

CSIR - CENTRAL ROAD RESEARCH INSTITUTE, NEW DELHI  
MINUTES OF 125<sup>th</sup> VIRTUAL MEETING OF CSIR-CRRI RESEARCH COUNCIL

Date 25<sup>th</sup> & 26<sup>th</sup> August, 2020  
Time 10. 00 hours  
Venue MS Teams online Platform

The following attended the meeting:

**Chairman**

Prof. Tarun Kant, Professor Emeritus, IIT Bombay

**Members**

Lt. Gen. (Retd.) Suresh Sharma, AVSM, Former Engineer-in-Chief, MoD ( Army)  
Prof. Ranganathan Sundaravadelu, Professor, IIT Madras  
Dr. I.K. Pateriya, Director (Projects- II), NRIDA  
Dr. R.K. Bhandari, Former Director, CSIR-CBRI (on 26<sup>th</sup> Aug. only)  
Dr. N. Gopalakrishnan, Director, CSIR-CBRI  
Prof. Santosh Kapuria, Director, CSIR-SERC  
Shree A.K. Gupta, Former Member, UP-PSC  
Shree R. K. Pandey, Member, NHAI (on 26<sup>th</sup> Aug. only)  
Prof. Satish Chandra, Director, CSIR-CRRI

**Secretary**

Shree K. Sitaramanjaneyulu, Chief Scientist, CSIR-CRRI

**Invitees**

All Scientists of CSIR-CRRI

**Item 1 – Welcome Address by the Director CSIR-CRRI**

Prof. Satish Chandra, Director CSIR-CRRI welcomed the Chairman, Members of RC and the scientists to the 125<sup>th</sup> Research Council Virtual Meeting conducted through MS Teams. He said that the meeting was being conducted virtually due to COVID Pandemic. He mentioned that meeting was planned in such a way that it will be started at 10 AM and will be over by 1.30 PM on both days. He thanked everyone for joining the meeting and requested the chairman to start the proceedings and for opening remarks.

**Item 2 – Opening Remarks by the Chairman**

Prof. Tarun Kant, Chairman RC, welcomed Director CRRI, RC members and all scientists to the 125<sup>th</sup> RC meeting. He expressed that it would have been much better if this meeting had happened offline as this was the last RC Meeting of his tenure as Chairman. He mentioned that his association with CSIR-CRRI was a learning experience for him as this was a unique laboratory working in specific areas such as roads, flyovers, bridges, etc. where the government was making substantial investments for improving the existing infrastructure in the country. Thus, however little contribution CSIR-CRRI makes in these areas will go a long way and will benefit the society. He mentioned that he had a chance of listening to DG, CSIR in the month of December in Goa, where he had given a presentation on the mandate of CSIR and one of that was to **do high quality research**. Therefore, everyone in CSIR-CRRI should strive to fulfill that mandate. He recalled the statement of Prof. Yashpal who was then DG, CSIR

that most of the CSIR laboratories should have been founded in university campuses to fully utilize the dynamism of the young PhD research scholars. Therefore, at least the laboratories which are in the vicinity of universities/ IITs/ NITs must actively involve such minds in order to improve the quality of research. He said that CSIR-CRRI should compare their performance and output and compete with the best in the world such as TRB/TRL, UK, ARRB Australia, etc. and good technical reports must come out from CSIR-CRRI which can be used as reference material by field engineers as it was the only national laboratory in the country working in the areas of roads, bridges and transportation systems.

As the visibility of any organization comes through good publications and research output, he advised the scientists to concentrate more on international publications out of projects of national importance. He suggested to make the laboratory's website as vibrant as possible and present it as professional as it can be. He opined that every project must have a well-documented final report which can be indexed and properly stored in the library and also on the website. He further opined that CSIR-CRRI should induct a few scientists having analytical and computational skills in pavement engineering. He suggested that researchers from IITs and NITs may be involved through a suitable mechanism on a regular basis by taking PhD/research projects jointly. He hoped that Director CRRI will do the needful in implementing the ideas given by RC in the last three years.

### **Item 3 – Confirmation of the Minutes of the 124<sup>th</sup> RC Meeting**

Shree K. Sitaramanjaneyulu, Secretary RC, informed that the minutes of 124<sup>th</sup> RC Meeting held during 2<sup>nd</sup> and 3<sup>rd</sup> December 2019 were circulated to all RC members. He proposed that the minutes may please be considered as confirmed. Council agreed for the same and approved the minutes.

