GLORIOUS 75 YEARS OF CSIR-CBRI

CSIR-Central Building Research Institute
Roorkee - 247667

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Edited and Compiled by:

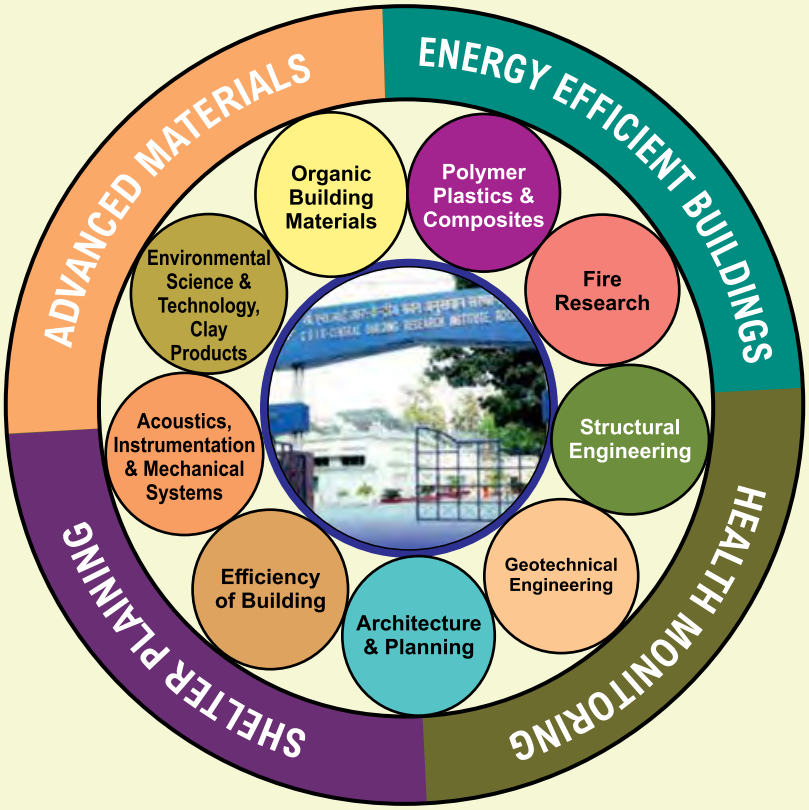
Dr. Shantanu Sarkar
Dr. Susanta Kumar Senapati
Mr. Koushik Pandit
Ms. Hina Gupta

CSIR – CBRI, Roorkee

CONTENTS

VISION

To work as the world-class knowledge base for providing solutions to almost all area of Building construction / Habitat planning and construction including building materials, technology, fire engineering and disaster mitigation.



MISSION

To carry out R&D on all aspects of building and housing and assist the building industry in solving problems of planning, designing, foundations, materials and construction including disaster mitigation in all kinds of buildings.

सबका साथ, सबका विकास, सबका विश्वास
Sabka Saath, Sabka Vikas, Sabka Vishwas

सत्यमेव जयते

डॉ हर्ष वर्धन
Dr Harsh Vardhan
स्वास्थ्य एवं परिवार कल्याण, विज्ञान और प्रौद्योगिकी व पृथ्वी विज्ञान मंत्री, भारत सरकार
Union Minister for Health & Family Welfare, Science & Technology and Earth Sciences Government of India

MESSAGE

It gives me immense pleasure to note that CSIR-Central Building Research Institute (CSIR-CBRI) has brought out compendium highlighting the achievements of the Institute during the last 75 years in the arena of building technology research and development.

CSIR-CBRI is one of the premier Research Institutes known for its excellence in the areas of building science and technology. It has vast infra-structure and adequate human resource which is well equipped with the knowledge, skills and capabilities required for the research and development in this field.

The contribution of the Institute in the field of building science & technology has been beautifully portrayed in the compendium and I am sure that it will serve as a remembrance of the significant involvement of the institute in the housing technology in the past.

I offer my best wishes for the successful publicat on of the compendium. I also congratulate the staff for their relentless efforts towards the excellence which have made CSIR-CBRI as an Institute of national pride.

(Dr. Harsh Vardhan)

कार्यालय: 348,ए–स्कंध, निर्माण भवन, नई दिल्ली - 110011• **Office**: 348, A-Wing, Nirman Bhawan, New Delhi - 110011
Tele.: (O): +91-11-23061661, 23063513 •**Telefax** : 23062358• **E-mail** : hfwminister@gov.in, hfm@gov.in
निवास: 8, तीस जनवरी मार्ग, नई दिल्ली – 110011 •**Residence**: 8, Tees January Marg, New Delhi - 110011
Tele.: (R): +91-11-23794649• **Telefax** : 2379464C

Foreword

सत्यमेव जयते

डॉ. शेखर चिं. मांडे
एफएनए, एफएएससी, एफएनएएससी
सचिव
वैज्ञानिक और औद्योगिक अनुसंधान विभाग तथा
महानिदेशक

Dr. Shekhar C. Mande
FNA, FASc, FNASc
Secretary
Department of Scientific & Industrial Research and
Director General

भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद
वैज्ञानिक और औद्योगिक अनुसंधान विभाग

Government of India
Ministry of Science and Technology
Council of Scientific & Industrial Research
Department of Scientific & Industrial Research

FOREWORD

CSIR-Central Building Research Institute, Roorkee is one of the initial R&D institutes of Council of Scientific and Industrial research (CSIR). It commenced as Building Research Unit in 1947, just before the country attained independence and was declared as 'Central Building Research Institute' by CSIR in 1950.

It is a matter of pride that CSIR-CBRI is bringing a document of its past 75 years of performance, highlighting history and development of the institute, contributing the building industry through its R&D activities e.g. inventing new technologies, new materials, and blending of engineering science with the basic sciences. I am very pleased to learn that the document contains exquisite photographs of its earlier decades. The recorded original speeches of Pandit Jawahar Lal Nehru, Shri Sri Prakasa, Dr. S.S.Bhatnagar, Dr. C.A. Hart and Dr. Mukherjee delivered during foundation laying ceremony of the institute on 10th February 1951 have also been included in the document.

I visited CSIR-CBRI couple of times as DGCSIR for a very short duration, and have found the infrastructure, present R&D activities and commitment of scientists and other staff in taking the challenging R&D tasks towards the solution of the present problems of housing infrastructure and disaster mitigation. I am confident that the institute will continue to evolve and reach greater heights in the coming years.

I convey my greetings and best wishes to TEAM-CBRI.

(Shekhar C Mande)
Secretary, DSIR and DGCSIR

Anusandhan Bhawan, 2, Rafi Marg, New Delhi-110001
Tel. : 23710472, 23717053, Fax : (91-11) 23710618, E-mail : secy-dsir@gov.in; dgcsir@csir.res.in and dg@csir.res.in, Website : www.csir.res.in

Preface

डॉ. एन. गोपालकृष्णन
निदेशक

Dr. N. Gopalakrishnan
Director

सीएसआईआर–केन्द्रीय भवन अनुसंधान संस्थान
रुड़की – 247 667 (भारत)

CSIR-Central Building Research Institute
(A Constituent Establishment of CSIR)
ROORKEE - 247 667 (INDIA)

PREFACE

It is my immense pleasure to present this document on 'Glorious 75 Years of CSIR-CBRI'. The Institute started with five scientists, appointed by CSIR who initiated the R&D activities in University of Roorkee Campus as 'Building Research Unit' in 1947. The Building Research Unit was raised to the status of Central Building Research Institute in 1950 with Dr. J.N. Mukherjee as its first Director. The foundation stone of the institute building was laid on 10th February, 1951 by the Honourable Shri Sri Prakasa, Minister of Natural Resources and Scientific Research in the presence of Pt. Jawahar Lal Nehru, the then Prime Minister of India and Dr. Shanti Swarup Bhatnagar, the then DGCSIR.

It is gratifying to note that the institute is continuously advancing with multidisciplinary research activities and had transferred a large number of technologies to the building industries. The document contains the history of the institute, development and major R&D outputs, placed decade – wise with recorded photographs. A list of awarded patents, technologies developed and transferred is included in this compendium. It is also nice to see that the document contains the recorded speeches of great luminaries during foundation laying ceremony of the main building.

The product of the compendium is a team effort and involvement of many S&T members. I wish to particularly thank Dr. Shantanu Sarkar, Dr. S. K. Senapati, Shri Koushik Pandit, Mrs Hina Gupta and the members of the committee who have brought this compendium into a tangible shape.

I am sure that you enjoy reading this compendium.

(N. Gopalakrishnan)
Director

Tel : (+91) 1332 272243 (O)
Website : www.cbri.res.in
Fax : (+91) 1332 272272, 272543
E-mail : director@cbri.res.in, director@cbrimail.com

GENESIS of CSIR-CBRI

THE PLAN:

As India was becoming independent in 1947, the Government faced the daunting task of rebuilding the Nation. The primary focus was on providing the citizens with the basic necessities of dignified life: food, clothing, and shelter. As expressed in the "Discovery of India" in Pandit Nehru's words, "We fixed a ten year period or the plan, with control figures for different periods and different sectors of economic life." The Govt. of India prepared some objectives to improve the quality of life in Independent India. Availability of housing or shelter was one of the fundamental problems. There was an immediate need to develop new technologies and indigenous building materials to speed up low-cost housing construction for the large masses.

BSIR & IRUC:

Sir A. Ramaswami Mudaliar, then Commerce Member in the Government of India, took the initiative to create a **Board of Scientific & Industrial Research (BSIR)** with many resources and broad objectives. The Board started functioning in the premises of the Government Test House, Calcutta. Dr. S.S. Bhatnagar took over as the Director General of Scientific & Industrial Research in August, 1940. Consequently, several research committees were formed under BSIR to suggest the prominent areas of research. On 8th February 1941, the Government set up an **Industrial Research Utilization Committee (IRUC)** composed of scientists and industrialists who would select the industries that could utilize the research results emanating from BSIR schemes.

CSIR:

After setting up the BSIR and IRUC by the Department of Commerce, the **Council of Scientific and Industrial Research (CSIR)** was formed as a Society and got registered on 12th March 1942 under the Registration of Societies Act of 1860. Hence, **CSIR came into existence on 26th September, 1942**.

The objectives of the CSIR Society were codified clearly on the Memorandum of Association. One goal was to provide scientific assistance to existing institutions and departments to study problems affecting particular industries and trade. It was realized that planned scientific research was essential for an effective solution for building construction, and specialized institutes are needed to facilitate building research.

CSIR-CBRI:

In December, 1943, a Building Research Committee was formed, with Sir Teja Singh Malik as the Chairman, to help the building research in India. Dr. S.S. Bhatnagar proposed the committee to consider setting up of a national laboratory for building research. Subsequently, the committee recommended setting up of a **Building Research Unit (BRU) at Roorkee** to work with the

Thomason College of Engineering (later on the University of Roorkee and now Indian Institute of Technology), Roorkee.

In 1947, a group of five CSIR scientists started functioning at the Building Research Unit (birthplace of CBRI) in the campus of Thomason College of Engineering, Roorkee. The Thomason College welcomed the Unit by providing some infrastructure to start with. The first five scientists were: Dr. S. Parthasarathy, a physicist from NPL, designated as Officer-in-charge; Shri Gurudas Ram (SSO), and Shri Chapghar (JSO), both physicists; Dr. N.K. Patwardhan (SSO) and Shri L.C. Jain (JSO), both chemists. Shri Dinesh Mohan (SSO), a civil engineer, joined in January, 1948. The plan for developing the Unit into a full-fledged Building Research Institute was entrusted for scrutiny to a sub-committee composed of Prof. B.D. Puri (Principal, Thomason College), Shri A.C. Mukherjee (Chief Engineer, UP), and the Officer-in-charge of the Unit. The Governing Body finally approved the plan of the CSIR in July, 1949.

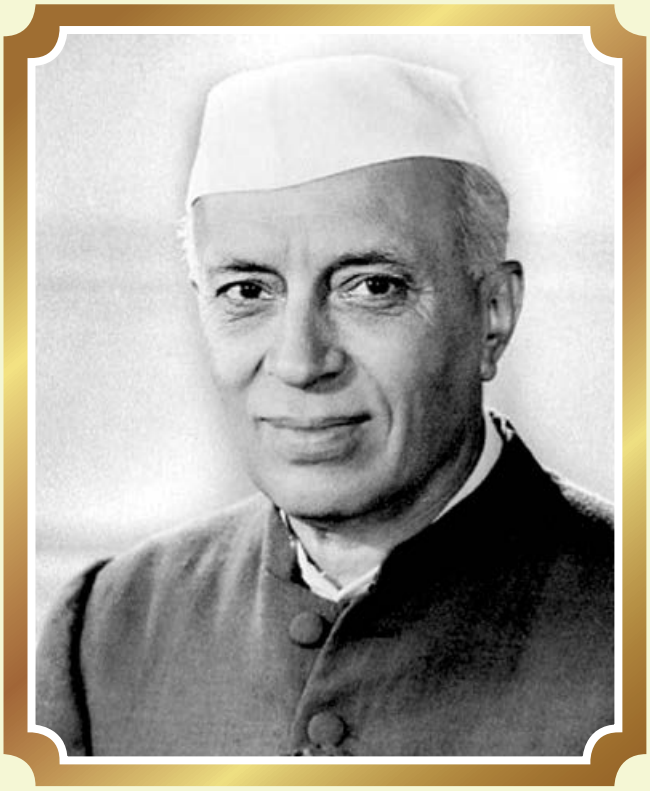
Thus, the Building Research Unit was raised to the status of Central Building Research Institute in 1950 with Dr. J.N. Mukherjee as its first Director.

The land acquisition process for construction of independent building and infrastructure for R&D facilities commenced and finally, the University of Roorkee offered a plot of land measuring ten acres at the disposal of the Council on a long lease for construction of the institute building with the approval of Shri Govind Ballabh Pant, the then Chief Minister, Uttar Pradesh.

The foundation stone of the new building was laid on 10th February, 1951 by Hon'ble Shri Shri Prakasa, the then Minister of Natural Resources and Scientific Research. It was a red-letter day for the Institute as Pandit Jawahar Lal Nehru graced the occasion by his presence along with other dignitaries like Dr. S.S. Bhatnagar and Dr. J.N. Mukherjee. The design of the CBRI building, prepared by famous architects Mr. Kanvinde and Mr. Rai, was exhibited on the occasion. Dr. J.N. Mukherjee retired as Director of CBRI in 1952 and soon, Dr. Kurt Billig was appointed as his successor.

On 12th April 1953, the opening ceremony of the new building of the Institute was held. Maulana Abul Kalam Azad, the then Minister of Natural Resources and Scientific Research, declared the building open. Prime Minister Jawaharlal Nehru graced the occasion with a galaxy of political leaders viz. Shri Govind Ballabh Pant, Chief Minister of UP; Shri Swaran Singh and Shri K.D. Malaviya, both central ministers; Shri Lal Bahadur Shastri, the then a Minister in UP; Dr. M.N. Saha, a distinguished scientist and Dr. S.S. Bhatnagar. Pandit Nehru was pleased with the appearance of the building and said, "The people of Roorkee are fortunate to have such a mansion of science in their midst, but they never forget that the Institute belongs to the Nation. I rejoice today because I see that the new India is in ferment, and out of the womb of this ancient motherland, something magnificent is being born".

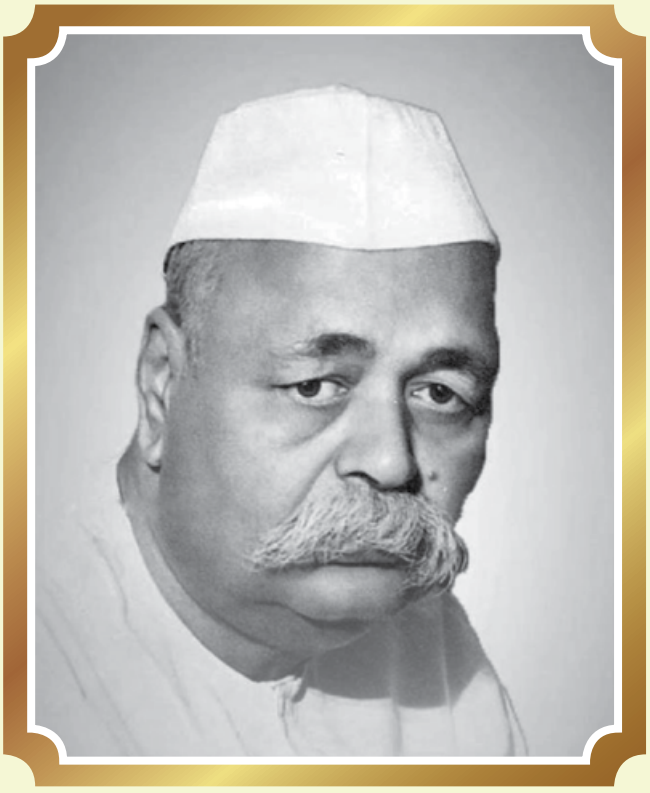
Engineering The Formation of CSIR-CBRI



Pandit Jawaharlal Nehru

Dr. S.S. Bhatnagar

University of Roorkee offered land for construction of the institute building



Shri Govind Ballabh Pant
Chief Minister of UP

Dr. C.A. Hart
First Vice Chancellor
University of Roorkee

BIRTH PLACE OF CSIR-CBRI (1947)
as Building Research Unit (BRU) at Roorkee

Founding Scientists of the Institute

HANGER (Thomason College of Engineering)

Shri Gurudas Ram

Shri Chapghar

Shri L. C. Jain

Dr. N.K. Patwardhan

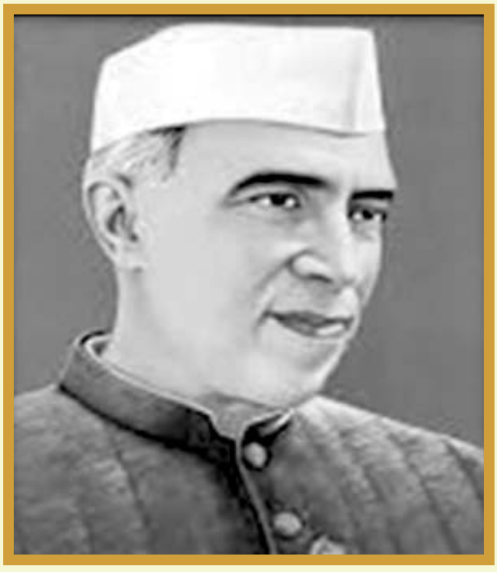
Dr. S. Parathasarthy

Shri Dinesh Mohan

Shri Sri Prakasa Laid the Foundation Stone of CSIR-CBRI (10th February 1951)

FOUNDATION STONE

VALUABLE QUOTES



Housing is our most important and urgent problem and the Building Research Institute would be doing a national service of enormous importance if it devices means of building durable and cheap houses in the country for low-income group of people".

Pandit Jawaharlal Nehru, First Prime Minister of India

(CSIR-CBRI, collection of speeches delivered by the Dignitaries during foundation laying ceremony of CBRI Building, Roorkee on 10th February 1951).

I most earnestly and confidently hope as I declare this Foundation well and truly laid, that the Central Building Research Institute that shall rise on it, will always attract to itself, earnest men and women, full of sympathy and understanding, who will work here silently – may be even unknown – so that other may be profited, and that the country that through the stress of adverse circumstances, has lost all sense of values, will recover its soul once again. May the houses constructed as recommended by the institute, be commensurate to the means and meet all the needs of our people, offering them all reasonable facilities and amenities, enabling all, from the humblest to the highest, to love lives of simple nobility and proper decency''.

Shri Sri Prakasa, Hon'ble Minister for Natural Resources and Scientific Research, Govt. of India

(CSIR-CBRI, collection of speeches delivered by the Dignitaries during foundation laying ceremony of CBRI Building, Roorkee on 10th February 1951).

VALUABLE QUOTES

The primary function of this institute is to conduct research on buildings in general with special emphasis on the indigenous materials and designing and construction of building suited to Indian conditions. In pursuance of this aim, the institute will undertake examination of building materials in common use and the methods on applying them with a view to effecting economy and improvement wherever possible. Other subjects of study include examination of new materials and process, diagnosis of the causes of difficulties and failures of materials or their application and determination standards for materials and workmanship. Attention will be directed not only to the development of the existing materials but also to the evolution of new ones. An important objective is to conduct investigations designed to cater to the needs of villages for cheap houses using readily available materials and devising means for cheap air-conditioning of buildings''.

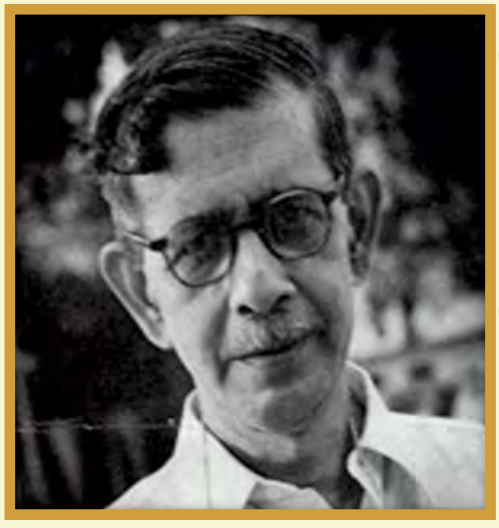
Dr. S. S. Bhatnagar, Director General, Scientific and Industrial Research.

(CSIR-CBRI, collection of speeches delivered by the Dignitaries during foundation laying ceremony of CBRI Building, Roorkee on 10th February 1951).

The first step, however, it seems to me, is to build up the scientific knowledge and technological experience of the men working in this institute in order that they may undertake the solution of the problems of the industry with assurance and success''.

Dr. J.N. Mukherjee, First Director, CSIR-CBRI

(CSIR-CBRI, collection of speeches delivered by the Dignitaries during foundation laying ceremony of CBRI Building, Roorkee on 10th February 1951).



VALUABLE QUOTES

On behalf of the University of Roorkee, I offer my sincere good wishes for the growth and development of the Central Building Research Institute; may its Director and staff meet with all success in their efforts, to enable it to play its full part for India and for Science and Engineering.''

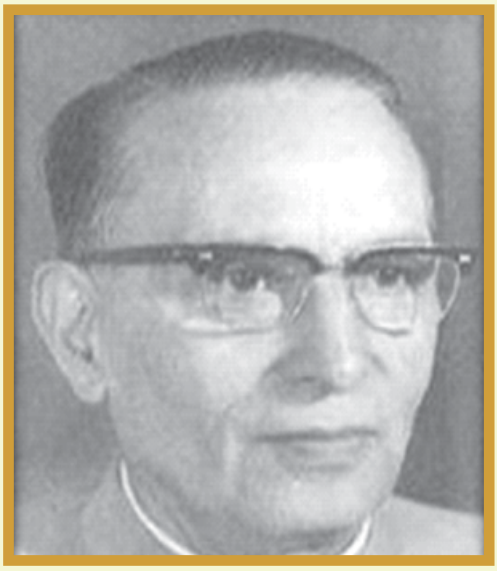
Dr. C. A. Hart, 1st Vice-Chancellor, University of Roorkee

(CSIR-CBRI, collection of speeches delivered by the Dignitaries during foundation laying ceremony of CBRI Building, Roorkee on 10th February 1951).

Steps have been taken to ensure that the Institute will in future be less dependent on the import of special equipments from abroad and it is hoped during the coming year to have a small fine instruments manufacturing and repair workshop as a going concern."

Lt. Gen. H. Williams, Former Director, CSIR-CBRI, Roorkee

VALUABLE QUOTES



As was expected, the project orientation of the research programme has yielded useful results and a number of projects have been carried to the stage for direct utilization by the industry. It is a good augury that the concerned industries have taken an increased interest in exploiting the results of the research work carried out at the Institute".

Prof. G. Pande, Vice-Chancellor, University of Roorkee and Chairman, Executive Council, CSIR-CBRI.

I have watched with interest, over the past several years, the progress of research at the Central Building Research Institute and am much impressed with some of its recent achievements, particularly those which can lead to cost reduction in buildings... I understand, made an impact on practicing architects and engineers and created an awareness towards greater utilization of results of research."

Prof. M.S. Thacker, Member, Planning Commission
& Chairman, Executive Council, CSIR-CBRI.

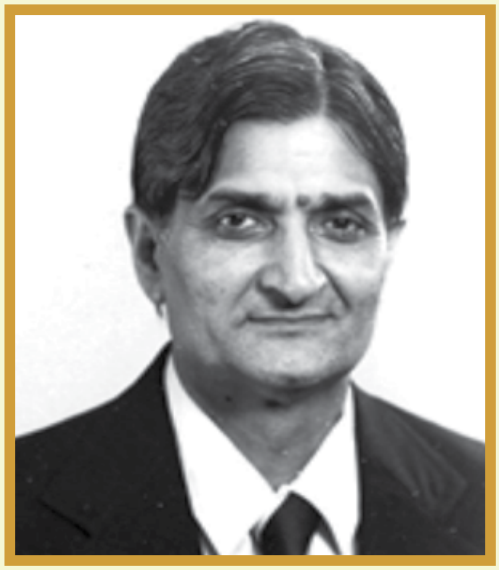
VALUABLE QUOTES

Finally a word on the eve of my retirement – I was associated with the planning of the Institute and have guided its research and development activities during the last three decades. I look back with the sense of satisfaction at the growth of the Institute and the measure of success it has achieved. The Institute is well known both within the country and abroad and enjoys considerable confidence of the profession and the industry. I hope this confidence will grow in the years to come and the Institute will continue to take its place of pride amongst leading research institutes of the country and abroad''.

Prof. Dinesh Mohan, Former Director, CSIR-CBRI.

Since the problem of building and housing at the national level is huge and the resource are limited, there has been a need not only to reorient our priorities but also to focus on a fewer number of major problems in all their totality rather than pursuing a large number of smaller programmes in a piecemeal manner our current plans would, in a matter of couple years, lead to R & D only in major areas identified in tune with the Technology Policy Statement of the Government and the priorities based on the felt needs''.

Prof. Shamsher Prakash, Former Director, CSIR-CBRI



VALUABLE QUOTES

R & D during the last three decades at CBRI owe a great deal to the stewardship of Professor Dinesh Mohan. It is indeed a fitting tribute to dedicate the volume to him. I thank the CBRI scientists and other authors for their contributions to this volume. In the years ahead, Building Research would prove equal to the challenges of tomorrow- this is the hope we cherish.''

Prof. Jagdish Narain, Secretary Association of Indian Universities and Former Vice-Chancellor, University of Roorkee.

These advances in building and construction in the last three decades have found acceptance and it is clearly advantageous to ensure these are now made part of engineering education and training."

Dr. S. Varadarajan, Director General, CSIR.

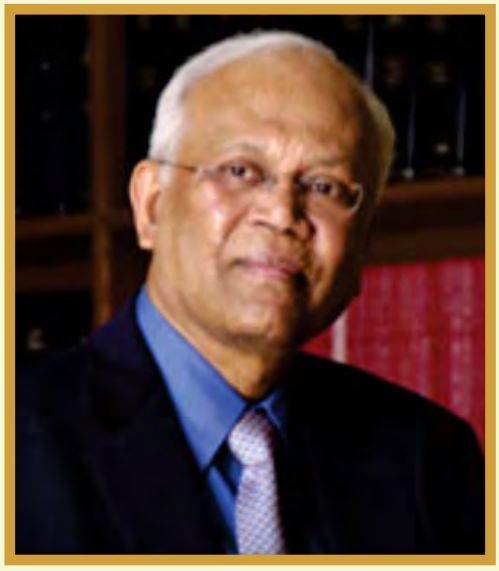
VALUABLE QUOTES

R&D building research, probably more than any other subject, calls for aggressive transfer of technology, ideally pattern of agricultural research''.

Dr. R.K. Bhandari, Former Director, CSIR-CBRI.

I am sure the enthusiasm that the event has rekindled will lead to a cultural transformation enabling CBRI to realise its full potential. This is the essence of the CSIR vision.''

Dr. R. A. Mashelkar, Former DG, CSIR



VALUABLE QUOTES

'The institute is adjusting itself to the fast-changing scenario in the construction industry. In its post-golden jubilee period, CBRI will not only to cater rural development programmes but also to the development of intermediate and high level knowledge base spanning the whole gamut of building science and technology.''

Prof. R.N. Iyengar, Former Director, CSIR-CBRI.

In the new millennium, the institute is geared up to play a major role in finding solutions to the housing and construction problems. We are committed to provide a better living environment for one and all with the ultimate aim to build a better habitat for the growth and prosperity of the nation''.

Ar. V.K. Mathur, Former Director, CSIR-CBRI.

VALUABLE QUOTES

It was and is an honor to be a part of the CSIR-CBRI family, which stands on the footprints of the legendry structural engineer 'Prof. Kurt Billing', the Director during its formative years."

Prof. K. Ganesh Babu, Former Director, CSIR-CBRI.

I see CBRI emerging as an institution who cares for the poor of India while striving hard to make our living safe, efficient, economic and truly sustainable''.

Dr. M. O. Garg, Former Director, CSIR-IIP and Former Director, Additional Charge, CSIR-CBRI

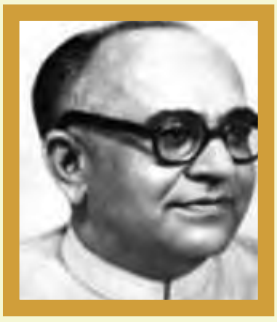
VALUABLE QUOTES

CSIR, in its Eleventh Five Year Plan, has implemented a Supra Institutional Project on 'High-Performance Materials and Construction Technologies for sustainable Built Space' at this institute through its existing overreaching core competencies with a focus on technology-led accelerated inclusive growth. I hope the outputs and outcomes of the project would provide S & T benefits to the building and construction sectors and also address societal requirements of the country in terms of employment generation and improvement in the quality of life".

Prof. S. K. Bhattacharyya, Former Director, CSIR-CBRI.

