), data-driven analysis, and engineering interventions under the Safe Systems Approach.



Vehicle Safety:

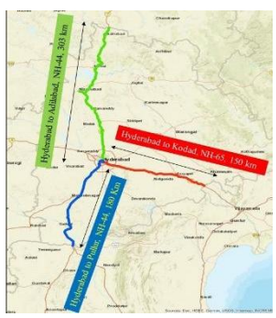


ADAS and DMS Devices

ADAS are advanced safety systems that alert drivers to risks from vehicles and vulnerable road users, promoting defensive driving through improved awareness, lane discipline, safe headway, and controlled speeds.

Infrastructure Safety:

Detailed safety audits and traffic studies were conducted at selected blackspots to understand traffic patterns and speed characteristics. Crash Data Analysis, Identification of



Blackspots, Detailed Geometric Plan (DGP) for Blackspots.

Mobility Safety:

By integrating dynamic ADAS alert data with static road geometry, spatial concentrations of risk and severity are identified, enabling Greyspot prediction and modelling. The project identified the top 60 Greyspots on Telangana highways. A web-based dashboard provides real-time visualization, helping stakeholders monitor risks and implement targeted safety interventions effectively.

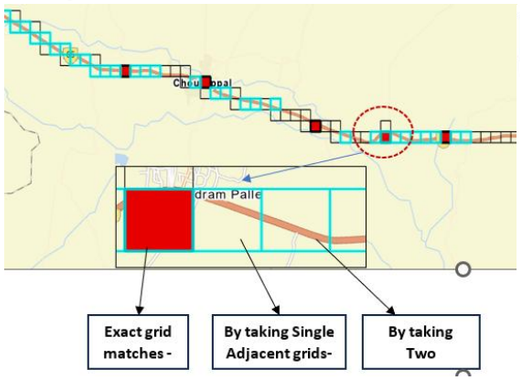


Figure 3.24 Identified greyspots in the three interurban NH corridors, Telangana state

https://inaix.iiit.ac.in/telangana-iraste/greyspots_dashboard2

Education, Awareness, and Emergency Care

It forms a critical pillar of the iRASTE framework, emphasising behavioural change and post-crash response. Over 600+ drivers were trained, supported by 40+ safety wardens and **120 safety awards**. Awareness campaigns targeted communities and road users. Strengthened emergency response systems ensure timely medical care, contributing toward the project's goal of **up to 50% reduction in fatalities**.

Key Highlights:

- **Improved Speed Compliance:** From Q1-Q4 (2023), bus drivers showed significant behavioural improvement, resulting in a **40% reduction in speed-violation zones**, enhancing overall corridor safety.
- **Crash Reduction with ADAS:** ADAS-equipped TGSRTC buses recorded a **33% lower fatal crash rate** compared to non-ADAS buses (April 2023–March 2024), demonstrating the effectiveness of AI-based safety systems.
- **Driver Capacity Building:** Over **500 drivers were trained** on ADAS and AI technologies, improving defensive driving and risk awareness.
- **Infrastructure Safety Improvements:** DPRs for **15 blackspots** were submitted, with improvement works underway at **three locations on NH-65**.
- **Greyspot Prediction:** A first-of-its-kind model identified **60 potential Greyspots** across study corridors.
- **Emergency Response Training: ABC workshops at seven locations trained 600+ responders**, saving **four lives within five months**.

Research

& Development Management Divisions

- Information, Liaison & Training (ILT)
- Planning, Monitoring & Evaluation (PME)
- Knowledge Resource Centre (KRC)
- Computer Centre & Networking (CCN)
- Maharani Bagh Staff Quarters Maintenance
- Mechanical and Transport
- Quality Management
- राजभाषा
- Administration

Information, Liaison & Training

Introduction

The Information, Liaison & Training Division acts as a nodal point between the Institute and outside agencies for promotion, utilization and implementation of the Institute's knowledge base. The main activities of the division include the dissemination of information, research liaison, initiating marketing & technology transfer of the Institute's knowledge base; development of human resources & organizing specialized training programs for the highway and transportation professionals. Dissemination of R&D products is promoted through a variety of channels, viz. Publications of Annual Reports, Newsletters, Profiles / Brochures; Organisation of National Get-Together / Conferences / Workshops & Participation in Technical Exhibitions to popularize the significant achievements.

ILT makes efforts to disseminate information, activities, findings and recommendations by organizing various workshops and conferences at CSIR-CRRI through exchanging information and knowledge transfer on roads and roads related areas.

The main services offered by ILT include the following.

- Human Resource Development
- Specialized Training Programmes for Highway Engineers
- Dissemination of Road & Road Transport related Issues
- Important Days Celebrations / Events Management
- Technical Exhibitions related to Road and Road Transport
- Publications of Annual Reports, Newsletters & Profiles, etc.
- Initiating Technology Transfer and Marketing of the Institute's Knowledge Base
- International Scientific and Technological affairs
- Information Collection, Analysis & Management
- Oraganisation / management of Jigyasa Programme events
- Facilitation of M.Tech & B.Tech students for their Thesis / Dissertation works.

Human Resource Development / Capacity Building Programme

Human resource development is a philosophy of management and is purported to upgrade the capabilities and professional skills of the personnel working in an organization to match the changing work demands. To enhance the professional capabilities of scientists and scientific staff for undertaking the R&D work in frontline areas of highway engineering and with the urge to develop technologies which have competitive edge and marketable strength, CRRI has been devoted in human resources development. Realizing the need for skill development and capacity building of the human resources, training programmes were identified /selected. Staff members received specialized training in the areas of their expertise to cope up with the challenging assignments. The details of those who attended various training programmes and the specialized areas of training are given in the section "Participation in Training Programs / Short Term Courses (Outside CRRI).

Institute's Publications

CSIR-CRRI Annual Report for the Year 2022-2023

CSIR-CRRI Annual 2022-23 was published during the year 2023-24. The report presents the Institute's major activities and achievements for 2022-2023. It also serves as a medium to acquaint the user agencies, clients and the other related organisations in the roads and road transportation research with R&D and other concomitant activities of the Institute. Progress reports of the R&D works and other related activities during the year from the various divisions/sections of the Institute were collected, compiled, edited and brought out as the Institute's Annual Report for the year 2022-23 in digital form.

CSIR-CRRI Newsletter (October 2022- March 2023)

During the year, one issue (no. 66) of CRRI Newsletter (October 2022- March 2023) was published in digital form. The Newsletters contained latest information related to R&D activities and other general information related to the Institute.

CSIR-CRRI Technical Profile 2024

During the year, CSIR-CRRI Technical Profile 2024 was published. The Technical Profile 2024 contained latest major projects / siginificant contributions of the Institute.

CSIR-CRRI Field & Project Work Record Book 2024

During the year, CSIR-CRRI Field & Project Work Record Book 2024 was published. The Field & Project Work Record Book 2024 contained latest information related to Head of Departments / Sections of the Institute alomg with date wise record entry book / work planner.

CSIR-CRRI Technical Brochure 2023-24

A two-page summary of major activities / projects / facilities of each divisons of the Institute was published in the form technical brochure during the period.

CSIR-CRRI Training Calendar / Brochure 2023-24

A training calendar containing details of each training programs conducted during the period was also published.

Technical Exhibitions

The Institute participated in the following technical exhibitions and depicted its expertise, capabilities, major projects and R&D achievements during the year.

82nd CSIR Foundation Day Mega Exhibition, Pragati Maidan, New Delhi

As part of 82nd CSIR Foundation Day celebration, a mega exhibition was organised by CSIR for its constituent laboratories during September 26-27, 2023 at Pragati Maidan, New Delhi. CRRI also took part of the exhibition by showcasing its expertise & capabilities in the fields of roads, bridges & other transportation areas.

82nd Annual Session of Indian Roads Congress, Gandhinagar, Gujarat

As part of 82nd Annual Session of Indian Roads Congress held during December 02-05, 2023 at Gandhinagar, Gujarat, a technical exhibition was organized to showcase the latest in technologies, products and projects in the roads & transports sectors for various stakeholders across the globe and CRRI also took part of the exhibition by showcasing its expertise & capabilities in the fields of roads, bridges & other transportation areas.


11th Edition Traffic Infratech Expo, Pragati Maidan, New Delhi

CSIR-CRRI participated in the11th Edition Traffic Infratech Expo held during October 10-12, 2023 at Pragati Maidan, New Delhi. During the expo, CSIR-CRRI showcased its expertise & capabilities in the fields of roads, traffic, bridges & other transportation areas.

All India Adhiveshan, New Delhi

As part of All India Adhiveshan organized by Laghu Udyog Bharati during August 23-25, 2023 at New Delhi, a technical exhibition was organized to showcase latest products & technologies and CSIR-CRRI participated in the exhibition on August 25, 2023.

India International Science Festival 2023

CSIR-CRRI participated in technical exhibition of India International Science Festival 2023 held during January 17-20, 2024 at DBT THSTI - RCB Campus, Faridabad-Gurugram Expressway, Faridabad - 121001 Haryana (NCR Delhi), India.


Other Activities

Dissemination of Publications

The Institute's R&D publications such as its Annual Report, Newsletters and Training Calendars were sent to highway professionals, engineering & academic organizations in the country and abroad. The publications are meant to disseminate R&D based information to the road and transporation engineering professionals / fraternity.

Technical Queries

Technical queries concerning the R&D activities and technical know-how of the Institute were attended. Information on various technologies developed by the Institute were sent to a number of organizations dealing with databases, technology transfer and consultancy assignments pertaining to roads and road transportation.

Press Publicity

Various local press approached CRRI for information on research & developments and studies carried out by the Institute on roads, flyovers, bridges etc. The needed information was provided to the press for the purpose of awareness and publicity.

Press clipping pertaining to road and road transport in particular and Science and Technology in general were culled out from various National dailies and were brought to the notice of the Director and circulated to staff members for information, if needed. These were also compiled in the form of documents.

Publicity through CRRI Advertisement

To popularise the Institute's past R&D achievements and present R&D programmes, capabilities, facilities and expertise, the Institute issued various advertisements at various forums. One such forum was the scientific documents brought out by various organizations on different occasions. The Institute published its various advertisements in the documents brought out by the various organizations on the different occasions.

Publication of Research Outputs

Research Papers emanating from the R&D work were prepared and submitted for publication in various National & International Journals/Conferences by individual staff members. Once the papers were accepted for publications, cases pertaining to deputation of CRRI Scientists to attend various Conference/Symposia were processed by this division.

Visitors

Visits of distinguished professionals and delegates from various organizations related to road and road transportation from India and abroad to CRRI were organized facilitated during the year. The details of the visitors during the year are given in Chapter "Visitors".

Linkages with Professional Bodies

The Institute is represented as the Institutional Member on the various technical, executive and administrative committees and groups of various National and Foreign Organizations. These organizations maintain their databases including R&D activities, organizational heads, etc. of the Member Institutions and regularly seek the updated information. The updated information on CRRI was provided to various organizations and the annual subscriptions were paid to continue the membership. The Institutional membership of the Institute is given in section "Membership of National and International Organisations".

Regular Training Programmes

Skill development of human resources by imparting training to the engineers of the user agencies / organizations is an integral part of the research and development programme of the Institute. During this fiscal year, following refresher courses / training programmes for engineers / professionals of the user organizations related to roads and road transportation in the Govt., Public & Private Sectors were organized. Through these programmes, the Institute imparted training to the junior, middle and senior level engineers of the user organizations and acquainted them with the latest research based information on various aspects of road and road transportation.

During the last fiscal year, the institute conducted following regular training programmes as listed in the table below.

S. No.	Training Program	Duration / Dates	No. of Participants	Inaugurated By
1.	Traffic Engineering & Road Safety Audit	July 10-14, 2023	25	Prof. Manoranjan Parida, Director
2.	Design, Construction, Quality Control and Maintenance of Rigid Pavements	August 28-September 01, 2023	34	Prof. Manoranjan Parida, Director
3.	Pavement Evaluation Techniques and their applications for Maintenance and Rehabilitation	September 18 – 22, 2023	30	Dr. S. Velmurugan, Chief Scientist
4.	Design of Bridge Structure and Foundation	October 09-13, 2023	11	Sh. P. V. Pradeep Kumar, Chief Scientist
5.	Quality Assurance, Health Assessment and Rehabilitation of Bridges	December 11-15, 2023	16	Dr. Vasant G. Havanagi, Chief Scientist
6.	Design, Construction and Quality Control in Flexible Pavements	December 18-22, 2023	17	Dr. Vasant G. Havanagi, Chief Scientist
7.	Geotechnical and Landslide Investigations for Highway Projects	January 08-12, 2024	8	Prof. Manoranjan Parida, Director
8.	Planning for Sustainable Transportation System (online)	March 19 – 21, 2024	8	Prof. Manoranjan Parida, Director

Glimpses of Regular Training Programmes

Traffic Engineering & Road Safety Audit (July 10-14, 2023)

Design, Construction, Quality Control and Maintenance of Rigid Pavements (August 28-September 01, 2023)

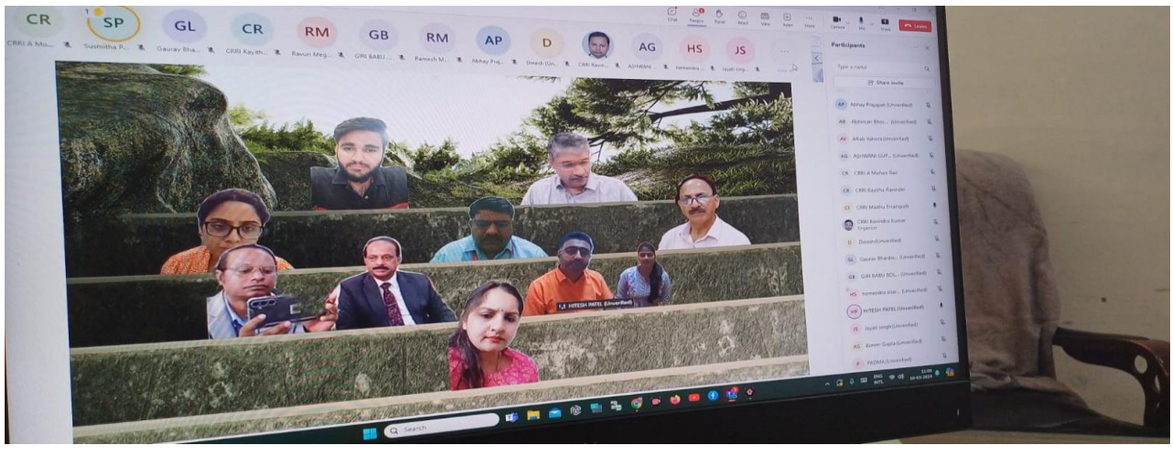
Pavement Evaluation Techniques and their applications for Maintenance and Rehabilitation (September 18 – 22, 2023)

Design of Bridge Structure and Foundation (October 09-13, 2023)

Quality Assurance, Health Assessment and Rehabilitation of Bridges (December 11-15, 2023)

Design, Construction and Quality Control in Flexible Pavements (December 18-22, 2023)

Geotechnical and Landslide Investigations for Highway Projects (January 08-12, 2024)



Planning for Sustainable Transportation System (March 19 – 21, 2024)

Customized Training Programmes

Besides the online regular training programmes, the Institute also conducted customer oriented /customized training programmes to meet the specific training requirements of the user agencies. During the last fiscal year, the Institute conducted the following customized training programmes as listed in the table below.

S. No.	Training Program	Duration / Dates	No. of Participants	Sponsoring Agency
1.	Orientation programme of NQM at CRRI for the officials of NRIDA, New Delhi	July 04-05, 2023	25	NRIDA, New Delhi
2.	Design, Construction and Quality control of Flexible and Rigid Pavements	January 15-19, 2024	22	NRIDA, New Delhi
3.	Maintenance of Rural Roads – Asset Management and Budgeting	January 29 - 02 February, 2024	28	NRIDA, New Delhi
4.	Design of Flexible and Rigid Pavements	February 26- March 01, 2024	20	NRIDA, New Delhi
5.	New Technology initiatives in Rural Roads including use of marginal materials	March 04-08, 2024	31	NRIDA, New Delhi
6.	Highway Development and Management (HDM-4)	September 20-24, 2023	08	Road Development Authority, Sri Lanka

Glimpses of Customized Training Programmes

Design, Construction and Quality control of Flexible and Rigid Pavements (January 15-19, 2024)

Maintenance of Rural Roads – Asset Management and Budgeting (January 29 - 02 February, 2024)

Design of Flexible and Rigid Pavements (February 26- March 01, 2024)

New Technology initiatives in Rural Roads including use of marginal materials
(March 04-08, 2024)

International Customized Training Program on "Highway Development and Management Tool (HDM-4)"

A 5-day customized training program on HDM-4 Tool was successfully organized at Road Development Authority (RDA), Colombo, Sri Lanka during September 20-24, 2023. The training program was sponsored by Ministry of Highways, *Road Development Authority (RDA)*, Sri Lanka**.** Dr. S. Velmurugan, Chief Scientist, Dr. Pradeep Kumar, Chief Scientist & Coordinator, Sh. Sunil Jain, Chief Scientist, Dr. A Mohan Rao, Chief Scientist, Dr. Deepa, S. Scientist and Sh. Sachin Gowda, Scientist visited Sri Lanka and trained 31 officials of RDA at Colombo, Sri Lanka. The CSIR-CRRI Team has also visited top officials of Ministry of Highways and discuss the joint research and development opportunities. The RDA has overall rated the training program as "Excellent". The following photos shows the glimpse of Inaugural and training session.

Inaugural Session

Training Session

15-day Road Safety Audit Certification Course

1. CSIR-CRRI conducted MoRTH approved 15-day certification course on “Road Safety and Other Road safety related aspects” during April 03-18, 2023. The training program was inaugurated by Prof. Manoranjan Parida, Director, CSIR-CRRI and attended by 65 participants from various parts of India.

2. CSIR-CRRI conducted MoRTH approved 15-day certification course on “Road Safety and Other Road safety related aspects” during November 15-30, 2023. The training program was inaugurated by Prof. Manoranjan Parida, Director, CSIR-CRRI and attended by 69 participants from various parts of India.

Any other Training Programs

Training program on Fire Awareness / Safety

CSIR-CRRI conducted one-day training program on “Fire Awareness / Safety” on August 22, 2023 for the staff members of the Institute. During the program, a team from Delhi Fire Service, Govt. of NCT of Delhi demonstrated fire fighting skills and a mock-drill also carried out. Many staff members of the Institute participated in the training program enthusiastically.

Internal Training Programm for Gr II and GR III Empolyee of CRRI

CSIR-CRRI conducted one-day training program on Traffic Data Collection Technique on April 03, 2023 for Group II and Group III staff members of the Institute.

Planning, Monitoring & Evaluation

Planning, Monitoring & Evaluation

The PME Division serves as the central hub for R&D management at CSIR-CRRI. Its core mandate encompasses the comprehensive planning, monitoring, and evaluation of diverse project categories, including sponsored, collaborative, grant-in-aid, and in-house R&D. Additionally, the Division manages consultancy and technical services, Intellectual Property (IP) portfolios, and business development while providing critical technical support to the Director, the Management Council (MC), and the Research Council (RC).

The ongoing activities of the PME Division are detailed below:

Project Planning & Strategic Resource Management

The Division streamlines the transition from research concepts to formal projects and ensures resource availability:

- Proposal Facilitation: PME interacts with scientists to prepare and submit R&D proposals to various funding agencies. This includes processing in-house projects and CSIR-funded initiatives (Fast Track Translational Projects, Focus Based Research, R&D Seed Fund, Facility Creation Projects etc.) and assisting in the submission of proposals to external departments like NHAI, MoRTH and DST.
- Budgeting & Procurement Planning: The Division formulates the annual R&D budget for the Institute and prepares the comprehensive Procurement Plan to ensure that R&D activities are supported by necessary resources.
- Infrastructure Prioritization: PME compiles the R&D Equipment Priority list, ensuring that institutional infrastructure development aligns with strategic research goals.
- Standardization of Proformae: The Division designs and maintains project-related proformae, ensuring they remain updated in accordance with ISO requirements and CSIR guidelines.
- Scrutiny and Registration: Upon receipt of funding and in-principle approval, PME registers and scrutinizes all projects, assigning unique identity numbers to ensure systematic tracking from inception.

Monitoring & Performance Tracking

Continuous oversight ensures that research remains on track and aligned with institutional goals:

- Progress Reporting: The Division Compiles Monthly and Quarterly progress reports for submission to CSIR HQ, providing higher authorities with data for institutional evaluation.
- Divisional Review Meetings: PME coordinates divisional review meetings chaired by the Director to assess project status, address bottlenecks, and ensure adherence to technical schedules.
- Performance Analytics: PME generates periodic reports on institutional performance parameters, such as technologies developed and licenses transferred, for submission to CSIR.
- Data Synthesis: PME manages the input of institutional data into the CSIR-Data Infographics System (C-DIS) and the SCDD-Data Collection Portal (S-DCP) to facilitate high-level data mining.
- Financial Tracking: The Division records and monitors External Cash Flow (ECF) from agencies such as NHAI, NRIDA, and MoRTH, comparing actual receipts against established targets.

Statutory Compliance & Inter-Agency Coordination

PME ensures that all activities meet technical, legal, and administrative standards:

- Audit & Liaison: The Division coordinates with the CAG Audit team and the GST department on all related institutional issues. It also maintains constant liaison with CSIR HQ regarding the management of various CSIR-funded projects.

- Financial Compliance: PME manages monthly GST-related activities (GSTR-1, 3B) and coordinates with the Finance and Accounts sections to ensure statutory compliance.
- Advisory Support: The Division provides data and status updates to the Research Council (RC) and Management Council (MC), enabling these bodies to offer strategic guidance and ratify project activities.
- Stakeholder Feedback: PME conducts Customer Satisfaction Evaluations for completed projects to measure and maintain high service standards.
- Technical & Legislative Support: The Division addresses technical queries from internal and external stakeholders and prepares replies to Parliament questions.

Digital Infrastructure & Business Development

The Division leverages technology to enhance institutional efficiency and commercial reach:

- Systems Development: PME maintains and enhances a web-based "Project Management System." This integrated platform includes modules for expenditure monitoring, manpower deployment, and online invoice generation.
- Software Implementation: The Division oversees the implementation of CSIR automation tools, including ACCESS and AMS software.
- Technology Transfer: PME facilitates technology transfer agreements and dissemination activities, supporting scientists in industry interactions and forum presentations.
- IP Protection: The Division manages the security of Intellectual Property by assisting scientists in filing patents, trademarks, and copyrights resulting from research outcomes.

Knowledge Resource Centre

Knowledge Resource Centre

Knowledge Resource Centre

Knowledge Resource Centre, a hub of learning resources, is one of the central facilities working with a mission to provide quality information resources in all forms to the academic and research community of CSIR-CRRI, New Delhi. The Knowledge Resource Centre of CSIR-CRRI plays an important role in advancing the research and academic mission of CSIR-CRRI and in facilitating the creation and dissemination of knowledge. It is a hub of learning resources and one of the central facilities, working with a mission to provide high-quality information resources in all forms to the academic and research community of CSIR-CRRI. With a commitment to excellence, the Knowledge Resource Centre plays a vital role in the acquisition and dissemination of all types of information resources, providing timely and innovative services that support the academic and research needs of the user community. The range and quality of services offered by the Knowledge Resource Centre are comparable to those of any modern library in India and meet international standards.

The Knowledge Resource Centre has developed a well-balanced and up-to-date collection of over 80,000 books, standards, periodicals, conference proceedings, maps, audio/video cassettes, bibliographic databases, etc., containing worldwide information in the field of highway engineering, traffic and transportation engineering, planning & environment, bridge engineering, geotechnical engineering, pavement and related areas. Reading material ranges with respect to the subject area from core science & technology to yoga & meditation and also with a massive collection of 2500+ Hindi Books. The publication also ranges in terms of year of publication from the latest to as old as the 18th century. Apart from the procurement of print books, the library achieved phenomenal progress in the subscription of e-resources through National Knowledge Resources Consortium (NKRC) and individually, which includes more than 100+ e-journals/Magazines, e-conferences, e-standards (Indian Standards on Civil Engineering) to its digital collection and KRC OPAC making 24 x 7 Library in a real sense on the institute-wide network. CRRI KRC is an automated library with an RFID system.

Library Collection at a Glance

The Knowledge Resource Centre has a rich collection of print and electronic resources that support the academic and research needs of the CSIR-CRRI fraternity. The collection includes books, journals, databases, software tools, theses and dissertations, magazines and newspapers, etc. The library provides support to more than 500 users, including students, research scholars, scientists, and staff.

The total collection of the library as on 31stMarch 2024 stands as follows:

Collection (Print & Electronic)	Quantity	Collection (Print & Electronic)	Quantity
Books	56953+	Full-Text Databases	03
E-Journals	80+	Plagiarism Detection Tools	01
Maps	688	Writing Assistance Tools	01
Microforms	655	Video Cassettes	122
Institute PhD Theses and Dissertations	70+	Bound Volume of Periodicals	15300

Knowledge Resource Centre Services & Facilities

❖ Library Membership ❖ RFID-Based Library Circulation ❖ OPAC Search (Online Public Access Catalogue) ❖ Circulation Service (Issue/Return/Renewal/Holds) ❖ Institutional Repository of CRRI ❖ Electronic Current Awareness in Road Transport (E-CART) ❖ Document Delivery Service ❖ Research Support Service	❖ Library Orientation Programme ❖ Reference Service ❖ Fully Airconditioned Reading Area ❖ Wi-Fi (Wireless Fidelity) Facility ❖ Raj Bhasha (Hindi) Collection ❖ Plagiarism Detection Tools ❖ Grammarly, a comprehensive digital writing assistant Tool ❖ Library Awareness Program ❖ QR-Code based Library Services

Print and Electronic Resources

The Knowledge Resource Centre has a rich collection of print resources, including books, theses, Journals, and magazines. The bibliographical information of these resources are accessible through the Library Catalogue or OPAC. The institute also has a rich collection of electronic resources, including access to 100+ electronic Journals and databases through the Institute Subscription and the National Knowledge Resources Consortium (NKRC). These e-resources are being subscribed to and renewed annually.

The e-resources subscribed by the Knowledge Resource Centre are as follows:

List of E-Resources (National Knowledge Resources Consortium)

Full-Text Databases

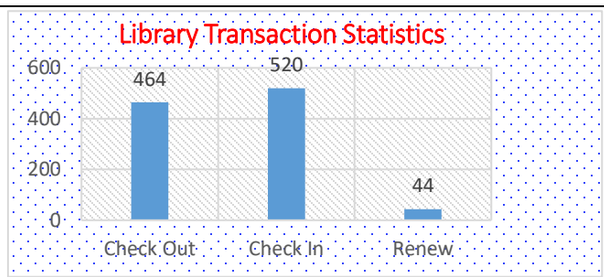
- ❖ American Society of Civil Engineers (ASCE)
- ❖ American Society of Testing and Materials (ASTM)
- ❖ ASTM International Standards & Engg. Digital Libraries
- ❖ Institution of Civil Engineers (ICE)
- ❖ CSIR-NIScPR
- ❖ ICE Publishing
- ❖ IEEE Xplore Digital Library
- ❖ Springer Journals
- ❖ Elsevier Science Direct
- ❖ Indian Standards on Civil Engineering

Library Automation

The Knowledge Resource Centre has been automated all its housekeeping operations using an open-source integrated library management system software **"Koha"**. The software is being maintained It supports the online public access catalogue (OPAC) through which a user can search books, check issued books, renew and reserve books. Further, it automatically sends all transaction alerts to users including overdue notices and book due reminders. The transaction statistics of the library from 1st April 2023 to 31st March 2024 is given below (**Source:** Koha).

Library Transaction Statistics (From 1st April 2023 to 31st March 2024)

Transaction Type	Total Counts
Checkouts (Issue)	464
Checkins (Return)	520
Renew	44
Total	1018



Out-reach Programmes of the Knowledge Resource Centre

Inauguration of Hindi Book Exhibition by our esteemed officiating Director Dr. Vasant G. Havanagi

Inauguration of RFID based Library Automation System by our esteemed Director Prof. Manoranjan Parida

Visit by Raj Bhasha Inspection Committee

KRC organised various competitions for the children of CRRI staff on the occasion of CSIR Foundation Day

Computer Centre & Networking

Computer Centre & Networking

Computer Centre and Networking Division (CCN Division) fulfils all the IT requirements of this institutes, and provides ICT Support and Services in various R&D activities, execution of consultancy services and handling HRD services etc.

This division is responsible for recommending and implementing information technology (IT) strategies, policies, and procedures. It evaluates organizational needs and provides various IT services, including LAN, Wi-Fi, network security, website and web-based application development and maintenance for both internet and intranet, email services, video conferencing and web meetings, and IT infrastructure maintenance and upgrades. The day to day regular activities and IT essential Services provided by CCN division are listed below:

- **LAN Infrastructure:** CRRI's LAN Infrastructure has been secured by Unified Thread Management System (UTM) security appliance for a complete enterprise class security solution with centralized management, logging, reporting and restrict unauthorized network use. The optimal performance of LAN is maintained and made perimeter protection intact. The present LAN/ IT system is supported by Layer 3 Core Switches, Layer 2 Edge Switches, Routers, Firewall, Net Manager and Wireless Controller for its functionalities and operations.
- **Secured Wi-Fi:** CCN operates the connectivity through a fully networked campus with state-of-the-art IT infrastructure, computing & communication resources which offers Scientists and Research Scholars the facility of 24x7 uninterrupted, super-fast, reliable and secure Wi-Fi Internet Access having 53 Access Points and 1GBPS LAN Connectivity through NKN to carry out the R&D works with ease.
- **Server Administration:** Administration of Maintenance of Server Hardware (Intranet, DNS Server, Antivirus) Power Supply, UPS, Cabling System etc.
- **End point protection:** A centralized corporate antivirus security solution has been deployed, providing comprehensive endpoint protection, web reputation, URL filtering, malware removal, and vulnerability management for all computing devices, including servers, PCs, and roaming clients within the institute. Additionally, awareness initiatives regarding phishing emails and cyber scams were conducted through the CRRI intranet page, digital signage, and email communications etc
- **Intranet Site Support:** CRRI's new Intranet website is developed to provide support for Online Library Search (Web OPAC) , BIS Searching facility, Transport Database, Links for subscribed E-Journal, Driver Testing Software, internal circular/OM, office forms, minutes of meeting, ISO Manual & QSPs, staff profile, articles as knowledge base for trouble shooting known regular issues regarding Windows, MS Office, MS Team and LAN/WiFi.
  A dedicated page has been created for Cyber Security awareness in the Intranet Portal.
- **AEBAS Implementation:** Maintenance of Aadhar Enabled Bio-metric Attendance devices in CRRI is being done by CCN Division. BAS portal operation, Device Activation and maintenance, RD Services update etc also carried out as and when required
- **RTI Online:** Nodaling with the RTI online, CIC RTI portal related tasks are done by CCN Staff. Implementation of Suo-Muto Disclosure in CRRI Web, Submission of Quarterly Reports and Transparency Audit are done by this division quarterly and annually
- **E-Mail Facility:** Official E-Mail IDs are provided to all the regular staff in CRRI. CCN Division takes care the BO Admin and Mail box security related activities etc.

- **IT Hardware Procurement and Support:** CCN division involves in the procurement and maintenance of IT hardware items (PCs, Printer, Laptop, Servers, Digital Notice Board) etc. Hardware and Software supports of all the above IT equipments in CRRI including Servers, LAN-Wi-Fi equipment, PCs, Printers, Laptops and various computer peripherals are one of the regular activity of this division
- **Assistance for Video Conferencing and MS Team online meeting :** Hardware maintenance of VC Equipment is taken care. Support for MS Teams Online Meetings and Live streams activities are also provided. Youtube live broadcasting also done by CCN Division

In-House Development, Management, and Digital Service Enablement of CSIR–CRRI Website by CCN Division

The Computer Centre & Networking (CCN) Division of CSIR–CRRI has successfully designed, developed, and deployed the Institute's official website (**https://www.crridom.gov.in**) entirely in-house, demonstrating strong technical capability and self-reliance in digital infrastructure development. The website is comprehensively hosted, managed, and regularly maintained by the CCN Division, ensuring high availability, data security, and seamless user experience.

The portal serves as a central information hub for the Institute, providing detailed insights into various R&D Divisions, Research Management areas, and the diverse Facilities and Services offered by CSIR–CRRI. It enables stakeholders—including researchers, industry partners, students, and the general public—to easily access updated and authentic information about the organization's activities and achievements.