### **Item 4 – Action Taken Report**

Shree K. Sitaramanjaneyulu, Secretary RC, presented the 'Action Taken Report (ATR)' on the 124<sup>th</sup> Meeting of RC. He mentioned that, as per the suggestion of the RC, all continuing projects would be presented in every RC meeting till completion and action taken on the suggestions given for those projects would also be presented by the respective presenters.

### **Item 5 – Director's Report**

Prof. Satish Chandra, Director CSIR-CRRI presented the progress of the institute since last RC meeting. It included attending the meetings on Delhi Research Implementation and Innovation (DRIIV), Bihar Road Research Centre (BRRC), Patna, with Alliance to end plastic waste, and Noise and vibration study on monuments in Delhi. He also talked about the dissemination workshops regarding mass housing project, PCRA sponsored project, etc. and training programs on different software such as soil works and IMAAP. He presented the details of webinars organized by CRRI, equipment procured, agreements signed/technology transferred, major projects taken up, awards received by CRRI and Scientists of CRRI at various platforms, training programs organized, lectures delivered by CRRI Scientists, deputations of scientists, visit of foreign delegates, projects handled, details of publications, patents and trademarks filed, external cash flow, etc.

He also informed about other developments in CRRI like Rajbhasha activities, Special day celebrations such as New Year Day, Foundation Day, National road safety week, Independence Day, etc. The new recruitments' status in the institute were also highlighted in the presentation. The council congratulated the Director CSIR-CRRI and expressed its satisfaction on the work done by CRRI since the last RC Meeting.

## **Item 6 – Remarks by Research Council (RC) Members**

**Chairman Prof. Tarun Kant** requested RC members to make their comments and give their remarks.

**Lt. Gen Suresh Sharma** thanked Director CRRRI for actively pursuing the points given by him during previous RC meeting regarding Sub surface drainage. It was updated that further studies on the subject have been carried out in the state of Kerala. He requested Director CRRRI to take up advance studies on sub surface drainage and hill slope stabilization in the Himalayan region.

Lt Gen Sharma brought out the fact that as Road Engineers, our focus is Highways whereas design and construction of urban Roads is equally important. Urban Planning intervention can bring a sea change in improving the present state of urban roads from non-motorised and pedestrian traffic point of view like Ajmal Khan Road in KarolBagh, Delhi. He proposed that a few projects in this direction should be undertaken by CRRRI as post pandemic review. Drainage is another area of concern.

He mentioned that introduction of new technologies and materials in the road sector is one of the key areas of research and application. Crystalline technology which is relatively new in the field of water proofing is useful for concrete roads, bridges, flyovers and highways. It has been approved by MORTH and IRC. CRRRI may undertake further studies in conjunction with the industry partners. There are a few companies in India making this product which is in line with make in India and Atmanirbhar Bharat themes.

**Prof. R Sundaravadivelu** suggested that publications may be looked into seriously. He made a general remark that some of papers are not accepted and reviewed by top journals because of lack of collaboration with the editors. He suggested to have correspondence or collaboration with leading authors in the journals. One of the methods to improve this situation is attending the good international conferences with a delegation and improve the visibility of the institute. He suggested to encourage young researchers to attend the international conferences to create some impact and showcase the competence of CRRRI. He exhorted the scientists to update the research areas and to have their work published in reputed journals.

**Prof. Santosh Kapuria** thanked chairman RC and Director CRRRI for the comprehensive report. He expressed that it was a wonderful opportunity to be part of this Council, under the chairmanship of Prof. Tarun Kant, who is a legendary figure in the area of civil engineering. He said that it was a great exposure and matter of learning for him. CRRRI being a very good national laboratory having a very unique network in the country on road research, it has been basically more of learning for him than giving anything. He mentioned that CRRRI has done a lot of good work in the past and still continuing to do so and particularly Delhi Research Implementation and Innovation (DRIIV) and development of North east areas are really good initiatives that the director has taken. Those will actually benefit the local people. Pandemic has posed some problems and society is looking towards science for solving them. He expressed the concern regarding the reverse migration that has happened during lockdown, where lots of people walked along the road for days for hundreds of kilometers. He suggested the need to develop technologies which will improve the rural roads, city roads by involving and training the local people to create employment for them. He said that scientists and technologists must try to develop technologies, solutions and processes and based on that, scientists should be able to fulfill the country's dream of becoming Atmanirbhar. He said it is scientist's responsibility to make new technologies instead of importing them from other countries and to achieve it, one needs to carryout high quality research.