DIRECTOR GENERALS OF CSIR

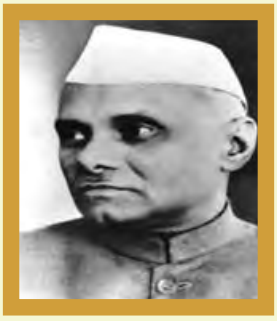
DR. S.S. BHATNAGAR
(1942-1954)



PROF. M.S. THAKAR
(3.08.1955-1.08.1962)

DR. S. HUSAIN ZAHEER
(1.9.1962-21.8.1966)

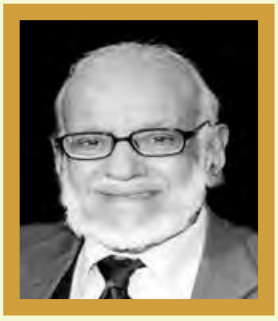
PROF. S.R. MEHRA
OFFICIATED DURING
DEPUTATION ABROAD OF DG



DR. ATMA RAM
(22.8.1966-21.8.1971)

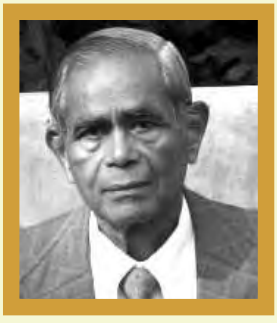
DR. NAYUDAMMA
(27.8.1971-27.7.1977)

DR. A. RAMACHANDRAN
(27.7.1977-9.10.1978)



PROF. M.G.K. MENON
(9.10.1978-4.05.1981)

DR. G.S. SIDHU
(5.5.1981-4.05.1984)



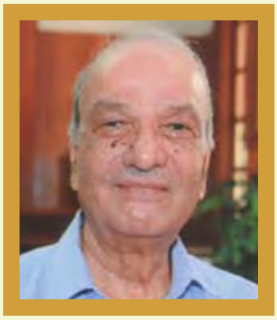
PROF. P.K. JENA
(05.05.1984-21.06.1984)
(28.01.1986-25.02.1986)

DR. S. VARDARAJAN
(22.06.1984-27.01.1986)

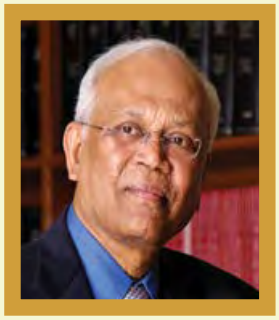
DR. G. THYAGARAJAN
(OFFICIATED FOR 7 DAYS
IN 1986)

DIRECTOR GENERALS OF CSIR

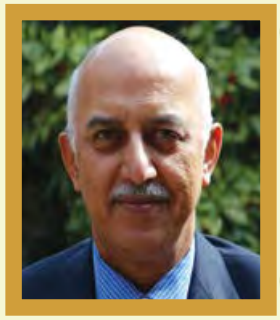
DR. A.P. MITRA
(26.02.1986-16.04.1991)



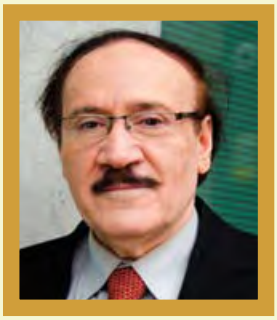
PROF. S.K. JOSHI
(18.04.1991-30.06.1995)



DR. R. A. MASHELKAR
(1.7.1995-31.12.2006)



DR. V.PRAKASH
(DEC. 2006)



DR. MAHARAJ KISHAN BHAN
(5.1.2007-6.3.2007)

DR. T. RAMASAMI
(7.3.2007-11.11.2007)

PROF. SAMEER K. BRAHMACHARI
(12.11.2007-31.12.2013)

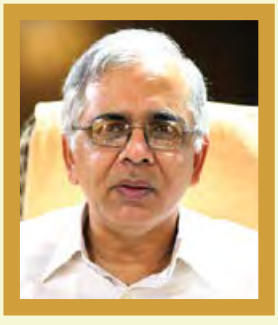
DR.T. RAMASAMI
(1.1.2014- 7.5.2014)

DR. P.S. AHUJA
(8.5.2014-31.12.2014)

DR. M.O. GARG
(3.2.2015-24.8.2015)

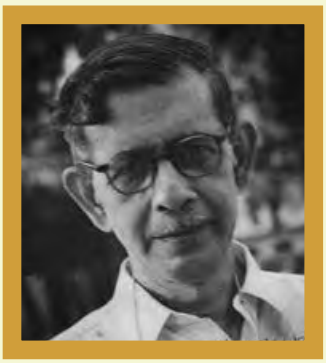
DR. GIRISH SAHANI
(24.8.2015-23.8.2018)

PROF. ASHUTOSH SHARMA
24.08.2018-15.10.2018



DR. SHEKHAR C. MANDE
(16.10.2018 to present)

DIRECTORS OF CSIR-CBRI



Dr. J. N. Mukerjee, Director
(14.10.1950 to 30.09.1952)

Dr. K. Billig, Director
(27.10.1952 to 09.09.1954)

Lt. Gen. H. Williams, Director
(17.10.1955 to 15.10.1962)

Prof. Dinesh Mohan, Director
(18.04.1964 to 30.06.1982)

Sh. R. C. Mangal, Acting Director
(01.07.1982 to 31.07.1983)

Dr. Shamsher Prakash, Director
(01.08.1983 to 24.06.1985)

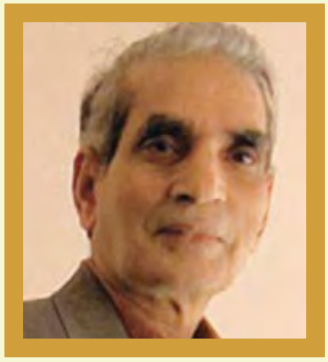
Sh. T.N. Gupta, Acting Director
(25.06.1985 to 28.01.1986)

Dr. R. K. Bhandari, Director
(29.01.1986 to 30.07.1990)

DIRECTORS OF CSIR-CBRI

Dr. S. K. Misra, Acting Director
(01.08.1990 to 24.05.1992)

Dr. A. C. Singhal, Director
(25.05.1992 to 12.01.1993)



Dr. T.S.R. Prasada Rao
Director - Addl. Charge
(14.01.1993 to 24.04.1994)

Prof. R N. Iyengar, Director
(25.04.1994 to 24.04.2000)

Sh. V. K. Mathur, Director
(25.04.2000 to 31.07.2005)

Sh. N. K. Shangari, Acting Director
(01.08.2005 to 10.08.2005)

Prof. K. Ganesh Babu, Director
(11.08.2005 to 22.07.2007)

Dr. M. O. Garg, Director - Addl. Charge
(23.07.2007 to 04.08.2009)

DIRECTORS OF CSIR-CBRI

Prof. S. K. Bhattacharyya, Director
(05.08.2009 to 04.08.2015)

Dr. Girish Sahni,
Director - Addl. Charge
(05.08-2015 to 08-10-2015)

Er Yadvendra Pandey, Acting Director
(09.10.2015 to 18.04.2016)

Prof. Satish Chandra
Director - Addl. Charge
(19.04.2016 to 25.05.2016)

Dr. N. Gopalakrishnan, Director
(26.05.2016 onwards)

CHAIRMAN OF RESEARCH COUNCIL

S. No.	Year	Name of Research Committee	Name of Chairman	Photo
1.	1953-55	Building Research Committee		
2.	1956-58	Scientific Advisor Committee	**Lt. Gen. H. William**	
3.	1958-59	Executive Council	**Shri K.C. Reddy**	
4.	1959-60	Executive Council	**Shri N. Dandekar**	
5.	1960-62	Executive Council	**Prof. M.S. Thacker**	
6.	1962-64	Executive Council	**Shri Sri. Prakasa**	
7.	1964-65	Executive Council	**Prof. G. Pande**	
8.	1966-72	Executive Council	**Prof. M.S. Thacker**	
9.	1973-77	Executive Council	**Prof. Dinesh Mohan**	
10.	1978-80	Scientific & Technical Advertising Committee	**Shri H.U. Bijlani**	
11.	1981	Research Advisory Council	**Prof. Jagdish Narayana**	

S. No.	Year	Name of Research Committee	Name of Chairman	Photo
12.	1982-85	Research Advisory Council	**Dr. A.K. Malhotra**	
13.	1985-88	Research Advisory Council	**Shri Ramesh Chandra**	
14.	1988-94	Research Council	**Prof. Bharat Singh**	
15.	1995-2000	Research Council	**Prof. N.C. Nigam**	
16.	2001-2006	Research Council	**Prof. H.C. Visvesvaraya**	
17.	2006-2010	Research Council	**Prof. S.K. Khanna**	
18.	2010-2017	Research Council	**Prof. Prem Krishna**	
19.	2017-2019	Research Council	**Prof. N. Raghavan**	
20.	2019-2020	Research Council	**Prof. T.G. Sitharam**	
21.	2020 - Present	Research Council	**Prof. Mahesh Tandon**	

RESEARCH COUNCIL (RC) MEETINGS

RC MEETING IN 2003

RC MEETING IN 2007

RESEARCH COUNCIL (RC) MEETINGS

RC MEETING IN 2009

RC MEETING IN 2014

RESEARCH COUNCIL (RC) MEETINGS

RC MEETING IN 2016

RC MEETING IN 2017

RESEARCH COUNCIL (RC) MEETINGS

RC MEETING IN 2019

VIRTUAL RC MEETING IN 2020

A GLANCE OVER THE DECADES

DECADE 1

The Beginning

(1947-1956)

- In 1947, Building Research Unit (today's CSIR-CBRI) started with five CSIR scientists in the campus of Thomason College of Engineering, Roorkee (today's IIT Roorkee).
- The Building Research Unit was declared as ''Central Building Research Institute'' in 1950, and the Foundation Stone of the CSIR-CBRI building was laid on 10th February, 1951.
- Inauguration of the new building in 1953.
- In the first decade, the Institute was led by Dr. J.N. Mukherjee (1950-52), Dr. Billig (1952-54), and Lt. Gen. Williams (1955-62) as Directors of the Institute.
- Corrugated Shell Building (C'tesiphon Shed) was made in CSIR-CBRI campus in 1954 and patented as "Billig and Walker". This shell building still exists in the institute campus.
- Construction of precast house using prestressed concrete units.
- The total strength of the institute staff rose from fifteen in 1947 to a hundred in 1954.
- Transfer of the first technology of CSIR-CBRI for the manufacturing process of foaming agent to the Hindustan Housing Factory for commercial use.
- In 1955, CSIR-CBRI developed the under-reamed pile technology on soft soils for building foundations.
- The layout and construction of the residential colony for the CSIR-CBRI staff begun in 1955. The colony was named Shantinagar after 'Sir Shanti Swarup Bhatnagar'.
- During the 1st decade, the scientific and research works were organized in six divisions (i) Building Materials, (ii) Soil Engineering, (iii) Design and Performance of Structures, (iv) Efficiency of Buildings, (v) Information and Survey and (vi) Operation, Cost, and Productivity.

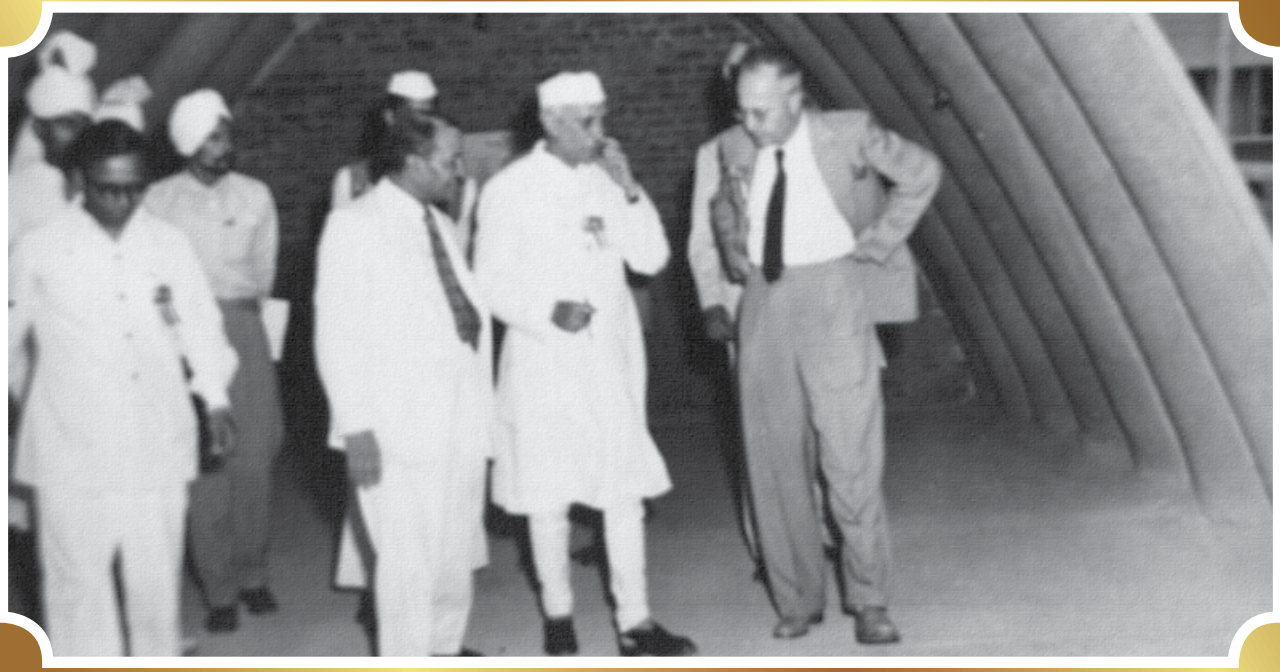
Our Memories

Hon'ble Shri Prakasa addressing the gathering

Pt. Jawahar Lal Nehru with Dr. K. Billig
during the Opening Ceremony of CSIR-CBRI

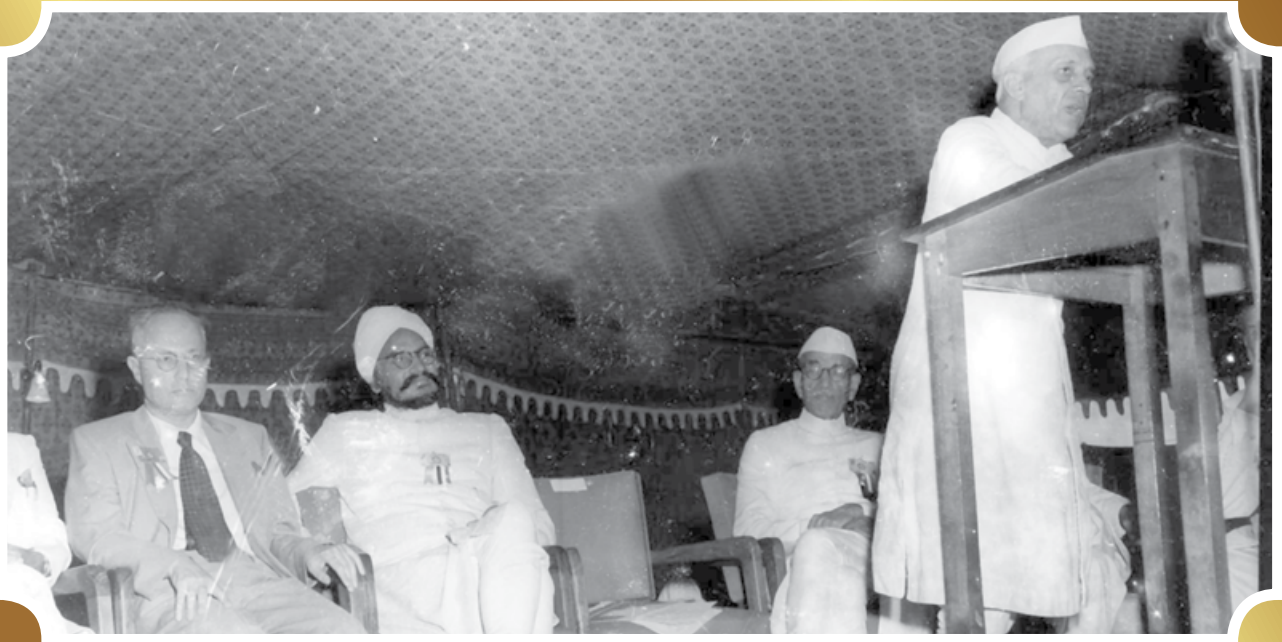
Our Memories

Pt. Jawahar Lal Nehru interacting with Dr. K. Billig



Pt. Jawahar Lal Nehru, Dr. Billig and Dr. S.S. Bhatnagar
at Corrugated Shell Building

Our Memories



Hon'ble Prime Minister Pt. Jawahar Lal Nehru addressing the gathering

Our Memories

Dr. S.S. Bhatnagar addressing the gathering

Dr. J.N. Mukherjee addressing the gathering

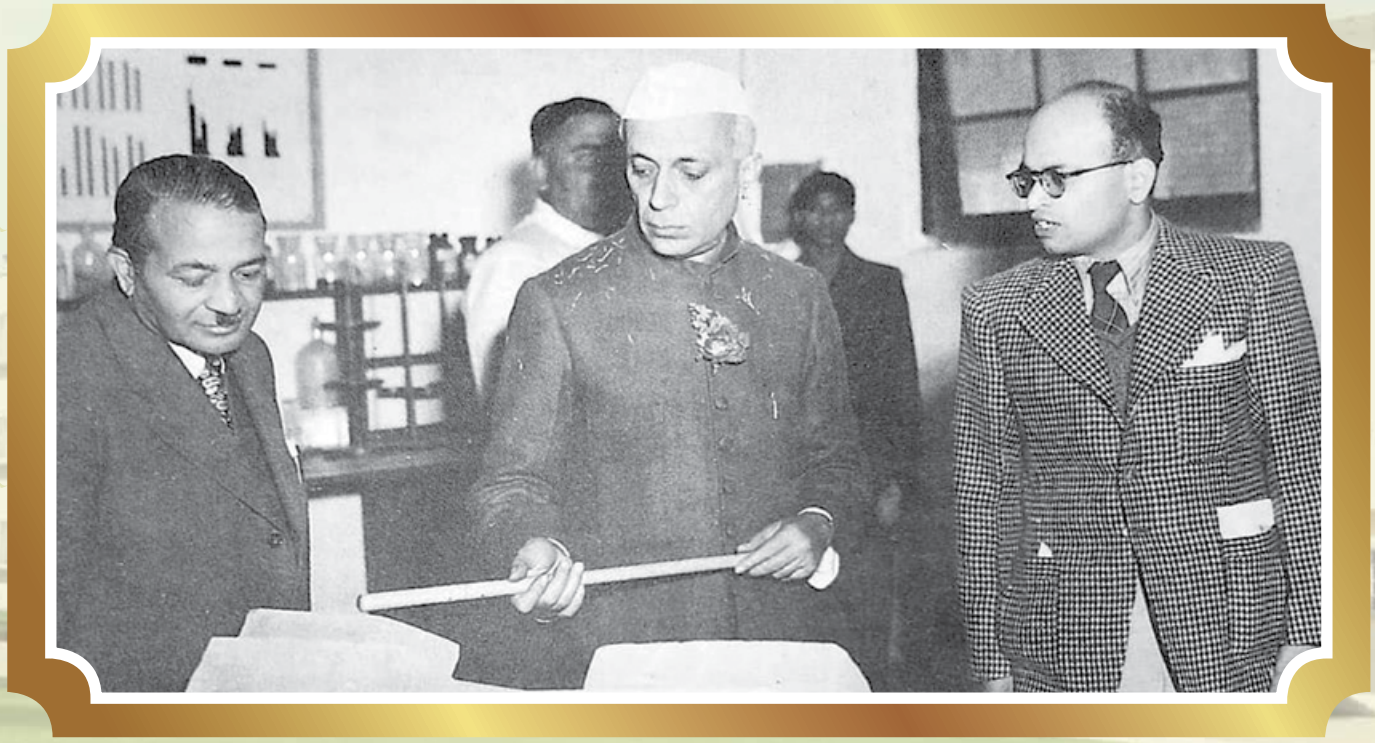
Our Memories

Shri Maulana Abul Kalam Azad inaugurating the main building

The Prime Minister and other invitees inside the foyer of the new building

Our Memories

Shri Jawahar Lal Nehru and others evincing keen interest in the activities of CSIR-CBRI



Shri Jawahar Lal Nehru during a visit to the institute, flanked by Dr. S.S. Bhatnagar and Dr. N.K. Patwardhan

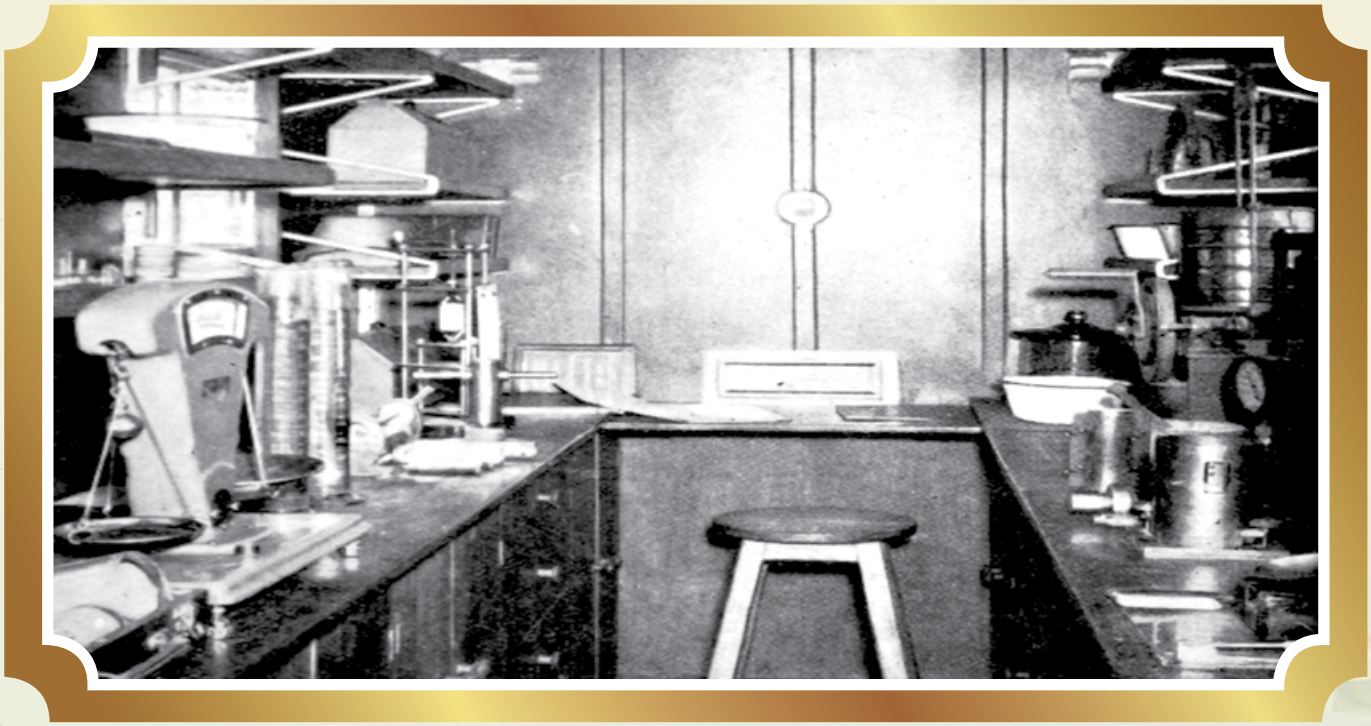
DECADE 2

The Spring

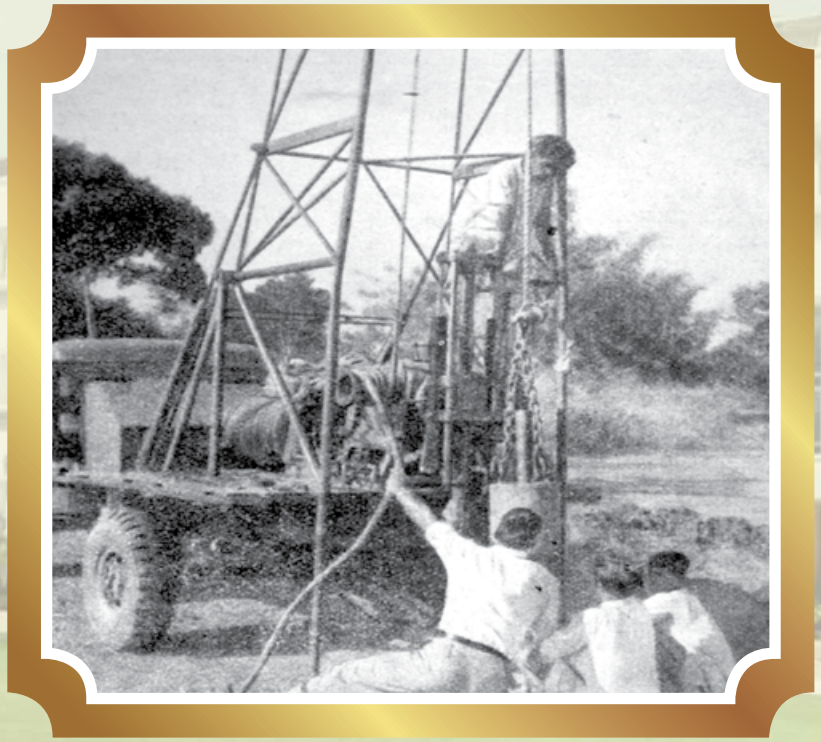
(1957-1966)

- Prof. Dinesh Mohan took over charge as Acting Director from Lt. Gen. Williams in 1962 and was appointed as full-fledged Director in April 1964.
- Establishment of the Architectural Division in 1960.
- Construction of 120 residences of various categories in CSIR-CBRI colony in 1960.
- Development of Clay bricks & Clay products.
- Installation of equipment for X-Ray analysis, Differential Thermal Analysis.
- Process of manufacturing of a foaming agent for foam concrete was given to the M/s Hindustan Housing Factory (HHF) for commercial development.
- Several small houses were erected in various black cotton soil areas using the under-reamed pile foundation system.
- Development of Doubly curved shell roofing units.
- Development of Light–weight sintered aggregate from fly ash.
- Preparation of suitable building designs for the school, hospital & industrial buildings.
- Folded plates & shells of various types as the solution of problems in roofing large areas.
- Development & fabrication of indigenous earth-pressure cells.
- The development of cement paints and plastic water-proofing coating deserves special mention since the industry readily accepted them.
- Full-scale factory trials on the production of cellular concrete using lime & fly ash.

Our Memories

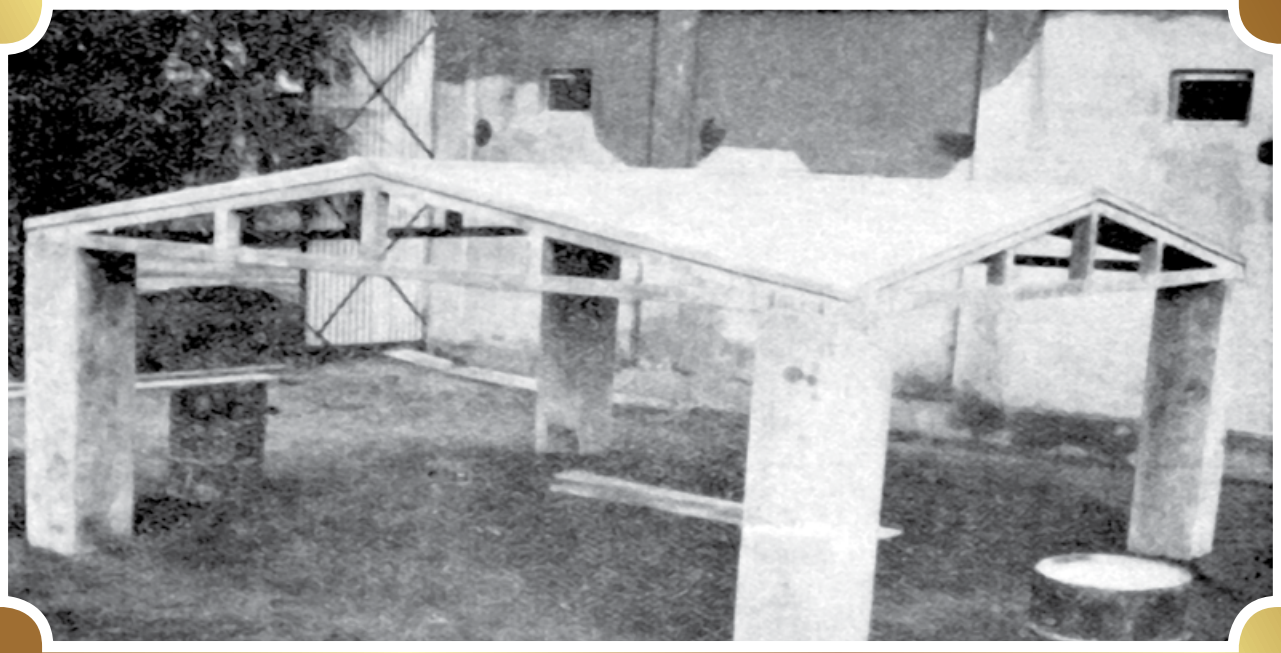


Mobile laboratory for soil testing

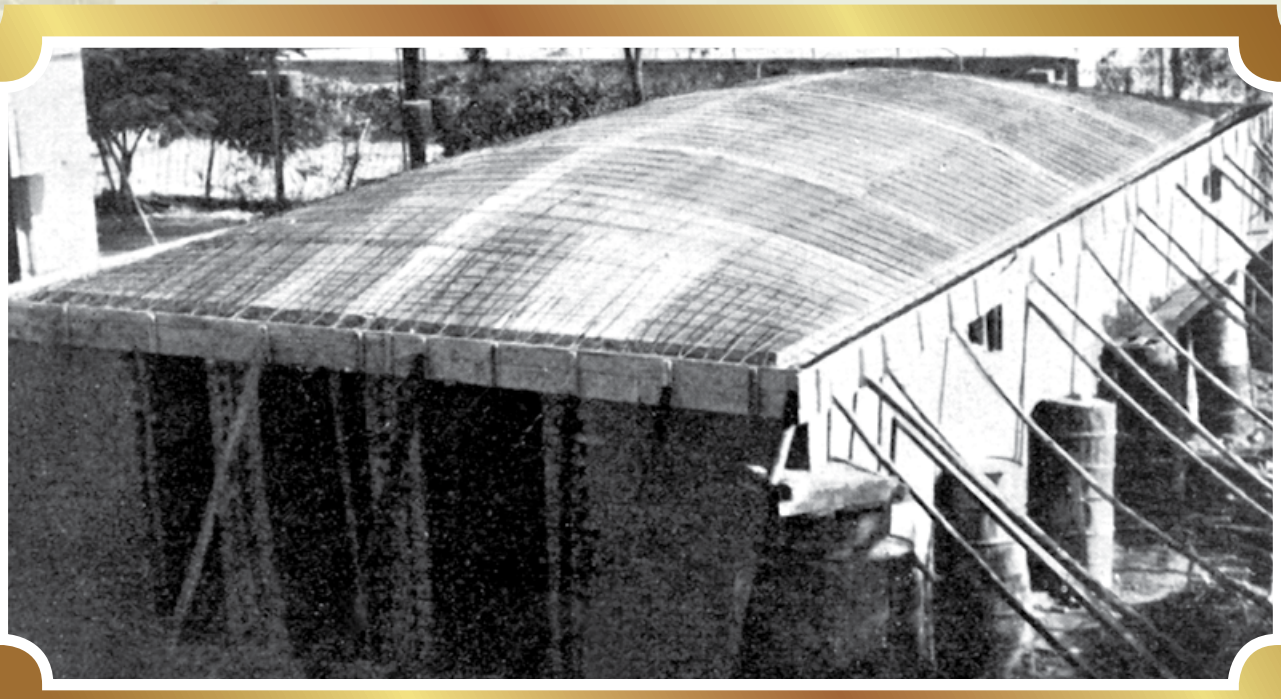


Ongoing Standard Penetration Test (SPT)