In addition, the website hosts a rich repository of institutional publications such as Annual Reports, Sadak Darpan, and other newsletters, which are systematically archived and made accessible year-wise for public reference.

The CCN Division also ensures that all information related to Suo Motu disclosures, as mandated under transparency guidelines, is regularly updated on the website, thereby reinforcing the Institute's commitment to openness and accountability.

Further, the portal integrates user-centric digital services, including online guest house booking and internship/training registration modules, streamlining administrative processes and improving accessibility for users. These features significantly enhance operational efficiency and user convenience.

Overall, the in-house developed website stands as a robust, dynamic, and user-friendly digital platform that effectively supports CSIR–CRRI's mission of research excellence, public engagement, and transparent governance.

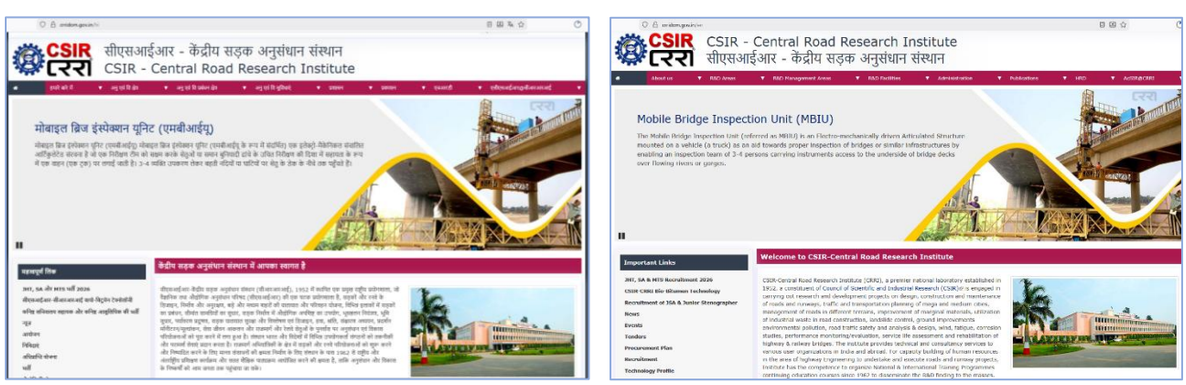


Figure 1: Bi-lingual website of CSIR-CRRI

Cyber Security Training and Awareness Initiatives

The **Computer Centre & Networking (CCN) Division** at CSIR–CRRI plays a proactive and pivotal role in strengthening the Institute's cyber security posture by regularly conducting structured training and awareness programmes for all staff members. The Division periodically organizes cyber awareness training sessions, and hands-on demonstrations covering key areas such as safe internet practices, password hygiene, secure email usage, identification of phishing attempts, ransomware threats, and data protection measures.

In addition, the CCN Division actively participates in and promotes nationwide initiatives such as the Cyber Jaagrookta Diwas (Cyber Awareness Day/Month), during which special campaigns, quizzes, and knowledge-sharing activities are conducted to reinforce cyber safety practices. The Division also facilitates E-Pledge campaigns on Cyber Security, encouraging staff to formally commit to adopting secure digital behaviors.

Through these continuous efforts, the CCN Division ensures that cyber security is not just a technical safeguard but a shared responsibility across the organization, thereby enhancing resilience against cyber threats and promoting a secure digital working environment at CSIR–CRRI.

Figure 2: Cyber Security Pledge

Other Activities:

- **One Week One Lab Related Activities :**

  CCN team was actively involved in the CSIR- "One Week One Lab" program, organised during this period, at various locations across India. The divisional staff effectively managed the end-to-end online streaming and YouTube live broadcasts of the event. Additionally, CCN team ensured continuous updates on the organization's homepage and social media platforms, providing real-time information about the program.

- **Divisional Achievements :**
  - CCN Division has secured Second Position in Best R&D Support Divisional Display Competition held on 29th Sept 2023 on the occasion of 82nd CSIR Foundation day Celebration.
  - CCN Division has been awarded Third place in **हिंदी पोस्टर प्रतियोगिता - गैर आर और डी श्रेणी** held on the occasion of **विश्व हिंदी दिवस** held on 12th Jan, 2024

Engineering Services

Engineering Services

Table 1: List of Completed Works at ESD (2023-2024)

Sl. No.	Name Of Works	Grant Code
1.	Repair/ Additional work of Centre for research on Steel Slag Lab at CSIR-CRRI New Delhi 110025.	P-06
2.	Repair/ Renovation of Guest House wing-II Room no -16 (Presently used as Creche) and other Miscellaneous Work at CSIR-CRRI Campus.	P-50
3.	Fire Awareness/Fire Safety Training Program at CSIR-CRRI, New Delhi-110025.	P-06
4.	Supply, Installation, Testing and Commissioning of Dual Fuel Kit for 380KVA and 750KVA DG Set (Cummins Make) at CSIR-CRRI, New Delhi-110025.	P-50
5.	Investment Grade Energy Audit (Promotion of ESCO Model 5th Phase – Group-A) of CSIR-CRRI, Mathura Road, New Delhi.	P-06
6.	Miscellaneous Civil Works in Electrical Sub Station and Repair/Renovation in RPD Division at CSIR-CRRI.	P-50
7.	Erection of Wooden Work Station in GTE Division Room No. E-217 at CSIR-CRRI, Mathura Road New Delhi 110025.	MLP–0656
8.	Wall Art Painting of Traffic Signage at CSIR-CRRI Institute Campus New Delhi-110025.	P-06
9.	Providing & Controlling the larvae, Fogging, Rodent & Termite through Spraying at CRRI office campus, New Delhi – 110025.	P-06
10.	Replacement of 163 Nos. Energy Efficient Window AC Against old energy consuming ACs.	P-50
11.	Installation of 17 Nos. Energy Saving Split AC in the R&D Corridor in CSIR-CRRI for the beautification of corridor.	P-50

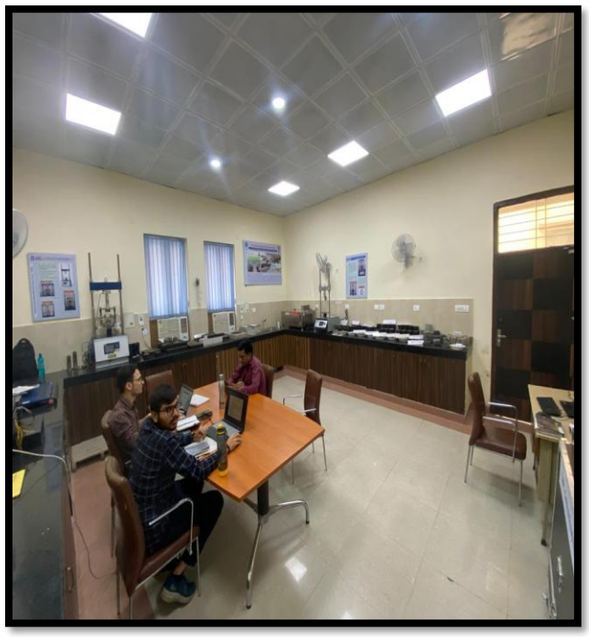
Table 2: List of Ongoing Works at ESD (2023-2024)

Sl. No.	Name Of Works	Grant Code
1.	Annual Maintenance Contract for Institute Office Campus at CRRI, New Delhi-110025.	P-06
2.	Construction Of cafeteria building1st floor (Now AcSIR) at CRRI NEW DELHI 110025.	P-50
3.	Renovation of PED, GTE Division and Administrative Block (E-II Section) at CRRI, New Delhi.	P-50
4.	Supply, Installation, Testing and Commissioning of Street lights and Flood lights along with laying of cables at CSIR-CRRI, New Delhi-110025.	P-50
5.	Geotechnical Investigation for Construction of Multi-Story Building at CSIR-CRRI, Office Campus, New Delhi-110025.	P-50
6.	Construction of Laboratory Waste Bins in Front of R.P Division at CSIR - CRRI New Delhi 110025.	P-50
7.	Internal / External Painting Work of CRRI Institute Campus Building Blocks at Mathura Road, New Delhi-110025.	P-06
8.	Cleaning, Sanitation ad Housekeeping Services for CSIR-CRRI Bldgs. & Office Campus, new Delhi-110025 and CSIR-CRRI Staff Colony at Maharani Bagh, New Delhi-110065.	P-06

वर्ष के दौरान 2023-24 से संबन्धित पूर्ण किए गए कार्यों के photographs निम्नानुसार है।

1. **CSIR-CRRI के Centre For Research On Steel Slag के नवीनीकरण के कार्य की कुछ तस्वीरें।**

कार्य का नाम -Repair/ Additional work of Centre for research on Steel Slag Lab at CSIR-CRRI New Delhi .110025



2. **CSIR-CRRI में क्रेच के नवीनीकरण के कार्य की कुछ तस्वीरें।**

कार्य का नाम -Repair/ Renovation of Guest House wing-II Room no -) 16Presently used as Creche) and other Miscellaneous Work at CSIR-CRRI Campu

3. CSIR-CRRI परिसर में Fire Awareness/Fire Safety Training Program की कुछ तस्वीरें।

कार्य का नाम -Fire Awareness/Fire Safety Training Program at CSIR-CRRI, New Delhi-.110025

4. CSIR-CRRI के Electric Sub Station 380KVADGSet व 750KVADGSet में Duel Fuel Kit (NaturalGas तथा Diesel के मिश्रित Operation के (Supply, Installation, Testing & Commissioning के कार्य की कुछ तस्वीरें।

कार्य का नाम -Supply, Installation, Testing and Commissioning of Dual Fuel Kit for 380KVA and 750KVA DG Set (Cummins Make) at CSIR-CRRI, New Delhi-.110025

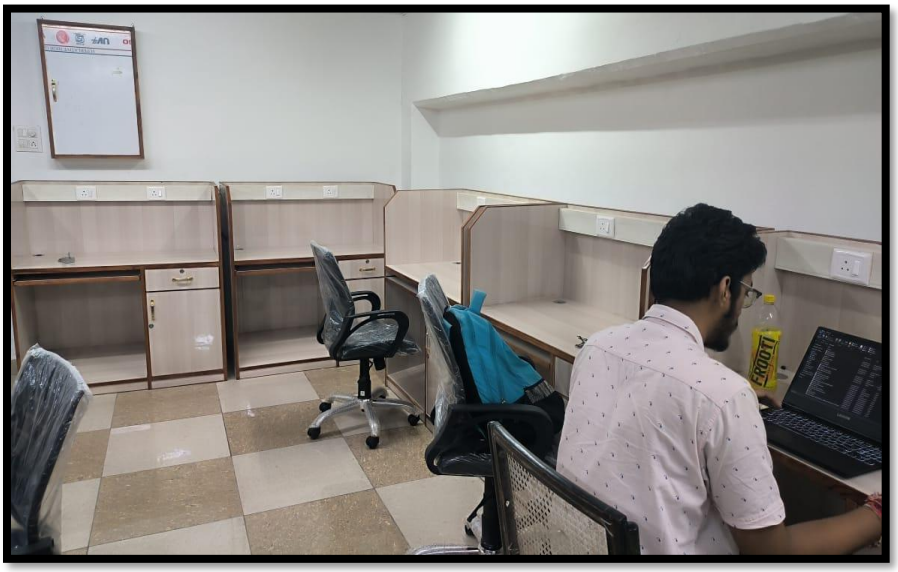
5. Investment Grade Energy Audit के दौरान ली गयी कुछ equipments व प्रयोग मे लाये गए Instruments की तस्वीरें।

कार्य का नाम -Investment Grade Energy Audit (Promotion of ESCO Model 5th Phase – Group-A) of CSIR-CRRI, Mathura Road, New Delhi.

6. Miscellaneous Civil works in Electrical Substation and Repair/Renovation in RPD Division in CRRI के कार्य की कुछ तस्वीरें।

कार्य का नाम -Miscellaneous Civil Works in Electrical Sub Station and Repair/ Renovation in RPD Division at CSIR-CRRI.

7. Erection of Wooden Work Station in GTE Division Room No. E- 217at CSIR-CRRI New Delhi – 110025के कार्य की कुछ तस्वीरें ।



कार्य का नाम -Erection of Wooden Work Station in GTE Division Room No. E- 217at CSIR-CRRI, Mathura Road New Delhi .110025

8. Wall Art Painting of Traffic Signage at CSIR-CRRI Institute Campus New Delhi-110025 के कार्य की कुछ तस्वीरें।

कार्य का नाम -Wall Art Painting of Traffic Signage at CSIR-CRRI Institute Campus New Delhi-.110025

9. Providing & Controlling the larvae, Fogging, Rodent & Termite through Spraying at CRRI office campus, New Delhi – 110025 के कार्य की कुछ तस्वीरें।

कार्य का नाम -Providing & Controlling the larvae, Fogging, Rodent & Termite through Spraying at CRRI office campus, New Delhi .110025

10. Replacement of 163 Nos. Energy Efficient Window AC Against old energy consuming ACs के कार्य की कुछ तस्वीरें।

कार्य का नाम -Replacement of 163Nos. Energy Efficient Window AC Against old energy consuming ACs.

11. Installation of 17 Nos. Energy Saving Split AC in the R&D Corridor in CSIR-CRRI for the beautification of corridor के कार्य की कुछ तस्वीरें।

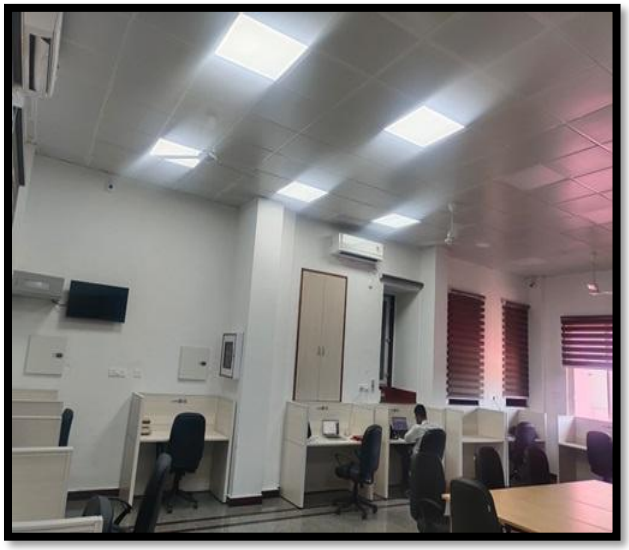
कार्य का नाम -Installation of 17Nos. Energy Saving Split AC in the R&D Corridor in CSIR-CRRI for the beautification of corridor.

वर्ष के दौरान 2023-24 से संबन्धित चल रहे कार्यों के photographs निम्नानुसार है।

1. **Annual Maintenance Civil के अंतर्गत CSIR-CRRI के मुख्य द्वार पर New Signage के कार्य की कुछ तस्वीरें।**

कार्य का नाम -Annual Maintenance Contract for Institute Office Campus at CRRI, New Delhi-110025.

2. CSIR-CRRI के Cafeteria First Floor (Now AcSIR) के नवीनीकरण के कार्य की कुछ तस्वीरें।



कार्य का नाम - Construction Of cafeteria building1st floor (Now AcSIR) at CRRI NEW DELHI 110025.

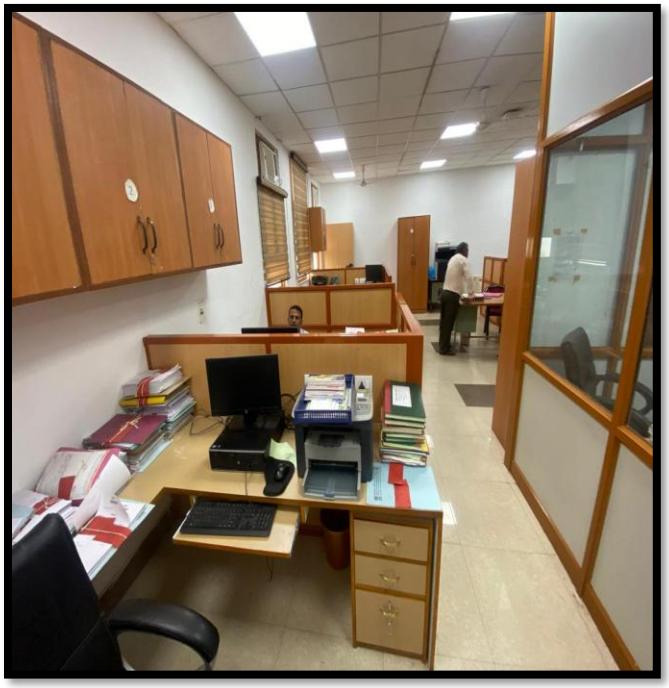
3. Renovation of PED, GTE Division and Administrative Block (E-II Section) at CRRI, New Delhi के कार्य की कुछ तस्वीरें।

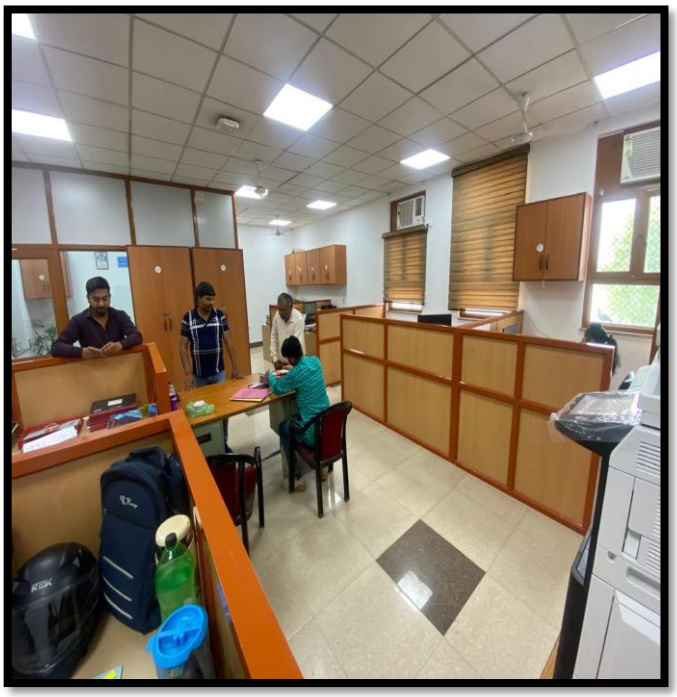
GTE

PED

कार्य का नाम -Renovation of PED, GTE Division and Administrative Block (E-II Section) at CRRI, New Delhi.

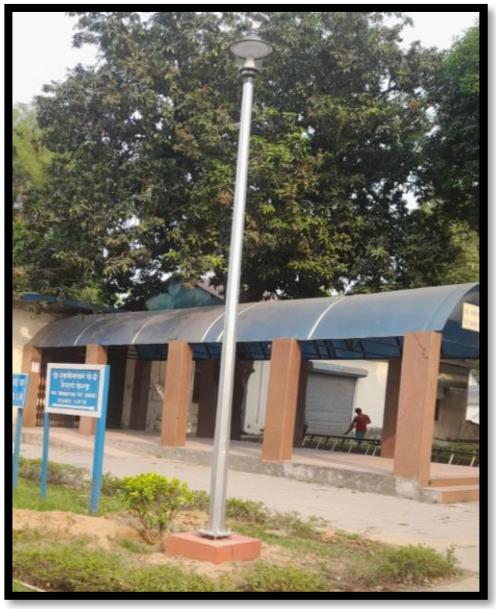
E-II Section





कार्य का नाम -Renovation of PED, GTE Division and Administrative Block (E-II Section) at CRRI, New Delhi.

4. **CSIR-CRRI में LED Street lights, LED Bollard Lights, LED Flood lights के installation तथा Underground Cable laying के कार्य की कुछ तस्वीरें।**



कार्य का नाम -Supply, Installation, Testing and Commissioning of Street lights and Flood lights along with laying of cables at CSIR-CRRI, New Delhi-.110025

5. **Geotechnical Investigation for Construction of Multi-Story Building at CSIR-CRRI, Office Campus, New Delhi-110025 के कार्य की कुछ तस्वीरें।**

कार्य का नाम -Geotechnical Investigation for Construction of Multi-Story Building at CSIR-CRRI, Office Campus, New Delhi-.110025

6. **Construction of Laboratory Waste Bins in Front of R.P Division at CSIR - CRRI New Delhi 110025 के कार्य की कुछ तस्वीरें।**

कार्य का नाम -Construction of Laboratory Waste Bins in Front of R.P Division at CSIR - CRRI New Delhi .110025

7. Internal / External Painting Work of CRRI Institute Campus Building Blocks at Mathura Road, New Delhi-110025 के कार्य की कुछ तस्वीरें।

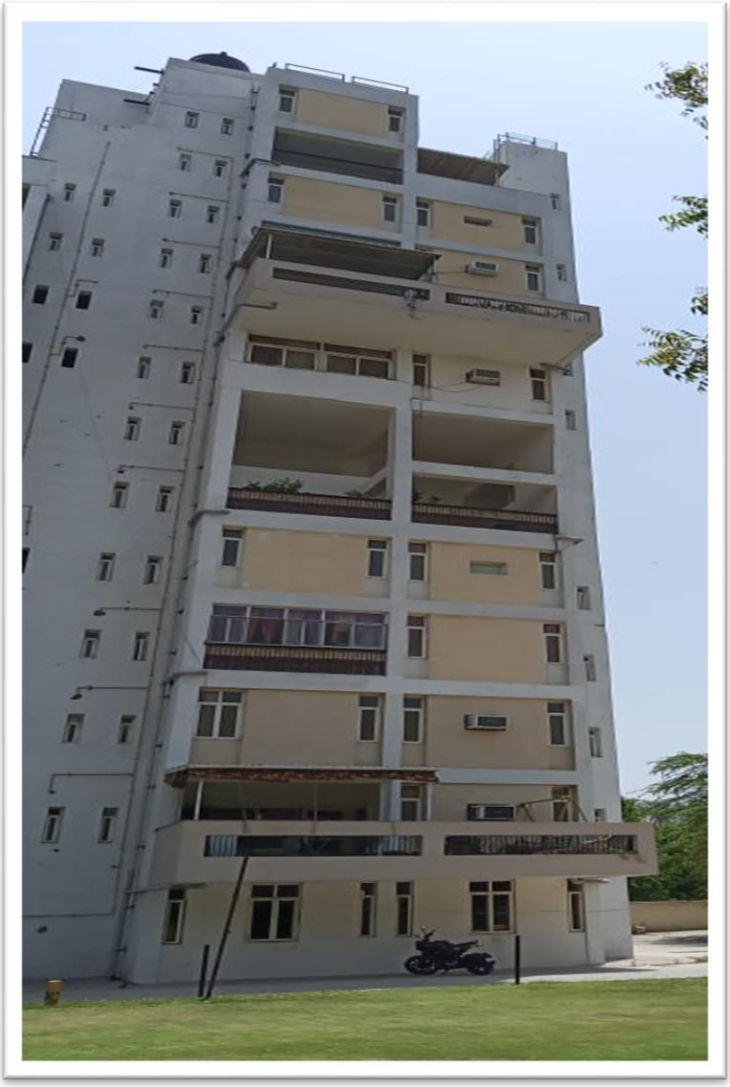
कार्य का नाम -Internal / External Painting Work of CRRI Institute Campus Building Blocks at Mathura Road, New Delhi-.110025

8. **Cleaning, Sanitation ad Housekeeping Services for CSIR-CRRI Bldgs. & Office Campus, new Delhi-110025and CSIR-CRRI Staff Colony at Maharani Bagh, New Delhi-110065 के कार्य की कुछ तस्वीरें।**

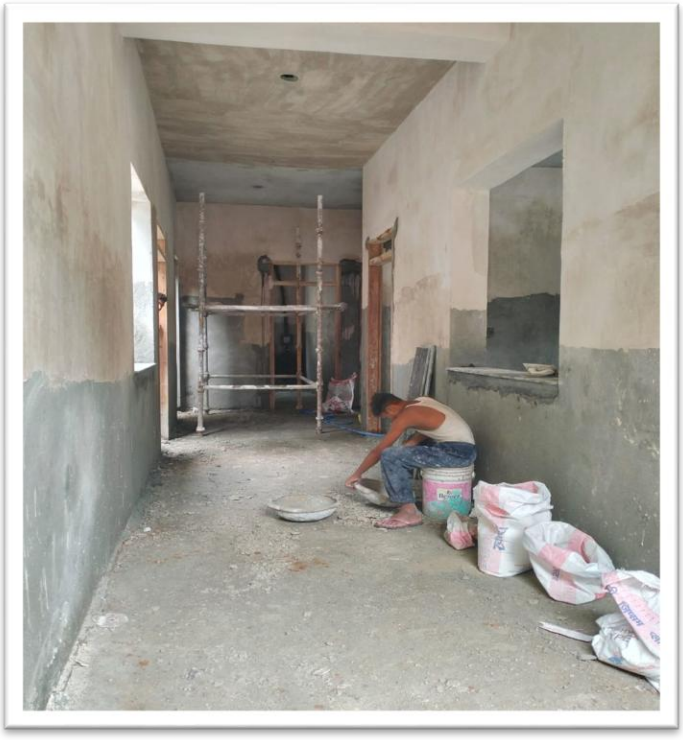
कार्य का नाम -Cleaning, Sanitation ad Housekeeping Services for CSIR-CRRI Bldgs. & Office Campus, new Delhi- 110025and CSIR-CRRI Staff Colony at Maharani Bagh, New Delhi-.110065

Maharani Bagh Staff Quarters Maintenance

Maharani Bagh Staff Quarters Maintenance



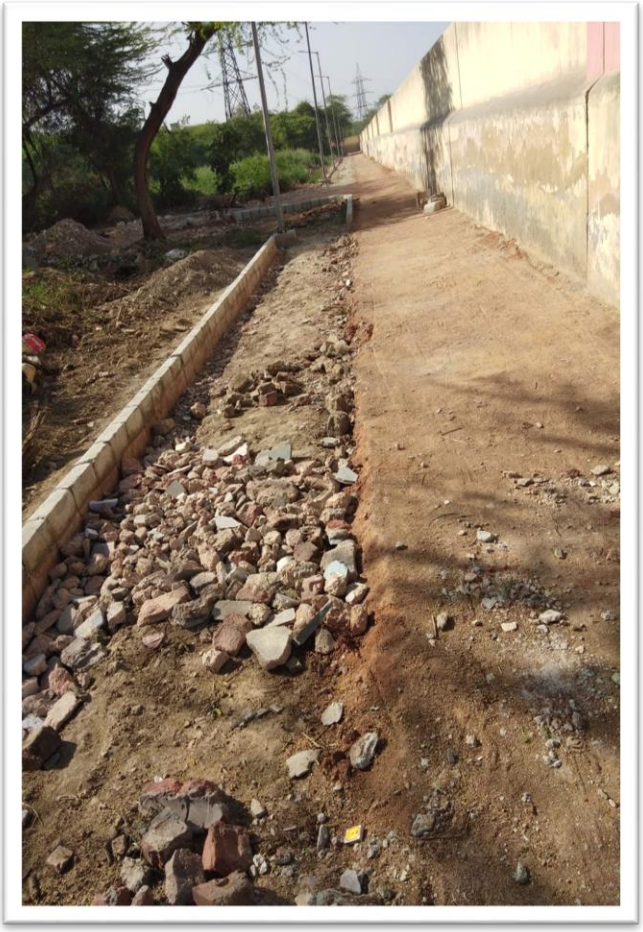
Structural Repairs and Renovation/Rehabilitation of the Existing Twelve Storied Multi-Story Building at CRRI Staff Colony, Maharani Bagh, New Delhi-110065.



Roof replacement and Renovation work of existing maintenance office and construction of temporary shed for sitting of staff at CRRI Staff Colony, Maharani Bagh, New Delhi-110065

Construction of Security Tower post and two layered wire fencing on Boundary wall at Campus-II and other miscellaneous works at CRRI Staff Colony, Maharani Bagh, New Delhi-110065

Construction of Under Ground Water Tank for STP Treated Water at CRRI Staff Colony, Maharani Bagh, New Delhi-110065



In-house project for the green initiative by using C&D waste material in the road sub-base i.e. similar to the WMM/WBM sub-base layer, at MBSQ campus-II area, used along the boundary wall widening of existing pathway and for footpath/walkway in the wooded in-accessible area i.e. Jungle area.

Mechanical and Transport

Mechanical and Transport

Thrust Areas

- Design and development of mechanical equipment required by R&D divisions
- Repair of mechanical equipment
- Transport Management

Significant Achievements

- Fabrication of Mould for I - Section Beam Casting
- Development of Ponding cum Debris Expulsion Test Equipment (Patent Applied)
- Creation of Expansion Joint Testing Facility
- Development of Nuclear Density Gauge mounting device
- Development of LVDT mounting device
- Development of Falling Weight Impact Tester
- Fabrication of Chimney models etc.
- Design & Development of Gym Facility

Major Infrastructural Facilities

- Spot Welding machine
- Lathe machine
- Welding Set (portable)
- Surface Grinder
- Gas welding set

Arc Beam Mould

Arc Beam

Quality Management

Quality Management

Quality Management

The CSIR-CRRI is an ISO:9001: 2015 Certified Organisation, and the present ISO Quality Management System (QMS) "Certificate""/"Licence" is valid from 09th March, 2023 - 18th December, 2025.
The Quality Management Division (QMD) of the Institute, is responsible to ensure that IS/ISO 9001:2015 Quality Management System operates effectively and efficiently in the Institute. Adopting higher level of quality standards in the working of the Institute is also the mandate of the Division.
During the year , QMD was engaged in conducting Internal Quality Audits, Updating/Revising the Quality System Procedures (QSPs) of various Divisions/Sections, discussing the findings of the Internal Quality Audit in the Management Review Committee meetings and ensuring corrective and preventive measures, Creating awareness amongst the staff of the Institute regarding ISO/QMS implementation, Updating the CRRI website/intranet related to various ISO/QMS related aspects and also Ensuring the Institute's readiness for the external/surveillance audits to be conducted by certification agency [i.e., Bureau of Indian Standards (BIS)] as per the requirements of IS/ISO 9001: 2015, a higher level of quality standards, in the working of the Institute.
All the R& D Divisions, Stores and Purchase Section and Administration (Security, Canteen, Guest House, E2 Section) of the Institute are presently covered under the purview of QMS as per the provisions of ISO:9001: 2015 certification.

Internal Quality Audits (IQAs)

The "Internal Quality Audits" are systematic and independent examination of the system to determine whether the planned arrangements/procedures are implemented effectively, and are suitable to achieve the objectives. The audit is carried out by trained quality auditors of the Institute (i.e., Internal Quality Auditors) with the following objectives:

- To determine the conformity or non-conformity of the quality system elements with specified requirements.
- To determine the effectiveness of the implemented quality system in meeting the specified quality objectives.
- To provide the auditee with an opportunity to improve the quality system.
- To meet all applicable requirements.
- To ensure Institute's readiness for Renewal Audit

During the Internal Quality Audit, two aspects namely, the requirement of the Quality Management System (QMS), as defined in the Quality Manual and the Quality System Procedures (QSPs) are focused. The Non-Conformity Reports (NCRs) and Corrective Action Reports (CARs) are communicated to the auditees for ensuring the corrective and preventive actions. The action taken by the auditees are verified subsequently and NC's are closed. Auditees were also instructed to comply and submit the Action Taken Report (ATR) of non-conformities and Opportunities for Improvement (OFIs)

Management Review Meeting (MRM)

As per the ISO 9001-2015/QMS requirements, "Management Review Meetings (MRM)" were held at the Institute on August 20th,2023 (34th) and March 19th, 2024 (35th) respectively. Management Review Committee consists of all HoDs/Sectional Heads, Chief Scientists, Task Force Members and Internal Quality Auditors of the Institute and is chaired by the Director, CSIR- CRRI.

The findings of the internal quality audits and their reports/findings were discussed in detail in the above mentioned 34th and 35th Management Review Committee meetings.

During the discussions, it was informed to the Committee that the CRRI-ISO Intranet site has already been updated/revised. Many of the Divisions/Sections, whose name(s) have been changed in previous restructuring of various R&D Divisions and Services Divisions, have been appropriately updated/changed on the CSIR-CRRI/ISO website. The Quality System Procedures (QSPs) of various Divisions/Sections [viz., PED, RPD, ESD, Security (Under Administration), KRC, TES and GTE) have been Revised and uploaded on the CRRI-ISO Intranet.