**Dr. I. K. Pateria** congratulated the Director CRRRI for a very exhaustive and informative presentation regarding the activities carried out by CRRRI since last RC. He expressed his happiness that contribution of external cash flow from state governments is very encouraging, and CSIR-CRRRI has achieved a lot by sensitizing on the road research. He mentioned that there are a couple of issues related to commercial stabilizers. During the implementation of stabilizers, there is a need of guidance for the field engineers and contractors. He suggested CRRRI to take up project

like determining the strength of cement stabilised pavements as it is very difficult to extract the core from the site. CRRRI can work on physically determining the strength of layers where both commercial and conventional stabilizers are used. He suggested that CRRRI should proactively pass on research findings to IRC for revision of IRC codes and cited the example of recent modification of one IRC code on use of waste plastic in road construction where research based intervention of CRRRI can remove the confusion.

**Dr. Gopalakrishnan** also appreciated the progress of the institute since last RC. He suggested to keep in mind the challenges and innovation. He suggested that country should go diversified on planning, design and construction of suspension bridges as they are ideal for long life. He suggested to work on road construction machinery as Indians have very less role in manufacturing and designing of road construction equipment. The analytical and computational exercises should also be taken up by CRRRI scientists. He said it will give personal satisfaction when one involves in software part such as coding. He suggested to increase the bandwidth of PhDs from NITs and IITs.

**Sh. A.K. Gupta** congratulated the Director CRRRI for maintaining the grace of the institute and also encouraging the young scientists to attend foreign conferences. He also requested to include and invite the outgoing RC members for the webinars to be conducted in CRRRI. He suggested to work on the area of traffic projections by keeping practical issues into consideration.

#### Item 7 – Presentation of Sponsored Research Projects

S. No.	Project Details	Suggestions of the RC members
7.1	<b>Field Investigation and Experimentation on Prevention of Premature Longitudinal Cracking in Concrete Pavement Highways</b> Presented by Shree Binod Kumar	<ul style="list-style-type: none"> <li>• Shrinkage phenomenon and its mechanism is to be looked into.</li> <li>• RC suggested to develop a model to understand the mechanism</li> </ul>
7.2	<b>Sustainable Road Pavements in High Altitude Regions</b>  Presented by Dr. Bharat	<ul style="list-style-type: none"> <li>• RC enquired if there is any comparative study of different materials in the laboratory.</li> <li>• To define the specifications of geo cell in designing of the pavements.</li> <li>• Suggested to make a small trial where geo synthetics are used in base course and cold mix on surface layers if possible.</li> <li>• Suggested to develop a model, to estimate the modulus and verify with the experiment.</li> <li>• Findings of the project need to be disseminated properly through quality publications in SCI Journals</li> </ul>
7.3	<b>Application of cold Bituminous Based Eco-Friendly Road Building Technology for the Special Featured Himalayan Regions</b>  Presented by Dr. Siksha Swaroopa Kar	<ul style="list-style-type: none"> <li>• RC appreciated the concept and hoped that findings of the project will be properly published in journals like ASCE</li> <li>• Suggested to work on emission benefits of using the cold mix.</li> <li>• Suggested to report this work under the mission “Athmanirbar Bharat” as this cold mixer cum paver is indigenously developed.</li> <li>• Suggested to work on cold mix technology for high traffic loading.</li> <li>• Cost comparison for hilly regions may also be done.</li> </ul>