Our Memories

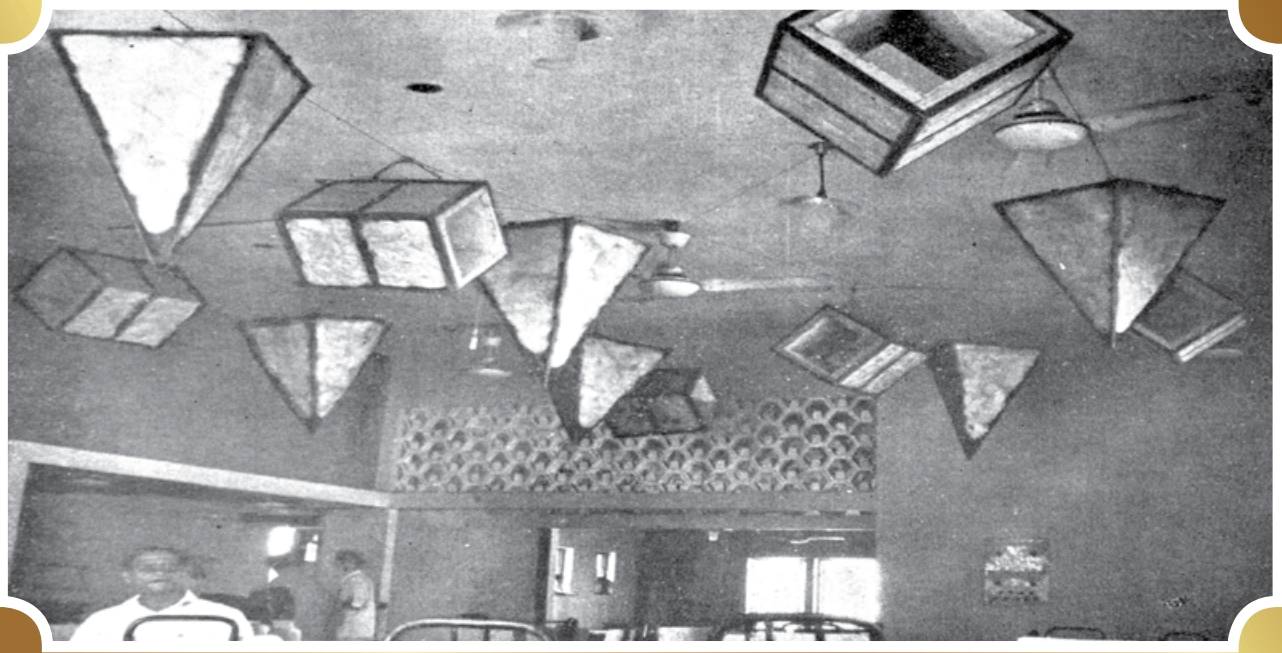


Hyperbolic Paraboloid

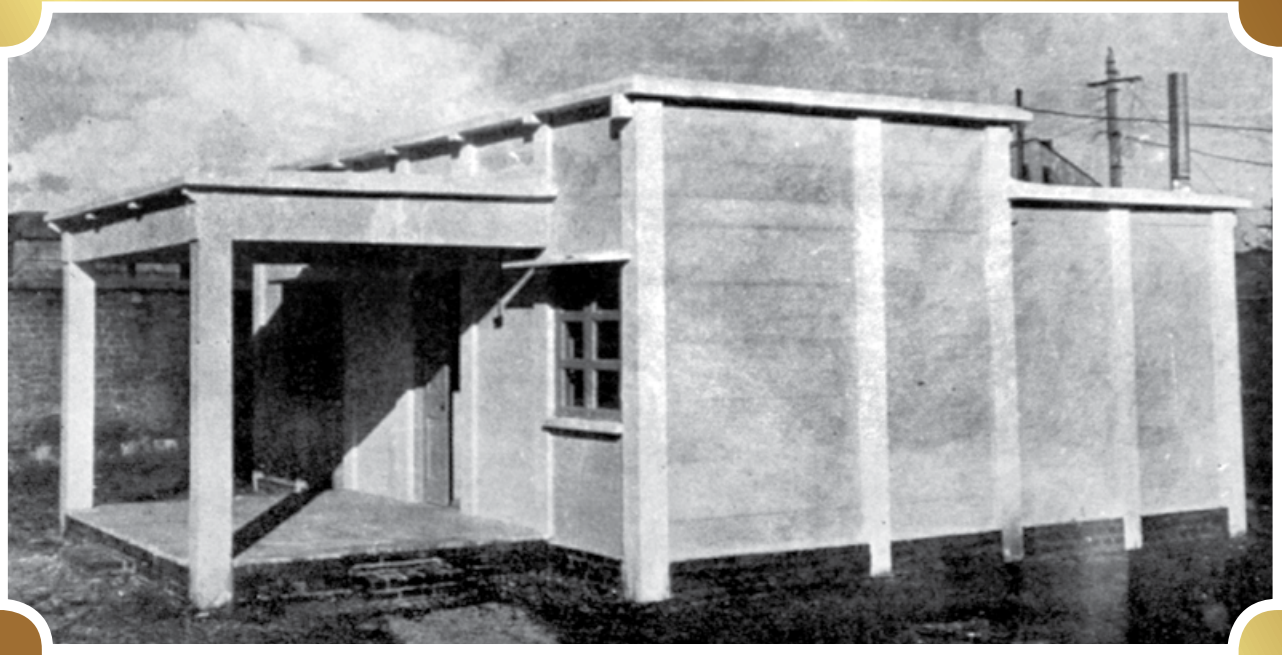


Form-work with reinforcements for a doubly curved shell roof

Our Memories

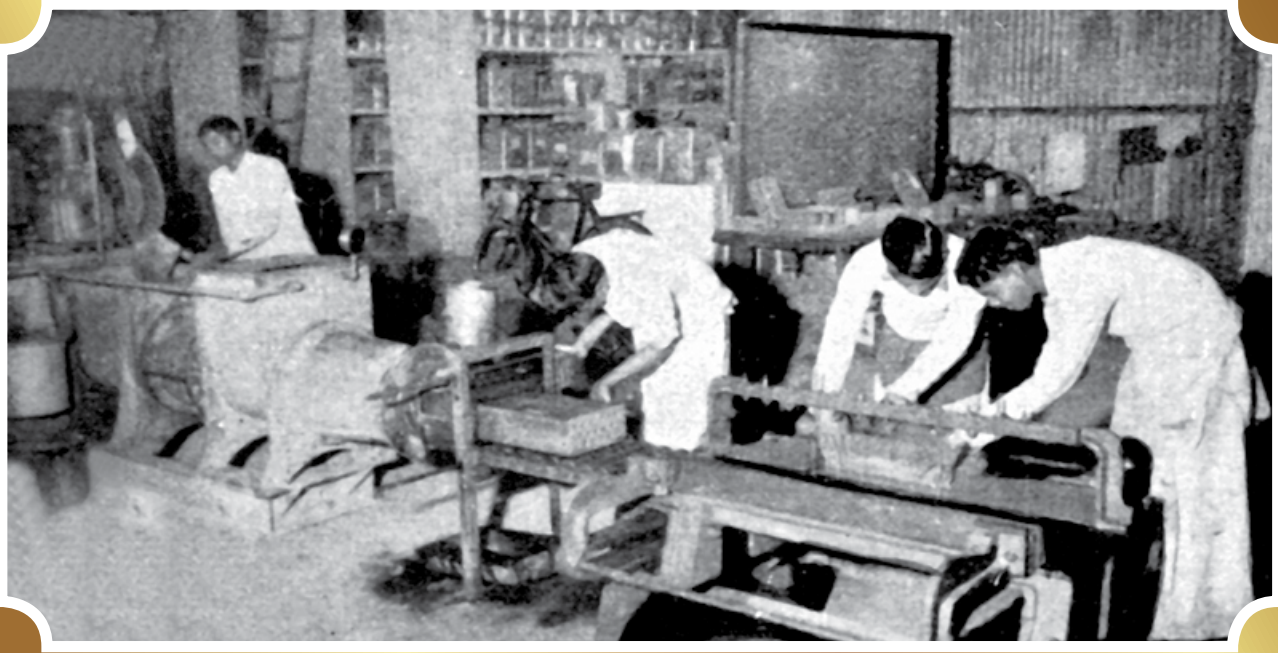


Functional Sound Absorbers

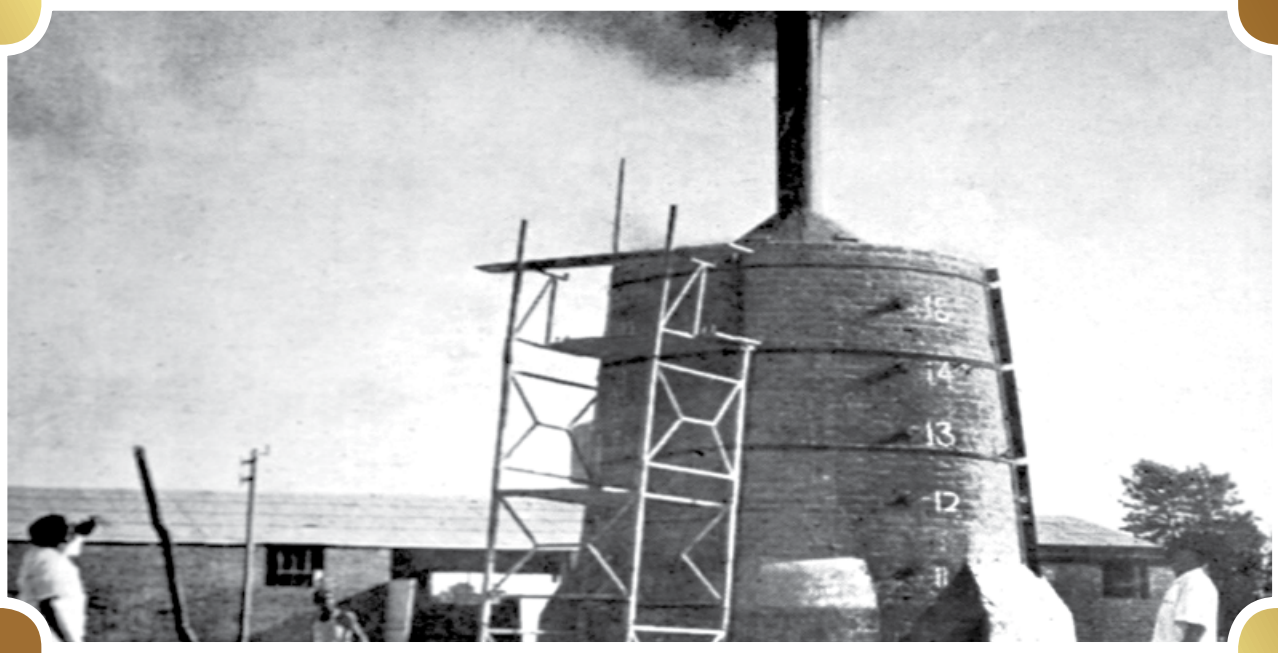


Prefabricated Concrete House

Our Memories



Semi-mechanised process of brick making



Pilot Lime Kiln

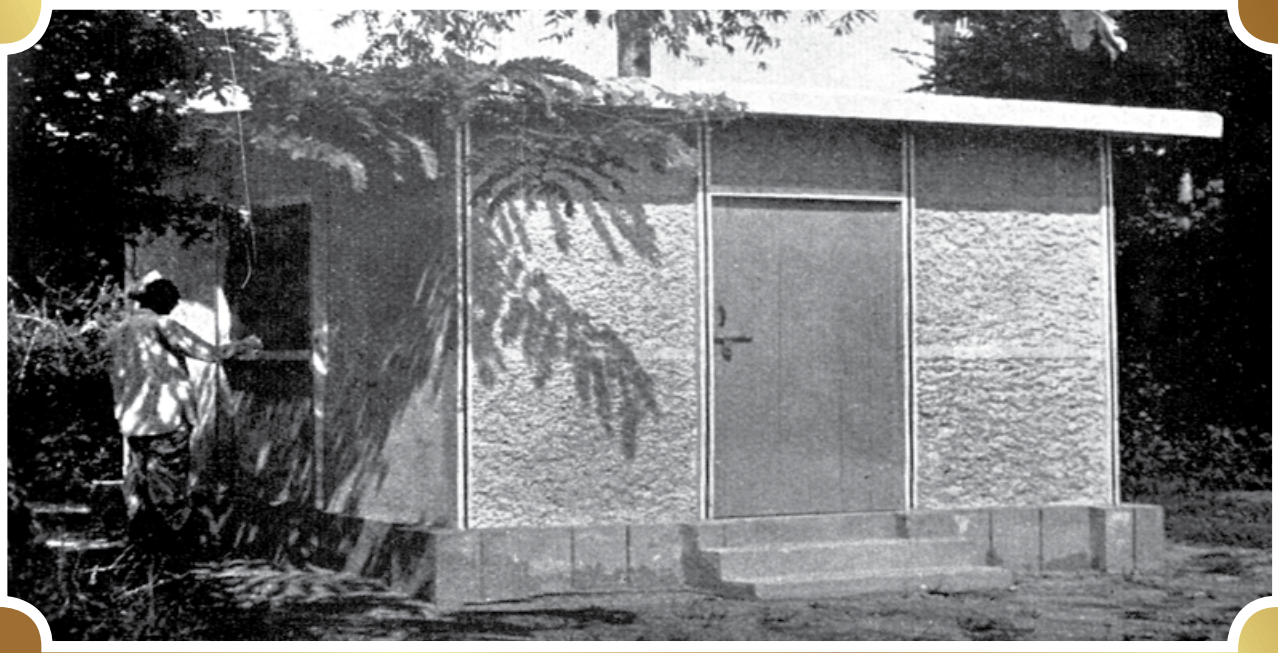
DECADE 3

Reaching New Heights

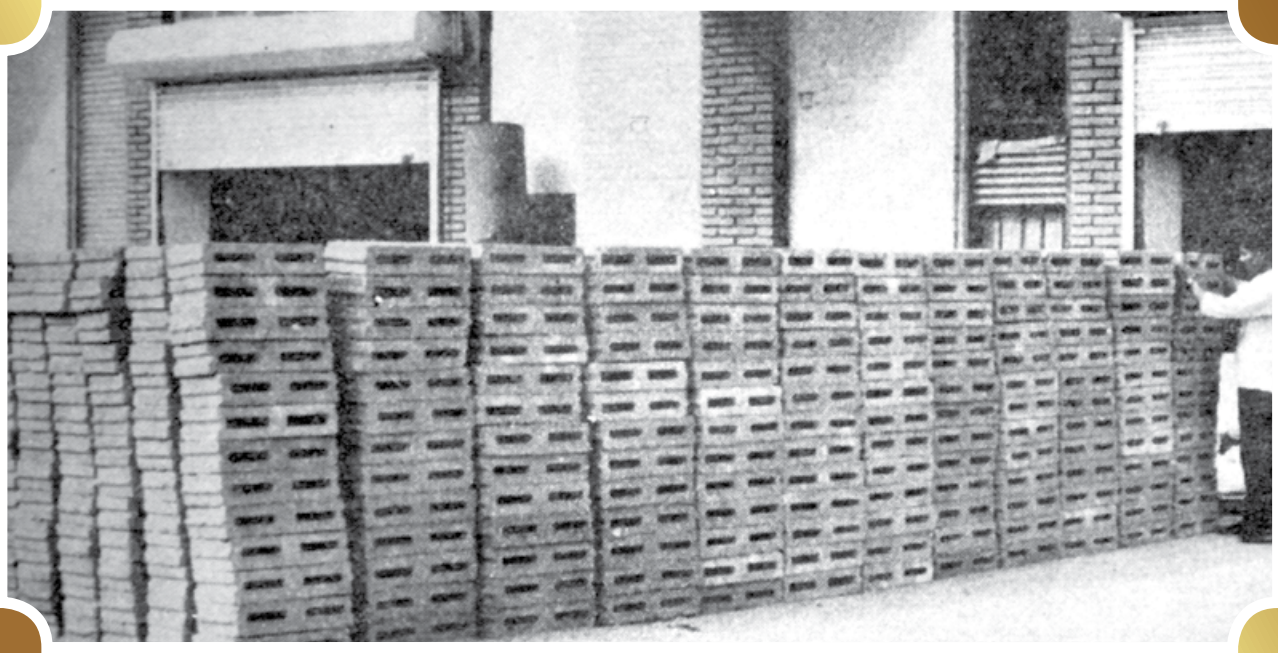
(1967-1976)

- A medical dispensary was built in 1968 and was inaugurated by Prof. M.S. Thacker.
- A school and a hostel, later called the guest house was constructed with CSIR-CBRI developed technologies.
- The architectural and library wings of the main building were built in 1970.
- Silver Jubilee Congress: CSIR-CBRI completed twenty-five years (1947-1973) of its existence in 1973. On the occasion of 25 years, Silver Jubilee Congress was held in February, 1973. The event was graced by a number of distinguished persons from India and abroad.
- The building of Fire Research Division was constructed in 1974.
- Prof. Dinesh Mohan, Director, CSIR-CBRI was awarded with Padma Shri in 1976 and also awarded Doctorate (Honorius Causa) by the University of Roorkee.
- The construction of experimental sheds for Building Process, Plant and Productivity (BPPP) and Building Materials completed in 1977.
- A third storey was built on the main building during 1977-78.
- This period's primary research work includes under-reamed piles for foundations, designing of precast and prefabricated units, utilization of fly ash as pozzolana, raw materials for lightweight aggregate, cellular concrete, bricks with different soils, and few other building materials.

Our Memories



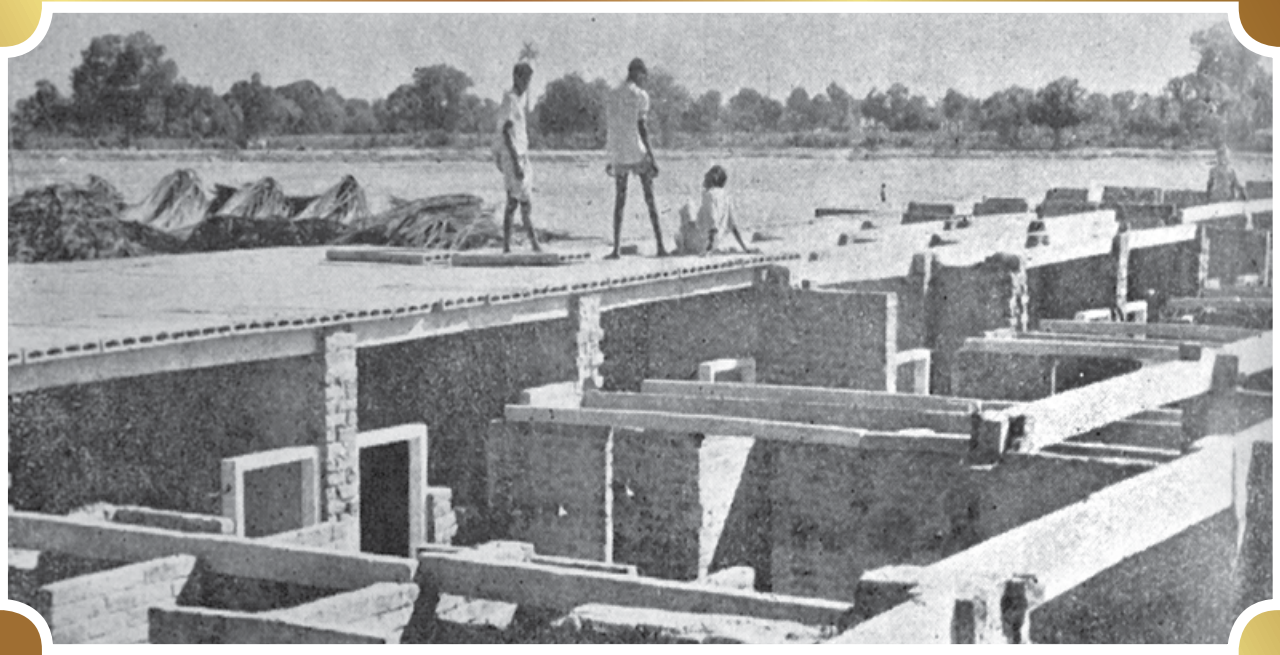
Prototype room with timber frame work and patera grass mat cladding



Flyash concrete hollow blocks

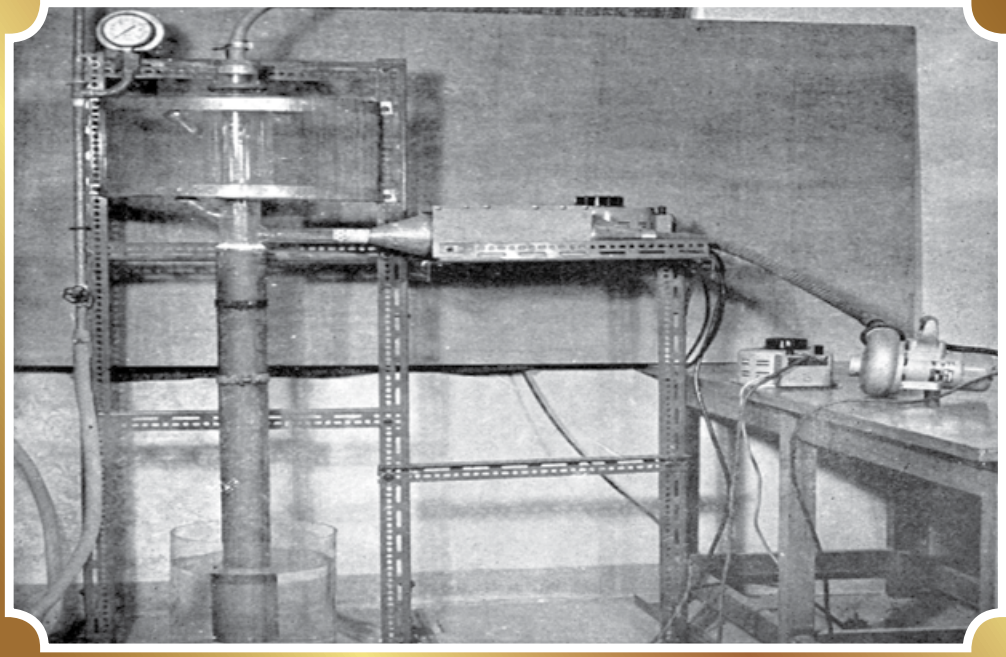
Our Memories

Primary school building constructed by CSIR-CBRI in U.P. School Building Project



Low Income Group houses for Gujarat Housing Board

Our Memories

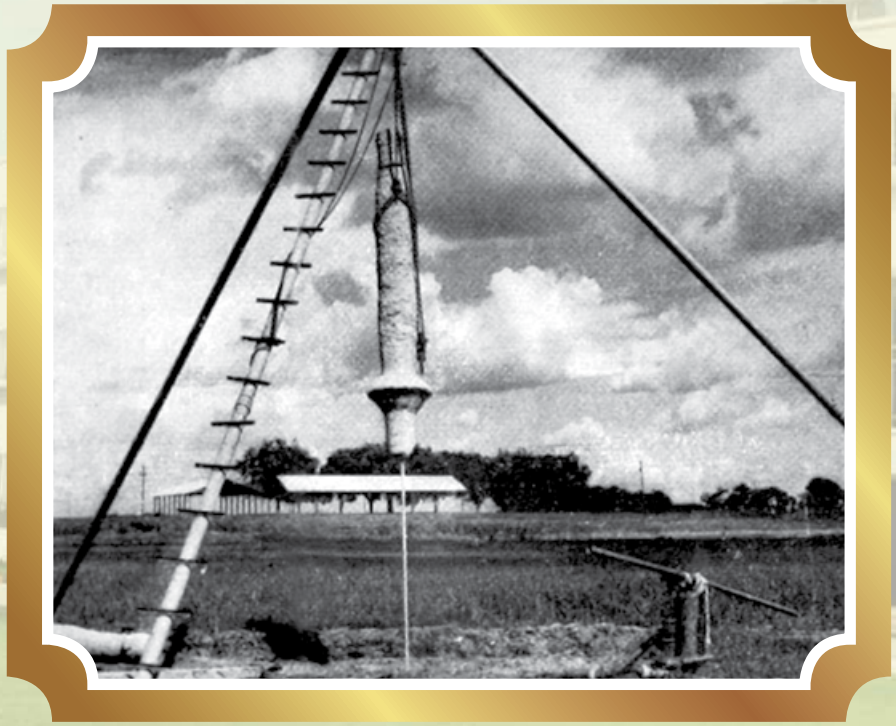


Automatic sprinkler set-up

Floor fire furnace

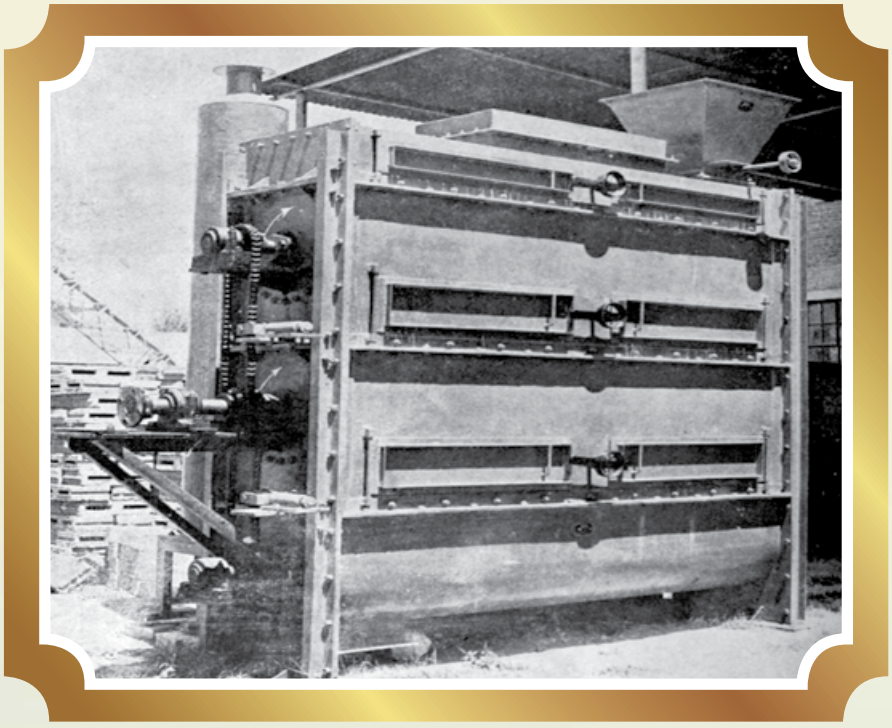
Our Memories

Celling of Waffle unit roof at Community Center, Shantinagar, Roorkee

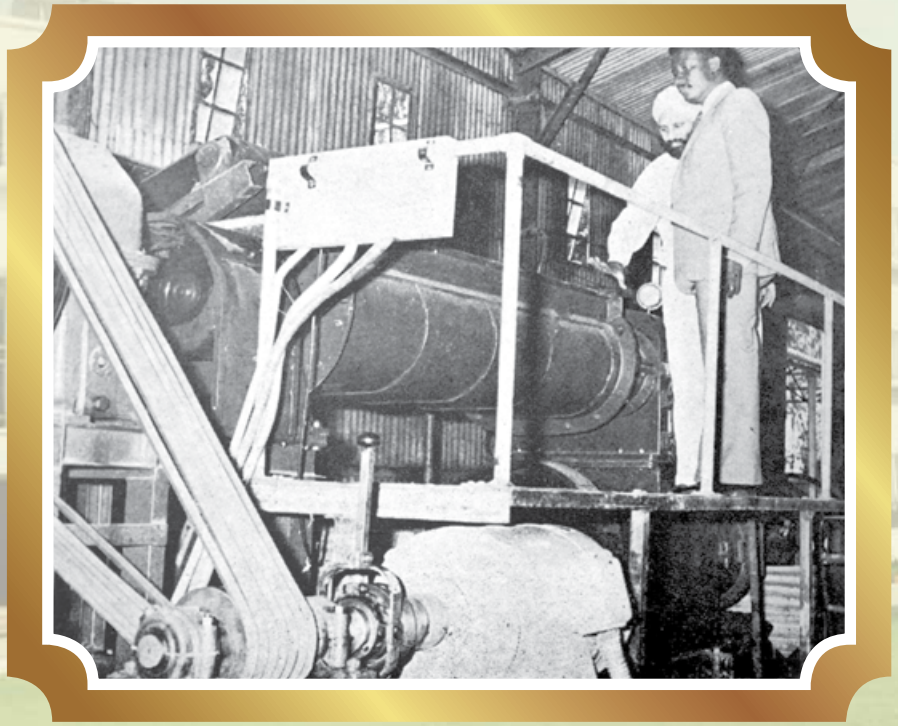


Compacted under-reamed pile

Our Memories



Lime hydrating machine (Capacity: 10 tons per shift)



Large capacity brick making machine

DECADE 4

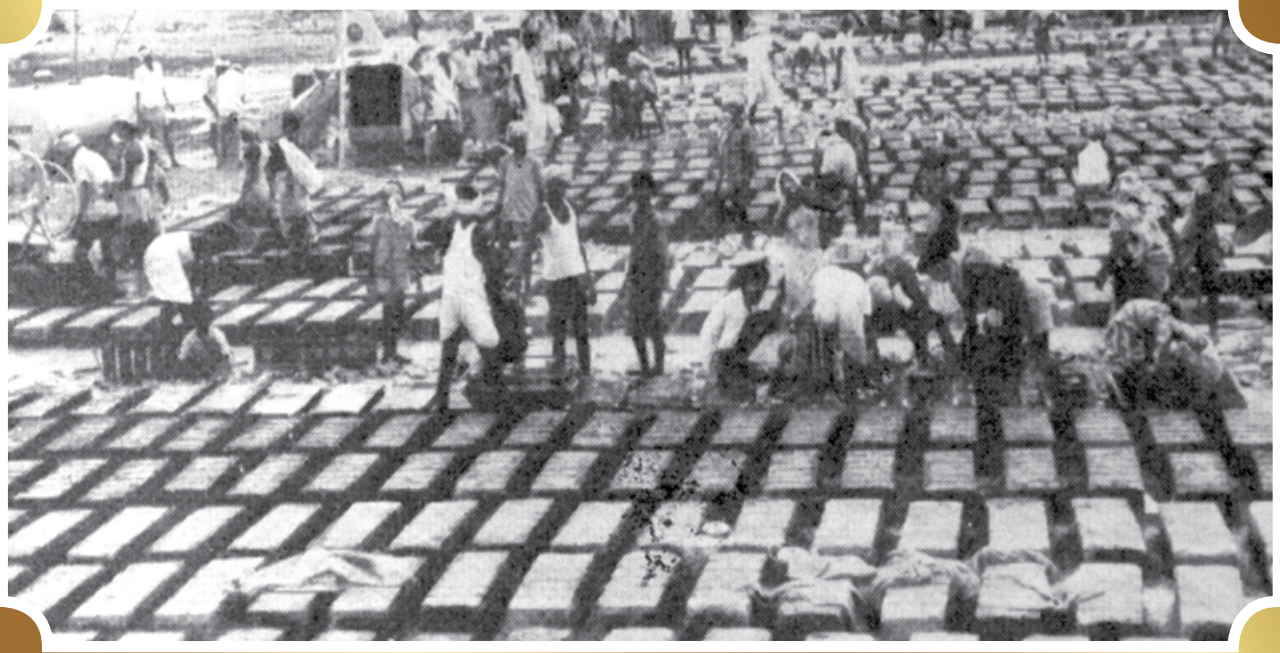
The Decade of Recognition

(1977-1986)

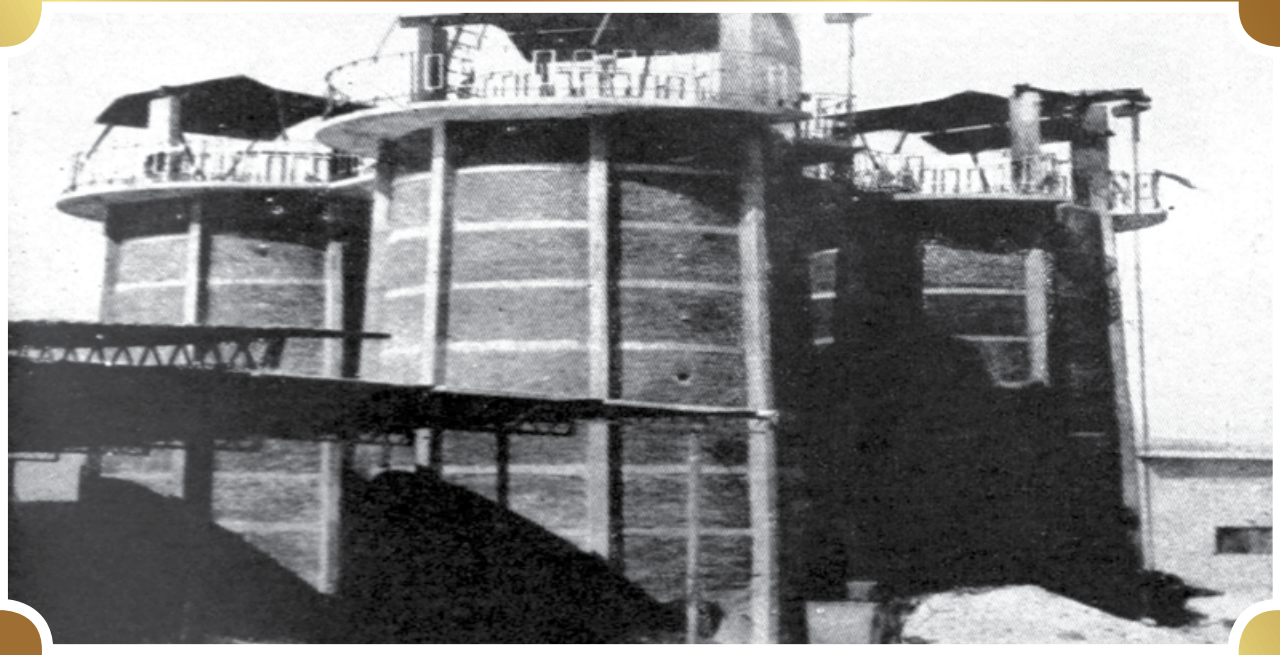
- During this period, five Directors (Prof. Dinesh Mohan, Shri R.C. Mangal, Prof. Shamsher Prakash, Sri T.N. Gupta, and Dr. R.K. Bhandari) served the Institute. Prof. Dinesh Mohan retired as Director in June 1982 and handed over the charge to Shri. R.C. Mangal who continued for one year as Acting Director. Shri T.N. Gupta, Dy. Director took over the charge from Shri Mangal and officiated as Director for seven months. Dr. R.K. Bhandari, Dy. Director was appointed as Director in 1986.
- The Construction and Extension Division was established with Extension Cells at Ahmedabad, Bhopal, Kolkata, Delhi and Hyderabad.
- Prefab brick panel system for roofing and precast lintels for doors and windows were introduced, which became very popular towards low-cost housing.
- An economical solar water heater with a built-in storage tank (100 liters) was developed.
- About 600 under-reamed piles were used for several transmission line towers in Dubai, UAE under the supervision of Institute's scientists.
- The Institute organized several seminars, symposia, and get-together programs, including "CIB Seminar on Building Research and Its Application in Developing Countries" in New Delhi.
- A solar timber seasoning kiln was designed and constructed at Haridwar.
- The technique of constructing skirted granular piles was licensed through the National Research Development Council (NRDC).