Further, Display of Quality Policy and ISO/QMS License of CSIR-CRRI at various Divisions/Sections at prominent places (viz., Conference Room, Council Hall) has been ensured by QMD.

Internal ISO awareness training of staff members of various Divisions/Sections, which was highlighted by the Auditors (both Internal and External), have been conducted by QMD with the help of concerned Divisions/Sections. A Committee has also been constituted by the Director, CRRI to recommend **(i)** Review of Quality Policy & Quality Objectives for its suitability for the Institute **(ii)** Changes in external and internal issues **(iii)** Recommendations for improvement in the Quality Management System (d) Division/Sections covered under the scope of ISO certification. The Committee provides its recommendations to the Quality Management Division, which is also put up in the MR meetings, and decisions/recommendations on the same(taken in MRM) are also recorded in the minutes of the MRM (duly approved by DRRI) and also displayed on the CRRI/ISO website/intranet. Similarly, a committee has also been formed by the Director, CSIR-CRRI, to take care issues related to Calibration of the equipments, which are being used in various R&D Divisions.

Information/Summary related to Customer Feedbacks, as provided by HoD (PME) were also discussed in the MRM. Preventive and corrective measures, if any, required by any R&D Division or at Institute level are undertaken to improve the quality of outputs as suggested in QMS documents/procedures.

Surveillance Audit

The Bureau of Indian Standards (BIS), the ISO/QMS licensing agency of CSIR-CRRI, has intimated that a team of Auditors appointed by them (I.e., BIS) is expected to carry out the Ist Surveillance Audit of the Institute in the month of April, 2024, as per the requirements/provisions of QMS/ISO 9001-2015 certification/licensing.

राजभाषा

राजभाषा अनुभाग

राजभाषा अनुभाग – एक परिचय

राजभाषा अनुभाग दिनसाथ स्थायी प्रकार के कार्यों में राजभाषा हिंदी के प्रयोग -प्रतिदिन के सरकारी कार्यों के साथ- को बढ़ाने का कार्य करता है। राजभाषा अनुभाग का उत्त्रदायित्वसंघ सरकार की राजभाषा नीति, राजभाषा अधिनियम के उपबंधों तथा आदेशों से अधिकारियों एवं कर्मचारियों को अवगत कराना, अनुपालन हेतु सहायता करना और अनुपालन कराना है। राजभाषा अनुभाग के प्रमुख कार्यों में राजभाषा कार्यन्वयन समिति की बैठक का आयोजन; हिंदी कार्यशालाओं का प्रबंध करना; संस्थान की राजभाषा कार्यान्वयन प्रगति संबंधी तिमाही प्रगति रिपोर्ट तैयार करना; हिंदी दिवस, हिंदी सप्ताहमास मनाना/पखवाड़ा/; राजभाषा नीति के अनुसार हिंदी भाषा, हिंदी टंकणआशुलिपि एवं कंप्यूटर पर हिंदी में कार्य करने का प्रशिक्षण दिलाना/; अंग्रेजी से हिंदी और हिंदी से अंग्रेजी में अनुवाद कार्य; हिंदी पत्रिका का प्रकाशनआदि कार्य शामिल हैं।

प्रमुख गतिविधियां

अंतरराष्ट्रीय मातृभाषा दिवस पर हिंदी व्याख्यान एवं विचार गोष्ठी का आयोजन

सीएसआईआर केंद्रीय सड़क अनुसंधान संस्थान-में दिनांक 21 फरवरी 2023 को अंतरराष्ट्रीय मातृभाषा दिवस के अवसर पर हिंदी में व्याख्यान एवं विषय विशेष परिचर्चा सत्र-का आयोजन किया गया। संस्थान में विभिन्न विषयों पर हिंदी व्याख्यान/तकनीकी प्रस्तुतीकरण कार्यक्रम का नियमित आयोजन किया जाता है। इसी क्रम में, दिनाकं 21 फरवरी 2023 को अंतरर्राष्ट्रीय मातृभाषा दिवस के अवसर पर "सड़कें -कितनी, किसकी और कैसी" विषय पर हिंदी में तकनीकी प्रस्तुतीकरण एवं विचार गोष्ठी आयोजित की गई।

इस विषय पर डॉ .मुक्ति अडवाणी, प्रधान वैज्ञानिक ने संस्थान के ऑडिटोरियम में उपस्थित अधिकारियों को पॉवर पॉइन्ट प्रेज़न्टेशन के माध्यम से रोचक जानकारी दी। कार्यक्रम का आरंभ करते हुए हिंदी अधिकारी ने अंतरराष्ट्रीय मातृभाषा दिवस की पृष्ठभूमि और मानवजाति के लिए मातृभाषा के महत्व पर प्रकाश डाला। अपने हिंदी प्रस्तुतीकरण में डॉ मुक्ति ने भारत में सड़क नेटवर्क की वर्तमान स्थिति को वैश्विक परिदृश्य के संदर्भ में प्रस्तुत किया। सड़क और यातायात के क्षेत्र में आईआरसी के दिशानिर्देशो एवं मैनुअल आदि की भी चर्चा की गई। साथ ही, यह देखते हुए कि भारत में हर दिन सड़क हादसों मेंबच्चों की मौत होती है 31 , स्कूलों तक सुरक्षित आवागमन के लिए दिशानिर्देश की जानकारी भी दी गई। स्कूलों के आसपास के क्षेत्र में यातायात चिह्नों, नियमों तथा सड़क उपयोगकर्ता के व्यवहार के संबंध में कुछ विशेष सावधानियों के बारे में चर्चा की गई ताकि बच्चों की सुरक्षा सुनिश्चित की जा सके।

व्याख्यान के अंतिम भाग में, संस्थान के निदेशक महोदय की अध्यक्षता में परिचर्चा सत्र का आयोजन किया गया। डॉ .मुक्ति अडवाणी ने उपस्थित श्रोताओ के प्रश्नों के उत्तर दिए। निदेशक महोदय, प्रो .मनोरंजन परिड़ा ने श्रोताओ की

कई शंकाओं का समाधान किया। अंत में निदेशक महोदय ने अपने अभिभाषण में सड़कों एवं परिवहन योजना से जुड़े अपने संस्मरण साझा किए एवं सरल भाषा में हिंदी व्याख्यान देने के लिए डॉ मुक्ति अडवाणी की सराहना की।

"मोरबी सेतु त्रासदी – चुनौतियां एवं संभावनाएं" विषयक तकनीकी प्रस्तुतीकरण

हिंदी व्याख्यान, प्रस्तुतीकरण व परिचर्चा सत्र के कार्यक्रमों की श्रृंखला को जारी रखते हुए को 2023 अप्रैल 28"मोरबी सेतु त्रासदी – चुनौतियां एवं संभावनाएं" विषय पर हिंदी में तकनीकी प्रस्तुतीकरण एवं विचार गोष्ठी आयोजित की गई। संस्थान के मुख्य वैज्ञानिक, श्री एस एस गहरवार ने अपने प्रस्तुतीकरण में वर्ष में गुजरात के मोरबी नामक 2022 शहर में घटित पुल टूटने से संबंधित हादसे के कारणों पर चर्चा करते हुए कुछ सुधारात्मक एवं निवारात्मक उपाय प्रस्तुत किए।

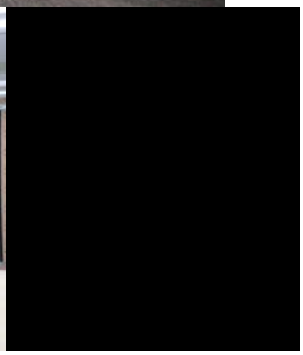
श्री एस एस गहरवार ने अपने प्रस्तुतीकरण में बताया कि पुल जोड़ने का काम करते हैं लेकिन तकनीकी कमियों एवं मानवीय भूलों के कारण दुर्घटनाएं एवं त्रासदी उत्पन्न होती हैं। पुल का उचित रखरखाव, विनिर्देशों का पालन और इनकी सुरक्षा लेखापरीक्षा बहुत महत्वपूर्ण है। दुर्घटनाओं को रोकना एक चुनौती है लेकिन मानवीय आपदाएं और गलतियां हमें भविष्य के लिए सीख देकर जाती हैं अर्थात इसमें भावी सुरक्षा की संभावनाएं रहती हैं। इन संभावनाओं की खोज करना और दुर्घटनाओं का निवारण ही वैज्ञानिक अध्ययनों का मुख्य उद्देश्य होता है।

तकनीकी प्रस्तुतीकरण व परिचर्चा सत्र " :जलवायु घड़ी तथा इसकी आवश्यकता"

जलवायु परिवर्तन की गंभीर समस्या के प्रति सबको जागरूक बनाने के उद्देश्य से संस्थान में दिनांक 2023 मई 17 को'जलवायु घड़ी तथा इसकी आवश्यकता' पर केंद्रित तकनीकी प्रस्तुतीकरण का कार्यक्रम रखा गया। जलवायु घड़ी जलवायु संकट की तत्कालिकता के एक दृश्य प्रतिनिधित्व के रूप में कार्य करती है तथा सुरक्षात्मक कार्य करने के लिए बचे हुए सीमित समय में तत्काल और निर्णायक कार्रवाई की आवश्यकता पर प्रकाश डालती है।

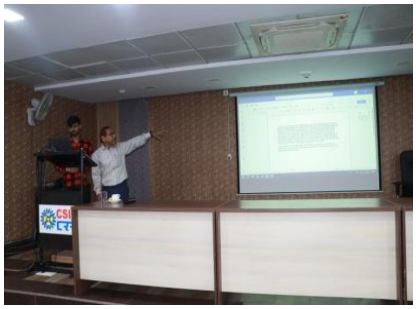
प्रस्तुतीकरण में बताया गया कि ऊर्जा स्वराज फाउंडेशन, नीति आयोग, अटल इनोवेशन मिशन, एआइसीटीई और सीएसआईआर द्वारा दिल्ली के आईजीआई स्टेडियम में 2023 अप्रैल 22, पृथ्वी दिवस के दिन जलवायु घड़ी के प्रदर्शन का आयोजन किया गया। ऐसा एक कार्यक्रम सीआरआरआई में भी मनाया गया जिसमें क्लाइमेट क्लॉक को बनाया गया। कई स्कूलों एवं संस्थान के स्वागत क्षेत्र में इन्हें प्रदर्शित किया गया है।

जलवायु घड़ियों को दर्शाने का उद्देश्य जलवायु परिवर्तन के बारे में जनता में जागरूकता लाना और संबंधितों को जलवायु सुधार के लिए कार्य करने के लिए प्रोत्साहन करना था। जलवायु घड़ी के द्वारा दिखाया गया समय कार्बन बजट पर निर्भर करता है जिसे हम निम्नलिखित तरीके से निकालते हैं – कितना कार्बन बजट बचा हैकार्बन उत्सर्जन / की वर्तमान दर। यह कार्बन उत्सर्जन पर निर्भर करता है अर्थात यदि कार्बन उत्सर्जन की दर बदलती है तो समय भी बदल जाएगा। इसलिए कार्बन उत्सर्जन को कम करना पड़ेगा ताकि मानव जाति के लिए बचा हुआ समय बढ़ जाये ।



<u>हिंदी में उपलब्ध डिजिटल टूल्स पर हिंदी कार्यशाला व प्रशिक्षण कार्यक्रम</u>

हिंदी में कार्य करने को प्रोत्साहित करने एवं हिंदी में उपलब्ध डिजिटल टूल्स का अधिकतम उपयोग सुनिश्चित करने के लिए संस्थान में दिनांक 29मई को हिंदी कार्यशाला के अंतर्गत वॉइस टाइपिंग डिक्टेशन का 2023प्रशिक्षण कार्यक्रम आयोजित किया गया। संस्थान के सभागार (ऑडिटोरियम) में उपस्थित कार्यशाला के प्रतिभागियों को डिजिटल तकनीक की मदद से हिंदी में झटपट काम करने के लिए कई सरल उपाय बताए गए। कार्यशाला में यह बताया गया कि वॉइस टाइपिंग की मदद से कंप्यूटर और मोबाइल में किन किन कार्यों को हिंदी में आसानी से किया जा सकता है।



गूगल वॉइस टाइपिंग के अलावा कार्यशाला में माइक्रोसॉफ्ट द्वारा विकसित स्पीच टू टेक्स्ट वॉइस डिक्टेशन की जानकारी दी गई। सबके सामने और सबकी सहभागिता से पत्र लेखन, नोटिंग, ड्राफ्टिंग, रिपोर्ट बनाने जैसे कार्यों के लिए बोल कर टाइप करने का सुगमता से प्रदर्शन किया गया। अनेक प्रतिभागियों ने मंच पर आकर अभ्यास कार्य किया तथा गूगल एवं माइक्रोसॉफ्ट के वॉइस टाइपिंग सुविधा को समान रुप से उपयोगी बताया। विराम चिह्न लगाने, संशोधन करने जैसे सभी काम आज वॉइस टाइपिंग की तकनीक के साथ संभव हो गए हैं।

<u>हिंदी व्याख्यान " :तनाव प्रबंधन एवं मनोगतिकी "</u>

संस्थान में दिनांक " को हिंदी व्याख्यान शृंखला के अंतर्गत 2023/06/26**तनाव प्रबंधन एवं मनोगतिकी**" विषय पर डॉ विजय .नारायण तिवारी ,समग्र स्वास्थ्य विशेषज्ञ व लोकप्रिय वक्ता द्वारा व्याख्यान आयोजित किया गया। डॉ तिवारी ने .तनाव के लक्षणों की पहचान करने और उसके इलाज के उपाय बताए। उन्होंने कई जीवंत उदाहरण

देते हुए विस्तारपूर्वक बताया कि तनाव को पूरी तरह से समाप्त नहीं किया जा सकता है परंतु उसे नियंत्रित अवश्य किया जा सकता है। उन्होंने तनाव प्रबंधन के चरणों की व्याख्या करते हुए उन्होंने बताया कि तनाव शुरुआत 8 चरणों में 8 से लेकर चरम सीमा तकबंटा हुआ है- इच्छाएं, इच्छाओं का पूरा न होना, मोह व आसक्ति, भारी तनाव, बुद्धि भ्रष्ट होना तथा अंतिम चरण विनाश है। तनाव प्रबंधन के उपायों में गहरी सांस ,त्वरित राहत के लिए गिनती करना, डॉक्टरी परामर्श शामिल हैं। डॉ तिवारी ने .कार्यस्थल पर तनाव के कारणों के निवारण एवं वातावरण को कार्मिक के अनुकूल बनाने कि आवश्यकता पर जोर दिया। कार्यवाहक निदेशक डॉ. आरके गर्ग ने अंत में अपने विचार रखे।

"यातायात मनोविज्ञान का सड़क पर संज्ञानात्मक,सामाजिक और पर्यावरण परिप्रेक्ष्य" पर हिंदी में तकनीकी प्रस्तुतिकरण

संस्थान में राजभाषा कार्यान्वयन को बढ़ावा देने के लिए दिनांक को 2023 जुलाई 05 हिंदी में तकनीकी व्याख्यान शृंखला के अंतर्गत डॉ. नीलिमा चक्रवर्ती, मुख्य वैज्ञानिक ,टीईएस प्रभाग द्वारा "यातायात मनोविज्ञान का सड़क पर संज्ञानात्मक"सामाजिक और पर्यावरणीय परिप्रेक्ष्य, विषय पर व्याख्यान दिया गया। इस व्याख्यान में उन्होंने ड्राइवर के मनोविज्ञान, उसके आसपास के वातावरण, उसकी तनाव प्रबंधन की क्षमता आदि का सड़क दुर्घटनाओं एवं रोडरेज की घटनाओं से संबंध एवं प्रभाव के बारे में विस्तारपूर्वक बताया। उन्होंने दिल्ली एवं देश के अन्य हिस्सों में हुई रोडरेज की घटनाओं का उदाहरण देते हुए उनसे होने वाले दुष्परिणामों के बारे में श्रोताओं को अवगत कराया। व्याख्यान के अंत में श्रोताओं के प्रश्नों एवं शंकाओं का यथासंभव निवारण किया गया। व्याख्यान के समापन के समय डॉ. विनोद करार, मुख्य वैज्ञानिक द्वारा भी अपने विचार रखे गए।

<u>राजभाषा हिन्दी के प्रचार</u> <u>हेतु हिंदी पुस्तक प्रदर्शनी</u>

राजभाषा हिन्दी के प्रचार के अंतर्गत सीआरआरआई के पुस्तकालय में हिन्दी -को सीएसआईआर 2023 अगस्त 4 पुस्तकों की प्रदर्शनी का आयोजन किया गया। प्रदर्शनी में सभी विभागों के कर्मचारियों को आमंत्रण पत्र भेजे गए थे। प्रदर्शनी में पुस्तकालय मेंउपलब्ध हिन्दी साहित्य, धार्मिक पुस्तकें, विज्ञान और प्रौद्योगिकी, कविताउपन्यास - और साहित्य सेसंबंधित पुस्तकों को प्रदर्शित किया गया।

हिन्दी पुस्तकों की प्रदर्शनी के दौरान पुस्तकालय में काफी बदलाव किये गये। फूलों वाले गमले, रंग बिरंगी हिन्दी वर्णमाला, पुस्तकालय के नियम और 3D प्रिंट वाले चार्ट पेपर आदि के माध्यम से पुस्तकालय को आकर्षक तरीके से सजाया गया। प्रदर्शनी के दौरान पुस्तकालय में कुल कर्मचारियों ने हिन्दी पुस्तकों का अवलोकन किया। 210

वसंत हवांगी जी ने पुस्तक प्रदर्शनी का .प्रभारी निदेशक डॉउद्घाटन किया। इस प्रदर्शनी में प्रशासन नियंत्रक श्रीमती बीना अनुपा सिक्वेरा तथा प्रशासन के अन्य कार्मिक शामिल हुए।

पुस्तकों की प्रदर्शनी में प्रभागों के प्रमुख, वरिष्ठ वैज्ञानिक गण और तकनीकीगण भी बड़ी संख्या में उपस्थित रहे। प्रभारी निदेशक, प्रशासन नियंत्रक, प्रभागीय प्रमुखों और वरिष्ठ वैज्ञानिकों ने प्रदर्शनी के बारे में अपने विचार व्यक्त किए। सभी ने प्रदर्शनी की सराहना की; कर्मचारियों 20 कर्मचारियों ने प्रदर्शनी पर अपनी टिप्पणियाँ दीं जबकि 75 ने विडियो के माध्यम से अपनी प्रतिक्रिया से प्रदर्शनी कोसराहा। इस पूरी पुस्तक प्रदर्शनी को एक वीडियो के माध्यम से सीएसआईआर ट्यूब चैनल में डाला गया है।-सीआरआरआई के यू-


<u>हिंदी पखवाड़ा उद्घाटन समारोह 2023 व "'सड़क दर्पण' पत्रिका का विमोचन</u>

केंद्रीय सड़क अनुसंधान संस्थान में दिनांक 31 अगस्त 2023 को हिंदी पखवाड़ा उद्घाटन समारोह आयोजित किया गया। सीएसटीटी के अध्यक्ष तथा जेएनयू के स्कूल ऑफ संस्कृत एंड इंडिक स्टडीज में कम्प्यूटेशनल भाषाविज्ञान के प्रोफेसर डा गिरीश नाथ .झा ने मुख्य अतिथि के रुप में समारोह की शोभा बढ़ाई। कार्यक्रम में विशिष्ट अतिथि डॉ. रवि शर्मा 'मधुप,' साहित्यकार व प्रोफेसर ,श्रीराम कॉलेज ऑफ कॉमर्स, दिल्ली विश्वविद्यालय की गरिमामयी उपस्थिति रही।


उद्घाटन समारोह में प्रो. गिरीश नाथ झा ने हिंदी भाषा से जुड़े तकनीकी पहलुओं एवं तकनीकी अनुप्रयोगों जैसे गूगल वॉइस टाइपिंग व मशीनी अनुवाद आदि पर प्रकाश डाला तथा डॉ. रवि शर्मा 'मधुप ने 'साहित्य एवं हिंदी भाषा के विभिन्न स्वरूपों पर अपनी बात रखी। कार्यक्रम के दौरान निदेशक प्रोमनोरंजन परिड़ा ने विश्व में हिंदी . के बढ़ते महत्व और संस्थान में हिंदी की प्रगति में कार्मिकों के योगदान पर प्रकाश डाला। कार्यक्रम के दौरान हिंदी पत्रिका "'सड़क दर्पण' के" अंक का विमोचन भी किया गया 25।

<u>तकनीकी प्रस्तुतीकरण कार्यशाला</u>

दिनांक 31 अगस्त 2023 को दूसरे सत्र में तकनीकी प्रस्तुतीकरण कार्यशाला का आयोजन किया गया जिसमें डॉ. विनोद करार;मुख्य वैज्ञानिक , डॉ. शिक्षा स्वरूप कर;प्रधान वैज्ञानिक , श्री जी. के. साहू;मुख्य वैज्ञानिक , श्री अंशुल सक्सेनातकनीकी अधिकारी , तथा श्री मुकेश कुमारअधीक्षक अभियंता , द्वारा अपने विषय से संबंधित तकनीकी प्रस्तुतीकरण दिए गए। सभी प्रस्तुतीकरणों के पश्चात डॉमुख्य व ,प्रदीप कुमार .ैज्ञानिक ने कार्यशाला की कार्यवाही को प्रस्तुत किया। पूरे कार्यक्रम के दौरान निदेशक प्रोमनोरंजन परिड़ा की गरिमामायी उपस्थिति रही। .

दिनांक 1 सितंबर 2023 को संस्थान में तकनीकी लेख प्रतियोगिता का आयोजन किया गया। इसके अंतर्गत शाम 5:00 बजे तक राजभाषा अनुभाग में सॉफ्टप्रतियों, हार्डप्रतियों एवं हस्ताक्षरित घोषणापत्र के साथ तकनीकी लेखों व शोधपत्रों की प्रविष्टियां जमा की गईं। दिनांक सितंबर 42023 को संस्थान के कार्मिकों के लिए हिंदी निबंध लेखन प्रतियोगिता का आयोजन किया गया। निबंध लेखन के लिए प्रतिभागियों को 'हिंदी की नई तकनीकी सुविधाएं और दफ्तर के कामकाज में हिंदी का प्रयोग' विषय दिया गया।

<u>हिंदी में व्याख्यान एवं का आयोजन 'हिंदी ज्ञान प्रतियोगिता'</u>

दिनांक 6 सितंबर 2023 को हिंदी में आंतरिक व्याख्यान आयोजित किया गया। सुश्री निधि, वरिष्ठ तकनीकी अधिकारी ने संस्थान के सभागार में "'आधुनिक तनावपूर्ण जीवन में ध्यान का महत्व '"विषय पर रोचक प्रस्तुतीकरण दिया। करीब 65 अधिकारियों/कार्मिकों ने इस व्याख्यान में भाग लिया। दिनांक 11सितंबर 2023 को संस्थान के ट्रेनिंग हॉल में हिंदी ज्ञान प्रतिय'ोगिता का आयोजन किया गया। लिखित प्रश्नोत्तरी के रुप में 'आयोजित प्रतियोगिता में अनेक अधिकरियों ने उत्साहपूर्वक भाग लिया।

<u>प्रशासनिक हिंदी कार्यशाला का आयोजन</u>

दिनांक सितंबर 132023 को संस्थान के ऑडिटोरियम में प्रशासनिक हिंदी कार्यशाला का आयोजन किया गया। संस्थान की प्रशासन नियंत्रक, श्रीमती बीना ए सिक्वेरा .ने सामान्य प्रशासनिक मामलों से संबंधित आवश्यक "' विषय पर 'दिशानिर्देशअपना व्याख्यान दिया। कार्यशाला के दूसरे सत्र में श्री यतेंद्र चौहानभंडार) वरिष्ठ नियंत्रक , (व क्रय ने विषय पर केंद्रित (माँगपत्र एवं स्थानीय क्रय समिति) छोटे मूल्य के खरीदारी के लिए दिशानिर्देश"' व्याख्यान और प्रस्तुतीकरण दिया। कार्यशाला में लगभग प्रतिभागियों ने भाग लिया 60। कार्यशाला के अंत में दोनों अधिकारियों ने प्रतिभागियों के प्रश्नों एवं शंकाओं का यथासंभव निस्तारण किया गया।


दिनांक 14 सितंबर 2023 को हिंदी दिवस के अवसर पर संस्थान में'" बढ़ती बीमारियों के संदर्भ में आयुर्वेद की उपयोगिता'" विषय पर विशेष आमंत्रित व्याख्यान का आयोजन किया गया। ऑल इंडिया इंस्टीट्यूट ऑफ आयुर्वेद, नई दिल्ली के डीन पी)एचडी(एवं संहिता सिद्धांत विभाग के प्रमुख, डॉमहेश व्यास . ने वर्तमान समय में आयुर्वेद की प्रासंगिकता और उपयोगिता पर केंद्रित यह सारगर्भित व्याख्यान दिया। कार्यवाहक निदेशक डॉ. वसंत जी . हवानगी ने कार्यक्रम की अध्यक्षता की तथा भरे हुए सभागार में प्रतिष्ठित आयुर्वेदाचार्य को संस्थान की ओर से सम्मानित किया।


<u>राजभाषा सम्मान समारोह 2023</u>

संस्थान में दिनांक अक्टू 13बर 2023 को हिंदी पखवाड़ा समापन एवं राजभाषा सम्मान समारोह का आयोजन 2023 मनोरंजन परिड़ा द्वारा कार्यक्रम की अध्यक्षता की गई। माइक्रोसॉफ्ट में .किया गया। संस्थान के निदेशक प्रो तथा सूचना प्रौद्योगिकी क्षेत्र के प्रख्या (सुगम्यता एवं स्थानीयकरण) भारतीय भाषाएं ,निदेशकत तकनीकी विशेषज्ञ, श्री बालेंदु शर्मा इस कार्यक्रम में मुख्य अतिथि थे। 'दाधीच'



श्री " ने इस अवसर पर 'दाधीच''हिंदी और आधुनिक तकनीक – नए घटनाक्रम : नई दिशाएँविषय पर अत्यंत '" ज्ञानवर्धक एवं रोचक व्याख्यान दिया तथा हिंदी भाषा को प्रयोग करने में तकनीक के विविध आयामों से संस्थान कर्मचारियों को अवगत कराया। व्याख्यान के अंत में आयोजित परिचर्चा सत्र में उन्होंने संस्थान /के अधिकारियों के अनेक अधिकारियों व कार्मिकों के प्रश्नों एवं शंकाओं का उत्तर दिया गया।



<u>हिंदी पखवाड़ा पुरस्कार वितरण एवं' सड़क अभियांत्रिकी शब्दावली '2023का विमोचन</u>

हिंदी पखवाड़ा पुरस्कार वितरण कार्यक्रम के दौरान जुलाईके दौरान 2023 सितंबर तिमाही तथा हिंदी पखवाड़ा-आयोजित हिंदी प्रतियोगिताओं के पुरस्कार विजेताओं को मुख्य अतिथि तथा निदेशक महोदय द्वारा पुरस्कृत तथा सम्मानित किया गया। हिंदी प्रतियोगिताओं में सर्वोत्कृष्ट प्रदर्शन के लिए संस्थान के दो अधिकारियों को राजभाषा सम्मान प्रदान किया गया। 2023








कार्यक्रम में '2023 सड़क अभियांत्रिकी शब्दावली'का विमोचन भी किया गया। श्री संजय चौधरीहिंदी अधिकारी , ने इस कार्यक्रम का संचालन किया। संस्थान के सभी श्रेणी अधिकारियों तथा कार्मिकों ने इस कार्यक्रम में भाग लिया।

<u>हिंदी तकनीकी प्रस्तुतीकरण व्याख्यान श्रृंखला के अंतर्गत "जिंक टेलिंग अपशिष्ट पदार्थ" विषयक तकनीकी प्रस्तुतीकरण</u>

संस्थान में दिनांक 06/12/2023 को हिंदी तकनीकी प्रस्तुतीकरण व्याख्यान श्रृंखला के अंतर्गत श्री पंकज भट्ट, वरिष्ठ तकनीकी अधिकारी (1) द्वारा तकनीकी प्रस्तुतीकरण दिया गया। प्रस्तुतीकरण का विषय 'तटबंध के निर्माण के लिए जिंक टेलिंग अपशिष्ट सामग्री का विरूपण व्यवहार एवं सामर्थ्य' था। प्रस्तुतीकरण के दौरान श्री पंकज भट्ट द्वारा जिंक टेलिंग अपशिष्ट पदार्थ के सड़क/तटबंध निर्माण में प्रयोग पर प्रकाश डाला गया। उन्होंने बताया कि सड़क/तटबंध निर्माण के सारे मानकों को पूरा करने पर भी अभी तक इसका प्रयोग सड़क/तटबंध निर्माण में नहीं किया जा रहा है।

श्री पंकज भट्ट ने बताया कि आईआरसी:2022 में सड़क निर्माण में औद्योगिक अपशिष्ट से संबंधित दिशानिर्देश जारी किए गए थे परंतु जिंक टेलिंग को शामिल नहीं किया गया था। उन्होंने बताया कि सड़क तटबंध निर्माण में जिंक टेलिंग के प्रयोग किए जाने की आवश्यकता है। उन्होंने अपने शोध कार्य में विभिन्न गहराइयों पर जियोग्रिड का इस्तेमाल करने पर सेटलमेंट को कम पाया। जियोग्रिड का प्रयोग उनके थीसिस कार्य का भाग है। श्री पंकज भट्ट ने सड़क निर्माण के क्षेत्र में जिंक टेलिंग अपशिष्ट पदार्थ के उपयोग की संभावनाओं पर विस्तार से प्रकाश डाला।



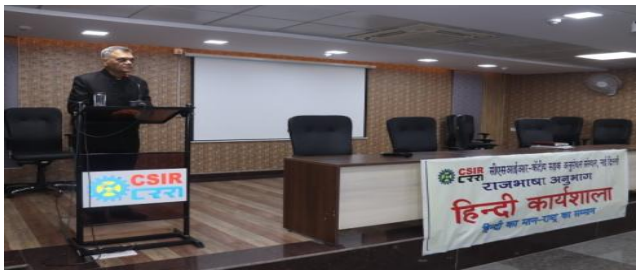
<u>अनुवाद विषयक हिन्दी कार्यशाला एवं प्रशिक्षण सत्र</u>

दिनांक 22 दिसम्बर, 2023 को अनुवाद पर केंद्रित हिन्दी कार्यशाला एवं प्रशिक्षण सत्र का आयोजन किया गया। इस कार्यशाला एवं प्रशिक्षण के लिए डॉ. पूरन चंद टंडन, वरिष्ठ प्रोफेसर, हिन्दी विभाग, दिल्ली विश्वविद्यालय तथा महासचिव, भारतीय अनुवाद परिषद आमंत्रित विशेषज्ञ थे। कार्यशाला दो सत्रों में आयोजित की गई। पहले सत्र में "'सूचना प्रौद्योगिकी, हिन्दी और अनुवाद' विषय पर प्रो. टंडन द्वारा विस्तारपूर्वक जानकारी दी गई। उन्होंने बताया कि अनुवाद के क्षेत्र में किस प्रकार सूचना प्रौद्योगिकी योगदान दे रही है। इस सत्र में निदेशक महोदय की गरिमामयी उपस्थिति रही।



कार्यशाला के दूसरे सत्र का विषय "'प्रशासनिक"'तकनीकी और साहित्यिक संदर्भ में सृजनशीलता और अनुवाद , था। प्रोटंडन ने हिन्दी से अंग्रेजी और अंग्रेजी से हिन्दी में अनुवाद की व्यावहारिक समस्याओं पर बात की। हिन्दी . रिकॉर्ड रखने वाले तथा हिंदी की तिमाही रिपोर्ट भरने /कार्यशाला के दोनों सत्रों में हिन्दी में कार्य करने वाले

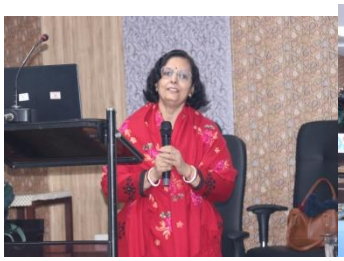
पूरन च .वाले अधिकारी शामिल हुए। प्रो ंद टंडन द्वारा प्रशासनिकतकनीकी और साहित्यिक संदर्भ में अनुवाद की , भूमिका को उदाहरण सहित समझाया। उन्होंने अनुवादकों के समक्ष आने वाली समस्याओं से भी श्रोताओं को अवगत कराया।