7.4	<p><b>To Study the Corrosion of Various Reinforcement Bar Materials / Structural Steel Including Anti-Corrosion Coatings Concrete Treated with Surface Coating Under Different Environment Exposure Conditions</b></p> <p>Presented by Dr. V.V.L Kanta Rao</p>	<ul style="list-style-type: none"> <li>• Measurement of surface characteristics shall be done and high level of analytical and theoretical work should be attempted.</li> </ul>
7.5	<p><b>Safe Road Connectivity for Tripura State of North East Region of India</b></p> <p>Presented by Dr. Mukti Advani</p>	<ul style="list-style-type: none"> <li>• Certain aspects such as intersection designs, curves, etc. are covered but some other major problems like landslides, floods, earthquakes, etc. are not covered in detail. These limitations must be highlighted in the report.</li> <li>• Way forward can be suggested and second stage of project may be initiated considering all the safety aspects.</li> </ul>
7.6	<p><b>Travellers Trip Patterns and its Implications on Intermediate Public Transport Services in Imphal, India</b></p> <p>Presented by Dr. S. Padma</p>	<ul style="list-style-type: none"> <li>• The number of trips generated and mode of transport may be affected due to covid. This effect may be considered during data collection.</li> <li>• Students from Manipur institute of Technology should be involved through MTech or PhD thesis to build the local capacity rather than involving during the data collection only.</li> <li>• Credibility and appropriateness of data may be checked by applying the relevant filters.</li> <li>• Randomized control of trials method for any pandemic situations may be followed.</li> </ul>
7.7	<p><b>Development of Design Guidelines and Specification for Utilization of Steel Slag in Road Construction</b></p> <p>Presented by Shree Satish Pandey</p>	<ul style="list-style-type: none"> <li>• The transportation and processing cost is very high. A matrix can be worked out on cost economics compared to conventional aggregates.</li> <li>• Get connected with the group who are working in this same area of waste utilization to improve the cost economics.</li> </ul>
7.8	<p><b>Development of Road Maintenance Management system (RMMS) for Public Works Department Govt. of Kerala</b></p> <p>Presented by Dr. Devesh Tiwari</p>	<ul style="list-style-type: none"> <li>• RMMS is extremely important aspect of highway engineering. RC welcomed the project.</li> <li>• A brief report on maintenance and management issues experienced in last 10 to 15 years may be prepared for information of field engineers.</li> <li>• All aspects of maintenance and management may be included to connect the last mile connectivity.</li> </ul>
7.9	<p><b>Development of Methodology for Traffic Circulation, Plans around Metro Stations and their Impact Quantification Using Microscopic Simulation</b></p> <p>Presented by Dr. Mukti Advani</p>	<ul style="list-style-type: none"> <li>• RC appreciated the project and hoped that the knowledge base created in this project will be useful for future projects as well.</li> </ul>

### Item 8. Presentation on In-House Research Project

S. No.	Project Details	Suggestions of the RC members
8.1	<p><b>Development of Mass Spring System based on low Frequency, i.e., 1Hz frequency</b></p> <p>Presented by Dr. Nasim Akthar</p>	<ul style="list-style-type: none"> <li>Stakeholders like metro authorities may be contacted for deployment of this technology</li> <li>The title of the project may be changed as “Development of low frequency mass spring system” or “Development of mass spring system for low frequency vibrations”</li> <li>Pneumatic suspension will help in attaining 1 Hz. frequency.</li> <li>Instead of trial and error, optimisation program may be run for better results.</li> </ul>

### Item 9. Presentation of Sponsored Consultancy Projects

Sl. No.	Project details	Remarks of RC Members
10.1	<p><b>Development of Airfield Pavement Management System</b></p> <p>Sponsored by Airport Authority of India, New Delhi</p> <p>Presented by Dr. Pradeep Kumar.</p>	<ul style="list-style-type: none"> <li>IRC codes or guidelines may be developed for Indian conditions with the findings of this project.</li> <li>Drainage issue may be considered while giving the maintenance suggestions.</li> <li>The touchdown and landing points on runway will have more wear and tear. More focus may be given to these sensitive areas.</li> </ul>

### Item 10. RC Meeting with Scientists

**Prof. Tarun Kant** chairman said he was fortunate in being associated with the CSIR-CRRI for the last three years. As the role of RC is advisory, Members of RC have tried their best in giving directions for R&D. CRRI was having very good experimental facilities and infrastructure hence it was the duty of scientists concerned to give the best scientific output from the laboratory. World class output should be visible internationally so that all road problems are referred to CRRI. It was a great experience to see the facilities of CRRI during this tenure of RC. He hoped to continue to maintain his long-term association with the institute in future. He wished the very best for the future of the CSIR-CRRI. He thanked the Member-Secretary Shree K. Sitaramanjaneyulu for being so efficient in organizing Agenda and Minutes of the RC meetings. He also had a special word of praise for Mr. S. Kannan (now retired) who looked after his transport and other facilities. Finally, he thanked Director for his hospitality.

**Dr. R.K. Bhandari** said it was a very special day for him, as 56 years ago he had joined CRRI and is happy to have a continuous association with the institute. As there is a change in level of science and technology then and now and there is an unprecedented level of Science and Technology at everyone’s command now, he advised the young scientists to tap the potential. He said that research problems should flow from the field and they should be demand driven. Though all these may not be directly part of the research, but occasionally, there should be some interaction so that the young people get jazzed about it and always identify problems from the field. He suggested that criticism or discussion on scientific basis should be taken with honor. If one really wants to be very happy with his career, he should create the career of those who are working with him and the senior people should go a mile extra to support their young colleagues. He thanked the director CRRI, and his entire team for the good work done during last three years. He said it was a wonderful association with the Institute, which is in an area of profound national importance.