- The roof surface evaporative cooling technique was successfully adopted for cooling an office building at BHEL, Hardwar.
- A cementitious binder from lime sludge and fly ash for use in masonry mortars, plasters and beneficiation of waste phospho-gypsum as a building material was developed.
- An instrument for measuring the amount of corrosion in steel reinforcement was developed to detect changes in thickness up to 0.25 mm accuracy.
- During 1982-83, the Institute provided the design and fabrication for shelters erected at Antarctica for the expedition team members.
- A hand-operated machine for making clay pipes for drinking purposes and irrigation in rural areas was designed and fabricated.
- A system for low cost dwellings with RCC walling and roofing frames suitable in earthquake prone areas was developed.
- Shri R. Venkataraman, the Hon. Vice President of India inaugurated an International Conference on Low-cost Housing for Developing Countries during 9 - 14 March, 1985, attended by over 250 delegates from 19 countries.
- A machine for stitching of loose debris on slopes using timber pile was developed.
- Around 38 foreign delegates visited CSIR-CBRI.

Our Memories

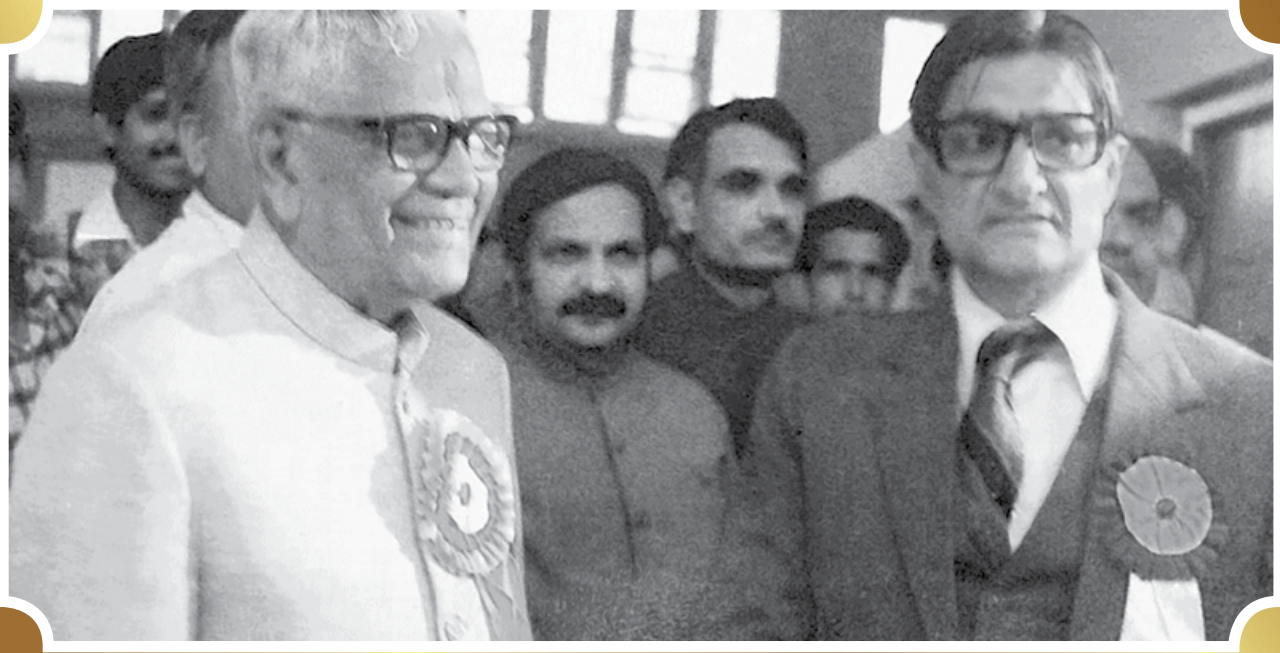


Cyclone Rehabilitation Project- a portion of the Central Casting Yard at Vijayawada

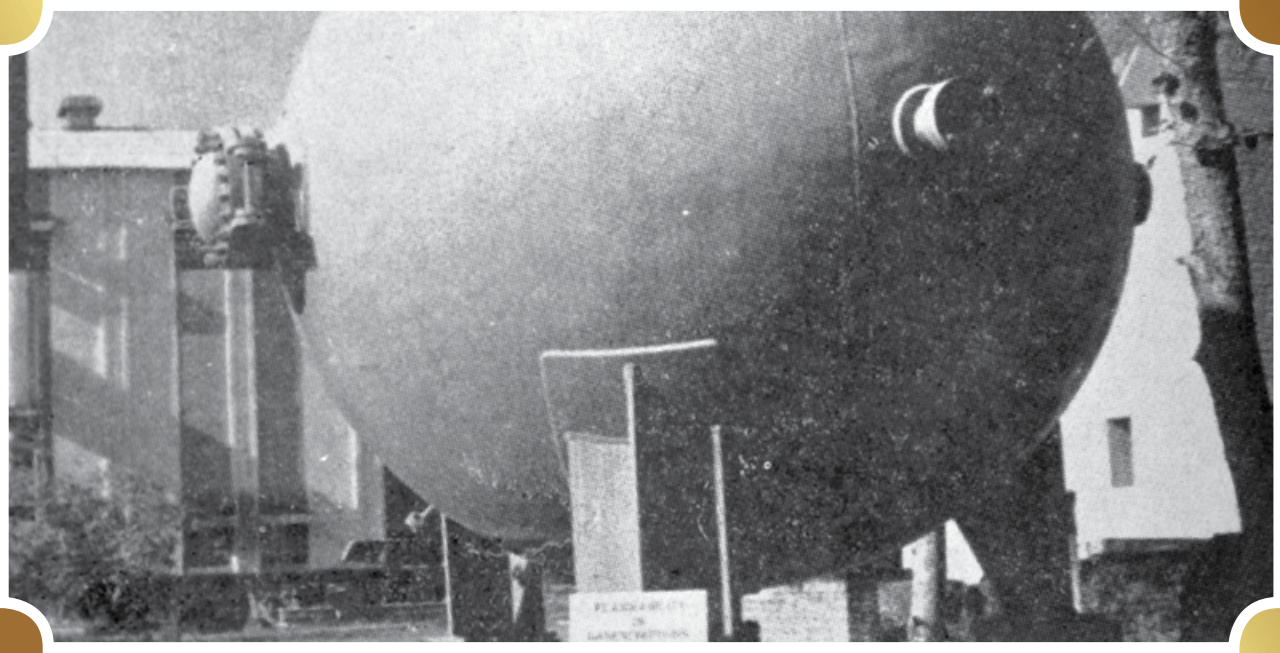


A battery of lime kilns at Naraina (Muzaffarnagar)

Our Memories

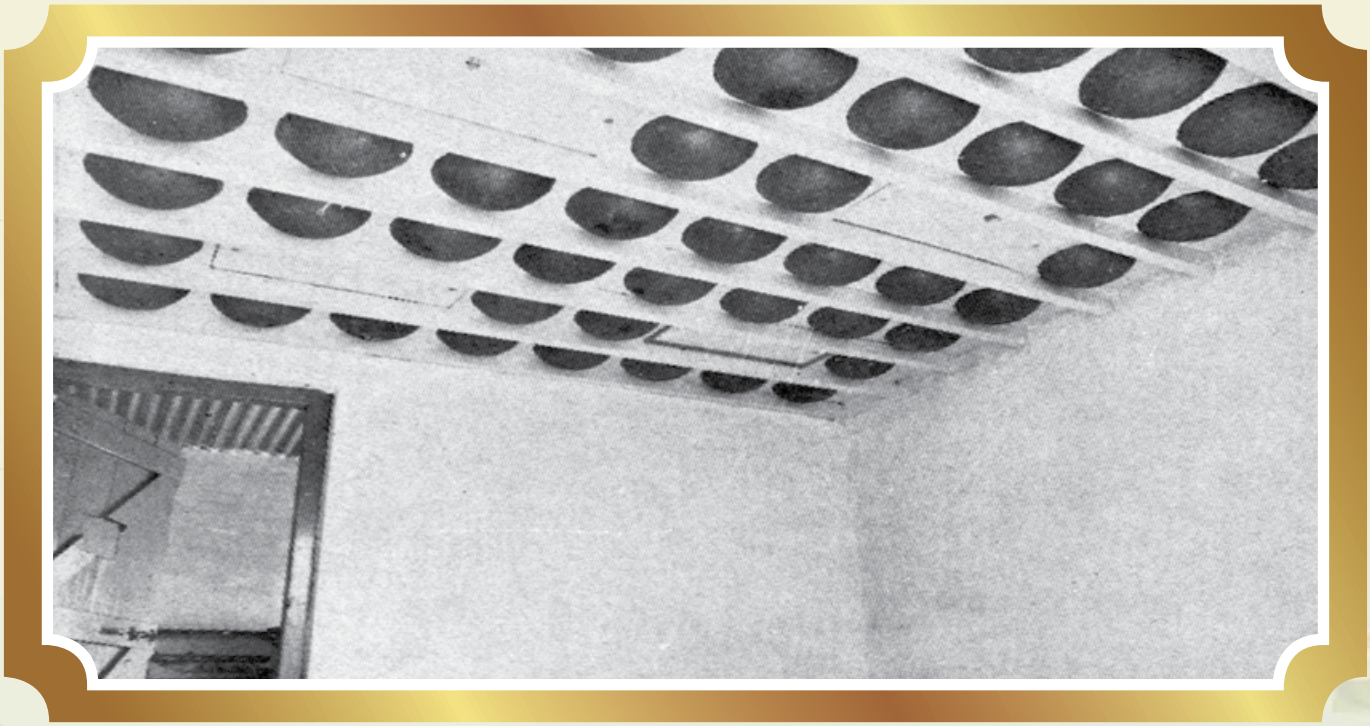


Sri R. Venkataraman, Vice President of India being received at the institute by Prof. Shamsher Prakash, 1984



Spherical vessel for flammability studies of gases/vapours/dusts

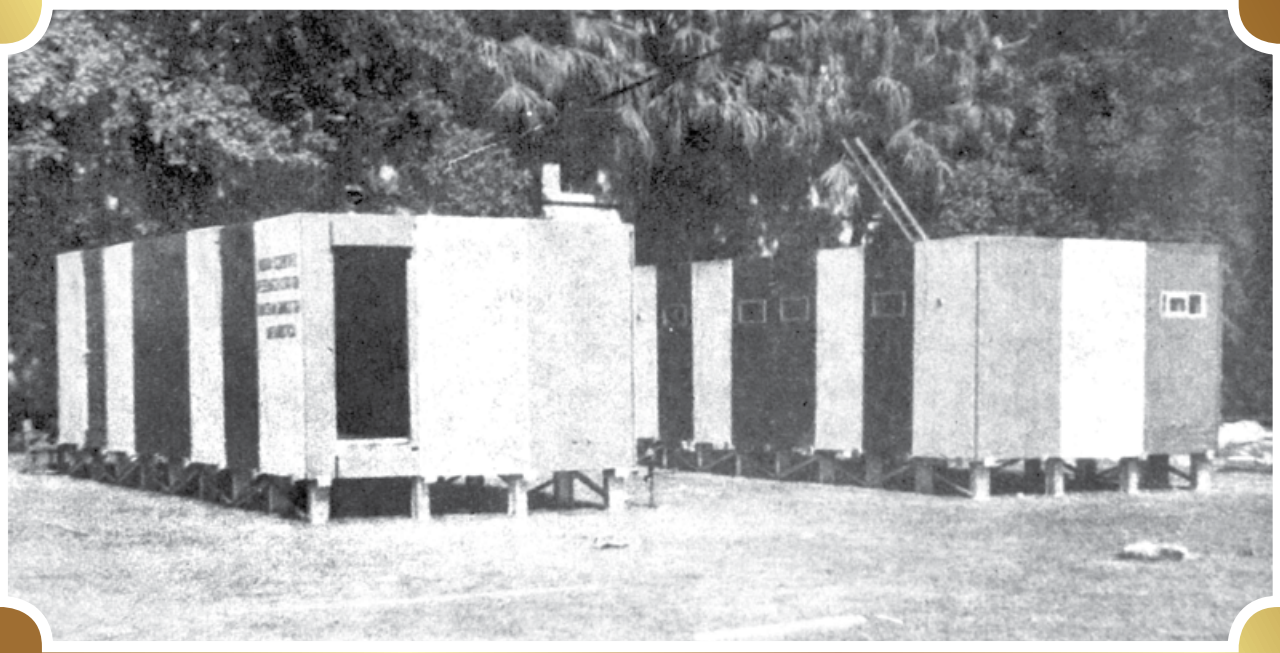
Our Memories



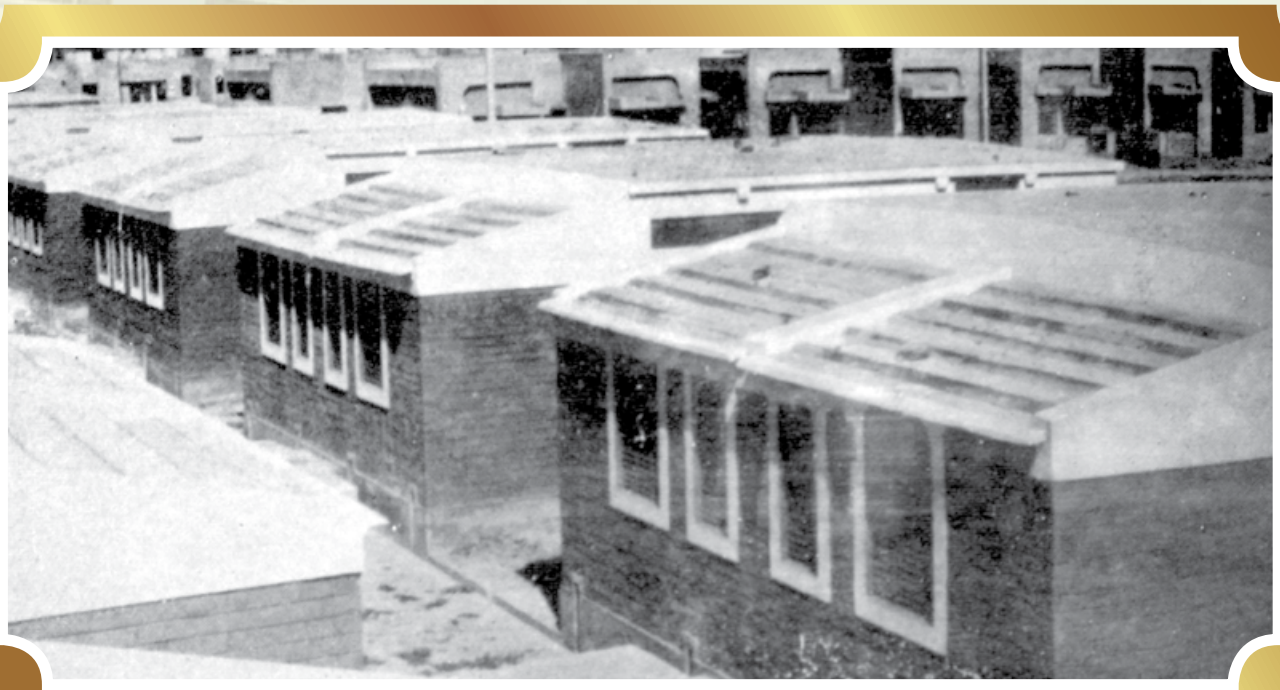
Passive cooling of buildings (inside view of room)

Cooling of buildings by roof surface evaporation

Our Memories



Prefabricated shelters for Antarctica



L.I.G. houses at Sarsuna Behala (Kolkata)

DECADE 5

Triumph of the Golden Fifty Years

(1987-1996)

- Dr. S.K. Mishra, Dy. Director took over the charge from Dr. Bhandari in July, 1990 and continued as Director till May, 1992. Dr. A.C. Singhal was appointed as the next Director on 25th May, 1992. After the resignation of Dr. Singhal, on 12th January, 1993, Dr. T.S.R. Prasada Rao, Director, CSIR-Indian Institute of Petroleum, Dehradun was asked to look after CSIR-CBRI. He remained as Director, Additional Charge till Prof. R.N. Iyengar joined as Director, CSIR-CBRI on 25th April, 1994.
- Gypsum calcinator developed by CSIR-CBRI received the prestigious NRDC Award.
- Ferro-cement door shutters were developed.
- Plastic & Polymer composite doors and jute & coir bonded boards were developed.
- A pilot plant was established at the Bandel Thermal Power Station, West Bengal, for producing cintered fly ash aggregate.
- CSIR-CBRI brick manufacturing technology was transferred to Sri Lanka.
- CSIR-CBRI was recognized as a Nodal Agency for planning & designing around 120 Navodaya Vidyalaya (NV) complexes throughout the country.
- Commercial production of clay fly ash bricks using CSIR-CBRI technologies was successfully commenced by M/s Grasim India Ltd. at Nagda (MP) & M/s Essar Projects Ltd., Baroda.
- Mini climbing crane was designed & developed, which received NRDC 1994 Republic Day Award.
- Developed fire protection cover for the aircraft seat cushion for Indian Airlines.
- A National workshop on ''Termite Management in Buildings'' was organized at CSIR-CBRI.
- A pilot plant for the purification of phospho-gypsum was established.
- A new laboratory exclusively for R&D work on Building Pests & Mycology was started.

Our Memories

Hostel Building at Gandhigram Rural University (T.N.) using brick panel roofing

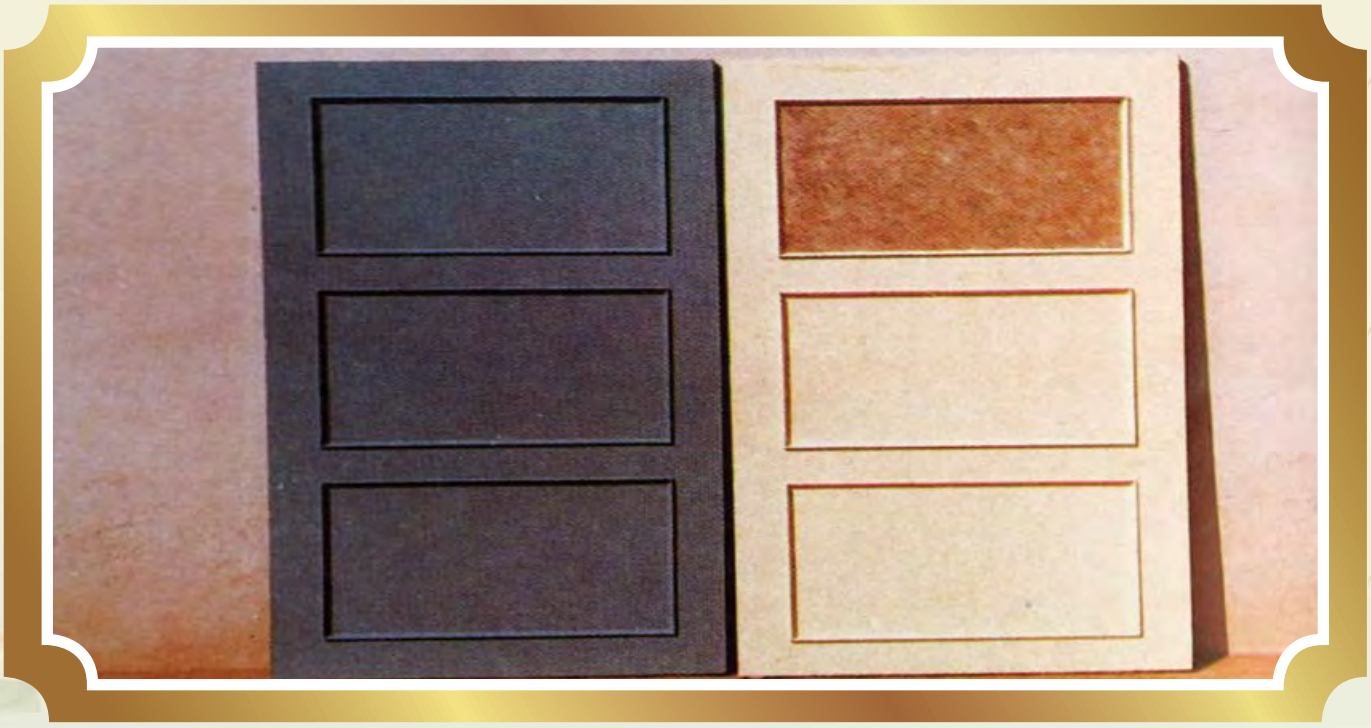
Class III Housing at Thimphu (Bhutan)