कार्यशाला के अंत में परिचर्चा सत्र भी रखा गया जिसमें उपस्थित अधिकारियोंकार/ ्मिकों ने अपनी शंकाएं रखीं जिनका यथासंभव निवारण किया गया। कार्यशाला में लगभग कार्मिकों ने भाग लिया।/अधिकारियों 65

<u>सड़क सुरक्षा और यातायात मनोविज्ञान पर केंद्रित तकनीकी प्रस्तुतीकरण कार्यक्रम</u>

दिनांक 2023 ,दिसम्बर 22को "सड़क सुरक्षा में यातायात मनोविज्ञान का महत्व" विषय पर डॉ ,नीलिमा चक्रबर्ती . मुख्य वैज्ञानिक द्वारा तकनीकी प्रस्तुतीकरण दिया गया। इस प्रस्तुतीकरण में निदेशक महोदय की गरिमामयी उपस्थिति रही। इस प्रस्तुतीकरण में उन्होंने ड्राइवरों के मनोविज्ञान पर विस्तारपूर्वक प्रकाश डाला। दिल्ली में हुई हुई एक रोडरेज की घटना का वीडियो दिखाते हुए उन्होंने यह समझाने का प्रयास किया कि किस प्रकार रोडरेज की घटनाएं बढ़ रही हैं। उन्होंने बताया कि वाहन चालक के ऊपर अनेक प्रकार के प्रभाव पड़ते हैं। इन प्रभावों में शारीरिक और मानसिक दोनों प्रकार के प्रभाव तथा बाहरी प्रभाव शामिल हैं जैसे वातावरण का प्रभाव ,तनाव , अनिद्रा, थकान आदि के प्रभाव।



प्रस्तुतीकरण के अंत में विचार गोष्ठी के अंतर्गत उपस्थित श्रोताओं ने अपने विचार रखे। सड़क सुरक्षा और यातायात मनोविज्ञान के विषय से संबंधित शंकाओं का डॉ नीलिमा चक्रबर्ती ने समाधान .प्रस्तुत किया। तकनीकी प्रस्तुतीकरण कार्यक्रम के साथ साथ हिंदी कार्यशाला के रुप में यह कार्यक्रम अत्यंत सफल रहा।

<u>विश्व हिन्दी दिवस समारोह : 2024राजभाषा शपथ ग्रहण समारोह</u>

सीएसआईआर केंद्रीय सड़क अनुसंधान संस्थान-में दिनांक मनोरंज .को निदेशक प्रो 2024/01/08न परिड़ा के नेतृत्व में अधिकारियों व कार्मिकों ने राजभाषा प्रतिज्ञा ली। राजभाषा हिंदी संबंधी इस समारोह का आयोजन संस्थान के स्वागती क्षेत्र में किया गया। आयोजन के दौरान बड़ी संख्या में संस्थान के अधिकारी व कार्मिक उपस्थित रहे। इस अवसर पर निदेशक महोदय व प्रशासन अधिकारी श्री संतोष कुमार ने सरकारी कार्यालयों में राजभाषा हिन्दी के कार्यान्वयन के महत्व पर प्रकाश डाला तथा सभी कार्मिकों से हिन्दी में अधिक से अधिक कार्य करने की अपील की।

सीएसआईआर – केंद्रीय सड़क अनुसंधान संस्थान

हिंदी

विश्व हिंदी दिवस समारोह

क्र.	दिनांक व समय	समारोह (08 से 12 जनवरी 2024) का विवरण	स्थान
1.	08/01/2024, पूर्वाह्न 10:30 बजे से	**राजभाषा प्रतिज्ञा**	स्वागत क्षेत्र
2.	09/01/2024, पूर्वाह्न 10:00 बजे से	राजभाषा मॉनिटरिंग समिति का **समीक्षा कार्यक्रम**	विभिन्न प्रभाग
3.		**हिंदी में पोस्टर प्रतियोगिता** (संस्थान के प्रभागों के लिए); विषय: अपने कार्यक्षेत्र से संबंधित हिंदी पोस्टर	
4.	10/01/2024, पूर्वाह्न 10:30 बजे से	**विश्व हिंदी दिवस व्याख्यान- विश्व हिन्दी की संकल्पना: स्वरूप और चुनौतियां**	सेमिनार हॉल
	वक्ता: **डॉ. विमलेश कांति वर्मा**, प्रतिष्ठित भाषा वैज्ञानिक, वरिष्ठ राजनयिक व पूर्व हिन्दी प्राध्यापक, दिल्ली विश्वविद्यालय		
5.	10/01/2024, अपराह्न 03:00 बजे से	**हिंदी निबंध लेखन प्रतियोगिता** (कार्मिकों के लिए)	काउंसिल हॉल
	विषय: **'विश्व में हिंदी का बढ़ता महत्व तथा सरकारी कार्यालयों में हिंदी के प्रसार के प्रति हमारा दायित्व'**		
6.	11/01/2024, प्रातः 11:00 बजे से	**जागरूकता कार्यक्रम**	ऑडिटोरियम
	विषय: **'कार्यस्थल पर यौन उत्पीड़न की रोकथाम'** वक्ता : **डॉ. सौम्या भौमिक**, प्रख्यात अधिवक्ता, सर्वोच्च न्यायालय		
7.	11/01/2024, प्रातः 11:00 बजे से	**सड़क सुरक्षा पर आमंत्रित व्याख्यान- 'शहरी क्षेत्र में सड़क सुरक्षा'**	ऑडिटोरियम
	वक्ता : **श्री अमित भट्ट**, प्रबंध निदेशक, इंटरनेशनल काउंसिल ऑन क्लीन ट्रांसपोर्टेशन, नई दिल्ली		
8.	12/01/2024, पूर्वाह्न 09:30 बजे से	**वाद-विवाद प्रतियोगिता** (कक्षा 11-12; विषय: 'सड़क सुरक्षा के हीरो बनें')	सेमिनार हॉल
9.	(जिज्ञासा व नवाचार, द. दिल्ली । के स्कूली छात्रों के लिए हिंदी प्रतियोगिताएं)	**प्रश्नोत्तरी/क्विज़ प्रतियोगिता** (कक्षा 8-10 तक) विषय: 'स्कूल व आसपास के क्षेत्र में सुरक्षा'	ऑडिटोरियम नया ट्रेनिंग हॉल
10.	12/01/2024, अप.03:30 बजे से	**पुरस्कार वितरण समारोह** (हिंदी प्रतियोगिताओं के विजेता **कार्मिक**, जिज्ञासा व नवाचार, द.दिल्ली । के **छात्र**)	सेमिनार हॉल

<u>हिन्दी में पोस्टर प्रतियोगिता</u>(2024/01/09 दिनांक)

विश्व हिंदी दिवस समारोह के अंत 2024गत दिनांक 09 2024/01/को संस्थान के विभिन्न प्रभागोंअनुभागों / में हिन्दी पोस्टर प्रतियोगिता का आयोजन किया गया। निर्णायक समिति ने विभिन्नप्रभागोंअनुभागों में / टीपीई ,आरपीडी ,जीटीई ,जाकर पोस्टरों का मूल्यांकन किया। संस्थान के आर एंड डी प्रभागों से पीईडी ,सीसीएन ,तथा एफपीडी ने इस प्रतियोगिता में प्रतिभागिता की। गैर आर एंड डी प्रभागों से केआरसी 1-पीएमई प्रभागों तथा स्थापनाअनुभाग व कार्मिक प्रकोष्ठ ने प्रतिभागिता की।

<u>विश्व हिन्दी दिवस आमंत्रित व्याख्यान</u> ,2024/01/10 दिनांक) पूर्वाह्न सत्र(

संस्थान में दिनांक स्वरूप और : विश्व हिन्दी की संकल्पना"“ बजे से 10:30 को पूर्वाह्न 2024/01/10 ””चुनौतियाँ विषय पर डॉभाषा वैज्ञ ,विमलेश कान्ति वर्मा.ानिक ,वरिष्ठ राजनयिक व पूर्व हिन्दी प्राध्यापक , से 100 दिल्ली विश्वविद्यालय द्वारा व्याख्यान दिया गया। इस व्याख्यान में संस्थानअधिक अधिकारी एवं कार्मिक उपस्थित रहे।

डॉवर्मा ने वैश्विक स्तर पर हिन्दी को स्थापित करने तथा इस संबंध में सामने आने वाली चुनौतियों के . बारे में प्रकाश डाला। उन्होंने विभिन्न विश्वविद्यालयों तथा देशों के अपने अनुभवों को साझा करते हुए इस बात को स्पष्ट किया कि भारत के विभिन्न प्रदेशों से बाहर केदेशों में गए लोगों की संपर्क भाषा हिन्दी ही है। व्याख्यान के अंत में श्रोताओं की शंकाओं का यथासंभव निवारण भी किया गया। कार्यक्रम में निदेशक महोदय की गरिमामयी उपस्थिति रही।

<u>हिन्दी निबंध प्रतियोगिता</u> ,2024/01/10 दिनांक) अपराह्न सत्र(

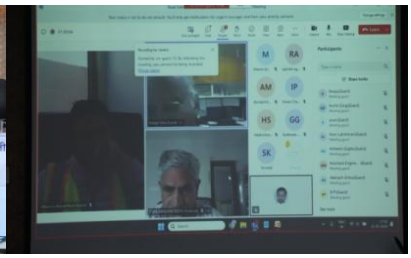
संस्थान में दिनांक के अंतर्गत हिन्दी 2024 को अपराह्न सत्र में विश्व हिन्दी दिवस समारोह 2024/01/10 विश्व में हिंदी का बढ़ता महत्व "“ – निबंध प्रतियोगिता का आयोजन किया गया। निबंध का विषय था ”"तथा सरकारी कार्यालयों में हिन्दी के प्रसार के प्रति हमारा दायित्व। संस्थान के कार्मिकों के लिए आयोजित हिन्दी प्रतियोगिता में अधिकारियों एवं कार्मिकों की उल्लेखनीय प्रतिभागिता रही।

<u>कार्यस्थल पर यौन उत्पीड़न विषयक जागरूकता कार्यक्रम</u> ,2024/01/11 दिनांक) पूर्वाह्न सत्र(

संस्थान में दिनांक बजे से लैंगिक समानता एवं 11:00 को पूर्वाह्न 2024/01/11यौन उत्पीड़न संबंधी जागरूकता कार्यक्रम का आयोजन किया गया। जागरूकता कार्यक्रम में सर्वोच्च न्यायालय के अधिवक्ता एवं प्रसिद्ध कानूनी सलाहकार डॉ“ सौम्या भौमिक.ने "कार्यस्थल पर यौन उत्पीड़न की रोकथाम”" विषय पर व्याख्यान दिया। इस विषय पर व्यापक जागरूकता लाने के लिए कार्यक्रम में संस्थान के सभी स्टाफ सदस्यों नियमित), संविदा, छात्र, परियोजना सहायक, इंटर्न आदि की सहभागिता सुनिश्चित की गई। (

<u>सड़क सुरक्षा पर आमंत्रित व्याख्यान</u> ,2024/01/11 दिनांक) अपराह्न सत्र(

दिनांक ' को अपराह्न सत्र में भारत सरकार के 2024/01/11सड़क सुरक्षा अभियान' पर केंद्रित विशेष आमंत्रित व्याख्यान का आयोजन किया गया। विश्व हिन्दी दिवस समारोह के अंतर्गत 2024संस्थान में हाइब्रिड विधि से इस क (ऑनलाइन व ऑफलाइन)ार्यक्रम का आयोजन किया गया। श्री अमित भट्ट , प्रबंध निदेशक, इंटरनेशनल काउंसिल ऑन क्लीन ट्रांसपोर्टेशन' नई दिल्ली ने पीपीटी के माध्यम से ,शहरी क्षेत्र में सड़क सुरक्षा 'विषय पर महत्वपूर्ण जानकारी दी। विभिन्न स्थानों से से अधिक 70विशेषज्ञों एवं प्रतिभागियों ने ऑनलाइन इस कार्यक्रम में भाग लिया तथा बड़ी संख्या में आकर कार्मिकों ने कार्यक्रम में प्रतिभागिता की।




<u>वाद</u> ,2024/01/12 दिनांक) <u>विवाद प्रतियोगिता तथा क्विज़ प्रतियोगिता-</u>पूर्वाह्न सत्र(

दिनांक के स्कूली छात्रों के लिए दो हिंदी 1 – दक्षिण दिल्ली ,को जिज्ञासा व नराकास 2024/01/12 प्रतियोगिताओं का आयोजन किया गया। कक्षा11 व 'सड़क सुरक्षा के हीरो बनें' के छात्रों के लिए 12 ''विषय पर वादस्कूल व आसपास के क्षेत्र ' तक के छात्रों के लिए 10 से 8 विवाद प्रतियोगिता एवं कक्षा-विवाद प्रतियोगिता में दिल्ली एवं -विषय पर प्रश्नोत्तरी प्रतियोगिता आयोजित की गई। वाद 'में सुरक्षा छात्रों तथा प्रश्नोत्तरी प्रत 80 राष्ट्रीय राजधानी क्षेत्र से आएियोगिता में छात्रों ने भाग लिया। छात्रों 129 थी। 50 के साथ आए शिक्षकों की संख्या लगभग

<u>समापन एवं पुरस्कार वितरण समारोह)दिनांक ,2024/01/12अपराह्न सत्र(</u>

संस्थान में दिनांक को समापन एवं पुरस्कार वितरण समारोह का आयोजन किया गया। 2024/01/12 के अंतर्गत आयोजित विभिन्न प्रतियोगिताओं तथा 2024 इस समारोह में विश्व हिन्दी दिवस समारोह क 2023/12/07 को आयोजित की गई राजभाषा सामान्य ज्ञान प्रतियोगिता तथा 2023/11/07 दिनांकों आयोजित प्रश्नोत्तरी प्रतियोगिता के विजेता कार्मिकों को पुरस्कृत किया गया।




इस अवसर पर दिल्ली एवं राष्ट्रीय राजधानी क्षेत्र के विभिन्न स्कूलों के लगभग छात्रों में 210से वादविवाद - एवं प्रश्नोत्तरी प्रतियोगिताओं के विजेता छात्रों एवं उनकी टीम को शील्ड एवं प्रमाणपत्र प्रदान किया गया।





कार्यकारी निदेशक डॉवेलमुरुगन तथा प्रशासन अधिकारी श्री संतोष कुमार द्वारा पुरस्कार वितरण किया .एस . गया।विश्व हिन्दी दिवस समारोह 2024के अंतर्गत आयोजित विभिन्न कार्यक्रमों के साथ साथ-समापन व पुरस्कार वितरण कार्यक्रम का संचालन श्री संजय चौधरीहिंदी अधिकारी द्वारा किया गया। ,

<u>अंतरराष्ट्रीय मातृभाषा दिवस हिंदी संगोष्ठी</u> – <u>"यातायातप्रदूषण और सड़क सुरक्षा ,"</u> <u>"</u>

अंतरराष्ट्रीय मातृभाषा दिवस के अवसर पर सीएसआईआर केंद्रीय सड़क अनुसंधान संस्थान में-राजभाषा हिंदी में आंतरिक तकनीकी संगोष्ठी का आयोजन किया गया। विषय पर केंद्रित "प्रदूषण और सड़क सुरक्षा ,यातायात"" तकनीकीसंगोष्ठी का आयोजन संस्थान के परिवहन योजना और पर्यावरण प्रभाग के सहयोग से किया गया।

तकनीकी संगोष्ठी के अंतर्गत चार सत्र रखे गए। पहले तीन सत्रों में तीन विभिन्न विषयों पर तकनीकी प्रस्तुतीकरण रखे गए। संगोष्ठी का अंतिम सत्र परिचर्चा एवं विचार विनिमय सत्र के रुप में रखा गया।

<u>तकनीकी सत्र</u> <u>खनन क्षेत्र में ट्रकों की मांग का अनुमान लगाना - 1</u>

डॉ.सी.एच टीपीई प्रभाग ,मुख्य वैज्ञानिक ,रविशेखर .ने खनन क्षेत्रों में ट्रकों की मांग तथा उनके आवागमन के प्रभावों पर विस्तारपूर्वक जानकारी दी। प्रस्तुतीकरण में खनिज पदार्थों से समृद्ध राज्यों जैसे ओडिशाझारखंड तथा , छतीसगढ़ के संदर्भ मेंसड़क नेटवर्क एवं मौजूदा परिवहन प्रणाली को रेखांकित किया गया। ट्रकों के आवागमन के घनत्व के अनुसार सड़कों के डिजाइन की मूलभूत बातों पर भी प्रकाश डाला गया।

डॉ. सी. एच. रविशेखर, मुख्य वैज्ञानिक

<u>तकनीकी सत्र</u> <u>ध्वनि प्रदूषण और बहरापन - 2</u>

डॉ टीपीई ,मुख्य वैज्ञानिक ,नसीम अख्तर .प्रभाग द्वारा ध्वनि प्रदूषण और बहरापन विषय पर प्रस्तुतीकरण दिया गया। अपने व्याख्यान में उन्होंने विस्तारपूर्वक ध्वनि प्रदूषण के प्रभावों तथा उससे होने वाले बहरेपन के विषय में बताया। डॉनसीम ने कान के अंदरूनी भागों के बारे में बताते हुए उनके कार्य करने तथा . प्रकृति की जानकारी

दी। ध्वनि प्रदूषण को नियंत्रित करने वाले शोर बैरियर का उदाहरण सहित विवरण-भी प्रस्तुतीकरण में रखा गया। साथ ही, एनीमेशन वीडियो के द्वारा ध्वनि प्रदूषण तथा बहरेपन के विषय में श्रोताओं को जागरूक किया गया।

डॉमुख्य वैज्ञानिक ,नसीम अख्तर .

<u>तकनीकी सत्र</u> <u>भारत में सड़क सुरक्षा का महत्व - 3</u>

डॉटीपीई प्रभाग द्वारा भारत में सड़क सुरक्षा का महत्व विषय के विभिन्न पहलुओं ,मुख्य वैज्ञानिक ,रविंद्र .के . रविंद्र .पर विस्तारपूर्वक जानकारी दी गई। डॉने सड़क दुर्घटनाओं के संभावित तथा वास्तविक कारणों सड़क , यातायात के नियमोंविश्व भर के देशों के चालकों के ड्राईविंग व्यवहार पर आंकड़ों की सहायता से , तथ्य रखते हुए सड़क सुरक्षा के क्षेत्र में जागरूकता के प्रयासों को महत्वपूर्ण बताया। प्रस्तुतीकरण के दौरान सड़क दुर्घटना में वाहन तथा चालक पर होने वाले प्रभाव को लाइव वीडियो के माध्यम से दिखाया गया। (इम्पैक्ट)

डॉ. के. रविंद्र, मुख्य वैज्ञानिक

परिचर्चा एवं विचार विनिमय के अंतिम सत्र में तीनों वक्ताओं के द्वारा श्रोताओं के प्रश्नों तथा शंकाओं का यथासंभव निवारण किया गया। निदेशक महोदय ने स्वयं परिचर्चा सत्र में भाग लिया तथा श्रोताओं के प्रश्नों के उत्तर भी दिए। अंतरराष्ट्रीय मातृभाषा दिवस आंतरिक तकनीकी संगोष्ठी में संस्थान के कार्मिकों के अलावा परियोजना सहायक, रिसर्च इंटर्न, एसीएसआईआर छात्र आदि नियमित व अनियमित स्टाफ भी बड़ी संख्या में सम्मिलित हुए।

हिंदी में आयोजित व्याख्यान व पेपर प्रस्तुतीकरण की सूची

दिनांक	विषय	वक्ता
28अप्रैल 2023	मोरबी सेतु त्रासदी – चुनौतियां एवं संभावनाएं	श्री एस एस गहरवार, मुख्य वैज्ञानिक
17मई 2023	जलवायु घड़ी तथा इसकी आवश्यकता	श्रीमती कामिनी गुप्ता, वरि.तकनीकी अधिकारी
29मई 2023	वॉइस टाइपिंग डिक्टेशन – तकनीक से संभव हिंदी में झटपट काम करना	श्री संजय चौधरी, हिंदी अधिकारी
07जून 2023	संरचनाओं का स्वास्थ्य परीक्षण	श्री जे के गोयल, मुख्य वैज्ञानिक
26जून 2023	तनाव प्रबंधन एवं मनोगतिकी	डॉ.विजय नारायण तिवारी, राजभाषा विशेषज्ञ व लोकप्रिय वक्ता
6जुलाई 2023	यातायात मनोविज्ञान का सड़क पर संज्ञानात्मक, सामाजिक व पर्यावरण परिप्रेक्ष्य	डॉ .नीलिमा चक्रबर्ती ,मुख्य वैज्ञानिक
31अगस्त2023 तकनीकी प्रस्तुतीकरण कार्यशाला	मानव क्षमताओं का विस्तार: उन्नत दृश्य प्रौद्योगिकियों सहित धारणा में बदलाव	**डॉ. विनोद करार, मुख्य वैज्ञानिक**
	सड़कों के निर्माण में वायु प्रदूषण	**डॉ. शिक्षा स्वरूपा कर, वरिष्ठ वैज्ञानिक**
	सेतु की विफलता के कारण	**श्री जी के साहू, मुख्य वैज्ञानिक**
	सक्रिय रखरखाव (प्रोएक्टिव मेंटेनेंस)	**श्री मुकेश कुमार, अधीक्षक अभियंता**
	चैट जीपीटी	**श्री अंशुल सक्सेना, तकनीकी अधिकारी**
06सितंबर2023	आधुनिक तनावपूर्ण जीवन में ध्यान का महत्व	श्रीमती निधि, वरिष्ठ तकनीकी अधिकारी
13सितंबर 2023	सामान्य प्रशासनिक मामलों से संबंधित आवश्यक दिशानिर्देश	श्रीमती बीना ए .सिक्केरा, प्रशासन नियंत्रक
	छोटे मूल्य की खरीदारी के लिए दिशानिर्देश) मांगपत्र व स्थानीय क्रय समिति (	श्री यतेंद्र चौहान, वरिष्ठ नियंत्रक) भं.व क्रय(
06दिसंबर2023	तटबंध के निर्माण के लिए जिंक टेलिंग अपशिष्ट सामग्री का व्यवहार एवं सामर्थ्य	श्री पंकज भट्ट, वरिष्ठ तकनीकी अधिकारी
22दिसंबर2023	सूचना प्रौद्योगिकी, हिंदी और अनुवाद	डा.पूरन चंद टंडन, वरिष्ठ प्रोफेसर ,हिन्दी विभाग ,दिल्ली विश्वविद्यालय
	प्रशासनिक, तकनीकी और साहित्यिक संदर्भ में सृजनशीलता और अनुवाद	
22दिसंबर2023	सड़क सुरक्षा में यातायात मनोविज्ञान का महत्व	डॉ .नीलिमा चक्रबर्ती ,मुख्य वैज्ञानिक
10जनवरी 202	विश्व हिन्दी की संकल्पना :स्वरूप और चुनौतियां	डॉ .विमलेश कांति वर्मा ,पूर्व राजनयिक
11जनवरी 2024	कार्यस्थल पर यौन उत्पीड़न की रोकथाम	डॉ.सौम्या भौमिक ,अधिवक्ता ,सुप्रीम कोर्ट
	शहरी क्षेत्र में सड़क सुरक्षा	श्री अमित भट्ट ,प्रबंध निदेशक, आईसीसीटी इं॰
13 फरवरी 2024	सड़क सुरक्षा विकास :सेंसर, इंजीनियरिंग, प्रौद्योगिकी और सामुदायिक जुड़ाव	डा.विनोद करार, मुख्य वैज्ञानिक
21फरवरी 2024 अंतरराष्ट्रीय मातृभाषा दिवस	खनन क्षेत्र में ट्रकों की मांग का अनुमान लगाना	डॉ.सी.एच.रविशेखर, मुख्य वैज्ञानिक
	ध्वनि प्रदूषण और बहरापन	डॉ .नसीम अख्तर, मुख्य वैज्ञानिक
	भारत में सड़क सुरक्षा का महत्व	डॉ .के.रविंद्र, मुख्य वैज्ञानिक

Administration

Administration

CSIR-CRRI Research activities are fully supported by dedicated staffs in the administration. It has different arms to assist its day-to-day functioning such as DRRI Secretariat, Controller of Administration, Personal Cell, Vigilance, Establishment-I, Establishment-II, Finance & Accounts and Stores & Purchase Sections. They maintain personal files, service books and Annual Confidential Report folders of around 250 staff members. They deal with allotment of staff quarters & scientist apartments, matters pertaining to estates, leaves, deputation/foreign services, pension, medical reimbursement etc. They deal with parliamentary questions and other related matters. These departments are also dealing with all administrative matters including their appointment, promotion, transfer, posting, deputation, and disciplinary issues, apart from other service matters that may come up from time to time. This division has the following sub-divisions.

- **DRRI SECRETARIAT**
- **COA's OffICE**
- **AO's OFFICE**
- **PERSONNEL CELL**
- **VIGILANCE CELL**
- **ESTABLISHMENT-I**
- **ESTABLISHMENT-II**
- **SECURITY**
- **GUEST HOUSE (WING I & II)**
- **CANTEEN**
- **FINANCE & ACCOUNTS SECTION**
- **STORES & PURCHASE SECTION**
- **RAJBASHA**

General Information

Important Days Celebrations

Important Days Celebrations

CELEBRATION OF EARTH DAY-2023 AT IGI STADIUM, NEW DELHI

As part of the Earth Day-2023 celebration, the world's largest Global Climate Clock Assembly and Display Event was organized on April 22, 2023, at the IGI Stadium in New Delhi. The event was organized by the Energy Swaraj Foundation in collaboration with the Atal Innovation Mission - NITI Aayog and the All India Council for Technical Education (AICTE). The CSIR-CRRI team, headed by Prof. Manoranjan Parida, Director of CSIR-CRRI, participated in the event with great enthusiasm. Besides, the online Energy Literacy Course, conducted by the Energy Swaraj Foundation, was attended and completed by more than 60 staff members of the Institute.

CELEBRATION OF EARTH DAY-2023 AT CSIR-CRRI

As part of Earth Day-2023 celebration, CSIR-CRRI organized a Climate Clock assembly and Display event for the students from class 8th to class 12th under the Jigyasa Model of Engagement "Important Awareness Days" on April 25, 2023. Prof. Manoranjan Parida, Director, CSIR-CRRI, welcomed the students and teachers from various schools and inaugurated the occasion.

SWACHHTA PAKHWADA

As part of the Swachh Bharat mission, the Scientists and Staff members of CSIR-CRRI undertook the action plan for Swachchta Pakhwada during May 01 to May 15, 2023, and enthusiastically achieved the goals. A Swachhta Pledge-taking ceremony on the occasion of the Swachchta Pakhwada was held on May 01, 2023, at the CSIR-CRRI campus and was attended by scientists and staff members of the Institute. During the Swachch Bharat Pakhwada, cleanliness drives were conducted in all divisions/sections, including canteen, guest house, hostel, garden, library, toilets, stores, and residential colonies, and old files were weeded out as per the record retention schedule. Additionally, Sanitary Napkin Pad Machines were installed in the Ladies' toilets on the CSIR-CRRI campus. Further, a lecture on Swachhta Pakhwada was delivered on May 15, 2023, by the invited chief guest, Shri Narendra Kumar, IAS Retd. Former Administrator of UTS of Daman and Dadra Nagar Haveli and Former Election Commissioner for UTs.

CSIR-CRRI FOUNDATION DAY

CSIR-CRRI Foundation Day was celebrated on July 16, 2023. On this occasion, former directors and chief scientists of the Institute were invited. A cultural program was organised on this occasion, and the Institute's staff members performed enthusiastically.

CELEBRATION OF INTERNATIONAL YOGA DAY

CSIR-CRRI celebrated the 9th Annual International Yoga Day on its premises, with the theme "Original Humanity," on June 21, 2023. Prof. Manoranjan Parida, Director, CSIR-CRRI, graced the occasion by his presence. This celebration was aimed at spreading awareness of Yoga's holistic nature and promoting it as a regular regimen worldwide for better health. On this occasion, the Institute's staff members enthusiastically performed the yoga exercise under the guidance of Smt. Shradha Singh, Yoga Instructor.

NATIONAL INTELLECTUAL PROPERTY FESTIVAL 2023

As part of the National Intellectual Property Festival 2023, from July 01 to July 31, 2023, under Azadi Ki Amrit Mahotsav, CSIR-CRRI organized a lecture by Prof. Rajat Agrawal, IIT-Roorkee, on the topic "Competing Through Intellectual Property Rights (IPR)" on July 28, 2023. The Institute's staff members (Scientists and Technical Staff) attended the expert lecture with enthusiasm and interacted well on IPR-related issues.

INDEPENDENCE DAY

CSIR-CRRI celebrated the 77th Independence Day of India on August 15, 2023, on the theme "Nation First, Always First". Prof. Manoranjan Parida, Director, CSIR-CRRI, hoisted the National Flag in the CRRI campus on this day.

SADBHAVANA DIWAS

CSIR-CRRI observed "Sadbhavana Diwas" on August 18, 2023. As part of this, the staff members of the Institute took a pledge to promote National integration and communal harmony among people of all religions, languages, and regions.

82nd CSIR FOUNDATION DAY

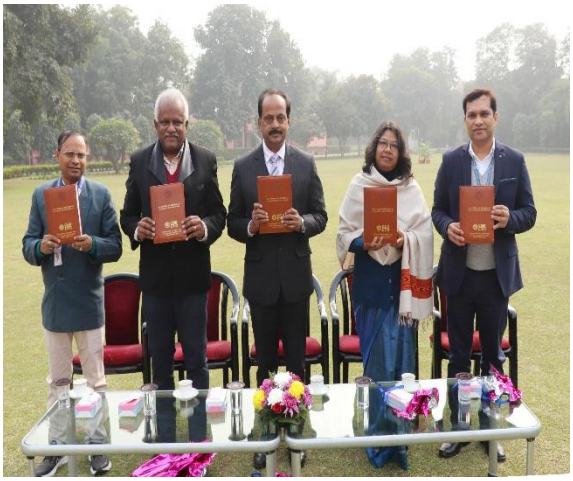
CSIR-CRRI celebrated its 82nd CSIR Foundation Day on September 29, 2023. As part of this celebration, various activities/events/competitions, such as the MSME Meet, the Divisional Posters Competition, and Students–Scientists Interactions programmes, were organized at CSIR-CRRI. Besides, a special lecture on "Energy Transition Strategy-Bet Zero Pathway" was given by the Chief Guest, Sh. Alok Sharma, Executive Director CHT, Ministry of Petroleum, New Delhi.

SPECIAL SWACHHTA CAMPAIGN 3.0

CSIR-CRRI celebrated Special Swachhta Campaign 3.0 during October 02-31, 2023. As part of this celebration, a cleanliness drive led by Prof. Manoranjan Parida, Director, was organized at the Institute on October 03, 2023, and participated in by the Institute's staff. Besides, a special lecture on “Sanitation Culture and Social Change” was given by Sh. Nikhilesh Jha, IAS (Retd.), Former Joint Secretary, CSIR, on October 04, 2023.

NEW YEAR'S DAY

A get-together was organized on the occasion of New Year's Day at CSIR-CRRI on January 01, 2024. Prof. Manoranjan Parida, Director, CSIR-CRRI, in his address highlighted the Institute's achievements during the preceding year (2023) and motivated the CRRI staff to meet new challenges and demands in the field. Prof. Manoranjan Parida extended best wishes to all the staff members and their families of the Institute. On this occasion, Prof. Manoranjan Parida released the CSIR-CRRI Field & Project Work Record Book-2024.



WORLD HINDI DAY

CSIR-CRRI celebrated “World Hindi Day” or “Vishwa Hindi Divas” from January 08-12, 2024, with an aim to promote the use of the Hindi language worldwide. As part of this celebration, various activities/events/competitions were organized at CSIR-CRRI.

NATIONAL ROAD SAFETY MONTH

The National Road Safety Month was observed in CSIR-CRRI from January 15-February 14, 2024. As part of this occasion, staff members of the Institute took the Road Safety Pledge from February 01-14, 2024.

INTERNATIONAL WOMEN’S DAY

International Women’s Day was observed in CSIR-CRRI during March 08-15, 2024, to celebrate the social, economic, cultural, and political achievements of women. As part of this occasion, various activities of the female employees of the Institute were also organized during March 08-15, 2024 2024.