He wished the institute to have a scintillating future. He said he owes a debt of gratitude to the chairman, who had conducted affairs of this meeting and the previous ones so efficiently. He thanked the Secretary of the committee, Shree K. Sitaramanajaneyulu for being the solid interface between CRRRI and RC members.

**Prof. Sundaravadivelu** thanked chairman and members for the opportunity given to him and mentioned that most of scientists are doing the latest field problems. He also suggested to encourage the young scientists to attend the international conferences for good exposure. He mentioned that he will cherish the moments he had with the RC chairman, Prof. Tarun Kant. He concluded by thanking the Director CRRRI and secretary RC for excellent communication and arrangements.

**Shree R.K. Pandey** thanked the Director CRRRI for giving him an opportunity to be in Research Council. He said that he learnt a lot by attending the RC and CRRRI is working excellently. However, there is a gap between people working in CRRRI and field engineers. He suggested for more collaboration with user agencies like NHAI, MoRTH and PWDs to solve many of the field problems. He said NHAI is willing to sponsor the research projects and to give the test section for experimentation. He said that the data available with NHAI can be used by CRRRI to develop deterioration models for Indian conditions. He concluded by wishing CRRRI a bright future.

**Prof. Santosh Kapuria** thanked DG and Director CRRRI for nominating him as a member of this research council and it was a great experience of working under the chairmanship of Prof. Tarun Kant. He mentioned that CRRRI certainly has moved very positively in terms of nationally relevant projects. CRRRI has increased its footprint in terms of working with the PWDs and very interesting and nationally important projects are being taken up. He is seeing a strong, and positive movement in that direction. He said RC possibly tried to make some positive changes and it is important to take care and make use of positive changes which have happened in CSIR in the last three years. He said that CSIR has created a system of theme project, where it is possible to interact with other labs and develop synergy with other competencies. The CSIR has developed peer review system for approving the projects which is a very good system and it is a good idea to participate in this review system. If scientists are exposed to such kind of peer review system, it will increase the confidence of the individual scientists. CSIR has developed different types of projects like FBR, NCP, FTT, mission mode, etc., which can be taken up to move forward in terms of research. He advised scientists to be associated with universities and institutes like NITs and IITs. Cooperation and coexistence are needed to build the synergy between the NITs and IITs and other research institutes which will help the country to move ahead. Purchasing the software has started instead of development but now it is the time, we develop our own software in the lines of "Atmanirbhar Bharat". He concluded by wishing all the best to CRRRI for future endeavors.

**Lt. Gen. Suresh Sharma** said that it was a wonderful learning experience by connecting with the scientific community in the field of roads and its associated activities. He mentioned every single meeting has gone with rich experience. To be ahead of others, it should be collective and collaborative effort. He thanked RC chairperson, fellow members and Director CRRRI.

**Dr. I.K. Pateria** said it was a wonderful experience working with RC. Interaction of MORD with CRRRI was always there and will continue in the future also. He said CRRRI was always present in the documentation like rural road manual, guidelines, etc. He appreciated the then joint secretary, Ministry of Rural Development for involving CRRRI in planning, documentation, taking up the new technologies and in implementation of PMGSY programme. He said using new technologies in rural roads is a big challenge as most of the facilities are not easily available. He recalled about the incident when scientists helped field engineers for implementation of new technology. He hoped to continue the coordination and association with CRRRI in future as well. He said that he is impressed about few points of Director's presentation that CRRRI helping people on ground during COVID period.

**Shree K. Sitaramanjaneyulu** thanked chairman RC and other Members for their suggestions and guidance during last three years. He also thanked Prof. Satish Chandra, Director, CSIR-CRRI for giving the opportunity to be the secretary RC for last three years. He finally concluded by thanking all the scientists of CRRI for their cooperation.

#### **Item 11. Closing Remarks by Director CRRI**

**Prof. Satish Chandra** said that he was extremely thankful to Prof. Tarun Kant for conducting the meetings by maintaining high level of decorum. He thanked Dr. Girish Sahni, former DG CSIR for constituting such a wonderful RC for CRRI. He said he personally enjoyed each and every meeting of RC and scientists have learned a lot from observations and comments from RC members as all the comments have really added value to the research. He hoped CRRI will continue to have the patronage of RC and he finally thanked the members for giving their valuable time. He thanked Shree K.Sitaramanjaneyulu for preparing the agenda and arranging the meetings. He wished everyone to stay safe and healthy.