Our Memories

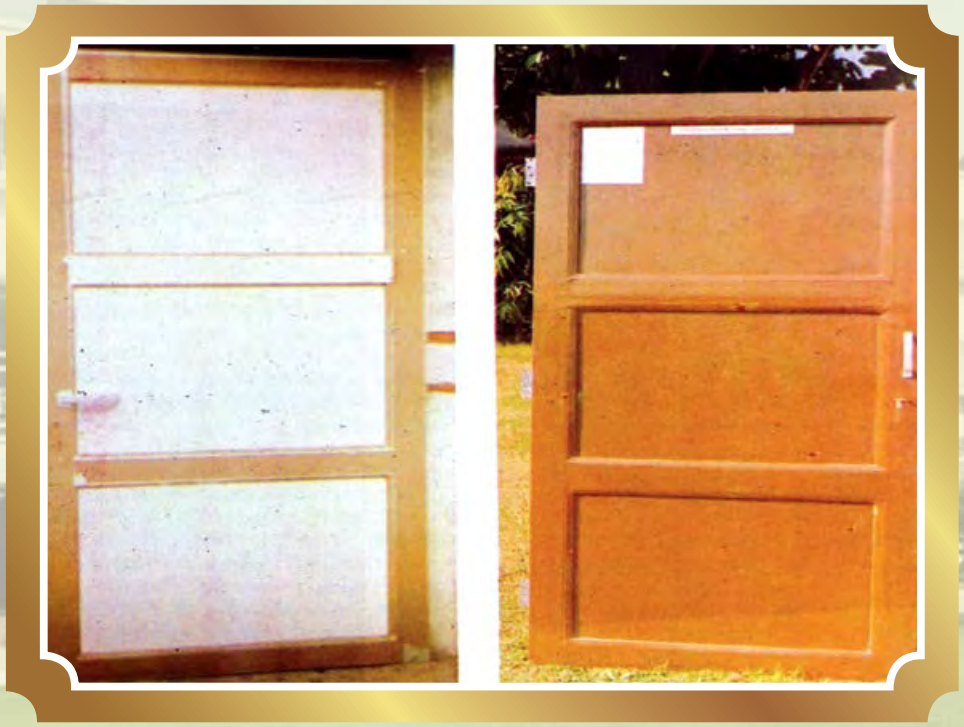
Unreinforced pyramidal roof

Dr. Mashelkar, DG, CSIR visiting Fire Research Laboratory

Our Memories

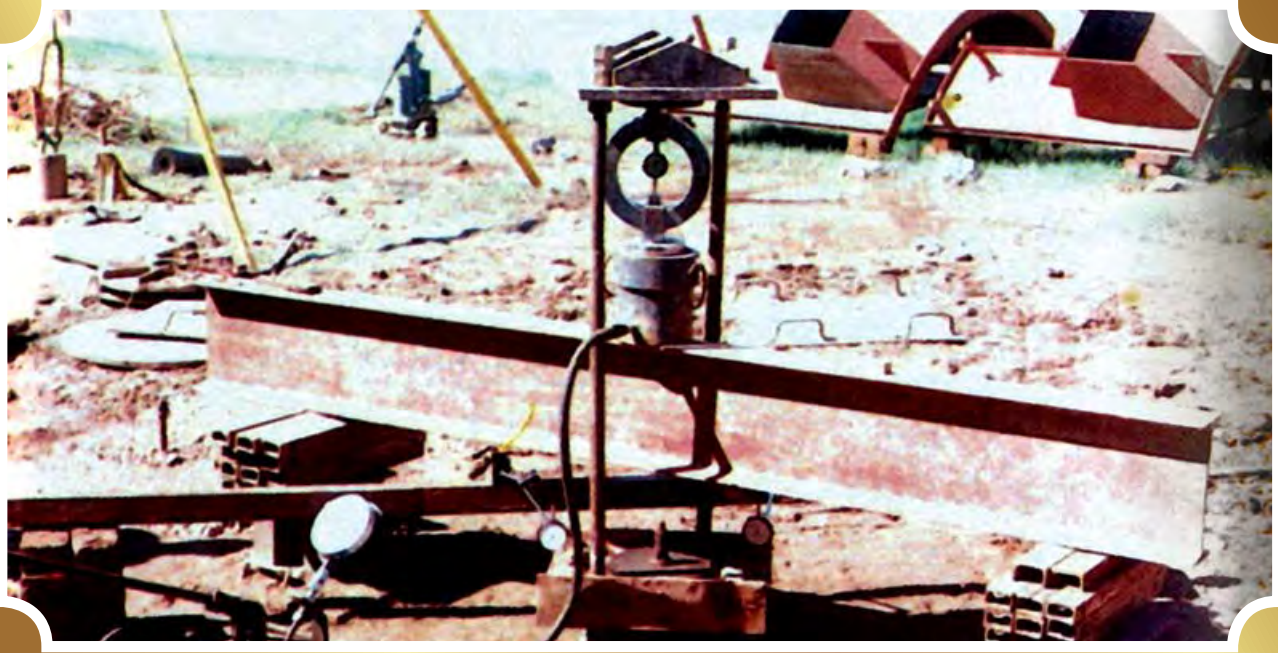


Coir fiber/cement panel door

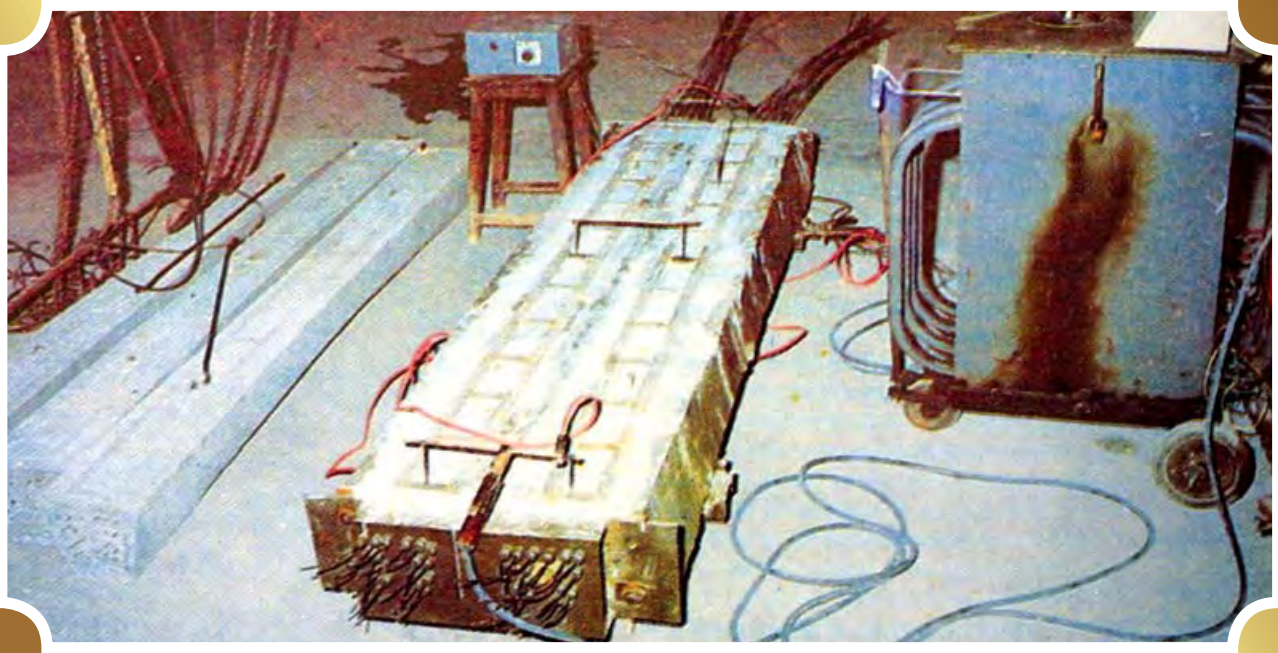


Aluminium and Mild Steel Door shutters exposed to flames

Our Memories

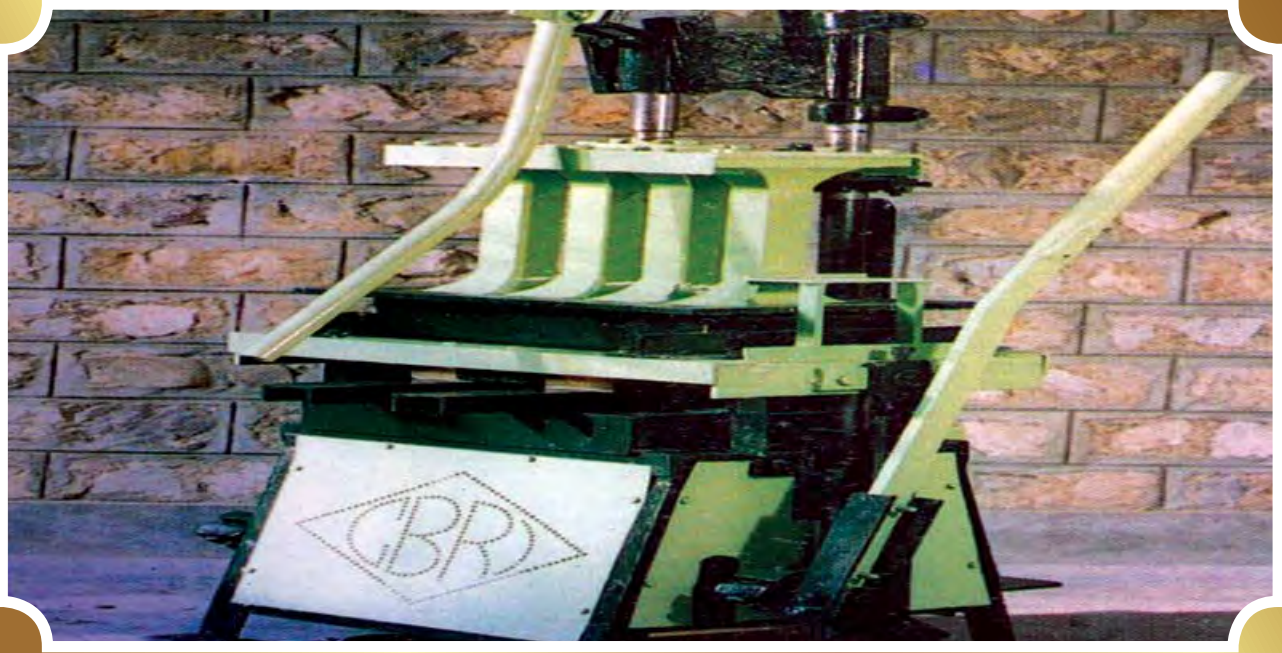


Test set up for single pile

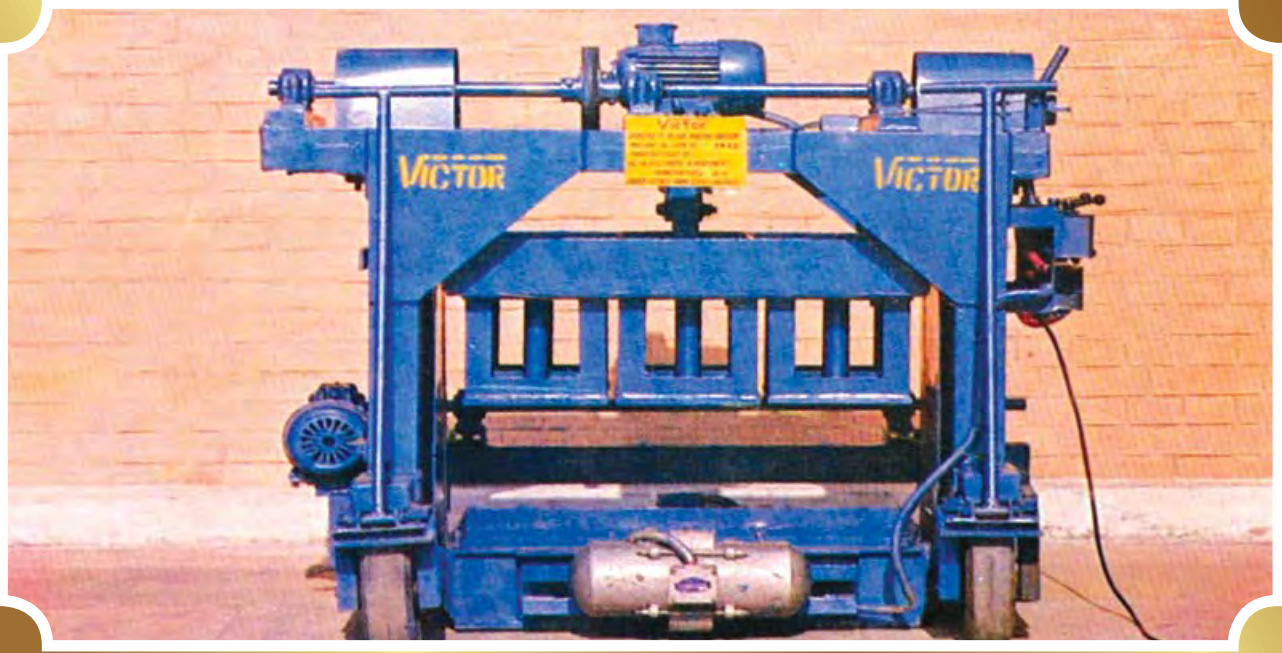


Electric curing of railways sleepers

Our Memories



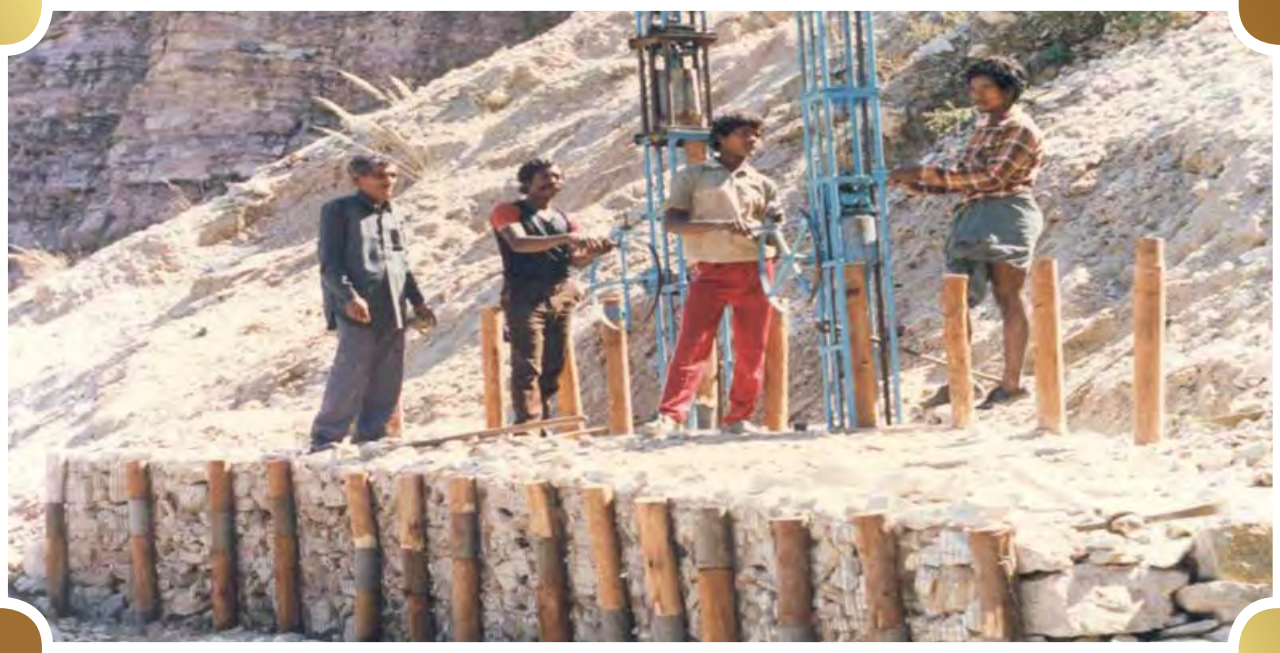
C-brick making machine



Solid concrete block making machine

Our Memories

Drum retaining wall for slope stabilization



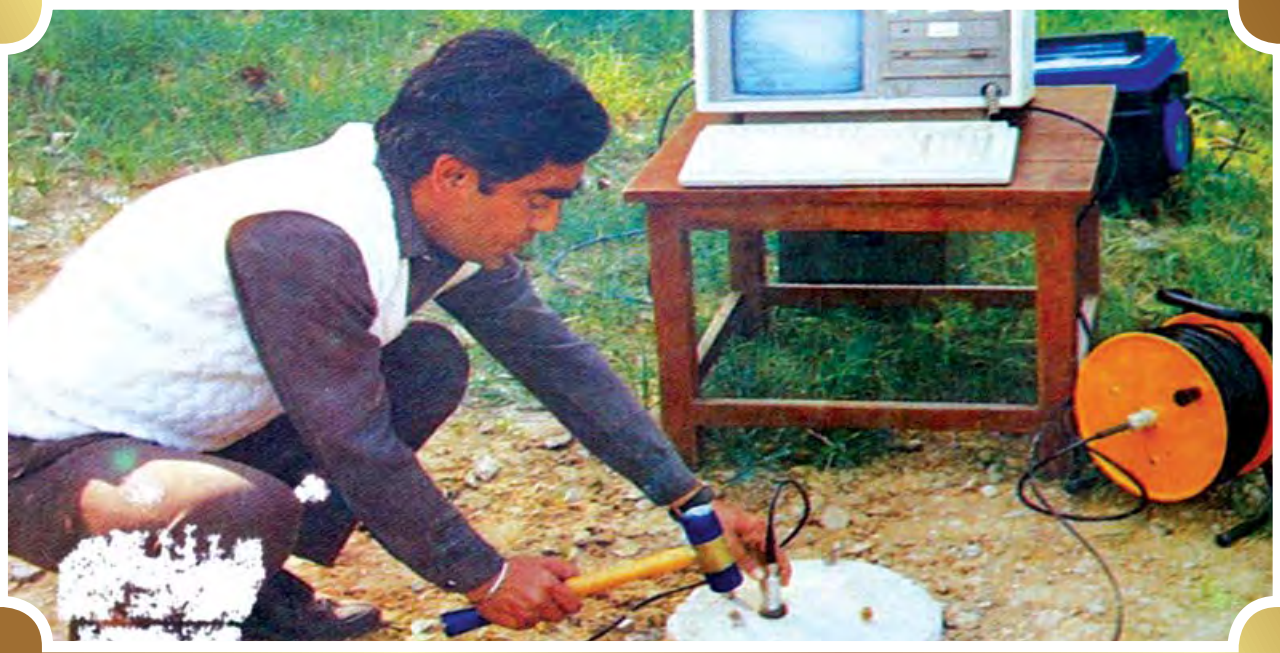
Pile driving machine

Our Memories

Flyash sand lime brick plant at DTPS, Durgapur

Lime brick plant

Our Memories

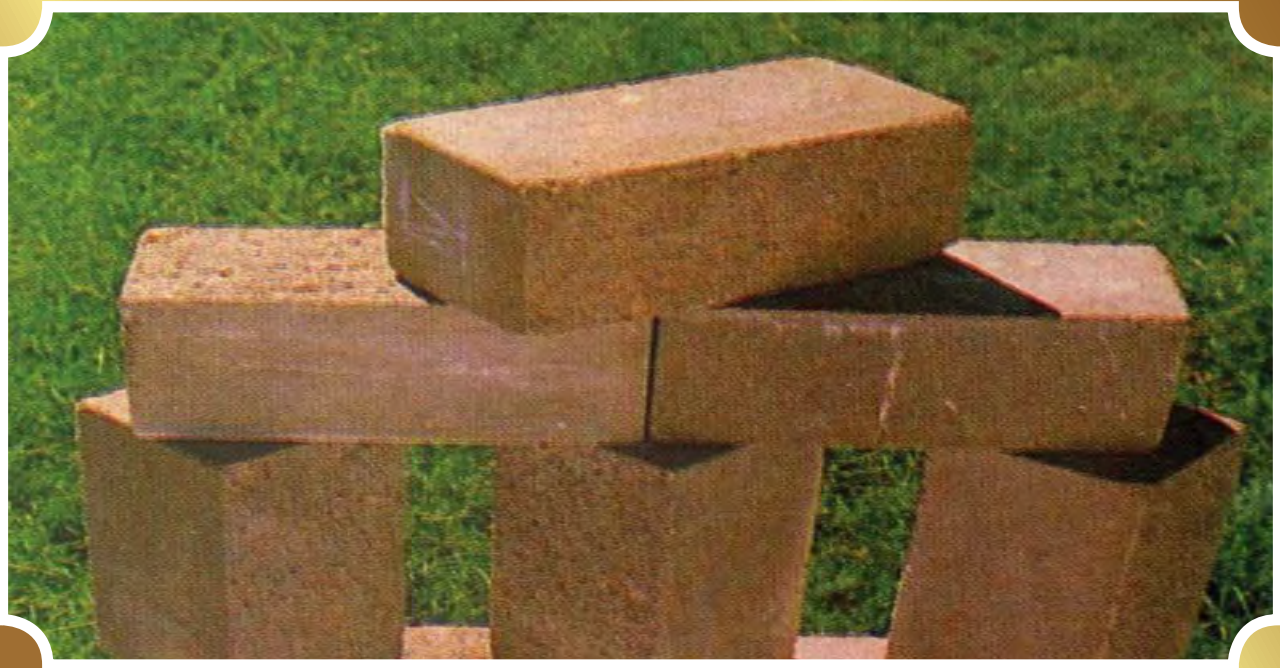


Integrity testing of piles

Load test on pile

Our Memories

Polycem tiles



Slag lime bricks

DECADE 6

Stepping into the New Millennium

(1997-2006)

- In 1997, CSIR-CBRI celebrated its Golden Jubilee Year (1947-1997) inaugurated by Dr. R.A. Mashelkar, DG, CSIR. On this occasion, new brochures and Golden Jubilee stamp were released.
- Shri V.K. Mathur, joined as Director on 25th April 2000. Shri N.K. Shangari took over the charge as Acting Director on 1st August, 2005. Prof. K. Ganesh Babu joined the Institute as Director on 11th August, 2005.
- Laboratory of Building Pestology and Mycology was inaugurated.
- Golden Jubilee conferences, industry meets in Delhi and Bangalore were organized in 1997.
- Golden Jubilee Guest House was inaugurated and named as Swarna Jayanti Guest House.
- New infra-structures such as, Environmental Chemical Analysis Lab, Seismic Instrumental Lab and the Building Dynamics Lab were added.
- The photo gallery of Indian scientists was inaugurated on National Technology Day.
- CSIR-CBRI developed and demonstrated settling chambers for the brick kiln for reducing the solid particulate matter in the exhaust gases to acceptable levels.
- MoUs were signed with the Ministry of Environment and Forests, DRDO-DTRL and IIT Roorkee.
- MoUs were signed between CSIR-CBRI and various industries such as M/s AMIZ, M/s E.I.D. Parry (India) Ltd., M/s Godrej & Boyce for transferring fire-rated doors technology.
- An MoU was signed between CSIR-CBRI and All India Brick and Tile Manufacturer Association on pollution monitoring studies of Brick kilns.
- Design and development of construction technologies for rural housing using locally available materials for North-Eastern region.

- A database of heritage buildings was prepared to help in repair, retrofitting, maintenance, and conservation of heritage structures.
- International Metro Civil Contractor (IMCC), New Delhi, appointed CSIR-CBRI for guidance on repairs and retrofitting of building in the vicinity of underground tunnels.
- State-of-the art equipments such as Scanning Electron Microscope (SEM), X-ray Diffraction equipment, Environmental Chamber, Ground Penetration Radar, Pile Diagnostic System, Cyclic Tri-axial Soil Testing System and Digital Tri-axial Accelerograph were procured.
- On 17th November, 2003, Dr. A.P.J. Abdul Kalam, H.E. the President of India, visited the Institute.
- Fire extinguishing techniques, agents, materials and systems were developed for high-risk occupancies.
- ISO 9001: 2000 Certificate was awarded to the Institute on 31st March 2005 by the STQC Certificate Services, Department of Information Technology, Government of India.
- The institute hosted Sir Shanti Swarup Bhatnagar Memorial Tournament, SSBMT (Zonal).
- Prof. Venancio Massingue, Minister of Science & Technology, Republic of Mozambique, visited CSIR-CBRI on 25th July, 2006.
- Eminent persons and dignitaries like Dr. R.A. Mashelkar, DG-CSIR; Dr. M.R. Srinivasan, Member, Planning Commission Govt. of India; Prof. M.G.K. Menon, FRS, Dr. S. Vardarajan, President, INSA; Prof. C.N.R. Rao; Prof. S.K. Joshi; Shri Sharad Pawar, Former Defence Minister, GoI; Chief Ministers of Uttaranchal: Shri Nityanand Swamy, Shri N.D. Tewari visited the Institute on various occasions.
- Prof. Yongnian, Research Professor and Dy. Director, State Seismological Bureau, China, along with Chinese Delegations visited the Institute.

Our Memories

Indo-China joint workshop on Earthquakes & Landslides

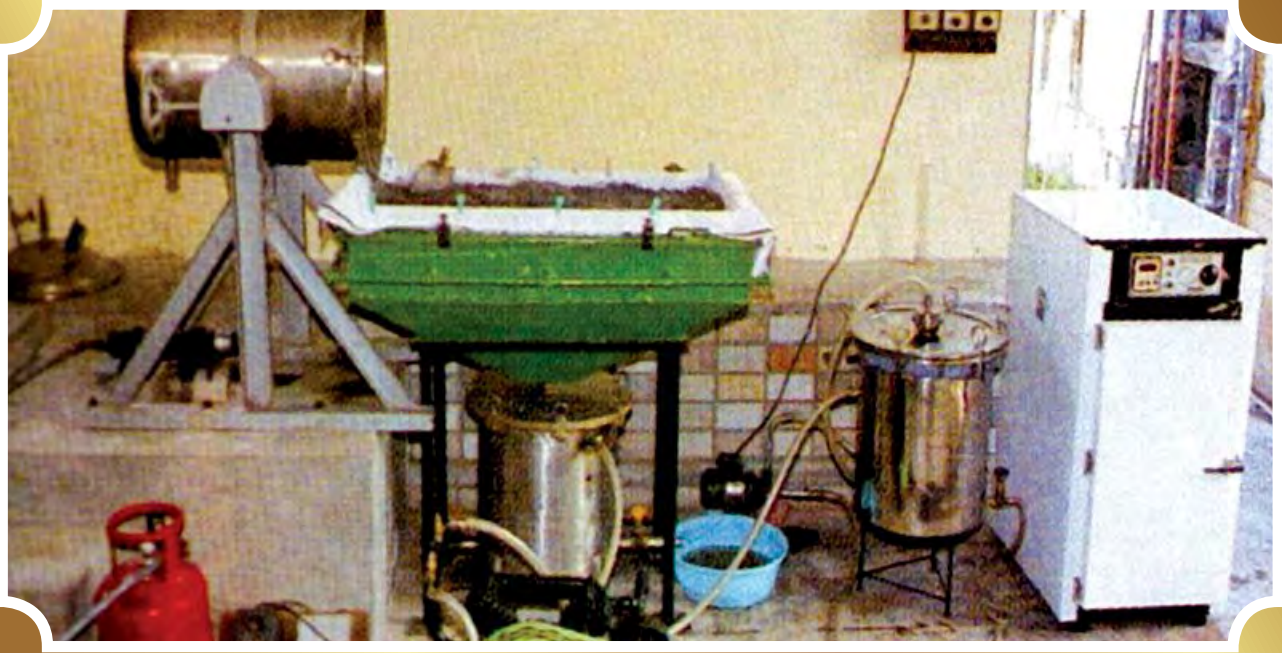
Prof. C.N.R. Rao and Prof. S.K. Joshi welcomed by Shri V.K. Mathur, then Director, CSIR-CBRI

Our Memories

The Former President of India, Dr. A.P.J. Abdul Kalam at CSIR-CBRI

Dr. A.P.J. Abdul Kalam in Rural Technology Park, CSIR-CBRI

Our Memories



Pilot plant for the production of reactive silica from fly ash

Testing arrangements for the core support structures model

Our Memories

Prototype building with pot panel base isolation bearing

Prototype of unreinforced cement concrete brick roof

Our Memories

Experimental set up to determine efficiency of plant extractions for controlling pests

Effect of carbonation on concrete

DECADE 7

Shining like a Diamond

(2007 – 2016)

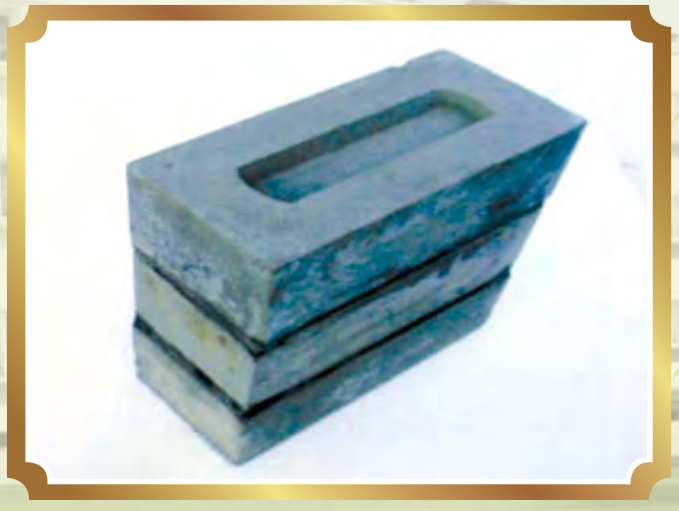
- Dr. M.O. Garg, Director, IIP, Dehradun took over Additional Charge of CSIR-CBRI on 23rd July, 2007 from Prof. K. Ganesh Babu. Prof Sriman Kumar Bhattacharyya joined as Director of CSIR-CBRI, on 5th August, 2009. After his tenure, Dr. Girish Sahni, Director, CSIR-IMTECH, Chandigarh took over as Director, Additional Charge of CSIR-CBRI on 5th August, 2015 and served up to 8th October, 2015 and joined as DG, CSIR. Er. Yadavendra Pandey, Chief Scientist, CSIR-CBRI joined as Acting Director on 9th October, 2015. Prof. Satish Chandra, Director, CSIR-CRRI, New Delhi took charge from Er. Pandey as Director, Additional Charge on 19th April, 2016 and continued till May 25th, 2016. Dr. N. Gopalakrishnan, Chief Scientist, CSIR-SERC, Chennai joined as Director on 26th May 2016.
- During the period, notable achievements have been made in the areas of newer construction materials, energy-efficient buildings, health monitoring and retrofitting and disaster mitigation. Number of studies were done under the Supra Institutional Project on 'High-Performance Material and Construction Technologies for Sustainable Built Space'. The Institute also carried out a noteworthy work of recycling mineral and industrial wastes to convert them into useful building materials.
- Underground Horizontal Boring Machine was developed.
- A conference on "Challenges and Applications of Mathematical Modeling Techniques in Building Science and Technology (CAM2TBST)" was held during February 7-8, 2008 in CSIR-CBRI as a part of the Diamond Jubilee Celebration.
- A conference on "Landslide Management – Present Scenario & Future directions" was organized by CSIR-CBRI during the Diamond Jubilee year during February 10-12, 2008. Dr. T. Ramaswami, Secretary, DST, was the Chief Guest.
- Three CSIR-CBRI Technologies were transferred to the Licensee (party) : viz. Brick Cutting Table; Brick Making Machine and Rice Husk Plastic Composites.

- An MoU was signed between CSIR-CBRI and M/s Meta Dynamics, South Africa to formulate the super sulphated cement from flurogypsum.
- A patent was filed for the manufacture of pine needle isocyanate.
- Director's Award for development of best technology / innovation / know-how and best publication was constituted from the Diamond Jubilee year 2009-10.
- CSIR-CBRI started the M.Tech programme PGRPE Programme on "Engineering of Infrastructure and Disaster Mitigation (Building/Roads)" from August 2010.
- A national conference on ''Fire Science Technology – research and its implementation'' was held at CSIR-CBRI in November, 2011.
- A Supra Institutional Network Project (SINP) on "Innovative Materials & Technologies for Next Generation Green Buildings (INMATE)" and a CSIR Network Project on "Engineering of Disaster Mitigation and Health Monitoring for Safe and Smart Built Environment" were initiated by CSIR-CBRI as a Nodal Institute under the 12th Five Year Plan project.
- A national conference on "Emerging Trends of Energy Conservation in Building" was held at CSIR-CBRI during November 01-03, 2012.
- A national workshop was organized on "Engineering Geophysics for Civil Engineering & Geo-hazards" during November 22-23, 2012.
- Annual Convention of the Indian National Academy of Engineering (INAE) held during December 6-7, 2012 at CSIR-CBRI.
- A two days 6th National Conference on Wind Engineering was organized by CSIR-CBRI at New Delhi during December 14-15, 2012.
- An international conference on "Advanced Materials for Energy Efficient Buildings" was organized by CSIR-CBRI at New Delhi during February 13-15, 2013.
- 44th SSBMT (Indoor) Finals was held at CSIR-CBRI during 5-7 April 2013.
- Dignitaries like Prof. S.K. Brahmachari, DG, CSIR, Dr. KikoMazveeuw and Dr. Aditya Barve, MIT, USA visited CSIR-CBRI.
- A landslide observatory for real time monitoring of a potential landslide near Pipalkoti, Garwhal Himalayas using wireless sensor network was installed under the 12th Five Year Plan activity to develop a landslide early warning system.
- CSIR-CBRI in association with Indo-US Science Technology Foundation and Michigan State University, USA organized an Exchange Meet on Structural and Passive Fire Safety in Buildings, during March, 2015.
- Dr. Harsh Vardhan, Hon'ble Minister of Science and Technology & Earth Sciences visited CSIR-CBRI, Roorkee on 23rd August, 2015.
- Two technologies were transferred viz. a) Fire Resistant Door and b) Ambient Cured Geopolymer for making Concrete & Building Materials for commercialization.
- CSIR-CBRI, Roorkee signed an agreement with NTPC Ltd. on June 7, 2016 for utilization of fly ash through geo-polymer technology in the construction sector (Building and Roads).

Our Memories

Bricks from tillage admixture

Geopolymer bricks



Joining of bricks with cement mortar

Our Memories

Direct Foam Injection (DFI) technology

Full scale fire experimental facility for G+1 building

Our Memories

Baggase fiber

Wheat straw

Less cohesive soil

Rubber tyre waste

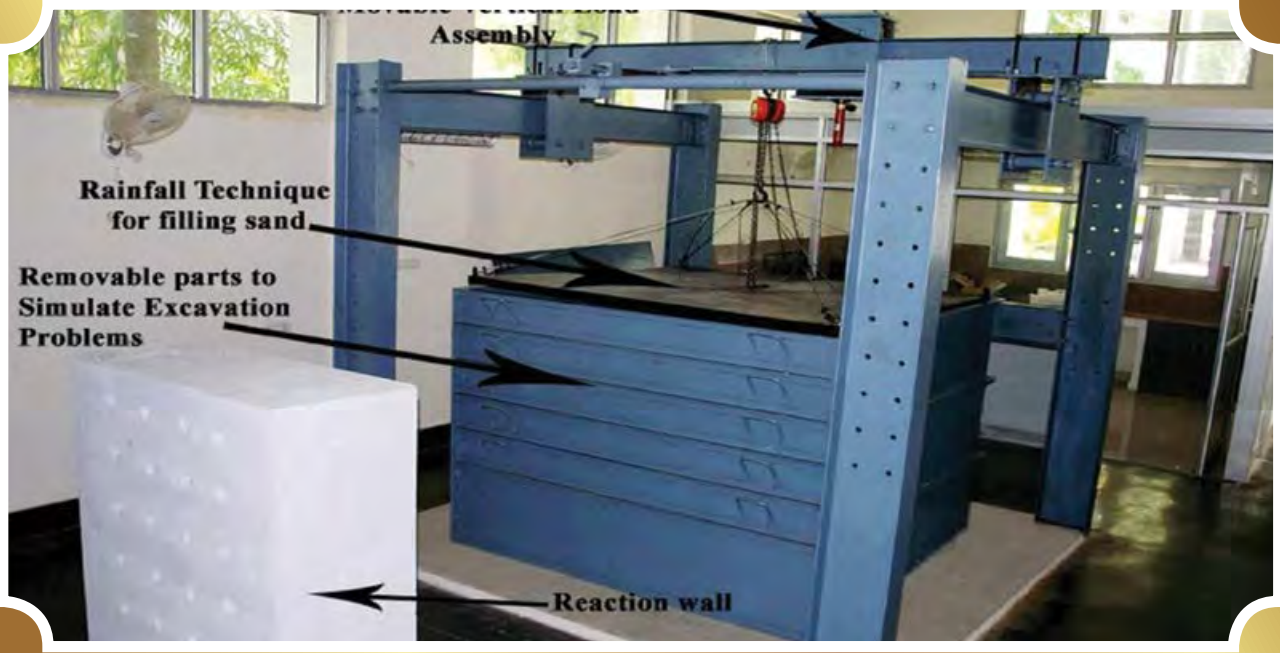
Footwear industry waste

Our Memories

Indira Awaas Yojana house in Meghalaya

Indira Awaas Yojana house in Madhya Pradesh

Our Memories

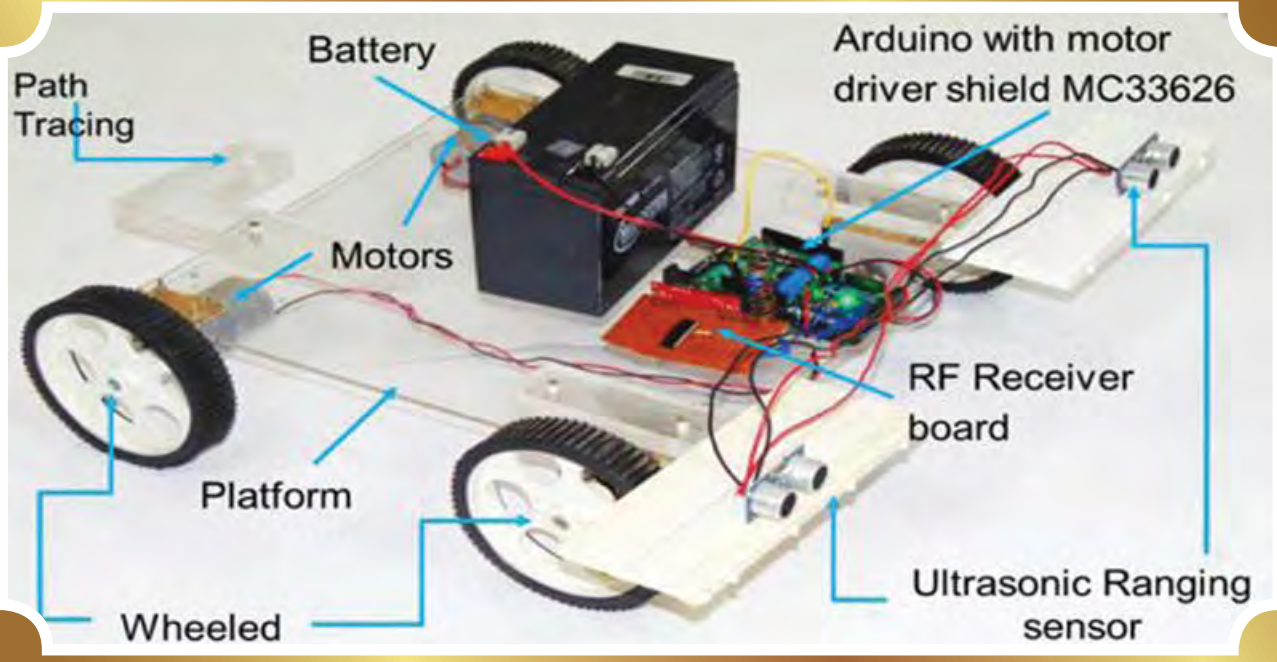


Model pile testing facility

Fire exposer set-up for RCC beam testing

Our Memories

Industrial Meet on Building Material &
Disaster Mitigation Technologies



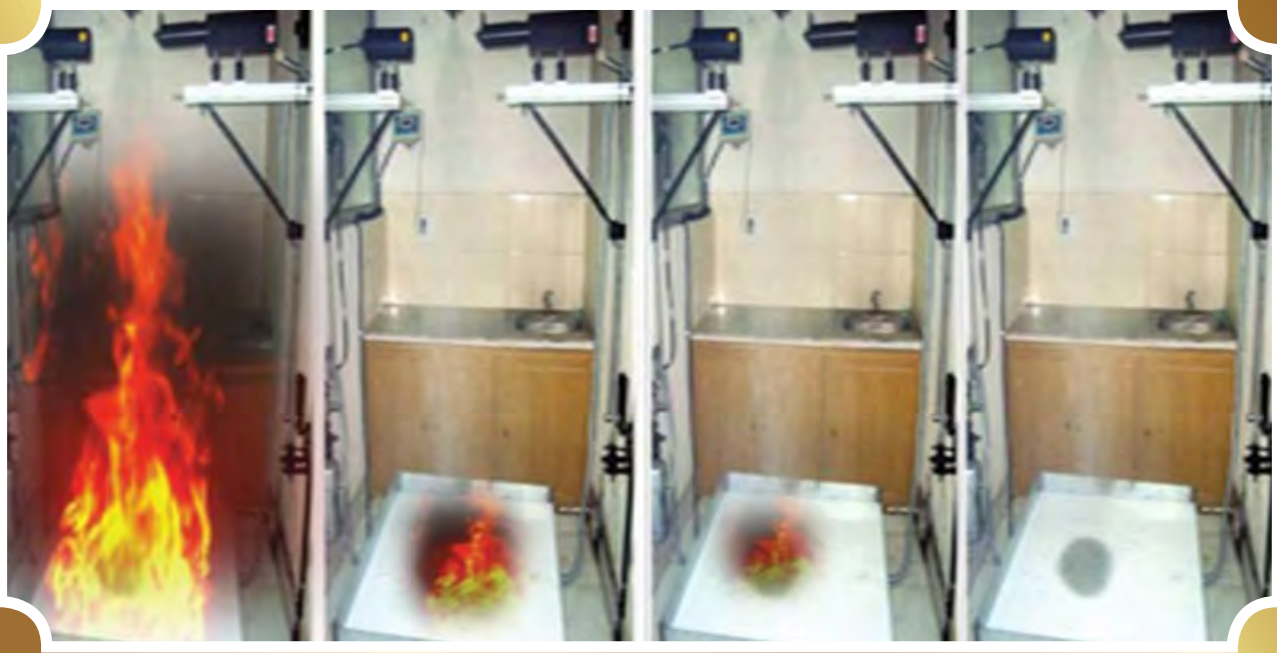
Glass façade cleaning robotic system

Our Memories

Landslide Observatory at Pipalkoti, Garhwal Himalaya

Full-scale confined masonry building model subjected to lateral cyclic load

Our Memories



Experimentation facility for water-mist and other indigenously developed liquid extinguishants

New facility developed for optimization of compositions as per IS: 15683-2006 on Class A wooden-crib fires