Workshops/ Conferences/ Seminars Organised

Workshops/Conferences/Seminars Organised

AWARENESS CAMP ON PREVENTION OF SEXUAL HARASSMENT

CSIR-CRRI organized a one-day awareness camp on workplace sexual harassment on April 11, 2023. The camp was organized to raise awareness about the prevention of sexual harassment among staff members of the Institute (including contractual staff, students, security guards, and sanitation workers).

129th RESEARCH COUNCIL MEETING OF CSIR-CRRI

129th Research Council Meeting of CSIR-CRRI was organized on April 12-13, 2023. Prof. Manoranjan Parida, Director, CSIR-CRRI, welcomed Prof. P. K. Sikdar, the Chairman, and all other members of the research council. Various presentations were made by scientists of the institute during the meeting.

INAUGURATION OF INTERN LEARNING CENTRE

An Intern Learning Centre (ILC) was newly established at the Prof. Swaminathan Research Centre, CSIR-CRRI, for students who joined the Institute from various colleges/universities for their Internships. This centre was inaugurated by Prof. Manoranjan Parida, Director, CSIR-CRRI, on May 29, 2023, and will facilitate students in carrying out various activities/works related to their Internships. On this occasion, the heads of departments of various divisions of the Institute briefed about their division's activities and opportunities currently available for the newly joined students in CSIR-CRRI.

ONE WEEK ONE LAB CAMPAIGN OF CSIR-CRRI

Dr. Jitendra Singh, Hon'ble Minister of State (Independent Charge) in the Ministry of Science & Technology and Vice-President, CSIR, Govt. of India, emphasized the unique characteristics of 37 CSIR Laboratories, each specialising in a wide range of areas such as building structures, road infrastructure, robotics, mineral research, and more. To promote and disseminate this rich diversity across society, Dr. Singh introduced the "One Week One Lab Campaign." As part of this campaign, CSIR-CRRI organised the One Week One Lab Campaign from July 16-22, 2023, and held the following events/workshops in different cities across India.

i) Curtain Raiser at CSIR-IGIB Auditorium, New Delhi on July 16, 2023
ii) Student Scientists' Connect at CSIR-CRRI, New Delhi on July 17, 2023
iii) Industry Meet at CSIR-CRRI, New Delhi, on July 18, 2023
iv) Young Researchers Conclave at CSIR-CRRI, New Delhi, on July 19, 2023
v) Engaging with State Government at Convention Centre, Lokaseva Bhavan, Bhubaneswar on July 20, 2023
vi) Next Generation Transport at IIIT-Hyderabad, Hyderabad, on July 21, 2023
vii) Mobility @ Northeast at NEC Auditorium, Shillong on 22, 2023

CSIR-CRRI RCREATIONAL MEET SUMMER-2023

CSIR-CRRI organized “CRRI Recreational Meet-Summer 2023” from June 21 to July 17, 2023. As part of this occasion, various competitions in indoor sports and activities, including Carrom, Table Tennis, Badminton, Chess, and Extempore Painting, were organised for the Institute's staff. Many staff members of the Institute participated in competitions/events with great enthusiasm and a spirit of games & sports.

Next Generation Transport at IIIT-Hyderabad

As part of CSIR-CRRI One Week One Lab Campaign, the Institute in collaboration with IIIT-Hyderabad, jointly organised 1-day conference on “Next Generation Transport” on July 21, 2023. The event was graced by Dr. (Mrs) N. Kalaiselvi, Director Genearal, CSIR as the Chief Guest.

iRASTE NXT CONFERENCE

CSIR-CRRI, in collaboration with INAI, IIIT-Hyderabad, and Intel, jointly organised the iRASTE NXT Conference on July 24, 2023. Hon’ble Union Minister for Road Transport & Highways, Sh. Nitin Gadkari ji graced the event as the Chief Guest.

130th RESEARCH COUNCIL MEETING OF CSIR-CRRI

The 130th Research Council Meeting of CSIR-CRRI was held on August 09-10, 2023. Prof. Manoranjan Parida, Director, CSIR-CRRI, welcomed Prof. P. K. Sikdar, the Chairman, and all other members of the research council. Various presentations were made by scientists of the institute during the meeting.

Dr. P. RAYCHUDHRI MEMORIAL LECTURE SERIES

CSIR-CRRI started “Dr. P. Raychaudhuri Memorial Lecture Series” in 2018 in honour of Late Dr. P. Raychaudhuri, the First Head, Bridge Division, CSIR-CRRI, for his significant professional contributions to the Nation. The 6th Lecture of the Series was organized on August 24, 2023, and Er. K.P. Abraham,

Chief Engineer, Central Public Works Department (Retd.), delivered the lecture on “Innovative Concrete Construction in Signature Bridge, Delhi”. Prof. Manoranjan Parida, Director, CSIR-CRRI, felicitated Er. K.P. Abraham and the family members of Dr. P. Raychaudhuri.

1-DAY WORKSHOP ON ELECTRICAL MOBILITY

CSIR-CRRI organized a one-day workshop on “Electrical Mobility” on September 01, 2023

131ST RESEARCH COUNCIL MEETING OF CSIR-CRRI

131st Research Council Meeting of CSIR-CRRI was organized on November 28-29, 2023. Prof. Manoranjan Parida, Director, CSIR-CRRI, welcomed Prof. Mahesh Tandon, RC, Chairman, Tandon Consultants Pvt. Ltd., and all other members of the research council. Various presentations were made by scientists of the Institute during the meeting.

CURTAIN RAISER PROGRAMME FOR INDIA INTERNATIONAL SCIENCE FESTIVAL (IISF) 2023

India International Science Festival (IISF), under the visionary leadership of Prime Minister Shri Narendra Modi, is an initiative of the Ministry of Science and Technology and Ministry of Earth Sciences, Government of India, in association with Vijnana Bharti. The 9th edition of IISF 2023, with the theme 'Science and Technology Public Outreach in Amritkal', will be held from 17th to 20th January 2024, at DBT THSTI - RCB Campus, Faridabad, Haryana (NCR Delhi), India. As part of this festival, a Curtain Raiser programme for the IISF 2023 One Day Outreach Activity was organised at CRRI on December 13, 2023. Various activities were held on the day including Presentation by Vijnana Bharti Karyakarta Prof Rajeev Singh, Lecture by Chief Guest Dr Avanish Kumar Srivastava, NEERI Scientist Lecture, National Level Poster Presentation Exhibition for College Students from all over India, State Level Essay for Kendriya Vidyalaya students under Jigyasa 2.0 programme, and Micro Mobility E vehicle Mini Exhibition to raise awareness regarding the importance of sustainable technology and measures in transportation sector

SCIENTIST-STUDENT INTERACTIVE PROGRAMS UNDER JIGYASA PROGRAMME

In the past year under Jigyasa 2.0, and further over 24 events of different categories have been held, 5000 (approx.) students took part in both offline and online modes. Their age group ranges from class 8th above until PG Level Dissertation Students. All KVs in Delhi NCR have participated in various Jigyasas events at CRRI, in rotation, as per their available slots, totaling approximately 59 events across both shifts. Around 2600 girls and 2400 boys (Total = 5000) have benefited from various events held under Jigyasa at CSIR-CRRI. Along with them, 1735 teachers have participated in various Jigyasa Events.

Honours
&
Awards / Appreciations Received

Honours & Awards / Appreciations Received

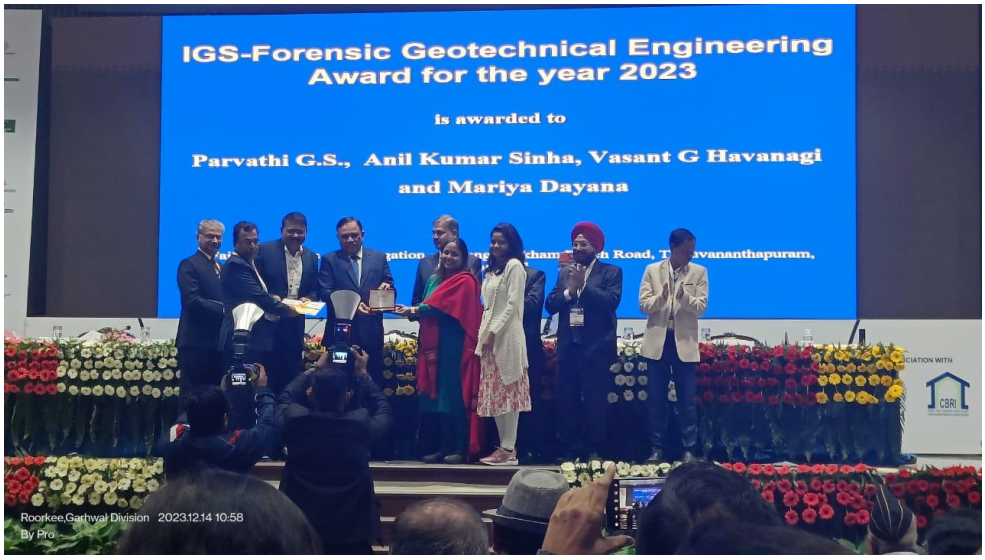
- Dr. Rakesh Kumar, Chief Scientist and Head RP Division, was invited as a panelist for the session on transportation scheduled on 11th April 2023, organized by India Construction Meet from 10th -12th April, 2023 at ICAR Convention Centre, Pusa, New Delhi.

- Shri. Dinesh Ganvir, Principal Scientist, was invited as a session chair for the poster competition in the 7th Conference of Transportation Research Group organized by SVNIT Surat from 17th-20th December 2023.

- Dr. Deepa S., received the Young Woman Researcher Award in Pavement Engineering at 9th Venus International Women Awards (VIWA 2024).

- The project titled "Design, Construction and Performance Study of Phosphogypsum Experimental Road at Paradeep, Odisha" received the CIDC Vishwakarma Award (2023) – Chairman Commendation Trophy; the project was led by Dr. A. K. Sinha.

- The project titled "Failure Analysis and Remedial Measures Design of Shankumugham Coastal Road, Thiruvananthapuram, Kerala" received the Forensic Geotechnical Engineering Award (2023) given by the Indian Geotechnical Society (IGS), New Delhi, India. The team members of the project are, Mrs. G.S. Parvathi, Dr. A. K. Sinha, Dr. V. G. Havanagi and Ms. M. Dayana.



- Mrs. Parvathi G. S. and Mrs. Mariya Dayana have been recognized among the 75 most influential Indian-origin women geotechnical engineers in the book "Daughters of Indian Soil – 2023", published by the Indian Geotechnical Society.

- CSIR-CRRI team got appreciation certificate and momento for participation in technical exhibition of 82nd Annual Session of Indian Roads Congress held during December 02nd-05th, 2023 at Gandhinagar, Gujarart

- Shri. J. K. Goyal, Chief Scientist & Head (BES), received the best paper award in 25th LISBON International Conference on Architecture, Structure and Civil Engineering (ICASCE-23) held during December, 11th-13th, 2023 at Lisbon (Portugal).

- Shri. J. K. Goyal, Chief Scientist & Head (BES), successfully registered in the 'Indian Structural Health Monitoring Society (ISHMS)' as the founding member and is serving as the 'Vice President and General Secretary'.

- Shri J. K. Goyal, Chief Scientist & Head (BES), attended the 225th Mid-Term Council Meeting as an IRC Council Member on July 7–8, 2023. He contributed to IRC SP 35: Manual for Bridge Inventory, Inspection, Maintenance and Management, prepared by the B-8 Committee, and IRC 40: Standard Specifications and Code of Practice for Road Bridges, Section IV – Brick, Stone and Cement Concrete Block Masonry (Second Revision), prepared by the B-3 Committee.

- Shri J. K. Goyal, Chief Scientist & Head (BES), led a team of 15 volunteers to participate in the World Record for the World's Largest Assembly and Display of Climate Clock on EARTH Day at IGI Stadium, April 22, 2023.

- Shri J. K. Goyal, Chief Scientist, served as a Review Board Member for the 1st International Conference on Recent Advances in Infrastructure Development (RAID 2024), held at NIT Calicut on February 12–13, 2024.

- Shri J. K. Goyal, Chief Scientist & Head (BES), also served as a panelist at the International Online Workshop on “How Structural Health Monitoring Works?” held on December 14, 2023, organized by the Indian Structural Health Monitoring Society (ISHMS) in association with the National Institute of Disaster Management (NIDM).

- Shri J. K. Goyal, Chief Scientist & Head (BES), also served as a Session Chair at the International Conference on Condition Assessment, Rehabilitation, and Retrofitting of Structures (CARRS 2023), held at IIT Hyderabad during December 11–13, 2023.

- Shri J. K. Goyal, Chief Scientist, Published an Article in New Building Materials and Construction World (NBM&CW) -India's #1 magazine for construction and infrastructure industry on "Women forging milestones in Construction Industry". Selected as Jury member for the 3rd CE & CR Awards 2024

- Shri Satish Pandey, Principal Scientist, received the Global Slag Personality of the Year Award at the 15th Global Slag Conference, held in Düsseldorf, Germany, on June 6–7, 2023.

- Shri. Aditya Gola, Shri .Chandra Mohan Dharmapuri, Dr. Neelima Chakraborty, Dr. S.Velmurugan and Dr.Vinod Karar received Best Paper Award for the research work "Experimental analysis of two wheeler headlight illuminance data from the perspective of traffic safety" during the 4th International Conference on Data Analytics & Management (ICDAM-2023) organized jointly by London Metropolitan University, London, UK in association with the Karkonosze University of Applied Sciences, Jelenia Gora, Poland, Europe and Politécnico de Portalegre, Portugal, Europe & BPIT, GGSIPU, Delhi on 23- 24 June 2023

- Dr. Vasant G. Havanagi received the Lifetime Achievement Award 2023 from the IGS Delhi Chapter.

- Dr. Siksha Swaroopa Kar received the IEI Young Engineer Award 2023.

- CSIR-CRRI was honored with the Construction World Global Product Innovation of the Year Award for its Steel Slag Road Technology.

- CSIR-CRRI was honored with the Construction World Global Product Innovation of the Year Award for its REJUPAVE Technology of Asphalt Recycling.

- Dr. Siksha Swaroopa Kar received special recognition in the form of an invitation as a Special Guest of the Government of India for the 75th Republic Day Celebration at Kartavya Path. The invitation was extended by the Controller General of Patents, Designs and Trade Marks & Registrar of Geographical Indications, DPIIT, Government of India, in recognition of her immense contributions to research and innovation.

- Dr. Siksha Swaroopa Kar received the Best Poster Award at the Young Scientists' Conference, held during the India International Science Festival (IISF) from January 17–24, 2024, at the DBT–THSTI–RCB Campus, Faridabad, Haryana, for her poster titled "Mechanized Cold Mixing and Paving Solution for Improved Road Construction in Himalayan Regions of India."

- Dr. Ambika Behl was felicitated by the Indian Plastics Institute (IPI) for her work on “Use of Waste Plastics for Road Construction” at IPI’s Annual Seminar on Plastics in Building & Construction, held in Hyderabad on February 16, 2024.

- Dr. Ambika Behl received “Ambassador of Change” award for her work on environment friendly road construction technologies: at Climate Financing in the Circular Economy Conference, on 09.01.20224.

- Dr. Ambika Behl received felicitation from Shri. Nitin Gadkari, Hon'ble Minister for Road Transport and Highways "For the Exemplary Contribution Towards Research in Sustainable Road Infrastructure" at the Annual Flagship Infrastructure Conference cum Awards, 2023.

Invited Talks/ Lectures Delivered / Meeting Attended (Outside CRRI)

Invited Talks and Lectures Delivered / Meeting Attended (Outside CRRI)

Invited Talks and Lectures Delivered

Name & Designation of staff	Title of Lecture/ Topic/ Talk / Activity	Purpose (Name of conference/ Meeting/ Session)	Date
Dr. Pradeep Kumar, Chief Scientist	Panelist	Annual Flagship Infrastructure Conference and Awards (Road, Highways and Underground Construction, Tunneling) at Hotel Shangri-la Eros, New Delhi	May 17-18, 2023
Dr. Pradeep Kumar, Chief Scientist	Chief Guest (Delivered the Inaugural Address)	2nd International Conference on Advanced Earth Science and Foundation Engineering (ICASF 2023), Organised by University Centre for Research and Development. Chandigarh University, Mohali, India	May 26-27, 2023
Dr. Pradeep Kumar, Chief Scientist	Odisha Road Asset Management System	81st Highway Research Board (HRB) Meeting in 225th Mid-Term Council Meeting of Indian Roads Congress, held at Raipur (Chhattisgarh)	July 7-8, 2023
Dr. Pradeep Kumar, Chief Scientist	Pavement Maintenance Management System	Five-day short-term course entitled "Resilient and Sustainable Transportation Engineering (RASTE)" organized by NIT, Patna.	November 6-10, 2023
Dr. Aakash Gupta, Scientist	Keynote Speaker and Session Chair and delivered lecture on “Modern Pavement Evaluation Techniques of Flexible Pavements”	Indo-European Conference on Sustainable Materials, Environment and Construction (COSMEC -2023)	April 28, 2023
	Keynote Speaker and Session Chair and delivered lecture on “Structural Evaluation of pavements using FWD”	2nd International Conference on Advanced Earth Science and Foundation Engineering (ICASF 2023)	May 26, 2023
	Pavement Surface Distress evaluation using NSV	For M.Tech students of RASTA, Bengaluru	August 31, 2023
Dr Deepa S, Scientist	An introduction to Flexible Pavement Design using IRC 37:2018	ICI student chapter department of civil engineering, AWH Engineering College, Kerala	February 27, 2024

Name & Designation of staff	Title of Lecture/ Topic/ Talk / Activity	Purpose (Name of conference/ Meeting/ Session)	Date
Sachin Gowda M K, Scientist	Structural Evaluation of Flexible Pavements Using FWD	For M.Tech students of RASTA, Bengaluru	August 31, 2023
Dr. Rajeev Goel, Chief Scientist	Use of Digital Technologies during Various Phases of Bridge Life	Conference on Bridge 2023: The New Frontiers in Bridge Engineering, Organised by IIBE and IIT Hyderabad at Hyderabad	June 23, 2023
	Overview of Bridge Design & Construction	CSIR-CRRI Training Program on "Design of Bridge Structure and Foundation"	October 09, 2023
	Load & Load Combinations-IRC 6		October 09, 2023
	Analysis of Bridges		October 10, 2023
	Design Provisions of IRC: 112		October 11, 2023
	Design of Foundation with Example		October 11, 2023
	Load Testing and Rating of Highway Bridges	CSIR-CRRI Training Program on "Quality Assurance, Health Assessment and Rehabilitation of Bridges"	December 12, 2023
	Repairs and Rehabilitation Techniques for Highway Bridges		December 15, 2023
Dr. Naveet Kaur, Sr. Scientist	Structural Health Monitoring and Energy Harvesting using piezoelectric materials	Online lecture organized by Mahindra University, Greater Noida	May 19, 2023
	Remotely Piloted Aerial Vehicle	iconnect 43 Robotics for civil Infrastructure Inspection and Manufacturing, organized by Ministry of Science and Technology and Ministry of Earth Sciences	July 8, 2023
	Structural Health Monitoring and Audit of Structures: Science Behind instrumentation of Bridges	National Training programme on "Urban Risk Mitigation-Focus on seismic and Fire Safety", organised by National Institute of Disaster Management, Ministry of Home Affairs, Government of India	August 8, 2023
	Investigation and Recommendation for the distressed ROB at Ch. 307 b/w Udaipur and Chittorgarh on NH-76	130th RC meeting organised at CSIR-CRRI	August 9, 2023
	Bridge classification and selection criteria	Three day training Programme on "Design of Bridge and Foundation with emphasis on long span bridges" organised by MPRRDA at Bhopal	September 12, 2023

Name & Designation of staff	Title of Lecture/ Topic/ Talk / Activity	Purpose (Name of conference/ Meeting/ Session)	Date
	Research scheme to study the corrosion of various reinforcement bar materials / structural steel including anti-corrosive coatings, concrete treated with surface coating under different environment exposure conditions	Progress Review for the GAP 4597 project by Ministry of Road and Transport Highways	October 4, 2023
	General Design Features of Bridges-IRC:5	An online training program 'Design of Bridge Structure and Foundation' organised by CSIR-CRRI	October 9, 2023
	To Study the Corrosion of Various Reinforcement Bar Materials / Structural Steel including Anti-Corrosion Coatings, Concrete Treated with Surface Coating Under Different Environmental Exposure Conditions	131st RC meeting organised at CSIR-CRRI	November 29, 2023
	Structural Health Monitoring: Science behind Instrumentation	Training programme on Quality Assurance, Health Assessment, and Rehabilitation Techniques	December 14, 2023
	Drone Technology for Structural Health Monitoring	International Conference on Condition Assessment Rehabilitation and Retrofitting of Structures (CARRS-2023), IIT Hyderabad	December 11, 2023
	Recent Advances in SHM: Drones, Non-Contact techniques and AI-ML	Technical lecture series organised by Indian Structural Health Monitoring Society (ISHMS) at IIT Delhi	March 20, 2024
	Structural Health Monitoring and Energy Harvesting using piezoelectric materials	Online lecture organized by Mahindra University, Greater Noida	May 19, 2023
Dr. Rakesh Kumar, Chief scientist	A New Technology First Time Used in India for Improving the Riding Quality of a Newly Constructed Concrete Expressway: A Case Study	Revolutionizing Road Infra with Modern Equipment, Technologies, Sustainable Materials and Policy Guidelines: IRF-India Chapter Conference, held at Manekshaw Centre, New Delhi	February 29– March 01, 2024
Dinesh Ganvir, Principal Scientist	Design and Construction Aspects of Whitetopping	CRRI Training Workshop for Adoption of NewTechnologies for Urban Roads on 14 Feb. 2024 for Urban Development, Urban Employment & Poverty Alleviation Program Dept., Govt of Uttar Pradesh	February 14, 2024

Name & Designation of staff	Title of Lecture/ Topic/ Talk / Activity	Purpose (Name of conference/ Meeting/ Session)	Date
	White topping: A long Lasting Concrete Overlay over distressed bituminous pavement	Training Programme for NRIDA Engineers working in Various States organized by Visvesvararya National Institute of Technology, Nagpur	March 07, 2024
Yatin Chaudhary, Scientist	Design and Analysis of Cement Concrete Pavements	Datta Meghe College of Engineering, Maharashtra	September 27, 2024
	Design and Analysis of Rigid Pavement as per IRC:58-2015	Central Public Works Department (CPWD)	July 09, 2024
	Design of Low Volume cement concrete roads		
Romeil Sagwal, Scientist	Concrete pavement distresses, repair & rehabilitation	Central Public Works Department (CPWD)	July 09, 2024
	Design of Dry Lean Concrete (DLC)		
Dr A K Sinha, Chief Scientist	Application of industrial waste material for road construction	IRC Annual session	December 2-5, 2023
Parvathi G. S. Principal Scientist	Analysis and Design of Remedial Measures for Distressed Geosynthetic Reinforced Earth Wall: Case Studies	Short course on "Recent Advances in Transportation Geotechnics & Infrastructure Development", NIT Jalandhar	July 10-15, 2023
	Recent Advances in Geosynthetic Research at CRRI	Industry Day function held during the One Week One Lab (OWOL)	July 17, 2023
	Design and Construction of Coastal Road Protection Method at Shankhumugam Beach, Thiruvananthapuram	Workshop on Sustainable Geotechnical Solutions for Problematic Soils and Disaster Management titled 'Geokeralam', CUSAT Kochi	November 17-18, 2023
	Foundation for Transportation Infrastructure	Six-day online FDP on Recent Advances in Transportation Geotechnics (ReATraG'24), College of Engineering Trivandrum	January 15-20, 2024
	Shankhumugam Coastal Road Remediation - Design and Construction	Expert Talk as a part of VNIT Course CSA501	March 1, 2024
	Sustainable Geocomposite root barriers	Presented the project progress Monitoring Committee to review of 4th tranche E3OW FTC-FTT projects, 3rd Meeting at CSIR-NGRI, Hyderabad	March 7, 2024

Name & Designation of staff	Title of Lecture/ Topic/ Talk / Activity	Purpose (Name of conference/ Meeting/ Session)	Date
Mariya Dayana P J Scientist	Sustainable Geocomposite root barriers	Project progress Monitoring Committee to review of 4th tranche E3OW FTC-FTT projects, 2nd meeting at CSIR-NEERI, Nagpur	August 27, 2023
	Expert committee meeting for the FBR proposal	Project proposal presentation at CSIR-SERC	February 5, 2024
	Collaboration for field implementation studies and upcoming UL International Conclave on Sustainable Construction	ULCCS, Calicut	February, 2024
Mariya Dayana P J, Scientist & Parvathi G. S., Principal Scientist	Development of 'Biodegradable Prefabricated Vertical Drain' by Molding Technique– A Sustainable Solution for Road Construction Over Soft Soil	Expert committee meeting for the FBR proposal evaluation at CSIR-SERC, Chennai	February 5, 2024
Subhash Chand, Sr. Principal Scientist	Engineering Aspects of Road Safety	Conference on Road Safety – Road Safety Month Ranchi, Jharkhand	February 12-13, 2024
Dr. Errampalli Madhu, Chief Scientist	ITS for Safer Road and Improving Road Safety	Training Programme on "Intelligent Transportation System Applications for Highways" organised by Indian Academy of Highway Engineers (IAHE)	August 23, 2023

Meetings Attended (outside CRRI)

Name & Designation of staff	Purpose (Name of conference/ Meeting/ Session)	Date
Dr. Deepa S, Scientist	Attended meeting on 'Failures in bituminous pavements: use of bitumen/modified bitumen' in the presence of the Honourable Minister of the Ministry of Road Transport & Highways (MoRTH), along with delegates of bitumen/modified bitumen manufacturers at the MORTH office, Transport Bhawan, New Delhi	November 01, 2023
Dr. Rajeev Goel, Chief Scientist	Attended several meetings as Member of various Committees of for Indian Roads Congress, Bureau of Indian Standards, Bureau of Energy Efficiency, NRIDA, etc.	2023-24
	Attended several project based meetings with various Clients such as MoRTH, NHAI, CPWD, State PWD's, Development Authorities etc.	2023-24
	Attended several meetings of assessment committees of CSIR/ Laboratories	2023-24

Participation in Conferences/ Seminars / Workshops

Participation in Conferences/ Seminars / Workshops

Name & Designation of Staff	Details of Conference/Seminar/Webinar	Venue	Date
Dr. Pradeep Kumar, Chief Scientist	Annual Flagship Infrastructure Conference and Awards (Road, Highways and Underground Construction, Tunnelling), The Associated Chambers of Commerce and Industry of India (ASSOCHAM)	Hotel Shangri-la Eros, New Delhi	May 17-18, 2023
	225th Mid-Term Council Meeting of Indian Roads Congress	Raipur (Chhattisgarh)	July 7-8, 2023
	G20 Standards Dialogue, organized by the Bureau of Indian Standards	Bharat Mandapam, New Delhi.	November 2-3, 2023
Dr. Aakash Gupta & Sachin Gowda M K	International Conference on Creative and Innovative Solutions in Civil Engineering (CISCE-2023)	(Hybrid Mode), organized by MNIT Jaipur.	August 11-12, 2023
Dr Deepa S, Sr. Scientist	Workshop on Electrical Mobility	CRRI	September 01, 2023
Dr. Aakash Gupta & Sachin Gowda M K	International Conference on Machine intelligence for Research & Innovations (MAiTRI-2024 Summit)	(Hybrid Mode), organized by NIT Jalandhar.	September 01-03, 2023
Dr. Aakash Gupta & Sachin Gowda MK	One day workshop conducted by Anton Paar on Asphalt Rheology	New Delhi	September 15, 2023
Dr. S. Deepa, Dr. Aakash Gupta, Er. Sachin Gowda, Dr. Vidhi Vyas, Er. A . K. Sagar, Er. A. K. Jain, Er. P C Meshram	National workshop on Hot-in-plant road recycling using Rejupave Technology	Hotel Leela Palace, Chanakyapuri	October 10, 2023
Sachin Gowda MK, Sr. Scientist	National workshop on hot in-plant road recycling using Rejupave technology	New Delhi	October 19, 2023
Sachin Gowda MK and Dr. Aakash Gupta	Global Road Construction Conference 2023	New Delhi	November 8-9, 2023
Dr. S. Deepa and Dr. Aakash Gupta	Sustainable Materials for Civil Infrastructure	CSIR-CRRI	November 03, 2023
Dr Deepa S, Sr. Scientist	Sustainable Materials for Civil Infrastructure	CSIR-CRRI	November 18, 2023
Dr. Aakash Gupta and Sachin Gowda MK	Indian Roads Congress 82nd Annual Session	Mahatma Mandir Gandhinagar (GUJARAT)	December 2-5, 2023
Sachin Gowda MK and Dr. Aakash Gupta	7th Conference of Transportation Research Group of India (CTRG-2023)	Surat, India	December 17-20, 2023

Dr Deepa S. Sr. Scientist	One day Antan paar workshop	CSIR-CRRI	December 08, 2023
	Revolutionizing Road Infra With Modern Equipment, Technologies, Sustainable Material And Policy Guidelines" International Road Federation, India Chapter	New Delhi	February 29-March 01, 2024
JK Goyal, GK Sahu, SS Gaharwar and Rajesh Rana	IRF –INDIA Chapter "Revolutionizing Road Infra with Modern Equipment, Technologies, Sustainable Materials and Policy Guidelines Paper titled as : "Development of Design Guidelines, Testing and Implementation Methodologies for Bridge Deck Water Proofing (BDWP) over Bridge Deck Overlays".	New Delhi	February 28-March 01, 2024
J.K. Goyal, Chief Scientist	25th LISBON International Conference on Architecture, Structure and Civil Engineering (ICASCE-23). Paper titled as: "An Infrastructure Information System for Bridges in India through Scientific Monitoring.	Lisbon (Portugal)	December 11-13, 2023
Dr. Rajeev Goel, Chief Scientist	IRC Annual session	Gandhinagar, Gujarat	December 01-5, 2023
	IABSE Congress 2023 on "Engineering for Sustainable Development"	New Delhi	September 20-22, 2023
	International Seminar on "Advances in Design, Construction and operation of Tunnels in India"	Dehradun	April 19-20, 2023
Dr Naveet Kaur, Sr. Scientist	Attended 46th induction program for newly recruited scientists, inaugurated by the Honourable Minister Dr. Jitender Goyal and Director General DR N Kalaiselvi,	HRDC, Ghaziabad	May 30- June 8, 2023
	Attended conference on "Drones and Robotics: Applications in Infrastructure"	Le Meredian, New Delhi`	June 22-23, 2023
	Attended 225th Mid Term Council Meeting	Chattisgarh	July 7-8, 2023
	Participated in the CSIR Foundation Day	Pragati Maidan, New Delhi	September 26-27, 2023
	Attended "Colloqium on Seismic protection of structures and Equipment"	A joint event by IIT Delhi and GERB, India	October 3, 2023
	Attended the online demonstration of "Sofistic Software' for the FEM modelling, analysis and design of bridges	online	October 25, 2023

	Attended lecture on “Juno Bridge Cloud based bridge management software” by MrShekharJerripothula, Director, Lonrix, India”,	CSIR-CRRI	November 6, 2023
	Attended Seminar on “”Fosroc Constructive Solutions for concrete”	Hyatt Centric Grand Ball	November 21-22, 2023
	Attended 82nd IRC Annual meet	Gandhinagar, Gujarat	December 1-5, 2023
	Attended International Conference on Condition Assessment Rehabilitation and Retrofitting of Structures (CARRS-2023)	IIT Hyderabad	December 11-13, 2023
	Attended International Online Workshop on “How Structural Health Monitoring Works?”	Online	December 14, 2023
	Attended and organized lecture on “Prevention against sexual harassment in workspace” by Sh. SoumayBhowmik, Senior Advocate Supreme Court	CSIR-CRRI	January 11, 2024
Dr. Rakesh Kumar, Chief Scientist	National Conference-cum-Exhibition on Sustainable Construction Materials: Trajectory to Sustainable Growth (SCM-TSG)	Manikshaw Hall, delhi	Februray 29-March 1, 2024.
	India construction meet – 10th -	at ICAR Convention Centre, Pusa, New Delhi	April 12, 2023
Yatin Chaudhary, Scientist	7th International Oil & Gas Chemistry, Chemicals and Additives Conference & Exhibition (IOGCA 2024),	Hotel Radisson Blu, Dwarka, New Delhi	September 26-27, 2024
Dinesh Ganvir, Principal Scientist	7th Conference of Transportation Research Group	Surat	December 17-20, 2023
Romeil Sagwal, Scientist	National Conference-cum-Exhibition on "Revolutionizing Road Infra with Modern Equipment, Technologies, Sustainable Material, and Policy Guidelines," (IRF-IC’s)	Manekshaw Centre, Parade Road, Delhi Cantt., New Delhi	February 29-March 01, 2024
	82nd IRC session	Gandhinagar, Gujarat	December 02-05, 2023
Dr A K Sinha, Sr.Pr.Scientist	Indian Geotechnical Conference	Roorkee	December, 2023
	82nd IRC Annual Session 2023	Ahmadabad	December, 2023

R.K.Panigrahi	International seminar on "Advances in Design, Construction and operation of Tunnels, Dehradun.	DIT university, Dehradun (India)	April 19-20, 2023
	82nd Annual session of IRC, Gujrat	Gandhinager, Gujrat	December 2-5, 2023
	Indian Geotechnical Conference-2023, Roorkee	IIT-Roorkee	December 13-16, 2023
Parvathi G. S. Principal Scientist	International Conference on Geosynthetics: 12ICG-Roma	Rome, Italy	September 17-21, 2023
	Workshop on Sustainable Geotechnical Solutions for Problematic Soils and Disaster Management titled 'Geokeralam' during	School of Engineering, CUSAT, Kochi	November 17-18, 2023
	Indian Geotechnical Conference (IGC-2023)	IIT Roorkee	December 14-16, 2023
	Webinar on 'Introducing the state-of-the-art search method in 3D Slope Stability: Intelligent Search"	Online	February 20, 2024
Dr. Ravi Shankar S Sr. Scientist	"82nd Indian Road Congress session 2023" Organized by IRC	Gandhinagar, Gujarat	December 2 -5, 2023.
Mariya Dayana P J Scientist	Indian Geotechnical Conference	IIT Roorkee	December 14-17, 2023
	IGC Post Conference Workshop - Advanced finite element modelling of geotechnical constructions	IIT Roorkee	December 14-17, 2023
Er. V. K. Kanaujia Sr. Technical Officer (3)	"82nd Indian Road Congress session 2023" Organized by IRC	Gandhinagar, Gujarat	December 2 -5, 2023.
	Jute Symposium, Delhi Organized by National Jute Board	Delhi	December 21, 2023.
	"One week One Lab Programme" Organized by CSIR-CRRI	Delhi	July 16-22, 2023
	iRASTE NXT Conference Organized by CSIR-CRRI	Delhi	July 24, 2023.
Subhash Chand, Sr. Prinicipal Scientist	IRC Annual Conference	Gandhi Mandir, Gandhinagar	December 2-5, 2023
	CII National Conclav on Road Safety	Hotel Le Meridien New Delhi	January 16, 2024
	IRF Road Safety Conference on Vision Zero- Targeting Road Safety by 5Es with innovative Technologies	The Claridge, New Delhi	January 24, 2024
Dr. Errampalli Madhu, Chief Scientist	Participated as Panelist in Panel Discussion on "Electrical Mobility: Optimizing EV Charging Infrastructure"	CSIR-CRRI	September 01, 2023
	Participated as Panelist in Panel Discussion: Technological Abatement, Recovery and Use	IIT Delhi	September 27, 2023

	Opportunities available for the country for Methane and Non-CO2 emissions reduction from the sector in the Brainstorming Session: Transformative Transport Non-CO_2 Emissions and Climate Change		

Participation in Training Programs/ Short Term Courses (Outside CRRI)

Participation in Training Programs/ Short Term Courses (Outside CRRI)

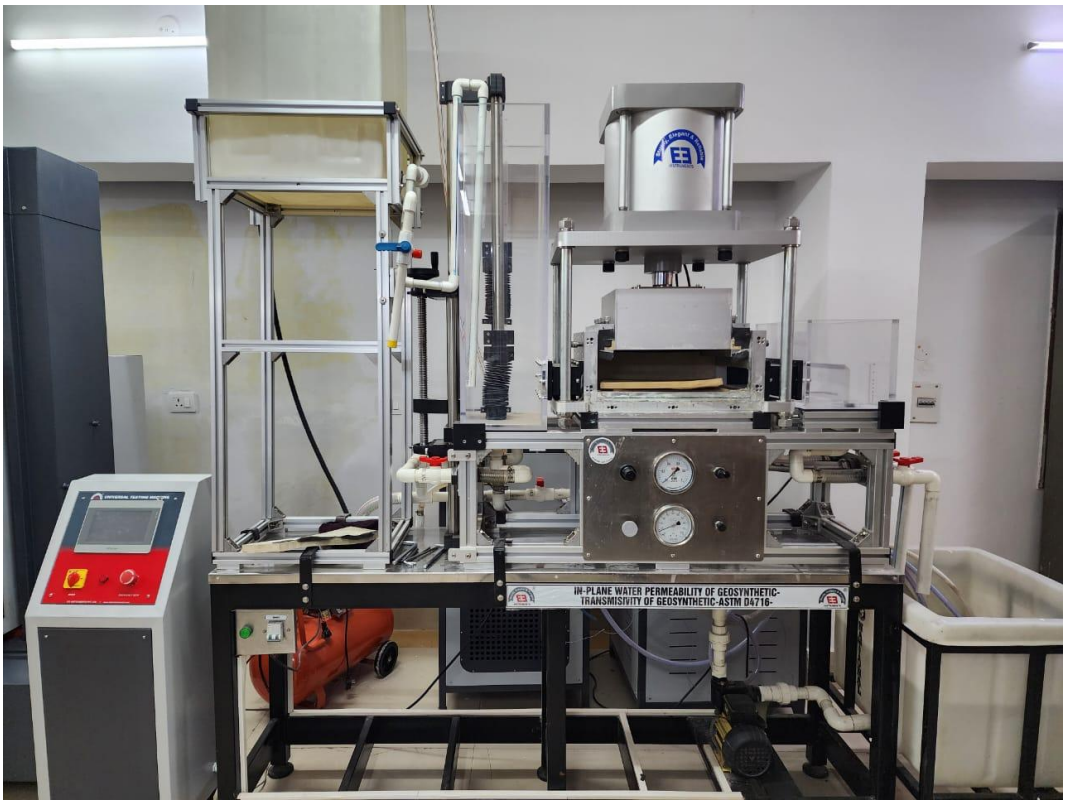
Name & Designation of Staff	Training/Course Name	Venue	Date
Dr. Aakash Gupta & Dr. Deepa S, Scientist	Induction program for newly recruited scientists	HRDC, Ghaziabad	March 4-13, 2023
Dr. Aakash Gupta	Energy Literacy Course	Online Course, IIT Bombay	August 2-5, 2023
Dr. Aakash Gupta & Sachin Gowda M K, Scientist	MATLAB training organized by SIAS research forum	Online Course	October 07-17, 2023
Sachin Gowda M K, Scientist	Fuzzy logic & Civil Engineering Applications	RASTA- Center for Road Technology, Bengaluru.	April 25-26, 2023
Dr Naveet Kaur (Sr Scientist)	Attended 46th induction program for newly recruited scientists, inaugurated by the Honourable Minister Dr. Jitender Goyal and Director General DR N Kalaiselvi,	HRDC, Ghaziabad	May 30-June 8, 2023
	Attended conference on "Drones and Robotics: Applications in Infrastructure"	Le Meredian, New Delhi`	June 22-23, 2023
	Attended 225th Mid Term Council Meeting	Chattisgarh	July 7-8, 2023
	Attended Seminar on ""Fosroc Constructive Solutions for concrete"	Hyatt Centric Grand Ball	November 21-22, 2023
	Attended 82nd IRC Annual meet	Gandhinagar, Gujarat	December 1-5, 2023
	Attended International Conference on Condition Assessment Rehabilitation and Retrofitting of Structures (CARRS-2023)	IIT Hyderabad	December 11-13, 2023
Mariya Dayana P J	Programming and Data Science	IITM Online	2023-2024

New Facilities / Equipment Procured / Developed

New Facilities / Equipment Procured / Developed

Name of the Division	Name of the Facility / Equipment
Pavement Evaluation Division	Theoretical Maximum Specific Gravity Apparatus 
	Mechanical Sieve Shaker 

	Binder Recovery Apparatus (Abson Method) 
	Bolero car for Pavement Evaluation Survey 

Geotechnical Engineering Division	Apparent Opening size testing device for geosynthetics
	In-Plane Water Permeability of Geosynthetic-Transmittivity of Geosynthetics 
	Universal Testing Machine (100 kN) for geosynthetics testing 

	Universal Testing Machine (50 kN) for tensile creep testing of geosynthetics with temperature chamber 
	Origin Pro v2023b Software
	Acrylic tanks with stand and drainage arrangement for soil testing
	Thickness gauge for geosynthetics
	ZW CAD Software
Rigid Pavement Division	3000 kN Comporession Testing Machine Supplier- HEICO Pvt. Ltd., New Delhi
Bridges and Structures Division	Vibro-Integrity Sensing Device (VInSD)
	UTM 3000 kN
	Servo Controlled CTM 5000 kN

	Development of Aggregate Indentation Test facility to perform the Aggregate Indentation test at different temperature i.e. 40, 80 & 125 °C according to BD47/99. 
	Development of Crack Bridging Test Equipment to perform the Crack Bridging Test according to ASTM C1305-2016. 
	Design and Development of Shear Bond Strength Test Fixture to evaluate the bond strength between the substrate, membrane and bituminous Wear Coat according to BD47/99.
	Design and Development of Tensile Bond Strength Fixture to evaluate the bond strength between the substrate and the membrane and between the substrate, membrane and bituminous Wear Coat according to BD47/99.

	
	Creation of test facility to see the effect temperature @160°C on the waterproofing membrane to simulate the effect of hot bituminous mix.
	To evaluate the other properties of the waterproofing membrane such as Tensile Strength, Tear Strength, Elongation at break, Water absorption, Chloride Penetration Test etc.

Thesis / Dissertation Supervision

Thesis / Dissertation Supervision

Ph.D. SUPERVISION

S.No.	Names of Student	Institute	Title of Project/Thesis	Supervisors
	In Progress as on April 2023			
1	Asif Hussain	DTU	Sustainable Transportation System	Dr Rajeev Mishra and Dr Ravindra Kumar
2.	Ms T. Lakshmi	AcSIR-CRRI	Development of Self Healing and Cleaning Materials for Sustainable Pavement	Dr.Rina Singh
3.	Ms Chhaya Sharma	Amity Institute of Applied Science, Amity University	Study of generation and variation of localized surface Plasmon resonance under a polarized beam	Dr.Jyoti Katyal and Dr Rina Singh
4.	Mr Summit Faujdar	Amity Institute of Applied Science, Amity University	Study of Plasmonic properties of different nanomaterials for energy efficient devices	Dr. Jyoti Katyal and Dr Rina Singh
5.	Mr. Bhavesh Jain	Centre of Transportation System (CTRANS), CED, IIT, Roorkee, Uttarakhand,	Development of Asset Management System for the Road Network of a Smart City	Prof. (Dr.) Manoranjan Parida, Dr. Devesh Tiwari and Dr. Ramesh Anbanandam, IIT Roorkee
6.	Ms. Kavya G M	AcSIR-CRRI	Correlation between Binder and Mix Properties for RAP with Rejuvenators	Dr. Aakash Gupta and Dr. Deepa S
7.	Gaurav Verma	AcSIR-CRRI	Development of low cost natural fibre based composite material for bridge construction	Dr. Rajeev Goel Dr. Naveet Kaur
8.	Mr. Kumar Shashi Bhushan	Delhi Technological University, Delhi (DTU)	Study of Nature of Ground Waves and Protection of Civil Engineering Structures by Passive Isolation	Dr. Rajeev Goel and Prof. AK Sahu, CED, DTU
9.	Mrs. Neha	NERIST, Arunachal Pradesh	Construction and Demolition Waste – A viable source of coarse aggregates for Sustainability	Dr. Rajeev Goel and Dr. Sudisht Mishra, NERIST, Arunachal Pradesh
10.	Mr. Neeraj Jain	AcSIR-CRRI	Design & Development of Multi-layered Bridge Systems	Dr. Rajeev Goel
11.	Kamal Dhiman	Thapar University, Patiala	Investigating the strength gain of self-healing concrete using piezoelectric material	Dr. Naveet Kaur and Dr. Shweta Goyal, Thapar University
12.	Mr. Yatin Chaudhary	AcSIR-CRRI	Estimation of Driver Fatigue on Expressways	Dr. A. Mohan Rao

13.	Mr. Priyadarshan Singh	AcSIR-CRRI	Evaluation of Road Geometry on Driver Behavior	Dr. A. Mohan Rao
14.	Syeda Sabina Yashmin	AcSIR-CRRI	Proposed Title - Dynamic Characterisation of cement stabilised red mud for subgrade, sub-base and embankment layer of road construction.	Dr. A K Sinha
15.	Harisbabu Jullu	IIT Roorkee	Use of Reclaimed Water in Road Construction	Dr Nikhil Saboo, IIT Roorkee and Dr Siksha Swaroopa Kar
16.	Rongali Umadevi	AcSIR-CRRI	Performance Evaluation of Reflection cracking resistance of the bituminous concrete mixes	Dr. G Bharath, andProf. Satish Chandra, IIT Roorkee
17.	Vijay Kanaujia	AcSIR-CRRI	Evaluation of Geosynthetic reinforced Pavement	Dr. G Bharath
18.	Sreenitya Singamsetty	IIT Delhi	Non-rectilinear configuration of piezo sensors for structural health monitoring and energy harvesting	Dr. Naveet Kaur and Prof. Suresh Bhalla, IIT Delhi
19.	Gaurav Chauhan	AcSIR-CRRI	Development of Private and Public Trip Generation Models	Dr.Ch. Ravi Sekhar and Dr. S. Padma
20.	Aleti Upendra Kumar	AcSIR-CRRI	Trip generation modelling for freight transportation system	Dr.Ch. Ravi Sekhar and Dr. K. Ravinder
21.	Mr. Sivam Singh Chauhan	IIT Jammu	Analysing Two Wheeler Rider Behaviour	Dr. Ankit Kathuria, IIT Roorkee and Dr.Ch. Ravi Sekhar
22.	Mr. Ashwini Gupta	AcSIR-CRRI	Methodology to Estimate the Optimum Transport Sustainability Index and values of most suitable indicators for a city utilising an Optimization technique	Dr. Errampalli Madhu
23.	Mr. Saurabh Kumar	IIT Roorkee	Revolutionizing Urban Mobility- A study on E moped	Dr. H.K. Suman, Prof. B.R. Gurjar and Dr.Ch. Ravi Sekhar
24.	Ms. Shamsul Bashir	AcSIR-CRRI	Estimation and control of Structural vibration in tunnel for high speed railway	Dr. Nasim Akhtar
25.	Mr. Abhijit Kumar	NIT Surathkal		Parvathi G. S.
26.	Mr. Alok Rathore	AcSIR-CRRI	Resilience based Assessment and Effect of Retrofitting for Bridges	Dr. Rajeev Goel and Dr. Rajeev K. Garg
27.	Gaurav Verma	AcSIR-CRRI	Development of low cost natural fibre based composite material for bridge construction	Dr. Naveet Kaur and Dr. Rajeev Goel
28.	Ms. Goldi Gupta	AcSIR-CRRI	Corrosion Assessment in real life field conditions	Dr Naveet Kaur and Dr.Shweta Goel
29.	Mr. Naveen Kumar	Development of Impact Echo test integrated with customized drone	AcSIR-CRRI	Dr Naveet Kaur

30.	Mr. Mukesh Vashan	Analysis of Bridges under Earthquake	AcSIR-CRRI	Dr Naveet Kaur and Dr Rajeev Goel
31.	Dipak Basumatari	Design and Construction of Engineered Landfill with Geotechnical Aspect for Small Community	AcSIR-CRRI	Dr. Sanjay Deori and Dr. A K Sinha

M. Tech. Dissertations (Completed)

Sl.No.	Name of the Students	College/University	Title of the Project/Thesis	Supervisors
1.	Mr. Aftab Sajidbhai Vahora	Maharaja Sayajirao University of Baroda	Study a Heavy Vehicle Driver's Vision Impact on Road Crashes	Dr. A. Mohan Rao
2.	Mr. Ahem Kumar	Central University of Jharkhand	Characterization of Water - Repellent Steel Slag Mixes Using Silane Nanomaterials	Sh. Satish Pandey
3.	Mr. Ankit Mishra	National Institute of Technology, Kurukshetra	Non-Destructive Techniques for Quality Assessment of Cement-Stabilized Flexible Pavement	Dr. Vasant G. Havanagi
4.	Mr. Anurag K T	Cochin University of Science and Technology, Kochi, Kerala	Analysis of Deep Cut Slope for Railway Project in Haryana Using Geotechnical Software	Dr. P.S. Prasad
5.	Mr. Bharat Bangar	Shri Govindram Seksaria Institute of Technology and Science, Indore, MP	Loss Estimation of Indore Metro Piers Due to Seismic Forces	Dr. Naveet Kaur
6.	Mr. Chanchal Pandey	National Institute of Technology, Karnataka	Analysing the Impact of Vehicle Breakdown on Traffic Performance: a Comprehensive Analysis in PTV VISSIM	Dr. Farahat Azad
7.	Mr. Dharmendra Kumar Mahto	Central University of Jharkhand	Use of Macro Synthetic Fibre in Concrete and Overlay Pavement	Dr. Rakesh Kumar
8.	Mr. Faraz Khan	National Institute of Technology, Kurukshetra	Evaluation of Grey Spot Model using AI to Enhance Road Safety	Dr. S. Velmurugan
9.	Mr. Himanshu Joshi	National Institute of Technology, Kurukshetra	A New Approach for Pavement Maintenance Management System	Dr. Pradeep Kumar
10.	Mr. Itraju Prasad	Rajiv Gandhi University of Knowledge Technologies, Nuzvid	A Pavement Maintenance and Management System for rural Roads	Dr. Pradeep Kumar
11.	Mr. Jyothish Prem P K	Cochin University of Science and Technology, Kochi	Geotechnical Characterisation and Stability Analysis of Zinc Tailing Waste Material Embankment	Dr. Anil Kumar Sinha
12.	Mr. Kallypalli Sai Madhu	Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat	A study on the Use of Rice Husk Ash as Filler in Bituminous Concrete	Dr. Deepa S

13.	Mr. Kunche Sai Aravind	Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat	An Investigation to Characterize the Effectiveness of Rejuvenator on RAP Material from Various Sources Using Simple Test Protocols	Dr. Deepa S
14.	Mr. M G Prajwal	RASTA- Centre for Road Technology	Development of Correlation Between Indirect Tensile Strength and Resilient Modulus for Bituminous Concrete	Dr. Aakash Gupta
15.	Mr. Md. Samiullah	National Institute of Technology, Kurukshetra	Trip Generation Model for Public Transport	Dr. Ch. Ravi Sekhar
16.	Mr. Md. Shaik Shakee Ur Rahaman	Rajiv Gandhi University of Knowledge Technologies, Nuzvid, Andhra Pradesh	A Study on the Investigation of Cement Asphalt Mortar for its Applications as a Damping Material for Indian Conditions	Dr. Sarfraz Ahmad
17.	Mr. Mohd. Imran Khan	National Institute of Technology, Kurukshetra	Performance Evaluation of Electric Arc furnace Steel Slag with GGBFS in Pavement Quality Concrete	Sh. Dinesh Ganvir
18.	Ms. Mohini Lashkari	Shri Govindram Seksaria Institute of Technology and Science, Indore, MP	Design and Analysis of Urban Intersections Under Heterogeneous Traffic Conditions	Sh. Subhash Chand
19.	Mr. Nandan C S	RASTA- Centre for Road Technology	Data-Driven Approaches for Predicting Pavement Condition and Deflection Bowl Parameters	Sh. Sachin Gowda M K
20.	Mr. Niazuddin	Central University of Jharkhand	Evaluating the Current and Anticipated Level of Service Using Growth Rate Method Specified in IRC for the City of Imphal	Dr. S. Padma
21.	Mr. Niranjan A. S.	RASTA- Centre for Road Technology	Chemical and Rheological Characterization of RAP and RAP-Rejuvenated Bitumen Binder	Sh. Sachin Gowda M K
22.	Mr. Nurul Ain Ansari	Geeta Engineering College, Panipat	Development of Road Quality and Road Safety Indices Utilizing CAS-Based Traffic Assests and Pavement Characteristics	Dr. A. Mohan Rao
23.	Mr. Pankaj Bhatt	Chandigarh University Mohali,(Punjab)	Strength Deformation Behaviour of Zinc Tailing for Embankment Construction	Dr. Anil Kumar Shukla
24.	Mr. Parthav Parikh	Knowledge Corridor, Raisan Village, PDPU Rd, Gandinagar, Gujarat 382007	Study Related to Driver Decision Making Capacity as an Indicator on Safe Driving Performance on Road	Dr. Neelima Chakrabarty
25.	Mr. Piyoush Punia	Deenbandhu Chhotu Ram University of Science and Technology, Murthal	Association of Drive Gaze Behaviour With Driving Behaviour at Toll Plaza	Dr. A. Mohan Rao
26.	Mr. Pramod Kumar	National Institute of Technology, Kurukshetra	To Study the Self Healing Behaviour of Asphalt Mixes	Mr. Sachin Gowda M K
27.	Ms. Prapti Dharmesh Kumar Lalpuriya	Maharaja Sayajirao University of Baroda	Application of Artificial Intelligence in Driver Monitoring System	Dr. A. Mohan Rao
28.	Mr. Prathuri Sumanth	Rajiv Gandhi University of Knowledge	Quaternary Blending of Silica Fume, GGBFS and Fly Ash as a	Mr. Romeil Sagwal

		Technologies, Nuzvid, Andhra Pradesh	Partial Replacement of Cement in Paving Grade Concrete	
29.	Mr. Pulkit Jain	Maulana Azad National Institute of Technology	Evaluation of Health Status of Bridge Through Various Performance Parameters	Sh. G. K. Sahu
30.	Mr. Saurabh Kumar Tiwari	National Institute of Technology, Kurukshetra	Tri-biological approach to Demonstrate the Workability of Warm Mix Asphalt	Dr. Ambika Behl
31.	Ms. Shailja	National Institute of Technology, Kurukshetra	Effect of the Addition of Lake Asphalt on the Properties of Conventional Blinders	Dr. Ambika Behl
32.	Mr. Shashi Raj	Central University of Jharkhand	Balanced Mix Design for Bituminous Mixes Using RAP.	Dr. Abhishek Mittal
33.	Mr. Shivam Kumar	National Institute of Technology, Kurukshetra	Study on the Use of Natural Bio-Oil as a Bitumen Modifier	Dr. G. Bharath
34.	Mr. Singamsetti Bobby Satish	Rajiv Gandhi University of Knowledge Technologies, Nuzvid, Andhra Pradesh	Effect of different supplementary cementitious materials on the properties of previous concrete	Dr. Yatin Chaudhary
35.	Mr. Somesh Kumar Nigam	National Institute of Technology, Kurukshetra	Characterization of Cement Stabilized Red Mud Waste Material For Subbase and Base Construction	Dr. Anil Kumar Sinha
36.	Mr. Sourabh Upadhayay	National Institute of Technology, Kurukshetra	Establishment Based Urban Freight Trip Generation	Dr. Ch. Ravi Sekhar
37.	Ms. Srishtri Saini	Central University of Jharkhand	AI-Enable Drowsiness Detection for Drivers Safety : Leveraging Eye Aspect Enable Drowsiness Detection for Drivers Safety : Leveraging Eye Aspect Ratio and Mouth Opening Ratio	Dr. A. Mohan Rao
38.	Mr. Sundar Gupta	National Institute of Technology, Karnataka	Identification and Rectification of Black Spots for Interurban Highways	Dr. S. Velmurugan
39.	Mr. Sunny Kumar	Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat	A Study on Healing Potential of Asphalt Binders	Dr. Deepa S
40.	Mr. Uday Shankar Mandal	Central University of Jharkhand	Transport Sustainability Index and its Optimization for Urban Area	Dr. E. Madhu
41.	Ms. Vandanapu Naga Lakshmi	Rajiv Gandhi University of Knowledge Technologies, Nuzvid, Andhra Pradesh	Comparative Assessment of Different Stabilizing Agents for Rehabilitation Through FDR Technique	Dr. Ashish Walia
42.	Mr. Vivek Saraswat	National Institute of Technology, Kurukshetra	Effect of Additives on the Performance of Cold Recycle Mix	Dr. Ambika Behl

M. Tech. Summer Internship (Completed)

Sl.No.	Name of the Students	College/University	Title of the Project/Thesis	Supervisors
1.	Ms. Aiswarya LM	National Institute of Technology Calicut	Influence of Different Layers in Flexible Pavement Design by Using IIT Pave	Dr. Rajiv Kumar
2.	Mr. Anshul Singh	Indian Institute of Technology Kharagpur	Design of Major Agriculture Market Under The Integrated Transport Network Development Plan of Meghalya	Dr. Ravindra Kumar
3.	Mr. Aryan Kumar Singh	Knowledge Corridor, Raisan Village, PDPU Road, Gandhinagar, Gujarat	Studying Trip Characteristics of Private Vehicles	Dr. Ch. Ravi Sekhar
4.	Mr. Ashish Kumar	National Institute of Technology Karnataka, Srinivasnagar PO, Surathkal, Mangalore	Design of Regional Hub Agriculture Market Under Integrated Transport Network Development Plan ITNDP of Meghalaya	Dr. Ravindra Kumar
5.	Mr. Ashutosh Chauhan	Amity University, Noida	Self Healing Materials and its Applications	Dr. Rina Singh
6.	Mr. Ashutosh Kumar	National Institute of Technology Calicut	Impact of Geosynthetics on Reflective Cracking Performance Life of Asphalt Concrete Overlays	Dr. G. Bharath
7.	Mr. Aswathy S R	College of Engineering, Trivandrum, Engineering College P.O. Thiruvananthapuram, Kerala	Study on the Effect of Rejuvenator on Recycled Asphalt Pavement Using Fragmentation Test	Dr. Deepa S
8.	Mr. Avinish Kumar	National Institute of Technology Karnataka	Development of Trip Generation Model for Vijayawada Using Cross Classification	Dr. S. Padma
9.	Mr. Bittu Singha	University of Madras, Chennai	Development of Visualisation System for Traffic Flow Characteristics in New Delhi	Dr. Errampalli Madhu
10.	Mr. Gaurav Singh	Indian Institute of Technology Kharagpur,	Optimising the Development of Electric Vehicle Charging Stations Using Pervasive Mobility Data	Dr. Ch. Ravi Sekhar
11.	Mr. Gaurav Verma	Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Sonipat	Trip Generation Model for Private Transport	Dr. Ch. Ravi Sekhar
12.	Ms. Gayathri B G	College of Engineering, Trivandrum, Engineering College P.O. Thiruvananthapuram,Kerala,	Finite Element Modelling of Ground Improvement Measures for the Construction of Multi Modal Logistics Park Over Soft Subsoil	Smt. Mariya Dayana P j
13.	Mr. Gore Naoroibam	University of Madras, Gandhi Mandapam Rd,	Assessment of Person Trip for Metro Using Geospatial	Dr. S. Padma

		Anna University, Kotturpuram, Chennai	Techniques and Regression Analysis for the City of Nagpur	
14.	Ms. Harshitha	National Institute of Technology Calicut	Slope Stability Mitigation Methods Using GEO5 Software	Dr. P.S. Prasad
15.	Mr. Jitendra Singh	National Institute of Technology, Tiruchirappalli	User Perception on Sustainability Parameters In Public Transport	Dr. Errampalli Madhu
16.	Mr. Kartik Shukla	Shri G.S. Institute of Technology and Science, Indore	Laboratory Assessment of Full Depth Reclamation Technique Using Various Stabilizers	Sh. Manoj Kumar Shukla
17.	Mr. Koaushik Paul	National Institute of Technology Karnataka, Srinivasnagar PO, Surathkal, Mangalore	Impact of Traffic Composition on Traffic Performance: a Comprehensive Analysis	Ms. Farhat Azad
18.	Mr. Manish K S	National Institute of Technology Calicut	Monitoring Fatigue and Drowsiness using Facial Landmarks and Machine Learning	Dr. A. Mohan Rao
19.	Ms. Nisna Nizar	College of Engineering, Trivandrum, Engineering College P.O. Thiruvananthapuram, Kerala	3 Dimensional Finite Element Analysis of Rainfall Induced Hill Slope Failure at Sillewani Ghat, Chhindwara, India	Smt. Mariya Dayana P j
20.	Mr. Nitish Kumar Khalmania	National Institute of Technology Karnataka, Srinivasnagar PO, Surathkal, Mangalore	Development of Trip Generation Model for Hyderabad Using Cross Classification and Regression Approach	Dr. S. Padma
21.	Mr. Parthav Parikh	Knowledge Corridor, Raisan Village, PDPU Rd, Gandinagar, Gujarat	Study Related to Driver Decision Making capacity as an Indicator on Safe Driving Performance on Road	Dr Neelima Chakrabarty
22.	Ms. Priyanka	Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Sonipat, Haryana	Road Safety Audit	Dr. K. Ravinder
23.	Mr. Satyam Kumar	Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat	Testing And Interpretation of the Test Results of Bitumen from Different Sources and RAP Material to Ensure its Suitability	Dr. Deepa S
24.	Mr. Shubham Gupta	Shri G.S. Institute of Technology and Science, Indore	Pavement Design and Rehabilitation of Rural Roads Using the FDR Technique	Sh. Manoj Kumar Shukla
25.	Mr. Siddharther Sonkar Gosh	Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat	Testing and Interpretation of the Test Results Of Bitumen from Different Sources and RAP Material to Ensure its Suitability	Dr. Pradeep Kumar
26.	Mr. Sumon Bakshi	National Institute of Technology Calicut	Comparative Rheological Property Test Between Bio Binder in DSR	Dr. G. Bharath
27.	Mr. Vijay singh	National Institute of Technology, Tiruchirappalli	Assessment of Passenger Occupancy Characteristics in Urban Area	Dr. Errampalli Madhu
28.	Mr. Vishnu K	College of Engineering, Trivandrum, Engineering College P.O.	Comprehensive Review on Structural Evaluation of Flexible Pavements Using Falling Weight Deflectometer, Network Survey	Dr. Vidhi Vyas

		Thiruvananthapuram, Kerala	Vehicle and Ground Penetrating Radar	
29.	Mr. Yenugandula Shashank	Birla Institute of Technology and Science, Pilani, Hyderabad	Analysis And Planning of Accessibility of Tourism in the State of Meghalaya Using Geography Information System(GIS) Software	Dr. Ravindra Kumar

B. Tech. Dissertation (Completed)

Sl.No.	Name of the Students	College/University	Title of the Project/Thesis	Supervisors
1.	Mr. Aditya Gola	GB Pant Government Engineering College, Okhla Phase-III, New Delhi	CSIR-CRRI Experimental Analysis of Two Wheeler Headlight Illuminance Data From the of Traffic Safety	Dr. Vinod Karar
2.	Mr. Anurag Shriwas	Madhav Institute of Technology and Science, Gwalior	Speed and Delay Characteristics of Elected Corridors of Delhi	Dr. Errampalli Madhu
3.	Mr. Arpit Ambastha	National Institute of Technology Calicut, Kerala	Assessment of Overall of Quality of Concrte Using NDT Technique.	Sh. S.S Gaharwal
4.	Mr. Ayush Singh	National Institute of Technology Calicut, Kerala	Applicability of Predictive Models In Estimation in of Mechanical Properties of Recycled Aggregate Concrete.	Sh. S.S Gaharwar
5.	Ms. Gopalapurapu Kavya Sri	Shri Vishnu Engineering College for Women (A), Bhimavaram, Andhra Pradesh	Enhancing Pavement Condition Assessment Through Visual Surveys: Introducing the M5 Prime Model Tree Algorithm for Accurate Pavement Condition Index(PCI)	Sh. Sachin Gowda M K
6.	Ms. K. Naga Suneetha	Shri Vishnu Engineering College for Women (A), Bhimavaram, Andhra Pradesh	Optimizing Pavement Condition Index Prediction Using PSO LSTM Algorithm a Data Driven Approach for Road Maintenance	Sh. Sachin Gowda M K
7.	Ms. Lipi Chand	Madhav Institute of Technology and Science, Gwalior	Traffic Volume and Spot Speed on National Highways.	Dr. Kayitha Ravinder
8.	Mr. Manas Sooden	BMS College of Engineering, Bangalore	A Lab Study on Lignin-Modified Bitumen	Dr. Ambika Behl
9.	Mr. Rishikesh Dirwal	Madhav Institute of Technology and Science, Gwalior	Traffic Data Collection and Translation on Simulation Environment (VISSIM)	Smt. Farhat Azad
10.	Mr. Shiv Kumar	Madhav Institute of Technology And Science, Gwalior	Queue Length Characteristic of Selected Intersections of Delhi.	Dr. Errampalli Madhu