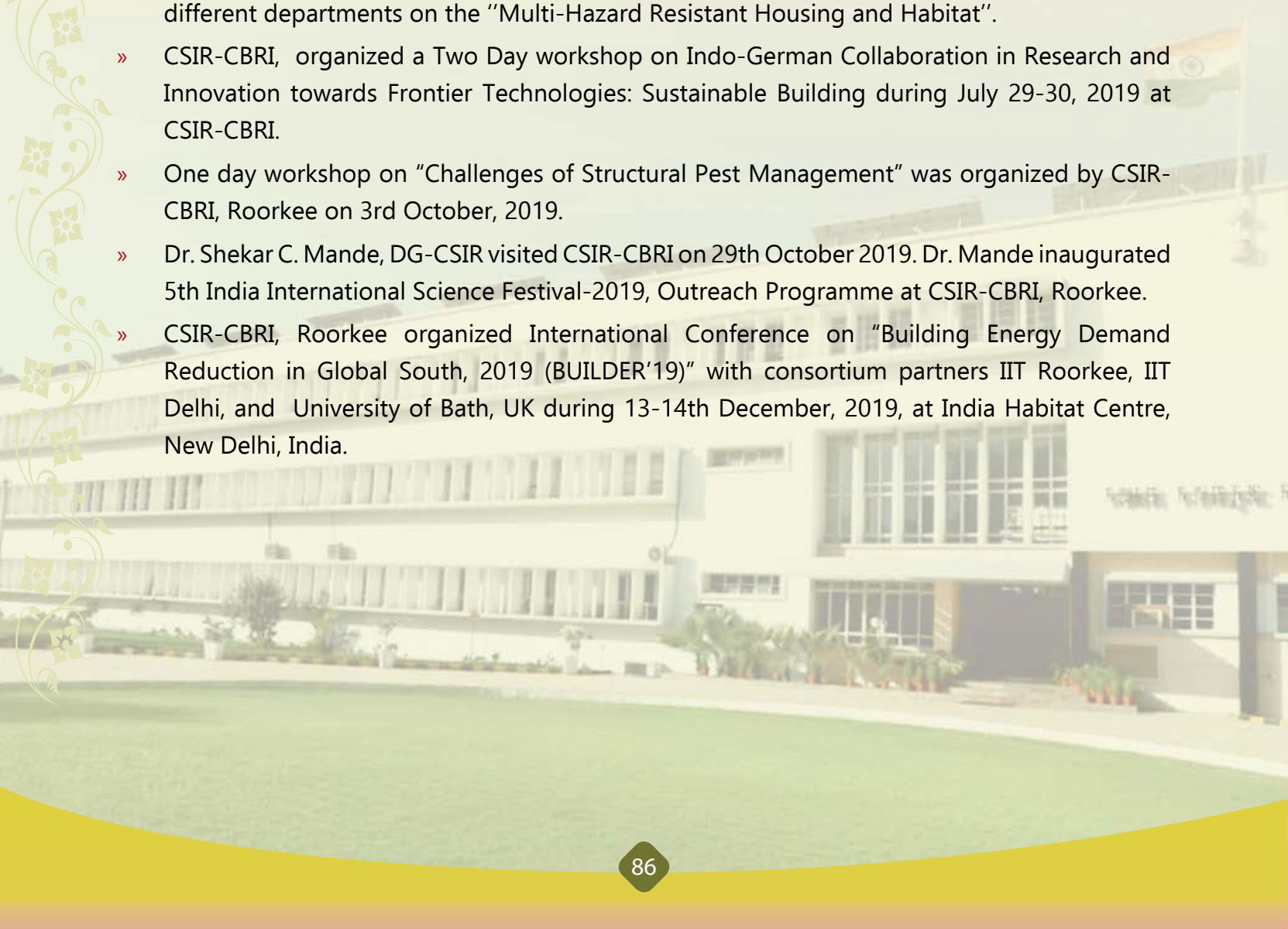
DECADE 8

The March towards Endless Glory

(2017 onwards)

- The Institute initiated R&D works on six major thrust areas – Housing, Structure, and Foundation; Conservation of Heritage Structures; Innovative Building Materials; Energy Efficient System; Disaster Mitigation; and Building Process and Automation.
- The research publication in refreed journals reached a milestone of 100 papers during the year 2020.
- The Institute crossed an external cash flow of Rs. 40 crore in the year 2020.
- CSIR Platinum Jubilee Capsule Exhibition held at Roorkee for teachers, students, common public, and user agencies.
- The Institute organized numerous motivational and educational programs.
- CSIR-CBRI transferred more than 10 technologies such as Epoxy-phenolic I.P.N. Coating based on CNSL to protect concrete and steel reinforcement in concrete; High Drought Brick Kiln; Building Products from Kota Stone Waste; Horizontal Boring Machine for making underground bores; C-Brick Machine (Upgraded Version); Autonomous Climbing Robot; Gypsum panel Machine; Fire Retardant Water Based Clear/Transparent Coating for Wood & Wood based interiors; Fire-Retardant Water-Repellent Canvas; Hybrid Rebar Couplers; Software for imaging of masonry and concrete structure using NDT.
- Ministry of Rural Development, Govt. of India awarded CSIR-CBRI, Roorkee, for its valuable assistance in the technical vetting of house design typologies developed for PMAY-G.
- Dr. Shekhar C. Mande, DG, CSIR visited CSIR-CBRI, Roorkee on 24th December, 2018. Addressing to the gathering, Dr. Mande acknowledged the glorious history and the contributions of CSIR-CBRI.

- CSIR-CBRI organized a National Workshop on Advances in Repair and Rehabilitation of Concrete Structures, Roorkee during September 22-23, 2017.
- CSIR-CBRI participated in the India International Trade Fair (ITF) held during November 14-27, 2016 organized by ITPO at Pragati Maidan, New Delhi. CSIR-CBRI the theme coordinator for Engineering and Infrastructure pavilion in ITF. During the ITF, two Memorandum of Understanding (MoUs) were signed, and one technology was transferred to the industry.
- CSIR-CBRI organized the 2nd National workshop on "Utilization of Bamboo as Building Material in NE region" during February 18-19, 2019.
- Embassy of India and CSIR-CBRI entered into an agreement on a project with the Government of Nepal on 6th March, 2019 for designing of project management for reconstruction/ retrofitting of 70 school buildings and 2 library facilities in earthquake affected districts of Nepal.
- Department of Disaster Management & Rehabilitation, Govt. of Uttrakhand entered into an agreement with CSIR-CBRI to provide monthly technical skill training to the engineers of different departments on the ''Multi-Hazard Resistant Housing and Habitat''.
- CSIR-CBRI, organized a Two Day workshop on Indo-German Collaboration in Research and Innovation towards Frontier Technologies: Sustainable Building during July 29-30, 2019 at CSIR-CBRI.
- One day workshop on "Challenges of Structural Pest Management" was organized by CSIR-CBRI, Roorkee on 3rd October, 2019.
- Dr. Shekar C. Mande, DG-CSIR visited CSIR-CBRI on 29th October 2019. Dr. Mande inaugurated 5th India International Science Festival-2019, Outreach Programme at CSIR-CBRI, Roorkee.
- CSIR-CBRI, Roorkee organized International Conference on "Building Energy Demand Reduction in Global South, 2019 (BUILDER'19)" with consortium partners IIT Roorkee, IIT Delhi, and University of Bath, UK during 13-14th December, 2019, at India Habitat Centre, New Delhi, India.



Our Memories

Hon. Vice President of India Shri Mohd. Hamid Ansari and
Hon. Minister of Science & Technology Dr. Harsh Vardhan
at CSIR-CBRI Exhibition Counter

Our Memories

Visit of Dr. Harsh Vardhan, Vice-President, CSIR & Minister of Science & Technology at CSIR-CBRI Exhibition stall

Our Memories

Inaugural address by Shri Saurabh Endley, Joint Secretary, MDoNER, Govt of India

Visit of Secretary, DST at CSIR-CBRI Counter

Our Memories

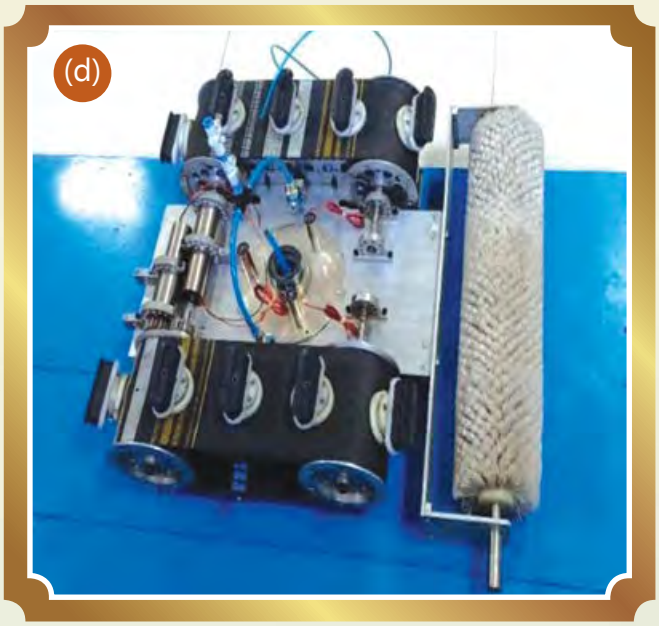
Visitors interacting in the exhibition

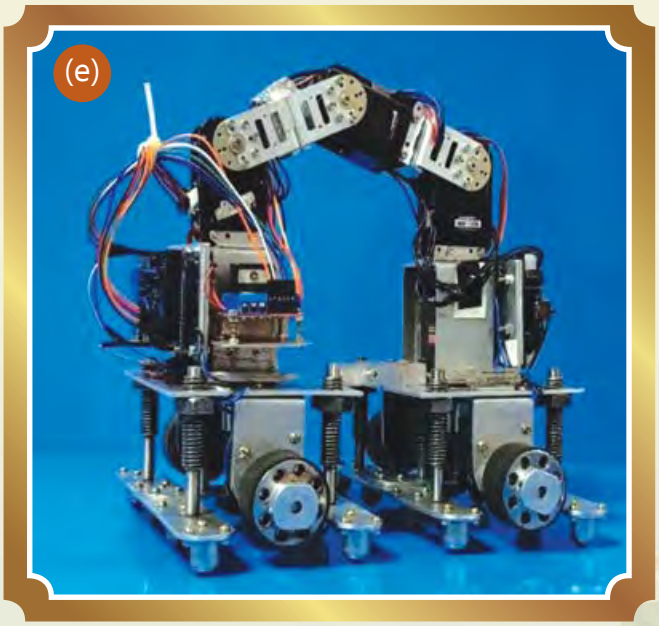
Participants of National training programme on 'Control Measures for Landslides' jointly organized with NIDM

Our Memories

(a) Wall plastering machine, (b) Underground horizonal boring machine, (c) Reverberation chamber

Our Memories





(d) Glass façade cleaning robot, (e) Autonomous robotic system for structural inspection, (f) Affordable modular mobile crane

Our Memories

(a) Inauguration of ASCD laboratory by DG, (b) Multipurpose collapsible structures (COVID-19 measure)

Our Memories

(c) Cyclic testing facility for structural elements (700 kN capacity),
(d) Corrosion laboratory

Our Memories

International Collaborations

Dr. Harsh Vardhan at CSIR-CBRI

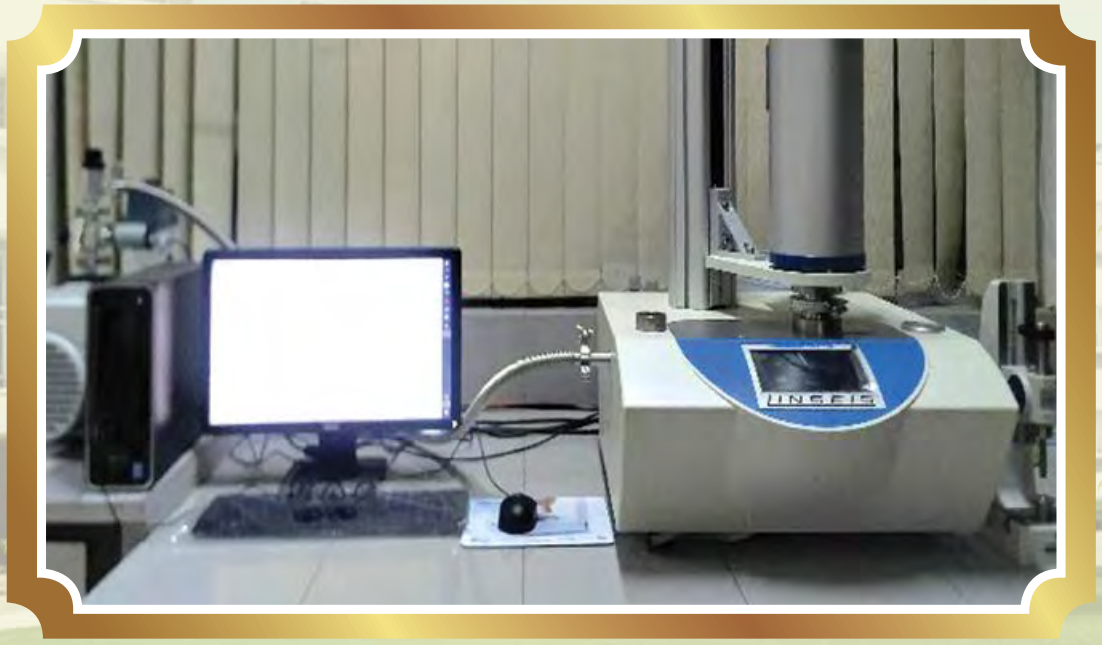
Our Memories

Transfer of technologies on Nano-materials

X-Ray Diffractometer

Our Memories

Scanning Electron Microscope



Thermogravimetric

Our Memories

Dr. Harsh Vardhan at CSIR-CBRI

Smt. Vasundhara Raje, Ex-CM at CSIR-CBRI stall in Jaipur

Our Memories

MoU with Rajasthan State Pollution Control Board, Jaipur

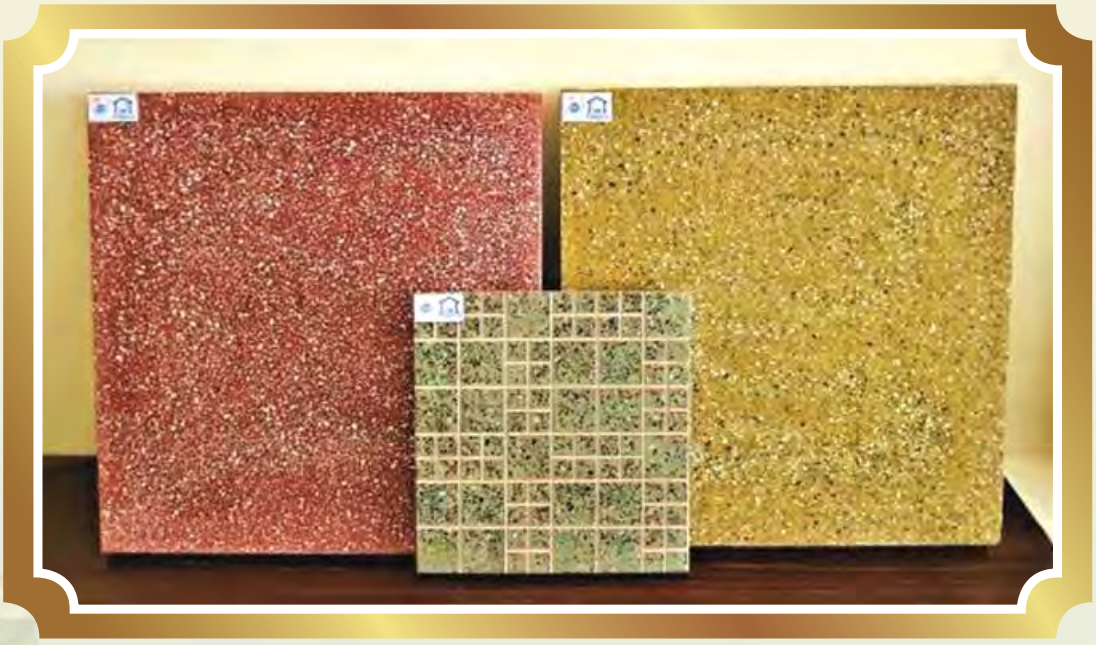
MoU with Kansai Narolac Paints, Mumbai

Our Memories

Technology demonstration

Start-up plant based on CSIR-CBRI technology

Our Memories



Mosaic Flooring Tiles from Marble Stone Waste

EPS Door

Our Memories

Coir CNSL Board Furnitures

Laying of Paver Blocks

Our Memories

Vermiculite Tiles

MDF Board from Bagasse

Our Memories

Transfer of technologies on High Draught Brick Kiln

Transfer of technologies on Utilization of C&D waste

Our Memories

Wave Length Dispersive X-ray Spectrophotometer

High Draught Zig-Zag Rectangular Brick Kiln

Our Memories

Building products from solid waste

Inductively Coupled Plasma Optical Emission spectroscopy (ICP-OES)

Our Memories

Rural Technology Park at SIRD Campus

Bamboo House constructed at CSIR-CBRI

Our Memories

Live Demonstration of casting of Pre-Cast Building Components

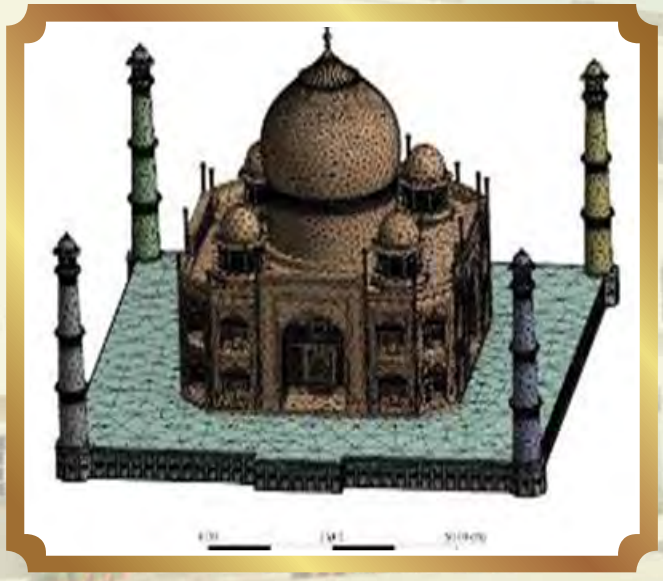
Live Demonstration of CSIR-CBRI Technology

Our Memories

CSIR-CBRI contributions in Heritage Structures

Laser Scanning

GPR Investigation



FEM Model

Original Grave

Investigations at UNESCO World Heritage, Taj Mahal, Agra

Our Memories

CSIR-CBRI contributions in Heritage Structures

GPR Investigation

Inside View from Top

3D Model Laser Scanning

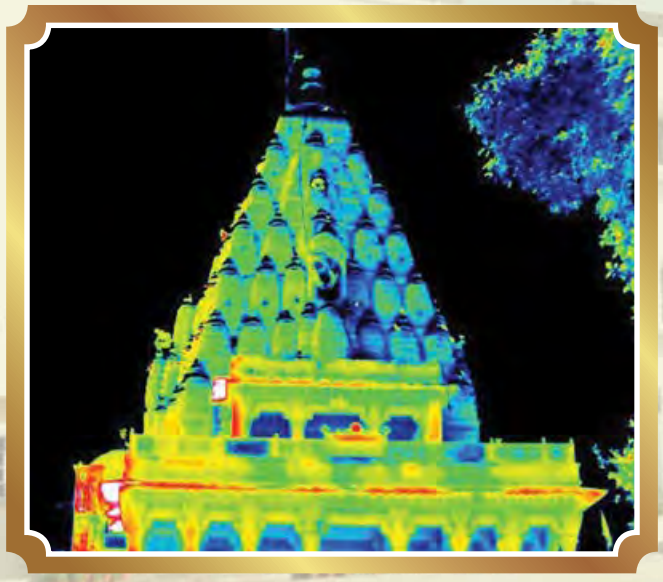
Damage Mapping at the top of Temple

Investigations at UNESCO World Heritage, Sun Temple, Konark

Our Memories

CSIR-CBRI contributions in Heritage Structures

GPR Investigation



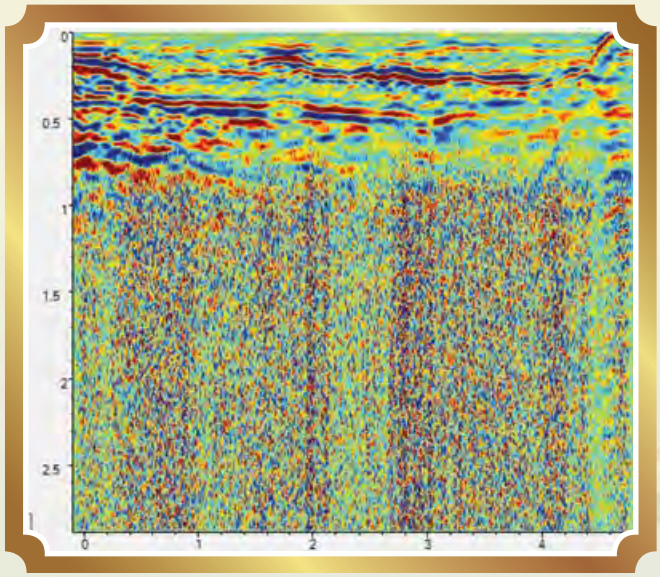
Thermal Image

Cores for Testing

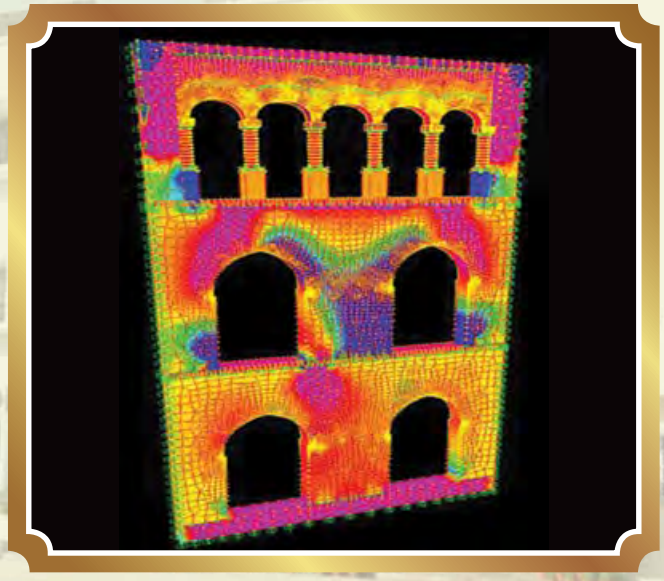
Investigations at Mahakaal Mandir, Ujjain

Our Memories

CSIR-CBRI contributions in Heritage Structures



Radargram

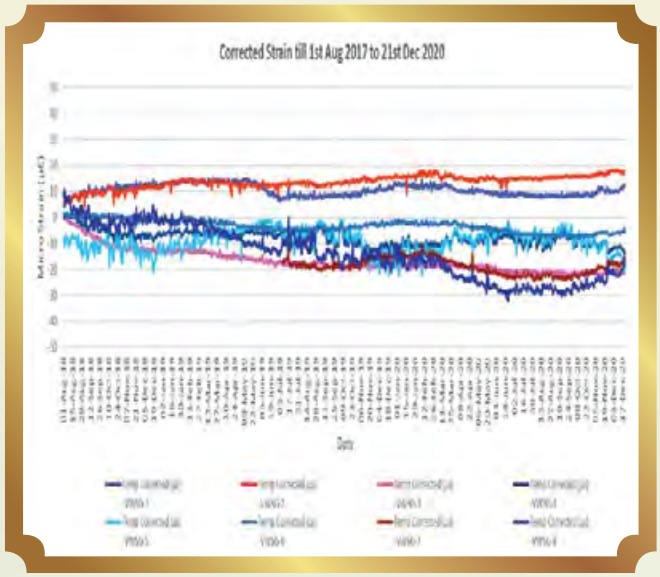


FEM Analysis

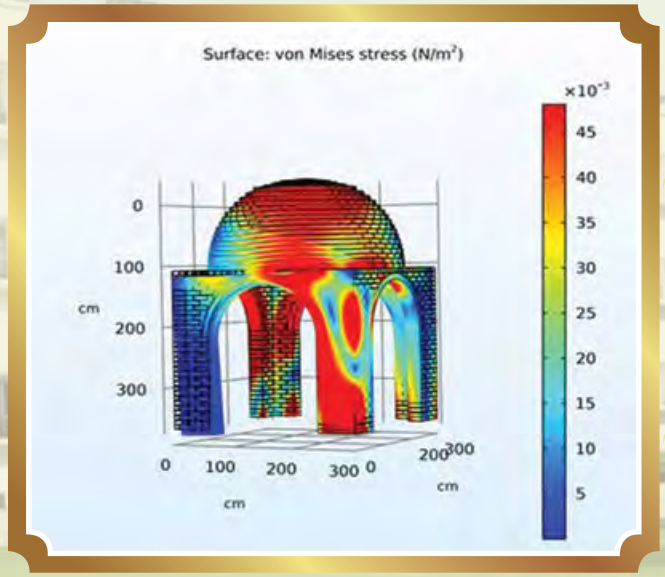
Investigations at UNESCO World Heritage Structure CSMT, Mumbai

Our Memories

Testing and Monitoring of Historic Structural Elements



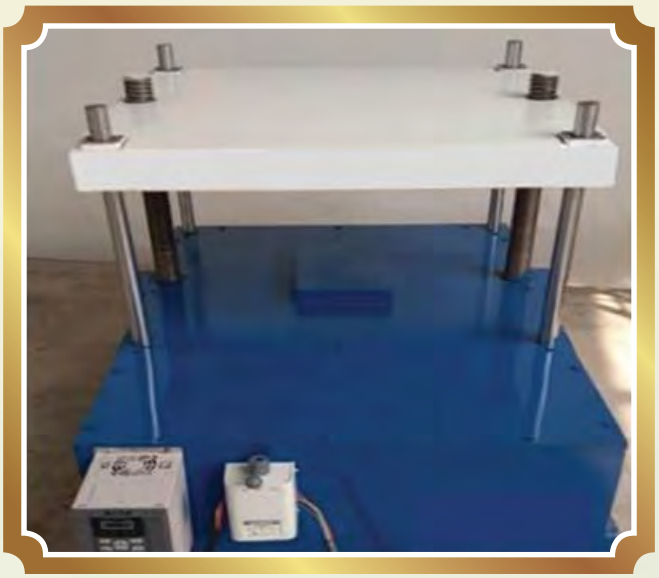
Health Monitoring at Jagannath Temple, Puri using VWSG



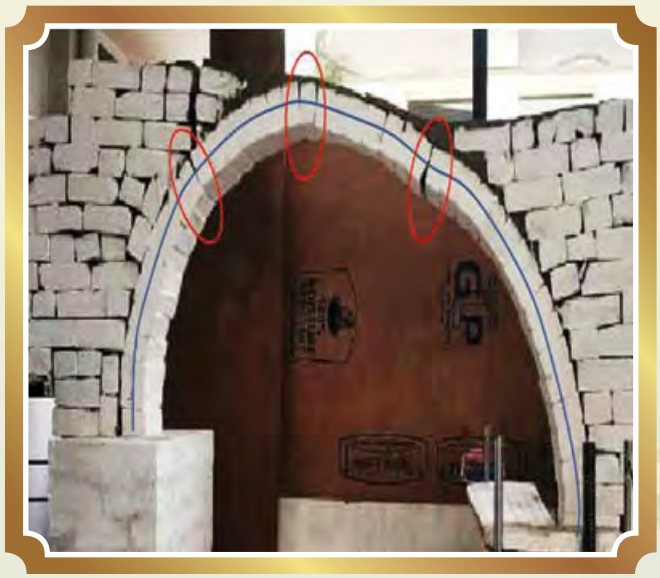
Experimental and numerical study of a full-scale dome structure (3m x 4.5m) constructed with brick & lime mortar

Our Memories

Testing and Monitoring of Historic Structural Elements



Development of controlled settlement mechanism



Monitoring of dry stack arch structure under settlement using FBG sensors

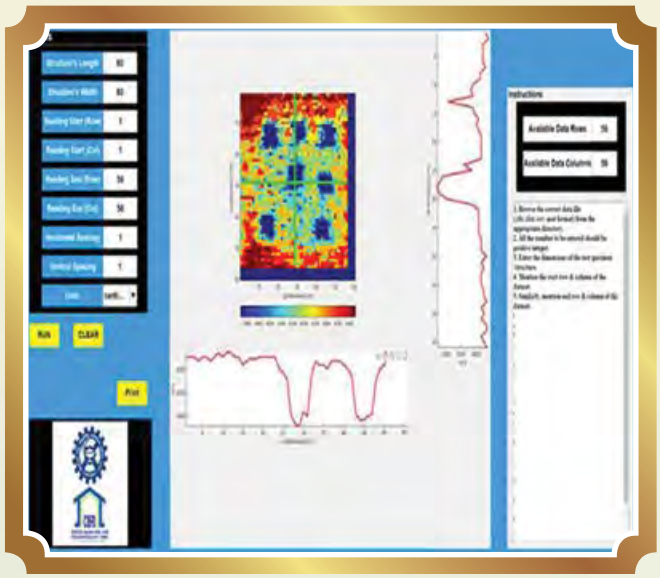
Crack Monitoring at Amer Fort, Rajasthan

Modified Diagonal Compression Testing of FRP Strengthened Brick wallet

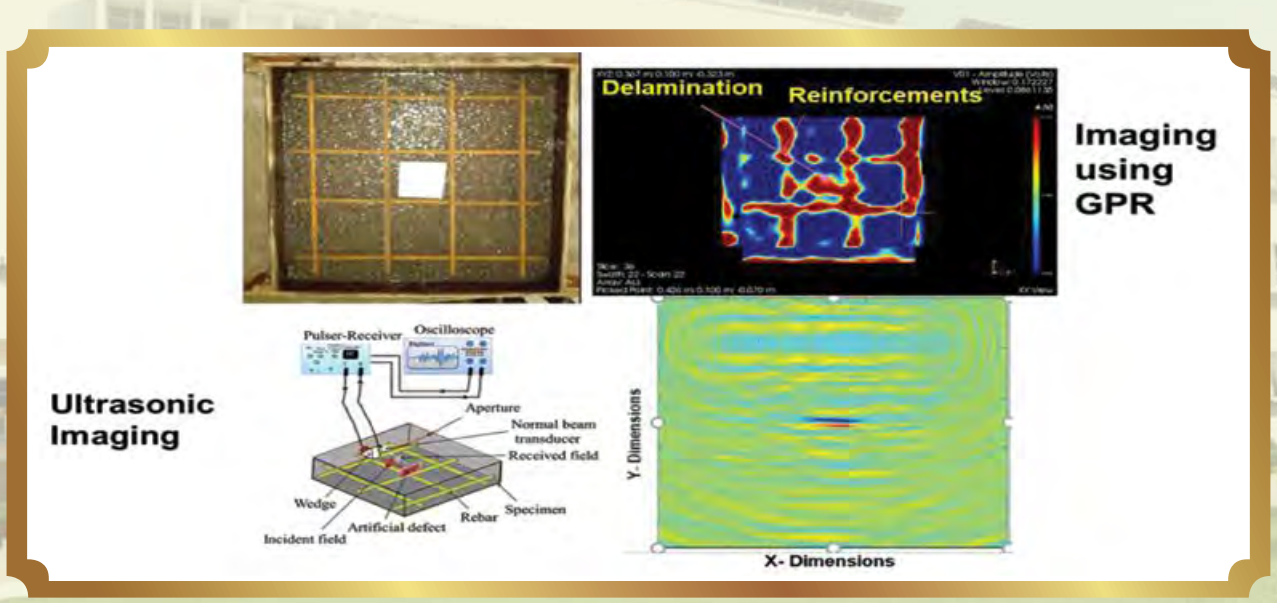
Our Memories

Development of Hybrid Non Destructive Evaluation using Multi-wave Imaging

Technology transfer on Imaging of Hidden Anomalies in Structures using UPV



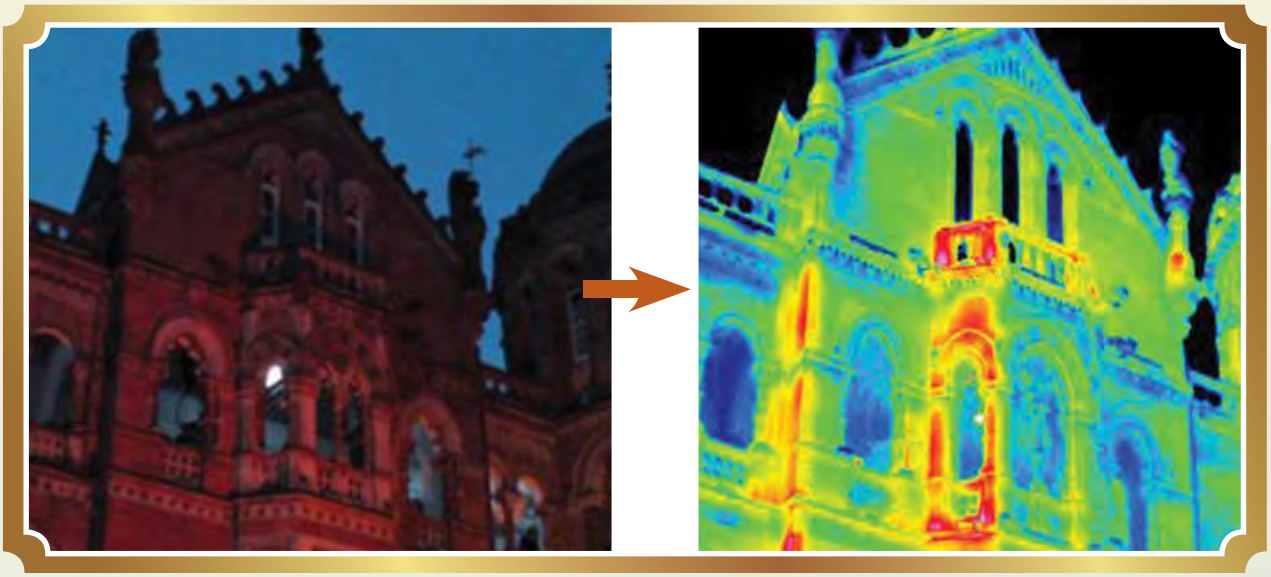
Developed UltraImage_V2 software: Ultrasonic Imaging Interface