B. Tech. Summer Internship (Completed)

Sl.No.	Name of the Students	College/University	Title of the Project/Thesis	Supervisors
1.	Mr. Amaan Ansari	Amity School of Engineering & Technology(Aset) Amity University, Noida, Uttar Pradesh	Design and Analysis of Gradually Change in Bituminous Concrete.	Sh. Gajendra Kumar
2.	Mr. Aaryan Vijay Kumar	Delhi Technological University, New Delhi	Are Electric Vehicle Efficient In Reducing Air Pollution a New Delhi Based Sensitivity Analysis	Dr. Mukti Advani
3.	Mr. Abhyudai	Birla Institute of Technology and Science, Pilani, Rajasthan	Electronic Devices in Mu Meter and GPR.	Dr. Pradeep Kumar
4.	Mr. Akshat Kumar	Birla Institute of Technology and Science, Pilani, Rajasthan	Development of a Driving Simulator for Training Purposes.	Dr. Vinod Karar
5.	Mr. Akshit Saxena	Birla Institute of Technology and Science, Pilani, Rajasthan	Bump Integrator	Mr. P.C Meshram
6.	Ms. Alamadri Sushmasree	S R Engineering College, Warangal	Assessment of Engineered Nono-Particles in Traffic Region of Delhi	Dr. Rina Singh
7.	Mr. Amrit Bahl	Birla Institute of Technology and Science, Pilani, Rajasthan	Stabilization of Black Cotton Soil Using Alkali bypass dust.	Sh.Vijai Kumar Kanaujia
8.	Mr. Aniket kirar	Madhav Institute of Technology and Science, Gwalior	Assessment Of Ultrafine Particles in The Traffic Region of Delhi.	Dr. Rina Singh
9.	Mr. Anirudh Dubey	Birla Institute of Technology and Science, Pilani, Rajasthan	Developing Machine Learning Models for the Calculation of the Pavement Layer Moduli	Dr. Abhishek Mittal
10.	Mr. Anupam Sachan	Birla Institute of Technology and Science, Pilani, Rajasthan	Estimation of Driver Fatigue From Driver Pose	Dr. A. Mohan Rao
11.	Mr. Arjun Srivastava	Birla Institute of Technology and Science, Pilani, Rajasthan	Inventory Management	Mr. Vivek Dubey
12.	Mr. Ashmit Tripathi	Madhav Institute of Technology and Science, Gwalior	Safety Rating of Indian Roads.	Dr. A. Mohan Rao
13.	Mr. Chalumuri Satya Savith	Bennett University, Greater Noida, Uttar Pradesh	Real-Time Safety Boost YOLOv8 Helmet Detection	Dr. S. Velmurugan
14.	Ms. Chhaya Patel	Shri Shankaracharya Technical Campus, Durg Bhilai, Chhattisgarh	Analysis of Total Registered Vehicle In Cities of India	Dr.Mukti Adwani
15.	Ms. Chitranshi Shrivastava	Madhav Institute of Technology and Science, Gwalior	Road Geometrics and Safety Standards for Indian Roads	Dr. A. Mohan Rao

16.	Mr. Darshit Agrawal	Birla Institute of Technology and Science, Pilani, Rajasthan	Additive in Bitumen.	Dr. Abhishek Mittal
17.	Mr. Deepak Kumar	Birla Institute of Technology and Science, Pilani, Rajasthan	Particulate matter Pm Pollution Sources Factors Affecting concentration Reduction Strategies Global and Indian Governments Initiative Challenges And Future Recommendations.	Dr.Rina singh
18.	Mr. Deepanshu Choudhary	Birla Institute of Technology and Science, Pilani, Rajasthan	State of Art of Use of Drone Technology in Structural Health Monitoring of Bridges	Dr. Naveet kaur
19.	Mr. Devesh Dhyani	Birla Institute of Technology and Science, Pilani, Hyderabad Campus	Studying and Handling Practical Problems Networking Faced at CRRI.	Mr. Vivek Dubey
20.	Mr. Harsh Agarwal	Birla Institute of Technology and Science, Pilani, Rajasthan	Analysis of Entrance and Observation Angles of Traffic Sign on Indian Roads	Dr. A. Mohan Rao
21.	Ms. Harshita	Birla Institute of Technology and Science, Pilani, Rajasthan	Use of processed BOF Steel Slag Aggregates in Granular Layers.	Satish Pandey
22.	Mr. Janmayjay Tomar	Birla Institute of Technology and Science, Pilani, Rajasthan	Identification of Driver Fatigue Through Visual Observation Using Artificial Intelligence and Machine Learning	Dr. A. Mohan Rao
23.	Mr. Jawed Anwar Ansari	Jamia Millia Islamia, New Delhi	Assessment of Driver Fatigue on Lane Changing Behavior on Indian Roads	Dr. A. Mohan Rao
24.	Ms. Jaya Sahu	Shri Shankaracharya Technical Campus, Durg Bhilai, Chhattisgarh	Digitization of Data Pdf to CSV In QGIS for Integrated Transport Network Development Plan Meghalaya Phase-3	Dr. Ravindra Kumar
25.	Mr. Kashish Kumar	Guru Jambheshwar University, Hissar, Haryana	Design of Regional Hub Agriculture Market under Integrated Transport Network Development plan (ITNDP) of Meghalaya.	Dr. Ravindra Kumar
26.	Ms. Kaushikee Biswas	Indian Institute of Technology Kharagpur	Examining Speed Behavior in response to Dms Alerts on Inter Urban highways.	Dr. Ch. Ravi Sekhar
27.	Ms. Khushi Gupta	Birla Institute of Technology and Science, Pilani, Rajasthan	Building a Comprehensive Dataset and Developing a Traffic Sign Recognition Model.	Mr. Vivek Dubey
28.	Mr. Kshitij Garg	Birla Institute of Technology and Science, Pilani, Rajasthan	Effect of Accidents on Different Intersections , Moving Traffic and Pollution Effects	Dr. Mukti Advani
29.	Mr. Kshitish Kumar	Birla Institute of Technology and Science, Pilani, Rajasthan	Management and segregation of Data of Interns Working in CRRI.	Ms. Kamla Masih
30.	Ms. Maahi Kaur Disanj	Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur	Microsurfacing	Dr. Rajiv Kumar

31.	Mr. Mahataabben Sajidbhai Vahora	Faculty of Technology, Dhramsingh Desai University, Nadiad, Gujarat	Detection of Fatigue by Monitoring Unbalanced Head Postures of Drivers Using Camera	Dr. Vinod Karar
32.	Ms. Mauli Chaturvedi	Birla Institute of Technology and Science, Pilani, Rajasthan	Development of a Driving Simulator for Training Purposes.	Dr. Vinod Karar
33.	Mr. Mohd Asad Naqvi	Jamia Millia Islamia, New Delhi	Soil Stability	Dr. Kanwar Singh
34.	Mr. Mohd Ayan	Jamia Millia Islamia, New Delhi	Soil Nailing	Dr. Kanwar Singh
35.	Mr. Munesh Kumar	Jamia Millia Islamia, New Delhi	Study of Goods Traffic Flow Characteristic in an Industrial Area.	Sh. Subhash Chand
36.	Mr. Nikhil Kumar	Accurate Institute of Management & Technology, Knowledge Park, Greater Noida(U.P)	Web Page Development (Inventory management)	Shri S. Mariappan
37.	Mr. Ojasva Chandra	Birla Institute of Technology and Science, Pilani, Rajasthan	Effects of Accidents on Different Intersections Moving Traffic and Pollution Effects.	Dr. Mukti Advani
38.	Mr. Piyush Awasthi	Birla Institute of Technology and Science, Pilani, Rajasthan	Virtual lab of Civil Engineering Experiment	Dr. Siksha Swaroopa Kar.
39.	Ms. Pragati Raj Asthana	Birla Institute of Technology and Science, Pilani, Rajasthan	Inventory Management	Mr. Vivek Dubey.
40.	Mr. Prankul Agarwal	Birla Institute of Technology and Science, Pilani, Rajasthan	Graphical User Interface (GUI)	Dr. Lokeshwor Singh
41.	Mr. Prasoon Narayan Singh	Birla Institute of Technology and Science, Pilani, Rajasthan	Study on Rigid Pavements and the Tests Used to Measure the strengths of Concrete Materials Used in Making Rigid Pavements.	Dr. Rakesh Kumar
42.	Mr. Priyanshu Debnath	Birla Institute of Technology and Science, Pilani, Rajasthan	Study on Rigid Pavements and the Tests Used to Measure the Strengths of Concrete Materials Used in Making Rigid Pavements.	Dr. Rakesh Kumar
43.	Mr. Priyesh Tongaria	Birla Institute of Technology and Science, Pilani, Rajasthan	Defining the Resilient Modules of Bituminous Mixes Using its Test By Application of Tool.	Sh. S. Mariappan
44.	Mr. Pulkit Vijay	Birla Institute of Technology and Science, Pilani, Rajasthan	Stabilization if Black Cotton Soil using Soil Alkali Bypass Dust.	Sh. Vijai Kumar Kanauja
45.	Mr. Raghav Sigtia	Birla Institute of Technology and Science, Pilani, Rajasthan	Electronic Devices in Mu Meter And GPR	Dr. Pradeep Kumar
46.	Mr. Rahul Srivastava	Birla Institute of Technology and Science, Pilani, Rajasthan	Effects of Accidents on Different Intersections Moving Traffic and Pollution Effects.	Dr. Mukti Advani
47.	Mr. Rahul Verma	Birla Institute of Technology and Science, Pilani, Rajasthan	Inventory Management	Mr. Vivek Dubey
48.	Mr. Rakib Nissar	Amity School of Engineering &	Design and Analysis of Gradation Change in Bituminous Concrete.	Sh. Gajendra Kumar

		Technology(Aset) Amity University, Noida, Uttar Pradesh		
49.	Mr. Ridham Mittal	Birla Institute of Technology and Science, Pilani, Rajasthan	Monitoring and Feedback System	Dr. D. Ravindra
50.	Ms. Rishita Gupta	Birla Institute of Technology and Science, Pilani, Rajasthan	Effective Graphic Design and Publicity Strategies.	Dr. Ravindra Kumar
51.	Mr. Rushabh Soni	Birla Institute of Technology and Science, Pilani, Rajasthan	A Data-Driven Approach for Driver Drowsiness Detection and Prediction Using Head Pose Estimation from Webley Eye Tracking System with Abnormal Pose Analysis.	Dr. A. Mohan Rao
52.	Mr. Sahaj Dwivedi	Birla Institute of Technology and Science, Pilani, Rajasthan	Mitigation of Carbon footprints For Road Projects In India.	Sh. Gagandeep Singh
53.	Mr. Saksham Jain	Birla Institute of Technology and Science, Pilani, Rajasthan	Studying and Handling Practical Problems of Networking Faced at CRRI	Sh. Vivek Dubey
54.	Mr. Saksham Singh Chauhan	Madhav Institute of Technology and Science, Gwalior	Design of Agriculture Market in a Minor Hub in Meghalaya.	Dr. Ravindra Kumar
55.	Mr. Sarthak Agarwal	Birla Institute of Technology and Science, Pilani, Rajasthan	Nanoparticles - Plasmonic Nanomaterials and Enhancement of Field.	Dr. Rina Singh
56.	Ms. Sarvani Vadaga	Rajiv Gandhi University of Knowledge Technologies, Nuzivid, Andhra Pradesh	A Laboratory Investigation to Stripping of Aggregates Using Bio-Binder.	Dr. G. Bharath
57.	Mr. Shaik Chand Basha	Rajiv Gandhi University of Knowledge Technologies, RK Valley Campus, Andhra Pradesh	Characteristic Study of Open - Graded Friction Course	Dr. Rajiv Kumar
58.	Mr. Shashank Shikhar	Birla Institute of Technology and Science, Pilani, Rajasthan	Effects of Accidents on Different Intersections Moving Traffic and Pollution Effects.	Dr. Mukti Advani
59.	Mr. Shashi Prakash Singh	Raj Kumar Goel Institute of Technology, Ghaziabad	Design of Rigid Pavement	Dr. Rakesh Kumar
60.	Mr. Shishir Kumar	Birla Institute of Technology and Science, Pilani, Rajasthan	Forming a Markovian Chain for Gaze Location Analysis.	Dr. A Mohan Rao
61.	Mr. Shiv Kumar	Accurate Institute of Management & Technology, Knowledge Park, Greater Noida (U.P)	Endpoint Protection System (Seqrite)	Shri S. Mariappan
62.	Ms. Shivani Soren	Indian Institute of Technology Kharagpur	Travel Cost Analysis of Recreational Site.	Dr. S. padma
63.	Mr. Shourya Pratap Singh Chauhan	Madhav Institute of Technology and Science, Gwalior	Study of Traffic Flow Characteristics on Internal Road Network of an Industrial Plant.	Sh. Subhash Chand

64.	Mr. Shresth Jain	Birla Institute of Technology and Science, Pilani, Rajasthan	Analyzing the Functioning and Mechanism of a Bump Integrator :Implications And Future research Directions	Dr.Pradeep Kumar
65.	Mr. Shubham Patel	Madhav Institute of Technology and Science, Gwalior	Assessment of Pm2.5 and Pm10 in Traffic Region of Delhi.	Dr. Rina Singh
66.	Mr. Shubham pathak	Madhav Institute of Technology and Science, Gwalior	Traffic Volume Survey and Utilisation of QGIS Software.	Dr. Nasim Akthar
67.	Mr. Talha Naushad	Birla Institute of Technology and Science, Pilani, Rajasthan	Utilizing Terahertz Antenna for Pavement Roughness Evaluated with Fifth Wheel Bump Integrator	Sh. P.C Meshram
68.	Mr. Talib Mohammad Rehman	Madhav Institute of Technology and Science, Gwalior	Safety Rating of Indian Roads.	Dr. A. Mohan Rao
69.	Ms. Tanvi	Shri Shankaracharya Technical Campus, Durg Bhilai, Chhattisgarh	Data Collection Complication From Secondary Sources.	Dr. Mukti Advani
70.	Mr. Tushar Batra	Birla Institute of Technology and Science, Pilani, Rajasthan	Analyzing The Functions and Mechanism of a Ground Penetrating Radar Implications and Future Research Directions.	Dr. Pradeep Kumar
71.	Mr. Varun Kumar Meena	Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur	A laboratory Study on Cement Grouted Bituminous Macadam	Dr. Ashish Walia
72.	Mr. Vasant Shanbhag	Birla Institute of Technology and Science, Pilani, Rajasthan	Effect of Geosynthesis on Reduction of Reflection Cracks in Asphalt Overlays	Dr. G. Bharath
73.	Mr. Yash Singh Rajput	Madhav Institute of Technology And Science, Gwalior	Study of Parking Characteristics of Goods and Passenger Vehicle in an Industrial Plant	Sh. Subhash Chand

Visitors to the Institute

Visitors to the Institute

Visitor (name and affiliation)	Purpose	Dates
Prof. P. K. Sikdar, Vice-President, ICT Pvt. Limited, New Delhi	Chairman for the 129th Research Council Meeting of CSIR-CRRI	April 12-13, 2023
Prof. Venkatesh, IIT Madras, Chennai	To interact with the scientists of the Institute	May 18, 2023
Dr. N C Pal, Engineer-In-Chief (Design), Works Department, Govt of Odisha	To discuss the detailed proposal of Condition Assessment of 304 distressed bridges in Odisha	May 18, 2023
Dr. Anbumani Subramanian, iNAI, IIIT Hyderabad	To deliver a lecture on "Road Safety in the World of AI and Large Scale Data"	May 23, 2023.
Dr. Nitish Dogra, Senior Consultant at Taru Leading Edge	To deliver a lecture on “Health Impacts of Traffic”	June 05, 2023
Dr. N. Kalaiselvi, DG, CSIR and Secretary, DSIR, Ministry of Science & Technology, Govt. of India, along with Dr. Prakash Kumar, Director, CSIR-NGRI, Hyderabad, and Dr. N. Anandavalli, Director, CSIR-SERC, Chennai	To discuss possible partnerships/ collaborations between CSIR laboratories and PWD Delhi for addressing the technical requirements of PWD Delhi	July 04, 2023
Dr. V.K. Saraswat, Member NITI Aayog, Govt. of India and Chancellor, Jawaharlal Nehru University	Chief Guest of CSIR-CRRI One Week One Lab Campaign event/ workshop on “Curtain Raiser”	July 16, 2023.
Dr. Jitendra Singh, Hon’ble Minister of State (Independent Charge) in the Ministry of Science & Technology, Govt. of India	Chief Guest of CSIR-CRRI One Week One Lab Campaign event/ workshop on “Student Scientists’ Connect”	July 17, 2023
Shri Faggan Singh Kulaste, Hon’ble Minister of State in the Ministry of Steel, Govt. of India	Chief Guest of CSIR-CRRI One Week One Lab Campaign event/ workshop on “Industry Meet”	July 18, 2023
Sh. Rajashekhar N, IPS, DIG Modernization, Bureau of Police Research & Development (BPR&D), Ministry of Home Affairs, and Ms. Rajni Gandhi, Founder and Secretary of TRAX Road Safety NGO,	Chief Guest and Guest of Honour, respectively, CSIR-CRRI One Week One Lab Campaign event	July 17, 2023
Ms. Ruchika Chaudhary Govil, Add. Secretary, Ministry of Steel, and Shri Mahendra Kumar Gupta (IRPS), Joint Secretary, CSIR	Chief Guest and Guest of Honour, respectively, CSIR-CRRI One Week One Lab Campaign event	July 18, 2023
Shri Chetan Prakash Jain, IPRS, CMD, CEL & JS, Finance (FA), CSIR	Chief Guest of CSIR-CRRI One Week One Lab Campaign event/ workshop on “Young Researchers Conclave”	July 19, 2023
Shri N G Lakshminarayan, Chief (Business Development), NRDC, New Delhi, along with a team from the Federal Ministry of Science, Technology and Innovation, Nigeria	To discuss possible partnerships/ collaborations	July 11, 2023

Prof. (Dr). Sewa Ram, Professor, School of Planning and Architecture, New Delhi	External expert for the divisional display competition organized by the Institute	September 13, 2023
Sh. Sanjay Murthy, IAS, Secretary, Deptt. of Higher Education and Member of CSIR Society, Govt. of India	To interact with the scientists of the Institute	December 22, 2023
Prof. Bidyadhar Subudhi, Director, NIT Warangal	To sign an MoU between CSIR-CRRI and NIT Warangal	February 28, 2023
Dr. Chidambara, Head, Transport Planning, SPA, New Delhi	Chief Guest of the International Women's Day celebration	March 15, 2024
Mr. Richard Yeo, Chief Operative Officer, Operations, NTRO, Australia	To explore the possibility of collaboration between NTRO and CSIR-CRRI	July 26, 2023

Deputation Abroad

Deputation Abroad

S. No.	Name of the Staff & Designation	Visiting Country and Duration	Purpose
1	Prof. Manoranjan Parida, Director	Belarus and Russia (22.05.2023 to 26.05.2023)	To develop and strengthen research and technology collaboration linkages between CSIR and these organizations, as well as other Research and technology organizations of Belarus and Russia
2	Dr. Rajeev Kumar Garg, Chief Scientist	Athens, Greece (12.06.2023 to 15.06.2023)	To present a paper entitled “Geotechnical Considerations and Vibration Response during Piling for Constructing Bridges" at the 9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023) held in Athens, Greece
3	Dr. S. Velmurugan, Chief Scientist	Colombo, Sri Lanka (19.09.2023 to 21.09.2023)	To impart the 5-day training to the senior engineers of Road Development Authority (RDA), Sri Lanka, on a payment basis (about USD 45000) under the project entitled "Customised Training Programme on Highway Development and Management Tool (HDM-4)" between CSIR-CRRI and RDA, Sri Lanka.
4	Dr. Ravindra Kumar, Chief Scientist	United Kingdom (06.03.2024 to 07.03.2024)	To orally present a paper titled "Navigating Green Routes: Transforming Meghalaya's Agriculture through Integrated Transport Infrastructure Planning” at the European Conference on Renewable Energy and Green Chemistry
5	Dr. Pradeep Kumar, Chief Scientist	Colombo, Sri Lanka (18.09.2023 to 25.09.2023)	Coordinator and Faculty for Five Days HDM-4 Training Program from 20.09.2023 to 24.09.2023 for the Ministry of Highways, Road Development Authority, Sri Lanka, at Colombo
6	Sh. Sunil Jain, Chief Scientist	Colombo, Sri Lanka (19.09.2023 to 21.09.2023)	Faculty for Five Days HDM-4 Training Program for the Ministry of Highways, Road Development Authority, Sri Lanka, at Colombo
7	Dr. S. Deepa, Sr. Scientist	Colombo, Sri Lanka (21.09.2023 to 25.09.2023)	Faculty for Five Days HDM-4 Training Program for the Ministry of Highways, Road Development Authority, Sri Lanka, at Colombo
8	Sh. Sachin Gowda M K, Sr. Scientist	Colombo, Sri Lanka (21.09.2023 to 25.09.2023)	Faculty for Five Days HDM-4 Training Program for the Ministry of Highways, Road Development Authority, Sri Lanka, at Colombo

Membership of Staff in Various Technical Committees

Membership of Staff in Various Technical Committees

Name of the Scientist /Staff & Designation	Position held	Name of the committee
Dr. Pradeep Kumar, Chief Scientist	Member	H-6 Committee: Road Maintenance and Asset Management Committee for 2021-2023, Indian Roads Congress
	Member	CSIR-CRRI Representation as Principal Member for Resource Management Sectional Committee, MSD 12, Management and Systems Division Council (MSDC), Bureau of Indian Standards, India
Er. Sachin Gowda M K, Sr. Scientist	Subgroup Member	Embankment, Ground Improvement, and Drainage Committee (H-4) of IRC
Dr. Aakash Gupta, Sr. Scientist	Member	Indian Roads Congress (IRC), Indian Geotechnical Society (Delhi Chapter)
Dr. Deepa S, Sr. Scientist	Member	Indian Roads Congress (IRC)
Dr. Rajeev Goel, Chief Scientist	Member Secretary	B1 Committee on "General Design Features (Bridges and Grade Separated Structures)" of Indian Roads Congress
	Member	B1.1 Sub-committee for Revision of IRC:5-2015 of Indian Roads Congress
	Member	B1.5 sub-committee for New Document on "Crash Barriers and Railings for Bridges" of Indian Roads Congress
	Member	B8 Committee on "Management, Maintenance and Rehabilitation Committee" of Indian Roads Congress
	Member	Expert Committee on 'Preparation of Guidelines for Use of Fiber Reinforced Polymer Bars in National Highways Works in different RCC structures such as bridges, viaducts, retaining walls, facia panel of RE wall, drains, etc.' of Indian Roads Congress
	Principal Member	Civil Engineering Division Council of Bureau of Indian Standards (BIS)
	Principal Member	Standardization Work under the Special Structures Sectional Committee, CED-38 of the Bureau of Indian Standards (BIS)

	Principal Member	Earthquake Engineering Sectional Committee, CED-39 of Bureau of Indian Standards (BIS)
	Principal Member	Concrete Reinforcement Sectional Committee, CED-54 of Bureau of Indian Standards (BIS)
	Principal Member	Framing document for launching the Ready Mixed Concrete certification of the Bureau of Indian Standards (BIS)
	Alternate Member	Construction Management Including Safety in Construction Sectional Committee, CED-29
	Alternate Member	Safety in Construction Sectional Committee, CED-45
	Principal Technical Auditor	Scrutiny of DPR's Of National Rural Infrastructure Development Agency (NRIDA)
	Member	Technical committee for Cement Sector under Indian Carbon Market, Bureau of Energy Efficiency, Ministry of Power
Dr. Naveet Kaur, Scientist	Vice President and Founding Member	Indian Structural Health Monitoring Society
	Council Member	Indian Road Congress
	Member	BIS Committee members: o Earthquake Engineering Sectional Committee CED39 o Panel for plain reinforced CED and Prestressed concrete CED 46:P8 (under National Code of India)
Dr. Pardeep Kumar	Fellow Member	Indian Structural Health Monitoring Society
	Lifetime E-membership	Indian Road Congress (IRC)
	Life membership	ICI Ghaziabad Chapter (GHAC)
Dr. Rakesh Kumar, Chief Scientist	Member of the Technical Advisory Committee and Organising Committee for IRF-IC's	National Conference-cum-Exhibition on Sustainable Construction Materials: Trajectory to Sustainable Growth (SCM-TSG) Nov. 2-3, 2023.
Dinesh Ganvir, Sr. Principal Scientist	Alternate Member	CED-2
Parvathi G. S. Senior Scientist	Executive Committee Member	Indian Chapter of the International Geosynthetic Society
	Member of Scientific Committee	International Conclave on Sustainable Construction, organized by Uralungal Labour Contract Cooperative Society (ULCCS Ltd.)

		and the Indian Institute of Infrastructure and Construction (IIIC)
	Member of the drafting committee	B3.8 committee for the revision of IRC SP 102 Guidelines for Design and Construction of Reinforced Soil Walls and Reinforced Soil Slopes.''
Sh. R.K. Panigrahi, Sr. Principal Scientist	Alternate Member	CED 48, Rock Mechanics Sectional Committee of BIS
Dr. Madhu Errampalli, Chief Scientist	Member Secretary	Transport Planning & Traffic Engineering Committee (H-1) of IRC
	Convener	Transport & Logistics Services SSD-II: P1 Panel of BIS (Bureau of Indian Standards)
	Member	Technical Specification Committee for ITMS Project of Delhi Traffic Police
	Member	TGSM (Travel Grant and Symposium Management) Committee of CSIR HRDG
Dr.S. Velmurugan, Chief Scientist	Co-Convener	Intelligent Transportation System Committee, i.e., G-7 of IRC.
	Member	H-1 Committee and H-8 Committees of IRC
Dr. Ch. Ravi Sekhar, Chief Scientist	Member	H-8 Committee of IRC
	Member	G-7 Committee of IRC

Membership of National and International Organisations

Membership of National and International Organisations

- Australian Road Research Board (ARRB), 80A Turners street, PORT MELBOURNE, Australia
- Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi
- Indian Institute of Bridge Engineers (IIBE), New Delhi
- Indian Association of Special Libraries and Information Centers, Kakugachi, Kolkata
- Transportation Research Board of the National Academy of Science, National Research Council, 2101, Constitution Avenue, Washington DC, USA
- Indian Geotechnical Society, C/o Central Soil and Material Research Station, Olof Palme Marg, Hauz Khas, New Delhi
- Indian Roads Congress (IRC), Kama Koti Marg, Sector-6, R.K. Puram, New Delhi
- Government of Indian Librarians Association (GILA) C/o Planning Commission, Library, Yojna Bhawan, Sansad Marg, New Delhi
- Society for Information Science, NISCAIR Building, Hillside Road, New Delhi
- Indian Group of Geotextiles, Central Board of Irrigation & Power, Malcha Marg, Chanakyapuri, New Delhi
- Associate Membership of Current Science Association, Bangalore
- International Road Federation (IRF) India Chapter, New Delhi

MoUs, Agreements and Patents

A. PATENTS GRANTED

i. Process for construction of shallow multidirectional underpass intersection by box jacking and soil nailing without affecting the existing traffic (Patent No.493870) – INDIA granted on 3rd January, 2024.

ii. Engineering of bitumen emulsion-based pothole repair system (Patent No. 510059) – INDIA granted on 13th February, 2024.

iii. Design of Noise barrier based on different frequencies (Patent No. 523262) – INDIA granted on 11th March, 2024.

iv. Car driving simulator with driver diagnostic and training method (Patent No. 528642) – INDIA granted on 17th March, 2024.

B. MoUs SIGNED

i. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Kalinga Institute of Industrial Technology (KIIT) Deemed to be University, Odisha signed on 3rd April 2023.

ii. For cooperation of the field of road transport Industry with CSIR-CRRI and Russian Road research institute (ROSDORNII) signed on 25th May 2023.

iii. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Madhya Pradesh Rural Road Academy (MPRRDA) signed on 5th July 2023.

iv. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian Institute of Technology Guwahati, Assam (IIT-Guwahati) signed on 22th July 2023.

v. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and National institute of Technology, Kurukshetra (Haryana) signed on 10th October 2023.

vi. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian Institute of Technology- Hyderabad (IIT-Hyderabad), Telangana Signed on 17th November 2023.

vii. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian Institute of Technology Madras (IIT- Madras), Tamil Nadu Signed on 05th January 2024.

viii. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian Institute of Technology , Banaras Hindu University (IIT- BHU), Uttar Pradesh Signed on 12th January 2024.

ix. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian National institute of Technology, Delhi (NIT-Delhi), Delhi Signed on 31st January 2024.

x. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Indian Institute of Information Technology Bhopal (IIIT-Bhopal) Signed on 10th February 2024.

xi. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and National institute of Technology, Calicut (NIT-Calicut), Kerala Signed on 12th February 2024.

xii. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and Motilal Nehru National Institute of Technology Allahabad, (MNNIT), U.P. Signed on 23rd February 2024.

xiii. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and National institute of Technology, Raipur (NIT-Raipur) Chattisgarh signed on 27th February 2024.

xiv. Academic and research collaboration in the areas of mutual interest with CSIR-CRRI and National institute of Technology, Warangal (NIT-Warangal), Telangana Signed on 28th February 2024.

xv. An Memorandum of Understanding signed on 6th March 2024 with CSIR-CRRI and Engineering Export Promotion Council of India (EEPC India) for Dissemination of CSIR-CRRI steel slag Road Technology of India.

C. AGREEMENTS SIGNED

i. A Project Based Agreement signed on 2nd June 2023 with Norwegian Geotechnical Institute (NGI) for enhancing risk management & resilience to natural hazards in India, Brazil & Norway through collaboration in education, research & innovation (NATRISK).

ii. A Project Based Agreement signed on 26th Jul 2023 with Alliance to End Plastic Waste (AEPW), USA for the purposes of supporting the construction of roads by CRRI using plastic waste via dry process in India.

iii. A Technology Transfer Agreement signed on 18th July 2023 with Somani Ecobuild Products LLP, Jaipur for development of cementitious material for stabilization of Sub-Base & Base course in Flexible Pavement.

iv. A Tri-Partite Agreement signed on 23rd August 2023 with CRRI, National Mission on Himalayan Studies (NMHS) and Border Road Organisation (BRO) for Transfer the PROTO-TYPE of Mobile Cold Mixer Cum Paver for mixing and lying of cold bituminous layer.

v. A Project Based Agreement signed on 24th August 2023 with Road Development Authority Ministry of Transport & Highways, Battaramulla, Sri Lanka to provide training on Highway Development and Management Tool (HDM-4) to Engineers at Colombo, Sri Lanka.

vi. A Project Based Agreement signed on 1st November 2023 with Envirotech Instruments Pvt. Limited (EIPL) for consultancy services for Noise Mapping, hot spot Identification and Mitigation Plan for Noise Pollution control in Goa.

vii. A Project Based Agreement signed on 14th February 2024 with ISRO Telemetry Tracking and Command Network, Bengaluru, Karnataka (ISTRAC) for Design & drawings of pier, pier foundation, foundation of circular dome as well as PEB structure for Installation of Telescope at Hanle, Ladakh.

viii. An Memorandum of Agreement signed on 11th March 2024 with Greater Noida Industrial Development Authority (GNIDA) for Functional and Structural Evaluation of Roads, vetting of design and BOQ, Pavement design, implementation of new technologies, Construction Quality Supervision, Road Safety, Traffic Management Plan and intersection improvement measures, and Training of Engineers and Staff Members.

ix. A Memorandum of Agreement signed on 15th March 2024 with Bharat Petroleum Corporation Limited (BPCL) for Feasibility study of using Module developed from end-of-life plastic for road and allied construction.