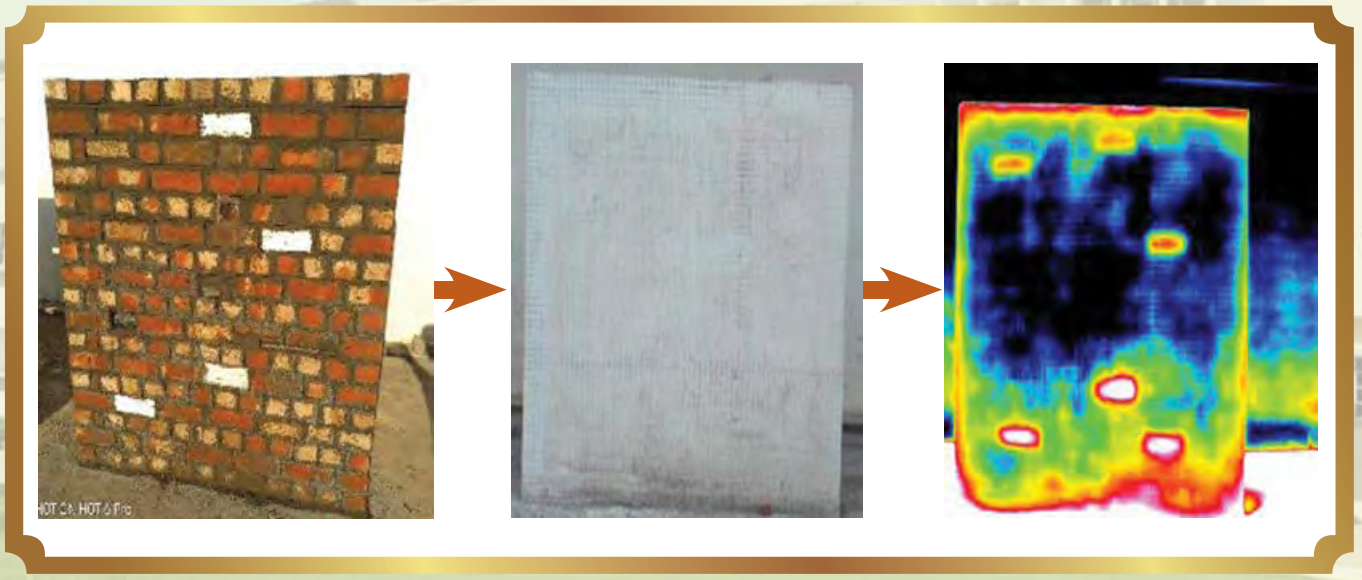
Signal processing techniques, algorithms, multi-wave imaging technique

Our Memories

Development of Hybrid Non Destructive Evaluation using Multi-wave Imaging



Thermal Imaging of Heritage structures (CSMT, Mumbai)



Defect detection in plastered Masonry wall using Thermal Imaging

Our Memories

Utilization of Bamboo as Structural Building Material

National conference at Aizawl

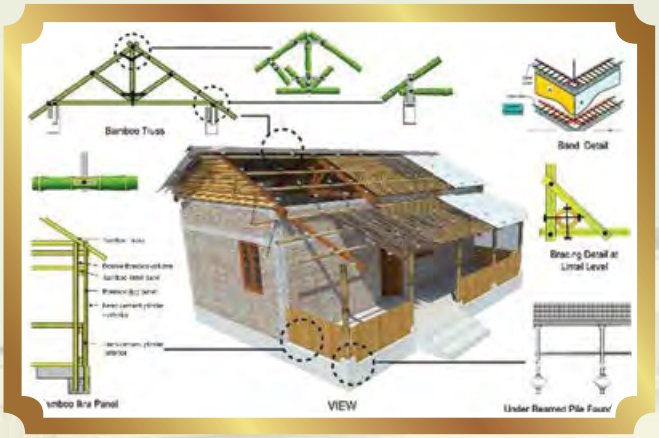
Material testing

Bamboo structures

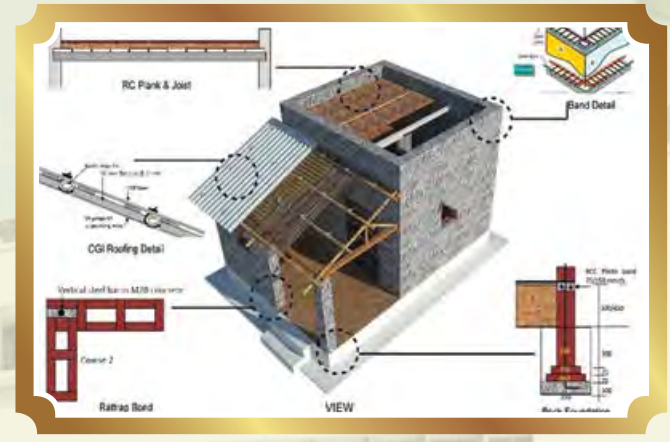
Demo house model

Our Memories

Formal Accreditation to CSIR–CBRI for Technical Compilation of Rural Housing Typologies (64 housing zones – 130 designs) by the Ministry of Rural Development



Assam



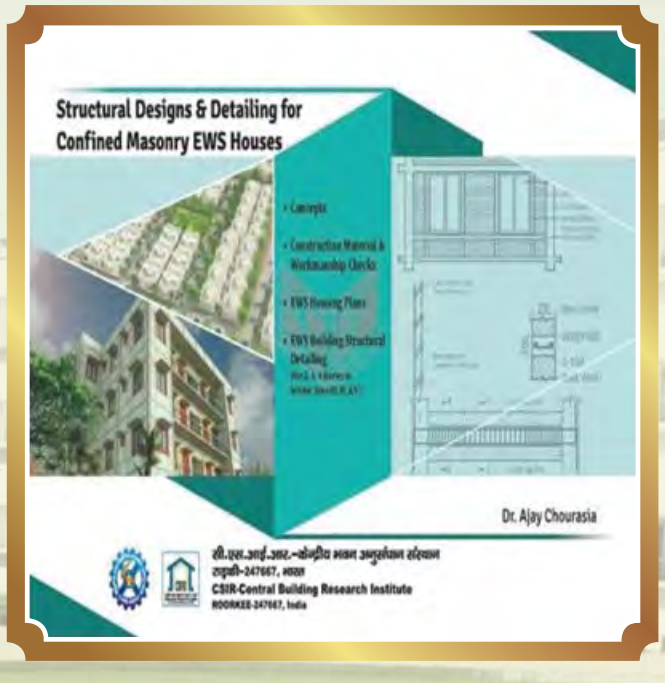
Jharkhand

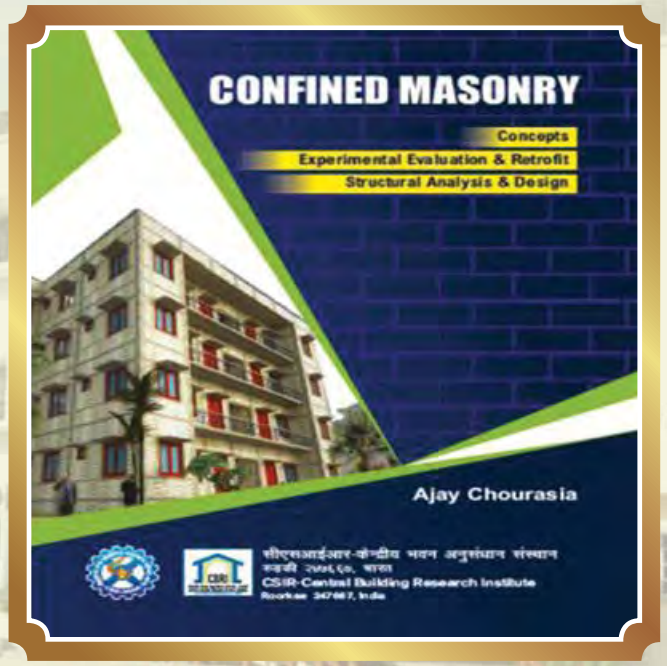
Madhya Pradesh

Our Memories

Lateral load tests on full-scale buildings: (a) confined masonry, (b) retrofitted confined masonry (c) confined masonry using light weight cellular panels

Our Memories





Published guidelines on Confined Masonry Technology, EWS Houses, Good Construction Practices

Our Memories

Reconstruction of Disaster Resilient Schools and Hospitals in Nepal

Our Memories

Reconstruction of Disaster Resilient Schools and Hospitals in Nepal

Our Memories

CSIR-CBRI Construction Technology Demo Park

Our Memories

CSIR-CBRI Construction Technology Demo Park

Our Memories

CSIR-CBRI Construction Technology Demo Park

Our Memories

Research Capabilities : Efficiency of Buildings

Illumination measurement of artificial lighting

Daylight measurement setup

Wind tunnel testing facility

Heat pump based heating system for cold climate

Our Memories

Research Capabilities : Efficiency of Buildings

Environmental simulator

High efficiency solar thermal collector

Our Memories

Research Capabilities : Fire Research

Floor furnace

Wall furnace

Testing of false celling and roof slab

Our Memories

Research Capabilities : Fire Research

Vertical wall furnace for testing fire resistance of building elements

Our Memories

Geopolymer Concrete Road

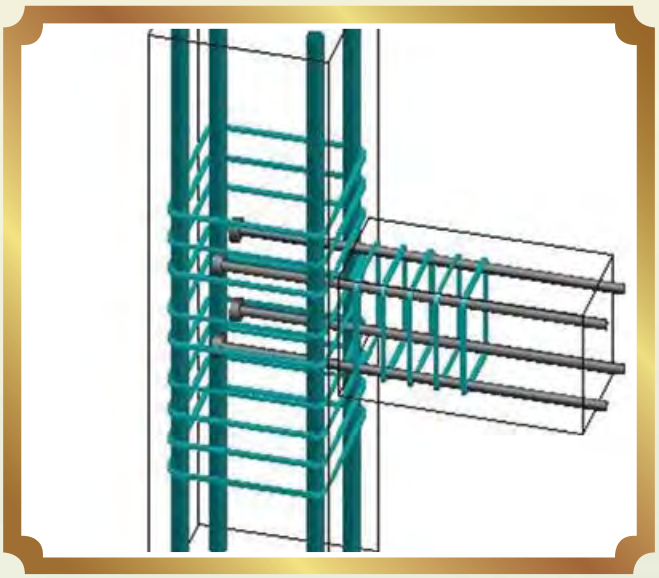
Our Memories

MoU with JSW

DG, CSIR at Cement, Concrete & Composite Lab

Our Memories

Headed bars as mechanical anchorage system for beam-column joints



Headed Bars In Beam-Column Joints

Headed Bars

Plain Headed Bars

Grooved Headed Bars

Our Memories

Headed bars as mechanical anchorage system for beam-column joints

Ribbed Headed Bars

Cross-bars and Plates

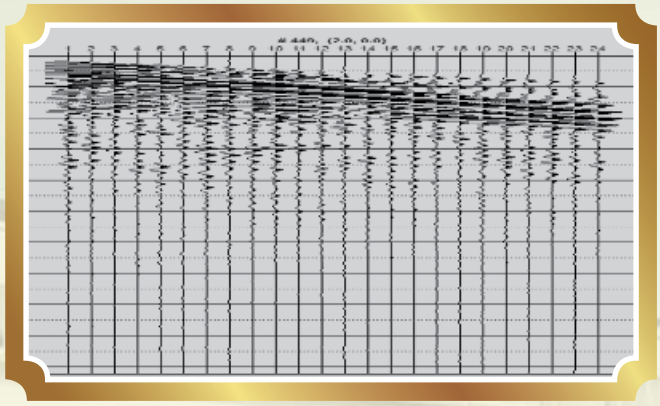
Expa-Mesh Provided in Column

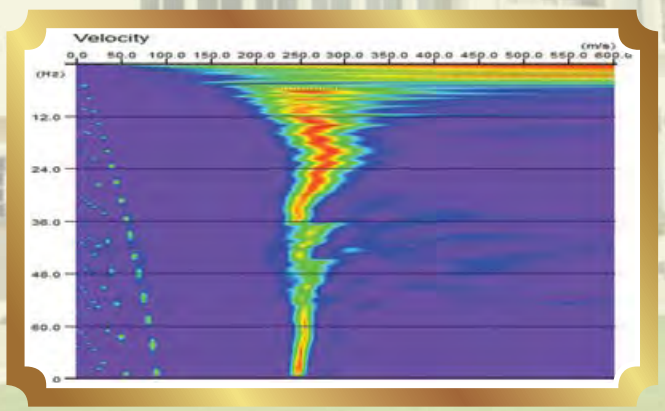
Our Memories

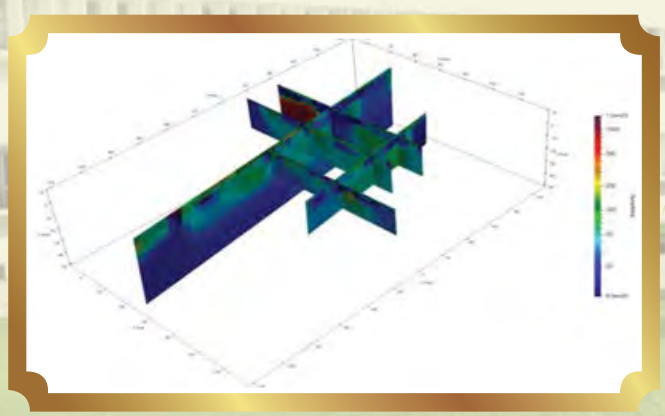
Slope stability assessment and monitoring of RE wall at Greenfield Airport, Pakyong (one of the five highest airports in India), Sikkim

Our Memories

Site investigation, seismic study and foundation recommendation of Shri Ram Janmabhoomi Mandir, Ayodhya







Our Memories

Stabilization measures and site development of Tungnath Temple area (one of the highest Shiva temples in the world)

Our Memories

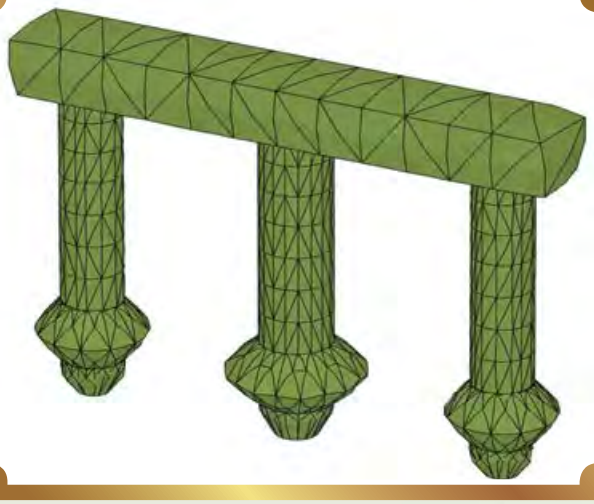
Geotechnical investigations & monitoring of the Victoria Memorial Hall (India's largest and one of its oldest museum libraries) at Kolkata

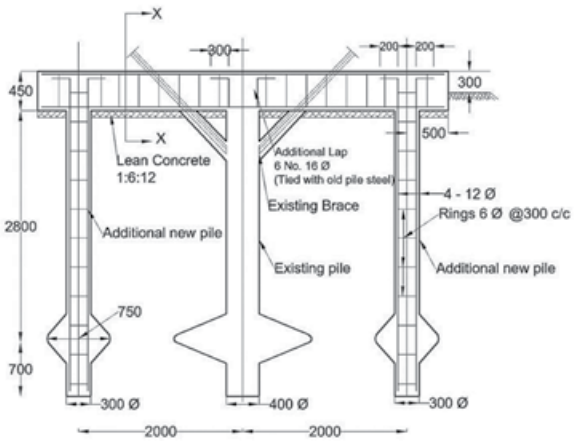
Our Memories

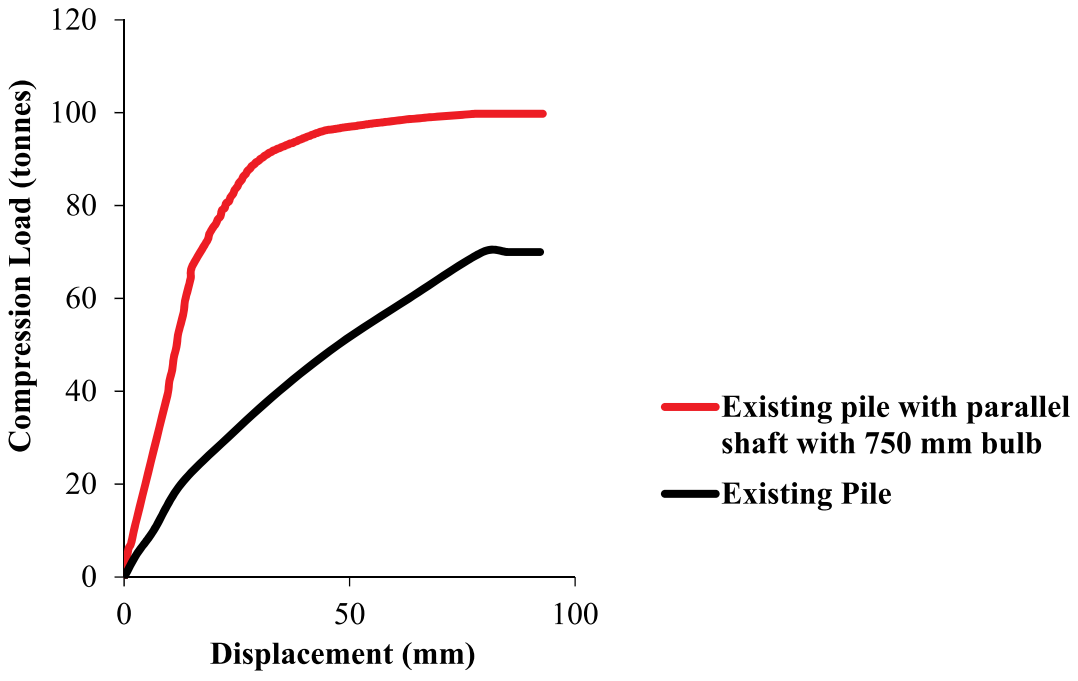
Conditions Assessment and Strengthening Measure of Under-reamed Pile Foundation Supporting Transmission Line Tower at Punjab

Our Memories

Conditions Assessment and Strengthening Measure of Under-reamed Pile Foundation Supporting Transmission Line Tower at Punjab





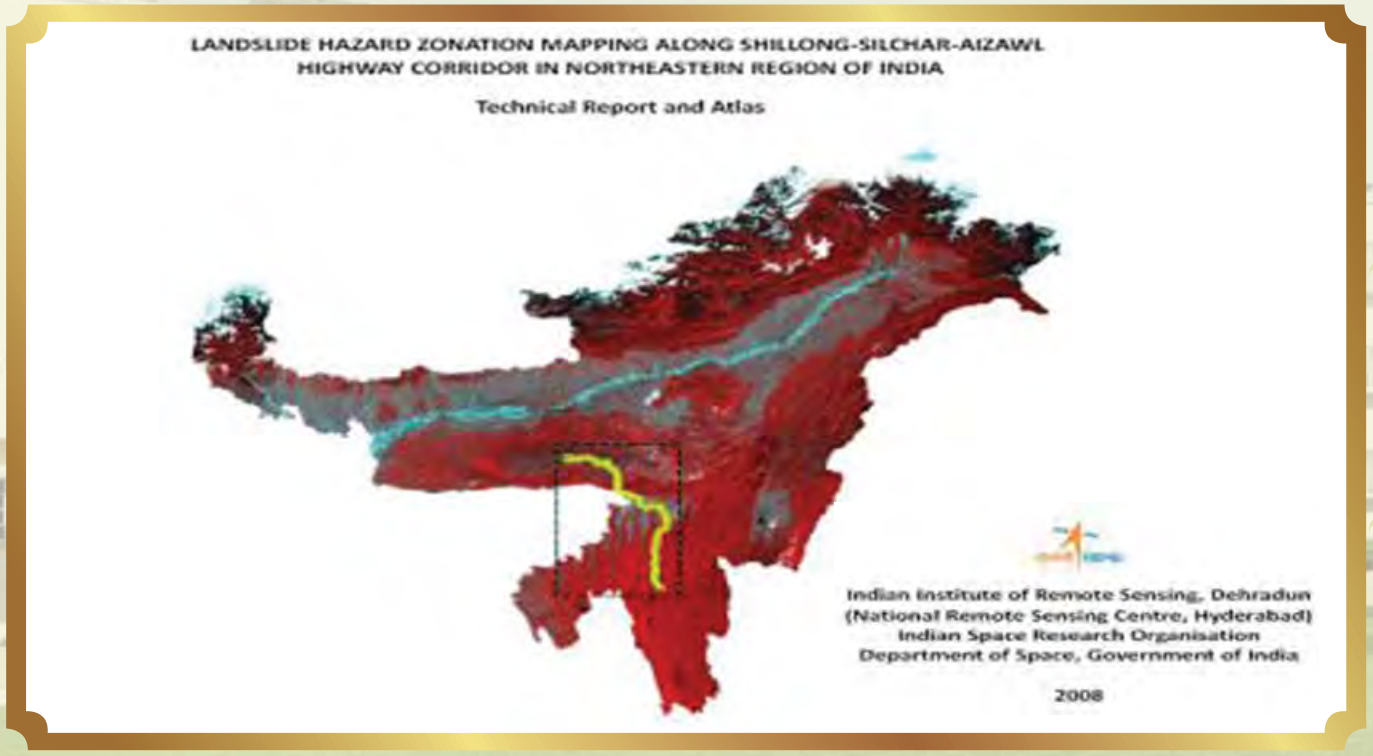


Our Memories

Landslide hazard study along NH-108 in Uttarkashi, Uttarakhand

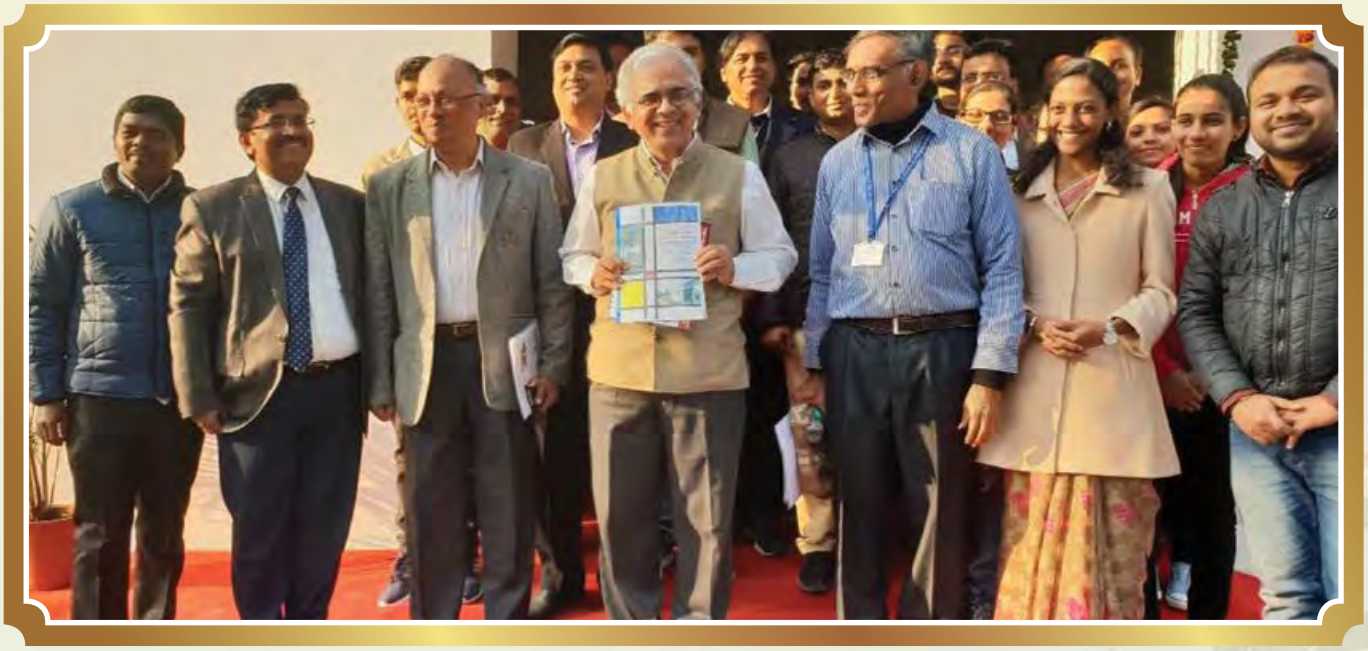
Our Memories

Atlas on Landslide Hazard Zonation



Our Memories

Visit of DG, CSIR



Inauguration of Cement, Concrete & Composite Lab

Construction Technology Demo Park

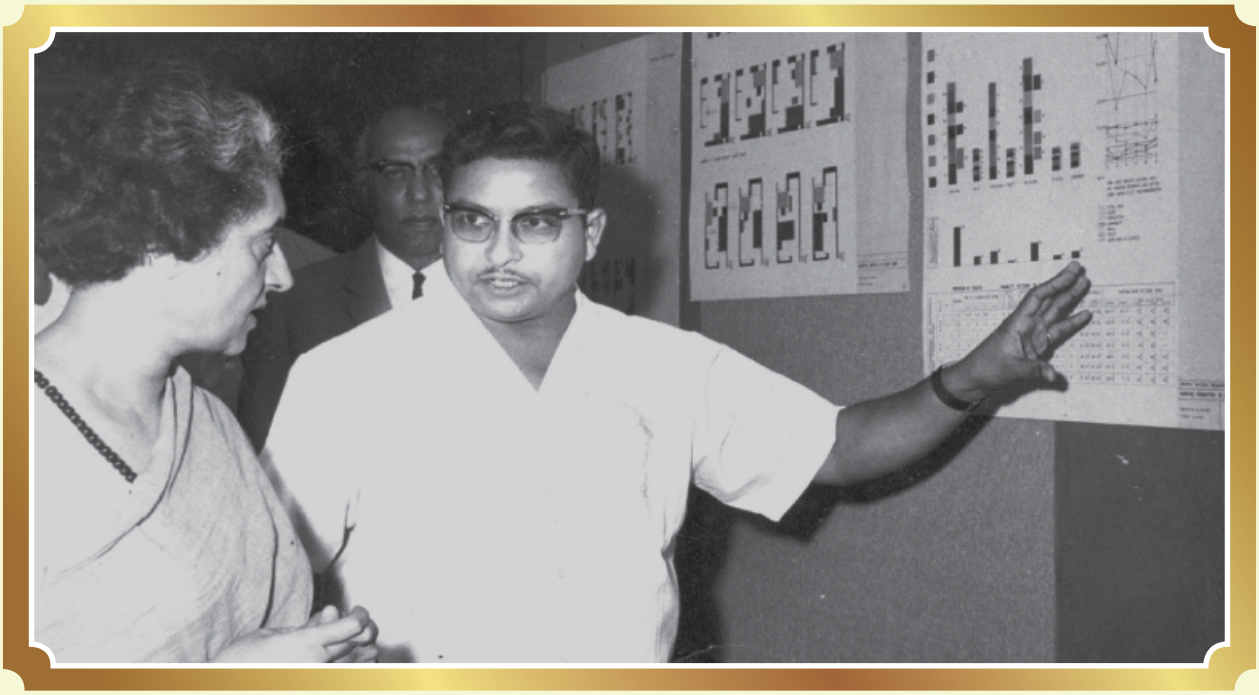
Our Memories

Visit of DG, CSIR

Inauguration of Website of Database on Heritage Structures

Landslide Model Testing Facility

Visit of Eminent Personalities

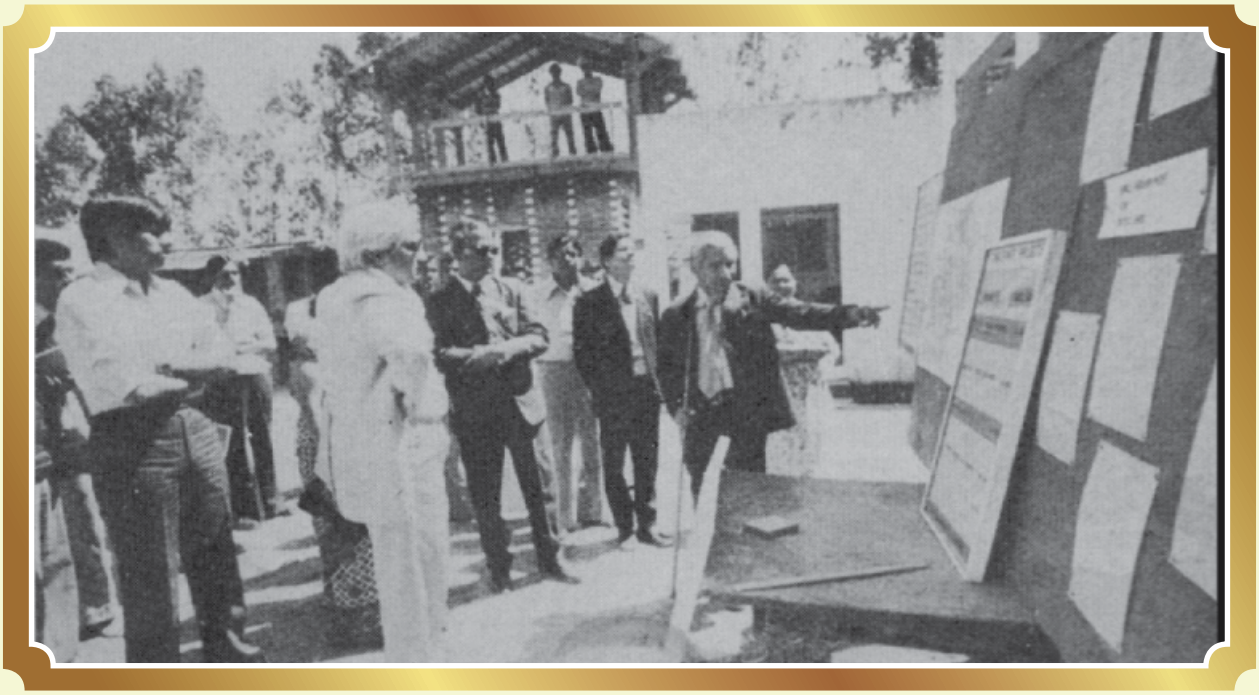


Prime Minister Mrs. Indira Gandhi at the exhibition on Cost Reduction in School Building at New Delhi