Papers in Journals

Papers in Journals

1. Advani, M., & Sarkar, P. P. (2024). “Road Safety Measures in Tripura, India.” Current Science, Vol. 126, No. 3, Feb. 2024, pp. 388-394. ISSN 0011-3891, doi: 10.18520/cs/v126/i3/388-394.
2. Aleena, V.K., Kaur, N.,Bhalla, S., & Bagalwar, S. (2023). “Efficacy of thin curved piezo transducers for structural health monitoring and energy harvesting when embedded in RC Structures.” Energy Reports, Vol 9, pp. 2506-2524 (SCI IF: 4.937)
3. Anand, K., Goyal, S., Kaur, N., & Reddy, M.S. (2023), “Viable FA based Bacterial Cells as Sustainable Solution for Corrosion Prevention in RC Structures.” Construction and Building Materials, Vol. 365, 130056 (SCI IF: 7.693)
4. Bangaku Naidu, K., Vijaya Kumar, K., K.S.N. Reddy, P. Ganapati Rao, & Ch. Ravi Sekhar. (2024). “Provenance of Low-Grossular–High-Pyrope Detrital Garnets from Beach Sands of East Coast of India between Gosthani and Vamsadhara Rivers.” Sedimentary Geology, Vol. 469, 2024, 106666, ISSN 0037-0738, doi: 10.1016/j.sedgeo.2024.106666
5. Busch, P., Pares, F., Chandra, M., and Tal, G. (2024). “Future of Global Electric Vehicle Supply Chain: Exploring the Impact of Global Trade on Electric Vehicle Production and Battery Requirements.” Transportation Research Record, doi: 10.1177/036119812412447.
6. Chandra, S., Chalumuri, R. S., Gupta, K., and Chakrabarty, N. (2023). “Evaluation of Fixation and Reaction Gaze Points near Speed Humps on Urban Roads in India.” Current Science, 124(2), 245-252. doi: 10.18520/cs/v124/i2/245-252.
7. Dayana, M. P. J., Parvathi, G. S., & Sinha, A. K. (2023). “Investigation of hillslope failure and mitigation: A case study of Sillewani Ghat, Chhindwara, India.” Journal of the Geological Society of India, 99, 621-634. https://doi.org/10.1007/s12594-023-2363-4.
8. Goel, P., Kumar, R., & Bhattacharjee, B. (2023). “Engineered Cementitious Composite Concrete-As a Durable Pavement Overlay Material.” Journal of the Indian Roads Congress, Discussion Paper (724), 82-3, July-September 2023: 10-18.
9. Goli, A., Sasidharan, D., Raj Kumar, B., & Bharath, G. (2023). “Effect of curing regime on mechanical characteristics of cold recycled bituminous mixes.” Materials and Structures, 56(7). doi:10.1617/s11527-023-02229-2 (SCI IF: 4.4)
10. Gowda, S., Kunjar, V., Gupta, A., Havanagi, V. G., & Kavitha, G. (2023). “Municipal incinerated solid waste bottom ash as sustainable construction material in the construction of Flexible Pavements.” Journal of Material Cycles and Waste Management, 25(6), 3824–3833. doi:10.1007/s10163-023-01809-2 (SCI IF: 3.1)

11. Gowda, S., Kunjar, V., Gupta, A., Kavitha, G., Shukla, B. K., & Sihag, P. (2024). “Prediction of the Subgrade Soil California bearing ratio using machine learning and neuro-Fuzzy Inference System Techniques: A sustainable approach in urban infrastructure development.” Urban Science, 8(1), 4. doi:10.3390/urbansci8010004 (SCI IF: 2.0)
12. Goyal, J.K., Sahu, G.H., Gaharwar, S.S., & Rana, R. “Development of Design Guidelines, Testing and Implementation Methodologies for Bridge Deck Water Proofing (BDWP) over Bridge Deck Overlays.” published in International Journal by IRF –INDIA.
13. Gupta, A. & Errampalli, M. (2024). “A Method for Assessment of Optimum Transport Sustainability Index of an Indian City.” Journal of Scientific and Industrial Research (JSIR), 83, pp. 242-254. http://doi.org/10.56042/jsir.v83i3.1964 (SCI Impact Factor: 0.21).
14. Gupta, A., Kumar, P., & Gowda, S. (2023). “Advancing Flexible Pavement Structural Health Monitoring: A user-friendly approach for network-scale assessments.” International Journal of Pavement Research and Technology. doi:10.1007/s42947-023-00395-8
15. Gupta, A., Prajwal M G., Gowda, S., & Jaya R S. (2024). “Development of Correlation Between Indirect Tensile Strength and Resilient Modulus for VG-40 Bituminous Concrete.” Indian Highways, Indian Roads Congress. 52,1, 17-27.
16. Gupta, A., Sasidharan, D., Gottumukkala, B., & Kar, S. S. (2023). “Evaluation of healing performance of blended reclaimed asphalt binders with rejuvenators based on rheological and Chemical Properties.” Sādhanā, 48(3). doi:10.1007/s12046-023-02213-0 (SCI IF: 1.6)
17. Jain, A.K., Sagar, A.K., Meshram, P.C., & Parihar, R.S (2024). “Design criteria of concrete pavements for plain and lean concrete roads.” Journal of emerging technologies and innovative research, 11,1.(SCI IF: 7.95)
18. Jain, A.K., Sagar, A.K., Meshram, P.C., & Parihar, R.S. (2024). “Evaluation of an extensive rupture fatigue destruction model for concrete pavements.” Journal of emerging technologies and innovative research, 11,1. (SCI IF: 7.95)
19. Kaur, N., & Negi, P., (2023). “In-situ strength assessment of rapid set concrete in real-time using resonant peak parameters of embedded PZT transducers.” Nature, Scientific Reports-Nature, Accepted for publication on May 11, 2023. (SCI IF: 4.38)
20. Kaur, N., Golla, D., Goel, R., & Kumar, P. (2023). “Field investigations on distressed highly skewed multi-cell reinforced concrete bridge”, Journal of Civil Structural Health Monitoring, USA, December, Vol.13, No.8, pp.1517-1535.
21. Kavitha, G., Kunjar, V., Gowda, S., Jayaram, M. A., & Veeraragavan, A. (2024). “Evaluation of drainage ability of granular subbase through large-scale model pavement studies and Machine

Learning Models." Innovative Infrastructure Solutions, 9(3). doi:10.1007/s41062-024-01391-y (SCI IF: 2.4)

22. Kumar, B., Sinha, A. K., Nigam, S. K., & Madan, S. K. (2023). "Cement stabilized zinc tailing waste material for subbase and base layers of pavement." Highway Research Board, Indian Roads Congress, 12(1), 26-39.
23. Kumar, P., & Sharma, M. (2023). "Modified pavement condition assessment model for asphalt concrete pavements." International Journal of System Assurance Engineering and Management, 15(3), 839–853. doi:10.1007/s13198-023-02102-z (SCI IF: 2.0)
24. Kumar, R., Chand, S., Saini, R., & Sharma, H. (2023). "Sustainable Driving: Zero-Emission Vehicles & Eco-Practices." Journal of Environmental Toxicology Research, UK, India, 103. DOI: 10.59462/JETR.1.1.103.
25. Kumar, S.B., Sahu, A.K., & Goel, R. (2023). "Elastic Surface Wave Propagation in Ground and effectiveness of Trench Wave Barriers for Diminution of vibrations: A Review", International Journal of Advances in Science, Engineering and Technology, India, April, Vol.11, Issue-2, pp.60-70.
26. Lashkari, M., Narulkar, S.M., & Chand, S. (2023). "A review paper on examining traffic operations at Multi-legged intersection operating under Heterogeneous traffic conditions." International Research Journal of Modernization in Engineering Technology and Science, India, Volume: 05/Issue:12.
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CSIR-CRRI in Media

CSIR-CRRI in Media

'जीवन आसान बनाने में विज्ञान की भूमिका बड़ी'

जागरण संवाददाता, नई दिल्ली: विज्ञान हमारे जीवन में आने वाले कठिनाइयों को दूर करने के लिए समाधान का रास्ता खोजने में अहम भूमिका निभाता है। इसे जन जन तक पहुंचाने और नई पीढ़ी का इसके प्रति झुकाव बढ़ाने के लिए सीएसआइआर–सीआरआरआइ में नौवें भारत अंतरराष्ट्रीय विज्ञान महोत्सव –2023 के तहत राज्यस्तरीय स्कूली प्रतियोगिता का आयोजन किया गया।

प्रो . मनोरंजन परिड़ा

इसमें परिवहन संबंधी पर्यावरण विषय पर विभिन्न स्कूलों से आए छात्रों के निबंध लेखन व चित्रकला प्रतियोगिता कराई गई। इस मौके पर सीआरआरआइ के निदेशक मनोरंजन परिड़ा ने कहा कि लोगों के जीवन को आसान बनाने में विज्ञान की अहम भूमिका है।

आम लोगों को विज्ञान से जोड़ने के लिए और सफलता का उत्सव मनाने के लिए विज्ञान भारती के सहयोग से इस एकदिवसीय कार्यक्रम का आयोजन किया गया। इस आयोजन से यह बताया गया कि किस तरह से विज्ञान प्रौद्योगिकी, इंजीनियरिंग और गणित आम लोगों के जीवन को बेहतर बनाने के लिए समाधान प्रदान करते हैं। प्रदूषण एवं निवारण योजना कार्यक्रम में हरियाणा, यूपी, राजस्थान व दिल्ली के 100 से ज्यादा छात्रों ने भाग लिया।

वाहन प्रदूषण के निराकरण संबंधी विषय पर देश के 23 प्रौद्योगिकी कालेजों के छात्रों के नावाचारों की भी प्रदर्शनी लगाई गई। इसमें वहां छात्रों द्वारा किए गए नवाचारों का सीआरआरआइ के निदेशक मनोरंजन परिड़ा ने देखा और पांच विज्ञानियों की टीम ने मूल्यांकन किया।

Ministry of Science & Technology

India's First National Highway Steel Slag Road section on NH- 66 Mumbai-Goa National Highway inaugurated

CSIR-CRRI's Steel Slag Road Technology is paving the way to build stronger and rco-friendly national highways in the country: Dr. V.K. Saraswat

Posted On: 13 JAN 2024 8:28PM by PIB Delhi

Dr. V.K. Saraswat, Member (S&T), NITI AAYOG inaugurated India's First National Highway Steel Slag Road section on NH- 66 Mumbai-Goa National Highway today. Dr Saraswat said that the Steel Slag Road Technology, developed by CSIR-Central Road Research Institute (CSIR-CRRI) is transforming the waste of steel industries into wealth and is helping the National Highways Authority of India (NHAI) to build stronger and ecofriendly national highways in the country.

JSW Steel, under the CSIR-CRRI technological guidance, has constructed the 1 km long four lane steel slag road section on Indapur-Panvel Section of NH-66 Mumbai-Goa. For construction of this road around 80,000 tons of CONARC Steel slag were converted as processed steel slag aggregates at JSW Steel Dolvi, Raigad plant. The processed steel slag aggregates are superior to natural aggregates in terms of various mechanical properties and utilized for steel slag road construction in all layers of the road in place of natural aggregates. The road has bituminous and cement concrete steel slag road section at same location in RHS and LHS carriageways. On this road section, the processed steel slag aggregates and slag cement have been utilized for construction of the cement concrete road in all layers.

CSIR-CRRI की स्टील स्लैग रोड टेक्नोलॉजी को जर्मनी में मिला ग्लोबल अवार्ड

अरुणाचल प्रदेश में भारत चीन बॉर्डर पर स्टील स्लैग रोड का निर्माण किया गया है.

ग्लोबल स्लैग पर्सनालिटी ऑफ द इयर अवार्ड 2023 प्रधान साइंटिस्ट सतीश पांडेय को जर्मनी में दिया गया. वो इस वैश्विक सम्मा ...अधिक पढ़ें

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WRITTEN BY : Sharad Pandey

संबंधित खबरें

नई दिल्ली. सीएसआईआर- केंद्रीय सड़क अनुसन्धान संस्थान, दिल्ली स्टील स्लैग रोड टेक्नोलॉजी को जर्मनी का प्रतिष्ठित अवार्ड मिला है. ग्लोबल स्लैग पर्सनालिटी ऑफ द इयर अवार्ड 2023 प्रधान साइंटिस्ट सतीश पांडेय को जर्मनी में दिया गया. वो इस वैश्विक सम्मान को प्राप्त करने वाले प्रथम भारतीय साइंटिस्ट हैं. यह सम्मान वर्ष 2007 से प्रतिवर्ष, स्टील इंडस्ट्रीज में सॉलिड वेस्ट के रूप में उत्पन्न होने वाले आयरन एंड स्टील स्लैग के पर्यावरण अनुकूल उपयोग को बढ़ावा देने के लिए अंतर्राष्ट्रीय स्तर पर किये गए विशिष्ट योगदान के लिए दिया जाता है.

Steel slag roads most suitable to Indian terrain, costs 30% cheaper and lasts three times longer: Dr Jitendra Singh

India's network of National Highways, at 1.45 lakh km, is now the second largest in the world after the United States, and it has increased by 59 per cent in the past nine years of the government led by PM Modi

Posted On: 17 JUL 2023 6:23PM by PIB Delhi

Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space Dr Jitendra Singh today announced that India has developed the world's latest Steel Road technology. He informed that CSIR- Central Road Research Institute (CRRI), New Delhi, which was founded in 1952, has pioneered the development of a revolutionary Steel slag road technology which facilitates the large-scale utilization of waste steel slag of steel plants in road construction.

जागरण विशेष

स्वदेशी मशीन से कम समय व लागत में होगी सड़क की मरम्मत

संकेत मिश्र ● नई दिल्ली

सीआरआरआइ में विकसित की गई छोटी मशीन, पेटेंट होने के बाद कंपनियों को हस्तांतरित की गई तकनीक

वाहनों के बढ़ते दबाव से फ्लाईओवर और प्रमुख मार्गों की मरम्मत का कार्य बड़ी चुनौती है। इसे पूरा करने में कई दिन लग जाते हैं। यातायात प्रबंधन ध्वस्त हो जाता है, लोगों को लंबे जाम से जूझना पड़ता है। सड़क दुर्घटनाओं के लिए भी खराब सड़क और गड्ढे बड़े कारण हैं। अब केंद्रीय सड़क अनुसंधान संस्थान (सीआरआरआइ) में स्वदेशी तकनीक से मशीन बनाई गई है जो कम लागत व समय में सड़क के रखरखाव में सहायक साबित होगी।

लगे हैं स्वदेशी कल पुर्जे: पैच फिल नामक मशीन में तकनीक के साथ कल पुर्जे भी स्वदेशी हैं। सीआरआरआइ की युवा विज्ञानी डा. शिक्षा स्वरूपा के निर्देशन में इसे तैयार किया गया है। सफल परीक्षण के बाद इसे पेटेंट मिल चुका है और दो कंपनियों को तकनीक हस्तांतरित कर दी गई है। मानसून से पहले केरल में इस तकनीक से बनी मशीन का प्रयोग शुरू होगा।

आसानी से ताना-ले जाना संभव: तकनीक को लंबे शोध व भारतीय सड़कों की जरूरतों व चुनौतियों के अध्ययन के बाद तैयार किया गया है। किसी विदेशी एजेंसी की मदद नहीं ली गई है। इस तकनीक से बनी मशीन का रखरखाव भी सस्ता है। मशीन आकार में छोटी है, इसलिए इसे छोटे चार पहिया वाहन के साथ एक स्थान से दूसरे स्थान पर आसानी से ले जाया जा सकता है। डा. शिक्षा का कहना है कि आमतौर पर मानवीय तरीके से सड़क मरम्मत में प्रयुक्त अधिकांश मशीनों को आयात किया जाता है जो बेहद मंहगी होती हैं। कई विदेशी मशीनों की कीमत छह करोड़ रुपये तक है। हम नई मशीन के संबंध में विभिन्न नगर निकायों को जानकारी देंगे। अन्य संबंधित विभागों को भी इसके बारे में बताएंगे।

अभी चार चरण में होती प्रक्रिया, अब एक चरण में हो सकेगी पूरी

डा. शिक्षा स्वरूपा ● तो. लार्स

सीआरआरआइ की विज्ञानी डा. शिक्षा के अनुसार कोलतार और गिट्टी से बनी सड़क के गड्ढे भरने के लिए अभी चार चरण की प्रक्रिया अपनाई जाती है। पहले चरण में गड्ढे को साफ करने के बाद दूसरे चरण में तेल लगाया जाता है। तीसरे चरण में कोलतार व गिट्टी का मिश्रण भरा जाता है। चौथे चरण में सड़क को समतल किया जाता है। इसके लिए श्रमिकों व कई तरह की मशीनों की जरूरत होती है। नई तकनीक में मात्र एक मशीन सभी चरणों को पूरा करने में सक्षम है। इसे एक मशीन आपरेटर और दो श्रमिकों की सहायता से संचालित किया जा सकता है।

नहीं निकलती हैं पर्यावरण के लिए हानिकारक गैसें

परंपरागत मरम्मत प्रक्रिया में ठोस कोलतार को 160 से 180 डिग्री के तापमान पर गर्म करके तरल बनाने में कई जहरीली गैसें निकलती है, जो पर्यावरण के लिए खतरनाक होती है। डा. शिक्षा बताती है कि नई तकनीक में कोलतार को गर्म करने की जरूरत नहीं होती है। जिससे जहरीली गैसों का उत्सर्जन नहीं होता है। यही नहीं कई बार कट के अभाव में ग्रामीण सड़कों की मरम्मत का कार्य पीछे छूट जाता है। ऐसे में सस्ती और सुगम होने के कारण यह मशीन वरदान साबित होगी।

नई दिल्ली स्थित सीआरआरआइ में सड़क की मरम्मत के लिए स्वदेशी तकनीक पर तैयार मशीन में बन रहा कोलतार और गिट्टी का मिश्रण ● तो. संकल्प

इस खबर को विस्तार से पढ़ने के लिए स्कैन करें

नई दिल्ली, गुरुवार, 14 दिसंबर, 2023

जागरण सिटी

दैनिक जागरण दिल्ली

पुरानी दिल्ली से जामिया तक जल्द शुरू हो सकती है बस सेवा: आले इकबाल IV

जीवन आसान बनाने में विज्ञान की अहम भूमिका : परिड़ा III www.jagran.com

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यूनिवर्सिटी में राष्ट्रीय प्रौद्योगिकी दिवस मनाया

■ एनबीटी न्यूज, ग्रेटर नोएडा : कासना स्थित गौतम बुद्ध विश्वविद्यालय में राष्ट्रीय प्रौद्योगिकी दिवस मनाया गया। कार्यक्रम में भाप इंजन के आविष्कार से लेकर वर्तमान के डिजिटल क्रांति तक के सफर के प्रमुख वैज्ञानिक और उनके योगदान पर चर्चा की गई। कार्यक्रम में बताया कि 11 मई के दिन 1998 में भारत ने दूसरी बार परमाणु परीक्षण किया था। इसी के उपलक्ष्य में 11 मई को राष्ट्रीय प्रौद्योगिकी दिवस मनाया जाता है। इस मौके पर कुलपति प्रो. रवींद्र कुमार सिन्हा आयोजित सभा को संबोधित किया। बतौर मुख्य अतिथि के तौर पर सीएसआईआर-सीआरआरआई के मुख्य वैज्ञानिक और एकेडमी ऑफ साइंटिफिक एंड इनोवेटिव रिसर्च के डॉ. प्रोफेसर विनोद करार ने हिस्सा लिया।

ETPrime

CSIR-CRRI's REJUPAVE technology deployed in Arunachal for high-altitude road construction

By Bikash Singh, ET Bureau • Last Updated: Jan 05, 2024, 01:14:00 PM IST

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Synopsis

To address all these challenges Border Road Organization, project VARTAK, Arunachal Pradesh has successfully utilized an indigenous road construction technology "REJUPAVE" developed by India's oldest and premier road research organization CSIR-Central Road Research Institute (CSIR-CRRI), Ministry of Science and Technology to construct high altitude bituminous roads at low and sub-zero temperature conditions.

BRO build road under sub-zero temperature at the Indo-China border in Arunachal Pradesh

Arunachal Pradesh has successfully utilized an indigenous road construction technology "REJUPAVE" developed by India's oldest and premier road research organization CSIR-Central Road Research Institute (CSIR-CRRI), Ministry of Science and Technology to construct high altitude bituminous roads at low and sub-zero temperature conditions.

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INITIATIVE BY ET INDIA RISING

Construction of Steel Slag Roads -

A Green Technology for Sustainable Road Building

The use of steel slag promises to open new vistas in highway construction and resource conservation in the country, especially at a time when India has embarked on a major road building programme.

In August 2022, ArcelorMittal Nippon Steel (AM/NS) India received an order for the supply of steel slag from a leading integrated road EPC company, which has been given a contract for construction of a 36 km eight-lane stretch in Surat. The EPC company will use this steel slag to build this stretch of the Mumbai-Vadodara highway in a first of its kind project in India.

Similarly, processed steel slag from Tata Steel Jamshepur has been used by Border Roads Organisation (BRO) to construct roads in Arunachal Pradesh and in the Indo Bangla border. Another project is coming up on NH 66 using cement concrete steel slag from JSW Cement's Dolvi plant.

Earlier in June last year, the then Steel Minister Ram Chandra Prasad Singh inaugurated a six-lane highway in Surat made of steel slag – a first for the country. The one km road which was entirely constructed using one lakh tonnes of processed steel slag from AM/NS India's manufacturing plant in Hazira, Surat, is an example of converting "waste into wealth". AM/NS India is a joint venture between Arcelor Mittal and Nippon Steel, two leading global steelmakers.

The concept of using slag lies at the heart of making green steel where steel production and processes remain sustainable and environmentally friendly. More than 1,200 heavy vehicles ply daily on the 1.2 km Surat road, which was opened to traffic in May last year. It was jointly constructed under technological supervision of Central Road Research Institute (CRRI)-- a laboratory of the Council of Scientific and Industrial Research.

"Supported by the CRRI, AM/NS India is proud to have developed an alternative to natural aggregates in road construction, which is of international quality standards, cost competitive, and reduces the burden on natural resources. Part of the Waste to Wealth and Clean India Campaign, the first-of-its-kind initiative not only validates our quest to contribute to a circular economy but also sets a new benchmark for others to emulate," said Dilip Oommen, CEO, AM/NS India and Executive Vice President, ArcelorMittal. The Hazira steel plant generates around 4,000-4,500 tonnes of steel slag a day.

Slag, a by-product of primary steel making process, comes out during manufacturing of steel through processes like basic oxygen furnace (BOF) route and electric arc furnace (EAF). At present, disposal of steel slag is a major concern for steel industries. Production of steel slag in India from different process routes is set to increase by 2030. With domestic crude steel production planned to go up to nearly 300 million tonnes by 2030-31, the production of steel slag in the country is likely to reach 45 million tonne (mt) from the current level of 19-20 mt. The use of steel slag for road construction was taken up under the aegis of Niti Aayog as an inter-ministerial collaboration task between Ministries of Defence, Science and Technology, Steel and Indian Railways.

In step, Niti Aayog initiated a study undertaken by CRRI on setting the guidelines for construction of roads using processed steel slag. Led by the union steel ministry, the study was jointly sponsored by AM/NS India, JSW Steel & RINL.

Since then, LD converter slag from Tata Steel Jamshedpur plant has been used to construct a 1.5 km two lane border road at Ziro in Arunachal Pradesh by Border Roads Organization (BRO). Around 1,200 MT processed steel slag aggregates were transported from Jamshedpur to Itanagar by railways and then from Itanagar to project site near Ziro in Lower Subansiri district by road.

The use of slag will be a boon for BRO to build roads in border areas, V K Saraswat, Niti Aayog member who recently visited the site, had said during his visit.

More recently, the Indian Navy has evinced interest in developing a heavy duty, 3 km steel slag road at the naval base in Vizag. "The improved durability of such roads along with the savings in construction cost work are significant," Satish Pandey, principal scientist of CRRI said.

Another project is currently under construction on National Highway 66, around 50 km outside Mumbai. The one km four lane stretch of road, which is located near JSW Cement's plant in Dolvi, Maharashtra, is being built using steel slag along with cement slag.

The CRRI is developing a web-based GIS platform on map of India that will have all steel plants in India and anyone who clicks on the location of the plant will get a real time data on availability of steel slag.

The Road Ahead

- These projects will lead to saving of natural resources, sustainable utilization of steel slag and overall cost reduction of 30 – 40% in comparison to natural aggregates and will facilitate sustainable utilization of 19-20 million tonnes of steel slag waste being generated annually in domestic steel plants.

It will also bring about reduction in greenhouse gas (GHG) emissions and carbon footprint in road construction, prevention of land, air and water pollution. In addition to these environmental benefits, the technological benefits would include improved durability of road with better service life, improved skid resistance, higher load resistance capacity, reduced road thickness and better moisture resistance.

by Rakhi Mazumdar

होम / न्यूज / व्यवसाय / सड़क निर्माण में स्टील स्लैग के इस्तेमाल को विज्ञान एवं प्रौद्योगिकी मंत्रालय बना रहा है योजना, जानें

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सड़क अनुसंधान संस्थान आईजीआईबी सभागार में 'वन वीक वन लैब' कार्यक्रम के उद्घाटन के मौके पर केन्द्रीय विज्ञान एवं प्रौद्योगिकी मंत्री डॉ. जितेंद्र सिंह, साथ में सीएसआईआर-सीआरआरआई के निदेशक डा. मनोरंजन परीदा और प्रिंसिपल साइंटिस्ट डा. सतीश पांडेय.

केन्द्रीय विज्ञान एवं प्रौद्योगिकी मंत्री डॉ. जितेंद्र सिंह ने कहा कि सड़कों के निर्माण में स्टील स्लैग का इस्तेमा ...अधिक पढ़ें

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संबंधित खबरें


लोक निर्माण विभाग रिंग रोड का करा रहा निर्माण, किसानों

नई दिल्ली. सड़कों के निर्माण में स्टील स्लैग इस्तेमाल करने के लिए विज्ञान एवं प्रौद्योगिकी मंत्रालय व्यापक योजना बना रहा है. इस दिशा में काम भी शुरू हो चुका है. यह जानकारी स्वयं सीएसआईआर के उपाध्यक्ष और विज्ञान एवं प्रौद्योगिकी मंत्री डॉ. जितेंद्र सिंह ने दी. केन्द्रीय मंत्री सोमवार को सड़क अनुसंधान संस्थान आईजीआईबी सभागार 'वन वीक वन लैब' कार्यक्रम को संबोधित कर रहे थे. कार्यकम का संचालन सीआरआरआई के प्रिंसिपल साइंटिस्ट डा. सतीश पांडेय ने किया.

डॉ. जितेंद्र सिंह ने कहा कि सड़कों के निर्माण में स्टील स्लैग का इस्तेमाल सड़क परिवहन एवं राजमार्ग मंत्रालय

अपशिष्ट पदार्थों का बढ़ता ढेर चिंता का विषय है : सारस्वत

जागरण संवाददाता, नई दिल्ली: देश में अपशिष्ट पदार्थों का बढ़ता ढेर चिंता का विषय है। इससे निपटने के लिए छोटे घरेलू शोध किए जाने चाहिए। अपशिष्ट पदार्थों का सही इस्तेमाल करके पारिस्थितिक क्षति को संतुलित किया जा सकता है। यह बात नीति आयोग के सदस्य डा. वीके सारस्वत ने कही। वे केंद्रीय सड़क अनुसंधान संस्थान (सीआरआरआइ) में वन वीक वन लैब के तहत अपशिष्ट से संपदा कार्यक्रम के शुभारंभ के मौके पर बतौर मुख्य अतिथि संबोधित कर रहे थे।


डा. वीके सारस्वत

डा. वीके सारस्वत ने सीआरआरआइ को अनुसंधान और सड़क नेटवर्क विकसित करने के 70 वर्ष पूरे करने पर बधाई दी। उन्होंने वर्तमान सड़क की गुणवत्ता और स्थिति की सराहना की। उन्होंने कहा कि हम रेलवे में स्टील स्लैग एग्रीगेट का उपयोग कर सकते हैं। इससे उसको मजबूती मिलेगी। निजी उद्योग बिना किसी पूर्वाग्रह के सहयोगात्मक नई प्रौद्योगिकी के लिए सीआरआरआइ के साथ जुड़ सकते हैं। किसी भी तकनीक को आइआरसी, एमईएस, सीपीडब्ल्यूडी या बीआइएस अन्य एजेंसी की मंजूरी के साथ बाजार में पेश किया जाना चाहिए।

उन्होंने कहा कि आर्थिक विकास, व्यवहार्यता और मानक कटौती के लिए आवश्यक है। संगठित तरीके से इलेक्ट्रानिक कचरे का विभिन्न क्षेत्रों में अन्वेषण किया जा सकता है। उन्होंने देश में अपशिष्ट से धन कार्यक्रम के अनुकरण पर जोर दिया।

कार्यक्रम के विशिष्ट अतिथि सीआरआरआइ के अध्यक्ष प्रोफेसर पीके सिकदर थे। कार्यक्रम के अंत में कचरे के सीमित उपयोग के कारणों पर पैनल चर्चा भी की गई। बता दें कि कार्यक्रम का आयोजन सात दिनों तक होगा। सोमवार को विज्ञान एवं प्रौद्योगिकी मंत्री और सीएसआइआर के उपाध्यक्ष डा. जितेंद्र सिंह सीआरआरआइ आएंगे और इंजीनियरिंग के छात्रों से चर्चा करेंगे।

सड़क निर्माण में अपशिष्ट पदार्थों का इस्तेमाल बढ़ेगा

नई दिल्ली, प्रमुख संवाददाता। देशभर की सड़कें बनाने में अपशिष्ट पदार्थों के इस्तेमाल को बढ़ावा दिया जाएगा। इसे लेकर न केवल केंद्रीय सड़क अनुसंधान संस्थान, बल्कि नीति आयोग की ओर से भी प्रयास किए जा रहे हैं।

यह जानकारी नीति आयोग के सदस्य विजय कुमार सारस्वत ने सीआरआरआई की ओर से आयोजित कार्यक्रम में दी। इस सात दिवसीय कार्यक्रम में अपशिष्ट पदार्थों के बेहतर इस्तेमाल को लेकर चर्चा की जाएगी। विजय कुमार सारस्वत ने कहा कि आज देशभर की सड़कें लाइफलाइन बन गई हैं। सड़कों के बेहतर बनने से सामान को एक जगह से दूसरी जगह पहुंचाना सस्ता हुआ है। देश की अर्थव्यवस्था के लिए सड़क बेहतर होना जरूरी है। इसके लिए अपशिष्ट जैसे फ्लाईऐश, स्टील स्लैग, कॉपर स्लैग, जारोफिक्स, नगर पालिका ठोस अपशिष्ट का प्रयोग किया जा रहा है, लेकिन सस्ती सड़कें बनाने के लिए इनके इस्तेमाल को बढ़ावा देना जरूरी है।

Staff News (Retirements, VRS, Transfer from / to CSIR-CRRI)

Retirements & Voluntary Retirement Scheme (VRS)

Following staff members have retired from service of the Institute during the period. CSIR-CRRI Welfare Committee organized functions to bid all of them a grand farewell.

Mr. Rajveer Singh, Lab Assistant, 30-04-2023

Dr. Pankaj Gupta, Sr. Principal Scientist, 31-05-2023

Dr. Rajiv Kumar Garg, Chief Scientist, 31-07-2023

Mr. A.K. Tripathi, Principal Technical Officer, 29-09-2023 (VRS)

Mr. Naresh Kumar Sharma, Principal Technical Officer, 31-10-2023 (VRS)

Mr. D.V.Singh, Senior Technical Officer (2), 31-12-2023

Dr. Neelima Chakrabarty, Chief Scientist, 31-12-2023

Transfers / Joining to CSIR-CRRI

- Mrs. Nidhi Gupta, Section Officer (G), 06-04-2023
- Mrs. Dolly Kausal, Sr. Steno, 04-05-2023
- Mr. Santosh Kumar, Administrative Officer, 01-01-2024

Transfers from CSIR-CRRI

- Mr. Biranchi Sarang, Administrative Officer, 28-04-2023
- Mrs. Sanghamitra Roy, Section Officer (G), 05-04-2023
- Mr. Dhananjay Kumar Singh, Section Officer (F&A), 10-08-2023
- Mrs. Santosh Khutan, PPS, 01-01-2024
- Mr. Abhi Mandal, Technician (1), 16-08-2023
- Mrs. Anija T.S., Technician (1), 02-05-2023

Resignations from CSIR-CRRI

- Mr. Umesh, SSA, 17-05-2023
- Mr. Ashish Tripathi, Technician (1), 30-11-2023

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