Mr. Moti Lal Vora, the then Chief Minister of M.P. visiting CSIR-CBRI

Visit of Eminent Personalities

H.E. Minister for Housing Govt. of Ceylon Visiting CBRI Stall at NBO Display Centre



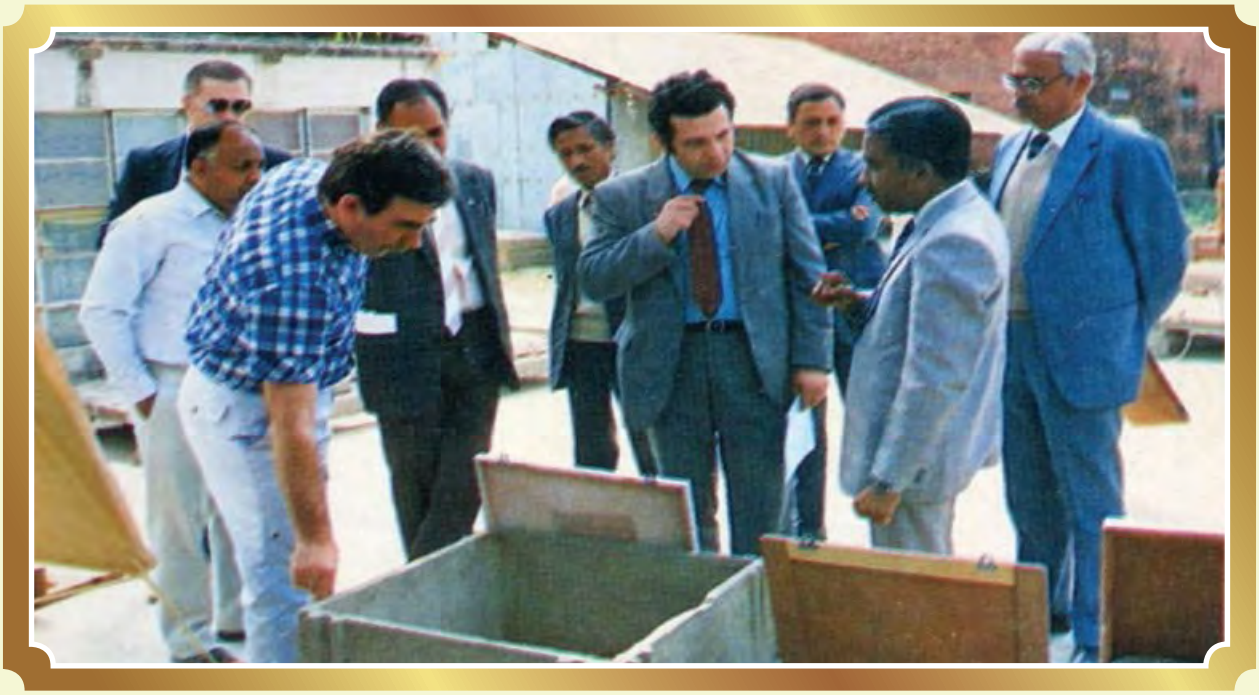
Hon'ble Minister Shri Sikander Bakht Visiting the Rural Buildings & Environment Division of CBRI

Visit of Eminent Personalities

Hon'ble Shri Kamal Nath, the then Minister of State for Environment & Forest inaugurating "National Seminar on Substitute of Wood in Buildings"

Dr. S.K. Joshi, Director General CSIR addressing CBRI Staff

Visit of Eminent Personalities



Russian Delegates visiting CBRI

Sri Sunder Lal Bahuguna, Environmentalist and other distinguished visitors inspecting Concrete Block making Machine

Visit of Eminent Personalities

Dr. A.P. Mitra, Director General, CSIR inaugurating
the Computer Centre on 28th July, 1980

Dr. Sam Pitroda at CBRI

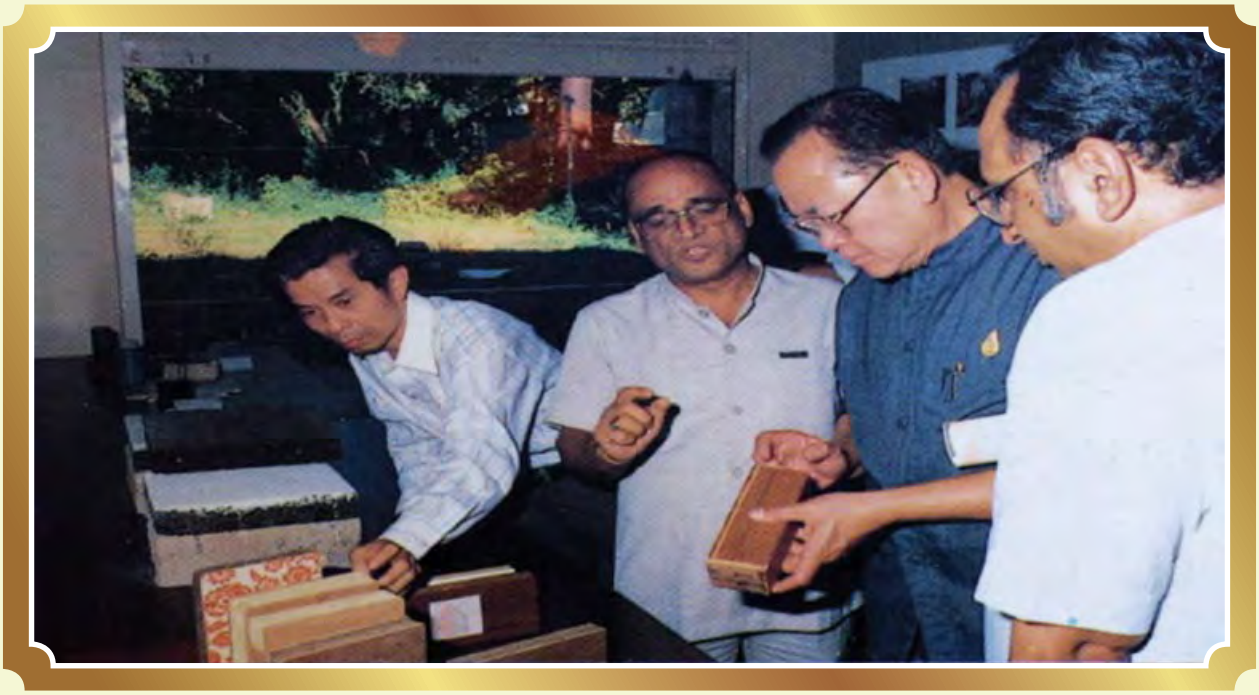
Visit of Eminent Personalities

Prime Minister Shri Rajiv Gandhi at the Institute

Shri R. Venkataraman, Vice President of India visiting the Institute in 1984

Visit of Eminent Personalities

H.E. Prof. Venancio Massingue along with Director, CSIR-CBRI visiting Rural Technology park



Dr. Smith Kempempool Governor General, TISTR, Thailand visiting CBRI

Visit of Eminent Personalities

Hon'ble Prof. Nurul Hasan, Governor, West Bengal and Ex. Vice President, CSIR visiting CBRI Stall at National Science Fair, Kolkata

Gramawas '95 :

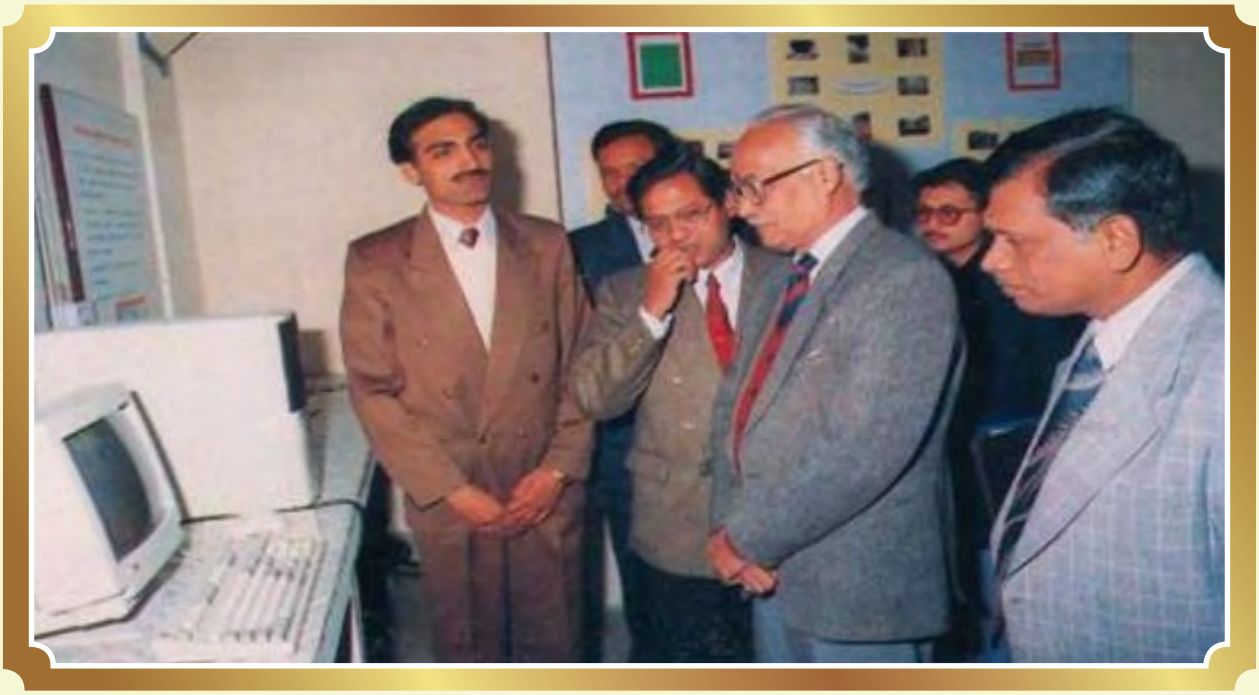
Shri. P.V. Narsimah Rao, Prime Minister at CBRI stall in India International Trade Fair, New Delhi, 15th November, 1995

Visit of Eminent Personalities

Admiral V.S. Shekhawat, Chief of the Naval Staff witnessing the Rural Sanitation Technologies developed at the Institute.

(L-R) Pof. R.N. Iyengar, Prof. A. Deb, Dr. N.S. Bhal and His Excellency Dr. Sanaee, Deputy Minister for Culture & Health Education Govt. of Iran (13th Feb. 1996)

Visit of Eminent Personalities



Prof. N.C. Nigam inaugurating the Building Dynamics Laboratory on 16th December 1997

Technology Show Case at Bangalore, 24th November, 1997

Visit of Eminent Personalities

Dr. S. Varadarajan and Ms. Kiran Agarwal at the CBRI-Industry Meet at New Delhi, 21st March, 1997

Seminar on Natural Hazards in Urban Habitat, New Delhi, 10th November, 1997 Prof. M.G.K. Menon receiving a Memento from the Director. Dr. M.R. Srinivasan, Member, Planning Commission is on the left

Visit of Eminent Personalities

Prime Minister Shri Chandra Shekhar with Sh. V. K. Mathur, Director, CSIR-CBRI

President Dr. A.P.J. Abdul Kalam Azad visiting the Institute

Visit of Eminent Personalities

Visit of Prof. S.K. Brahmachari, DG, CSIR

Visit of Eminent Personalities

Visit of Dr. Harsh Vardhan, Minister of Science and Technology &
Dr. M.O. Garg, DG, CSIR

Visit of Eminent Personalities

Visit of DG CSIR, Dr. Shekhar C. Mande

Visit of Eminent Personalities

Visit of DG, CSIR

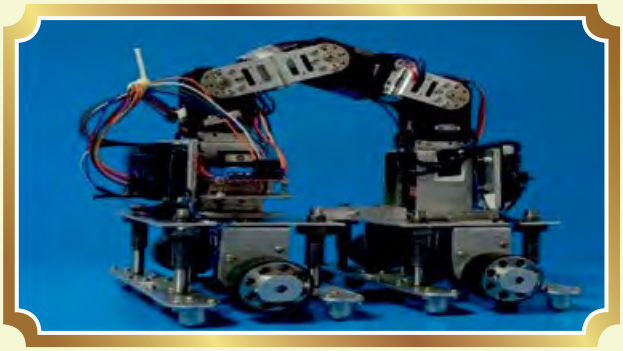
R&D Groups

Acoustics, Instrumentation and Mechanical Systems (AIMS) Group & Futuristic Construction Practices – Mechanization and Automation (FCP-MA)

Areas of Research:

- Mechanization in Construction
- Autonomous Robotics in Building
- Structural Health Monitoring
- Building Acoustics

Underground Horizonal Boring Machine



Autonomous Robotic System for Structural Inspection

Reverberation Chamber

Wall Plastering Machine

Glass Façade Cleaning Robot

Modular Mobile Crane

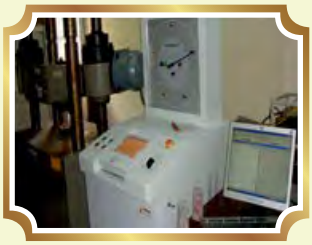
C-Brick Making Machine

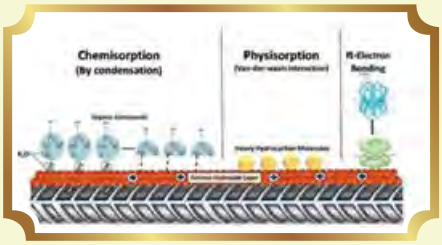
R&D Groups

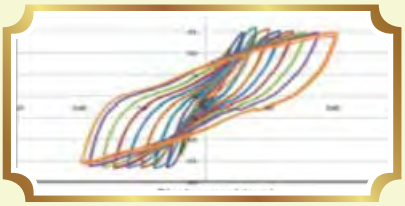
Advanced Structural Composites & Durability (ASCD) Group

Thrust Areas:

- Innovative Repair & Retrofitting Techniques
- Protective and Decorative Coatings and Finishes
- Corrosion Control Materials & Techniques
- C&D Waste and Agro-industrial Waste Utilization
- Static/Cyclic Behaviour of RC Structures
- High Performance Composite Materials and their Structural Applications
- Collapsible Structure, Make Shift Structures
- Cold Weather Concreting
- Water Proofing Systems for Building Applications







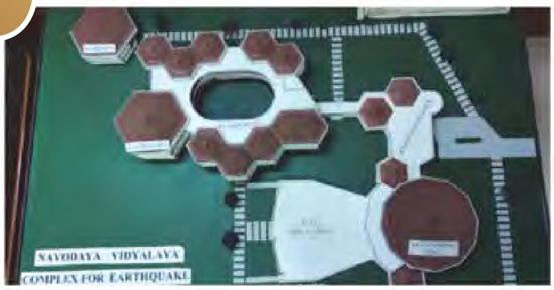
R&D Groups

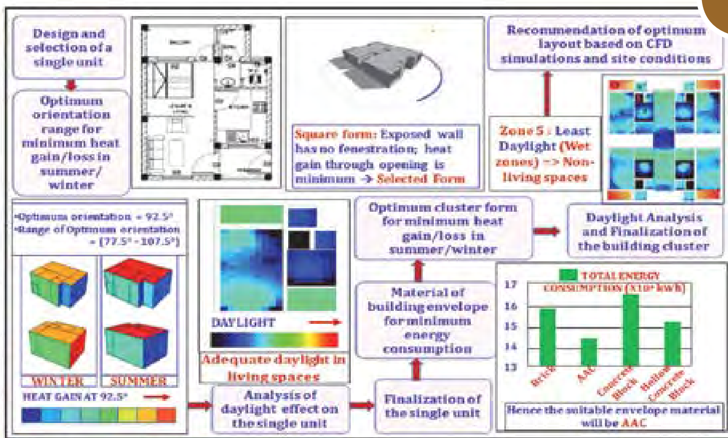
Architecture & Planning (Ar&P) Group

Thrust Areas:

- Design of Sustainable, Green and Energy Efficient Building Systems.
- Green Retrofitting of Existing Buildings.
- Design and Development of Appropriate Technology Packages for Urban and Rural Housing in different Geo-climatic Regions of India with Improved Thermal & Structural Performance.
- Development of Precast and Industrialized Building Systems for Low & Medium Rise Habitat.
- Green and Energy Efficient Materials including Life Cycle Energy Assessment.
- Energy Balance Algorithms and Energy Simulation.
- Development of Space Norms, Standards, Guidelines, Codes for Low Cost Housing, Building Envelopes, Education & Healthcare Buildings, Human Settlements, Performance Based Codes for Net Zero Energy and Zero Carbon Buildings.
- Application of IT in Building Science including Development of Apps for Integrating Daylight with Artificial Lighting for Improving Building Energy Efficiency, Appropriate Thickness of Glass, Selection of Appropriate Materials & Technologies etc.

R&D Groups


NAVODAYA VIDYALAYA
COMPLEX FOR EARTHQUAKE


Design and selection of a single unit
Optimum orientation range for minimum heat gain/loss in summer/winter
Square form: Exposed wall has no fenestration; heat gain through opening is minimum → Selected Form
Recommendation of optimum layout based on CFD simulations and site conditions
Zone 5 : Least Daylight (Wet zones) => Non-living spaces
•Optimum orientation = 92.5°
•Range of Optimum orientation = (77.5° - 107.5°)
WINTER
SUMMER
HEAT GAIN AT 92.5°
DAYLIGHT
Adequate daylight in living spaces
Analysis of daylight effect on the single unit
Optimum cluster form for minimum heat gain/loss in summer/winter
Daylight Analysis and Finalization of the building cluster
Material of building envelope for minimum energy consumption
Finalization of the single unit
TOTAL ENERGY CONSUMPTION
Brick
AAC
Concrete Block
Hollow Concrete Block
Hence the suitable envelope material will be AAC


INDIA


Retrofit Building

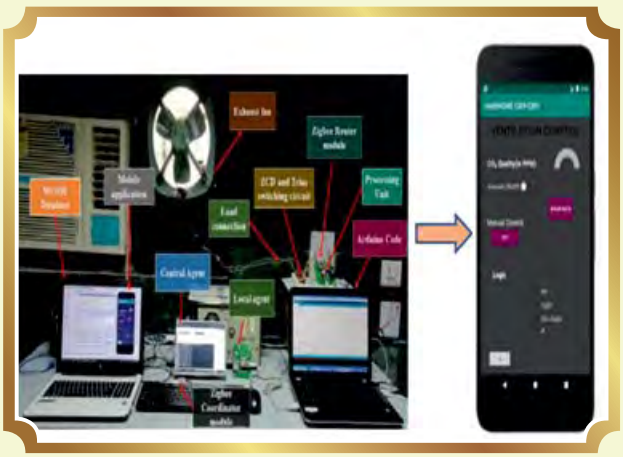

GRASS CARPETS
1.2 MM THICK GEOTEXTILE MEMBRANE
150 MM THICK FERTILE SOIL
FLEXODRAIN
PRECAST BRICK PANEL

R&D Groups

Building Energy Efficiency (BEE) Group

Areas of Research:

- Energy Efficiency in Buildings
- Renewable Energy Integration
- Indoor Environmental Quality
- Indoor Comfort
- Net Zero Energy Buildings
- Wireless Sensor Actuator Network for Smart Building



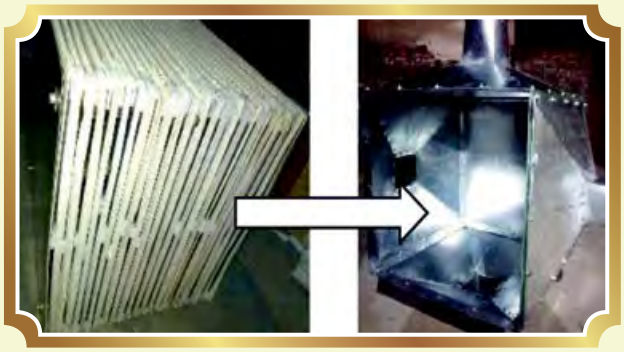
IoT controlled Ventilation System

Test Bed Duct Facility for COVID-19 disinfection solutions

High temperature and high efficiency solar collector

Solar powered heat pump water heating system

IoT controlled Air Purifier



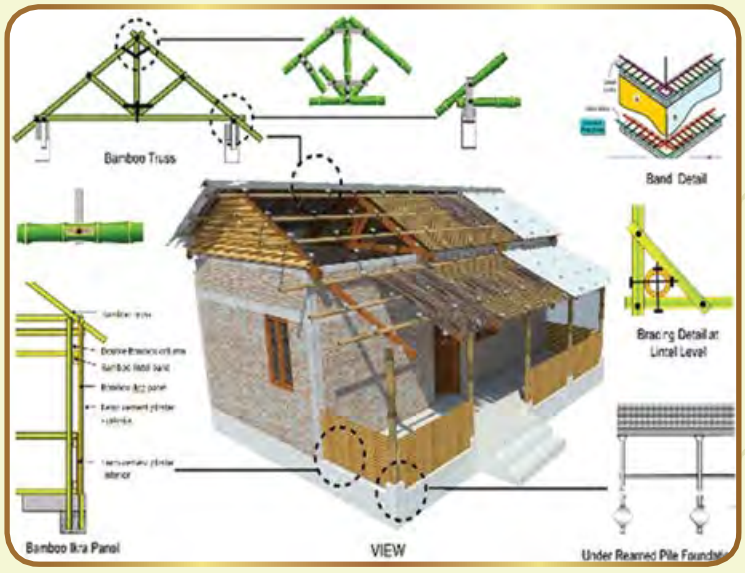
Indirect Evaporative Cooler

R&D Groups

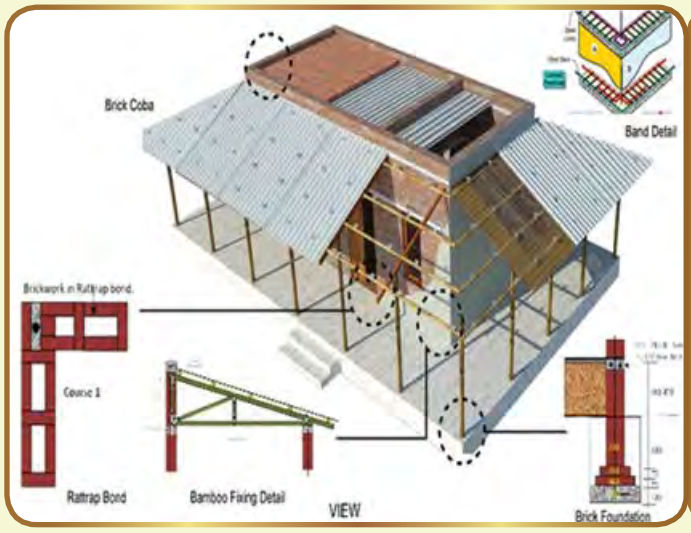
Development, Construction & Extension (DC&E) Group

The activities of DC&E are aimed to meet an important vision of CSIR - CBRI to extend scientific and industrial R&D of Building Technologies to maximize the economic, environmental and societal benefits for the people of India.

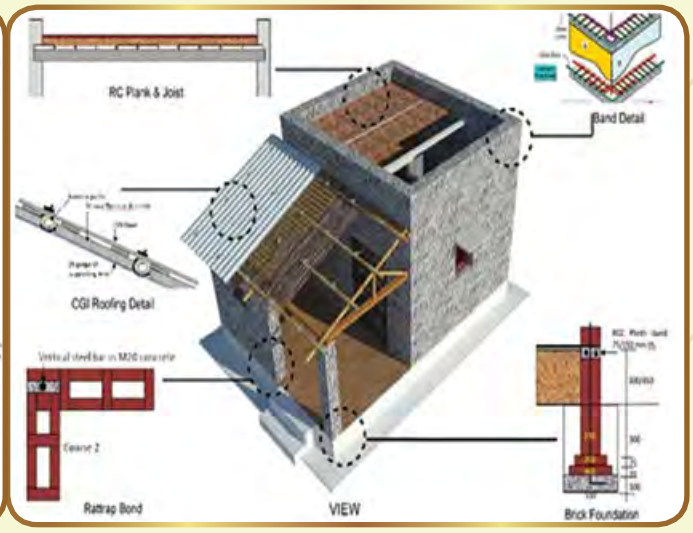
Under the PMAY-G scheme, more than 150 designs were suggested by CSIR-CBRI for 13 states appropriate to prevailing geo-climatic and local hazard conditions utilising local materials and cost optimization.



Assam



Madhya Pradesh



Jharkhand

R&D Groups

PMAY-G & BIJU PAKKA GHAR YOJANA- ODISHA

- CSIR-CBRI is providing technical support in the design, training and construction of rural houses under PMAY-G and Biju Pucca Ghar Yojana to the Govt of Odisha.
- The suggested typologies and construction systems were demonstrated at the State Institute of Rural Development (SIRD), Bhubaneswar.
- About 200 engineers were trained at CBRI and Odisha.

UTILIZATION OF BAMBOO AS STRUCTURAL BUILDING MATERIAL

A 2 Storey Model Demo House has been constructed at CSIR-CBRI, to demonstrate and study durability of bamboo structure, bamboo joints, bamboo splicing techniques & treatment methods.

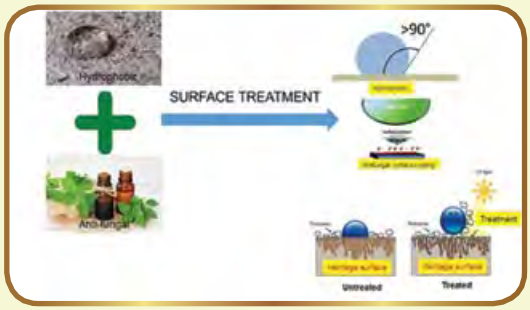
R&D Groups

Environmental Science & Technology (EST) Group

Environmental Science & Technology (EST) Group is engaged in R&D on environmental pollution monitoring and control in building materials process industries, waste water management, environmental audits, industrial solid waste utilization for development of value added building materials and building paste management.

Focused Research Areas:

- Utilization of Waste Gypsum
- Development of Pollution Control Device
- Eco-friendly Anti-fungal Coatings for Heritage Structures
- Eco-friendly Device for Termite Control
- Building Bricks
- Waste to Wealth



R&D Groups

Fire Research Group

Focused Areas of Research:

- Fire Resistance of Materials
- Active Fire Suppression System
- Fire Retardant Coating
- Reaction to Fire Tests
- Evacuation Strategies
- Numerical Modelling and Simulation
- Structural Fire Behavior of Materials

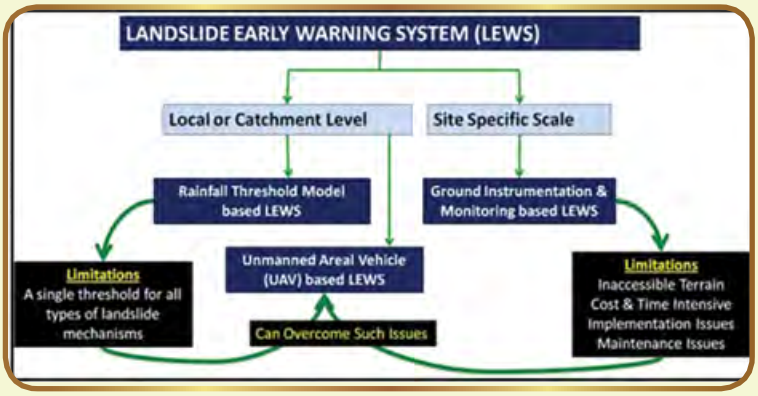
R&D Groups

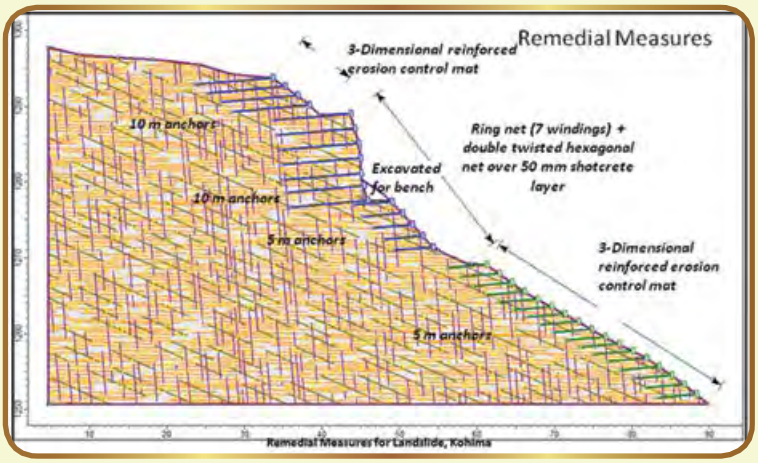
Geo-hazard Risk Reduction (GHRR) Group

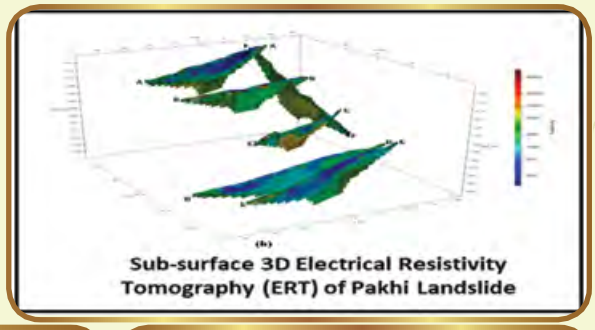
To better understand Geo-Hazards and to contribute towards risk management policies related to social and technical issues, disaster risk reduction for resilience and preparedness for effective response to Build Back Better in recovery, rehabilitation and reconstruction.

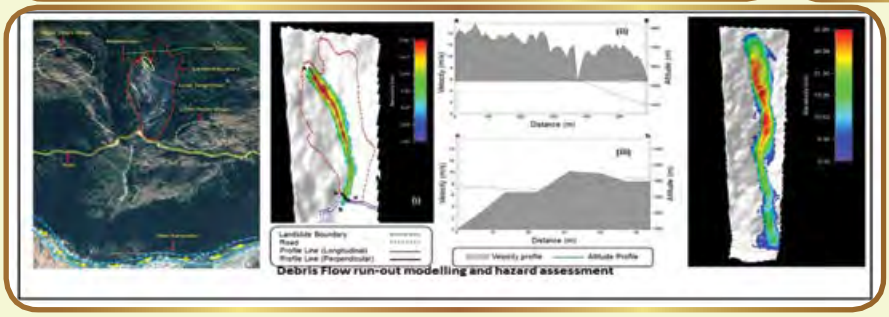
Thrust Areas:

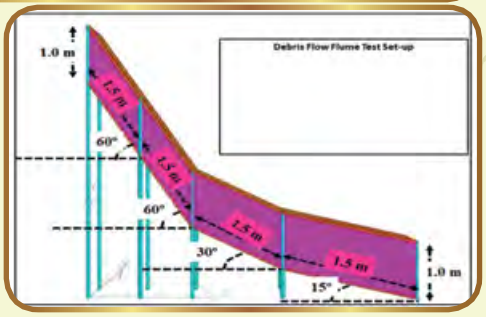
- Geological and Geotechnical Hazard Assessment
- Landslide Hazard, Vulnerability and Risk Assessment
- Landslide Early Warning System (LEWS)
- Debris Flow Run-out Modelling and Hazard Assessment
- Geo-Hazard Mitigation Measures
- Underground Infrastructures in Hazard Prone Terrain
- Engineering Geology & Geophysics
- Remote Sensing & Gis Applications











R&D Groups

Geotechnical Engineering (GE) Group

Geotechnical Engineering Group since its inception has been continuously working in areas of soil mechanics and foundation engineering, landslide studies, earthquake engineering, environmental geo-technique, geophysical investigation and remote sensing & GIS.

Thrust Areas

- Foundation Design
- Ground Improvement
- Disaster Mitigation
- Industrial Waste Utilisation
- Engineering Geophysics
- Remote Sensing & GIS

Under reamed Pile

Industrial waste utilization

GPR Survey

R&D Groups

Landslide Hazard Assessment

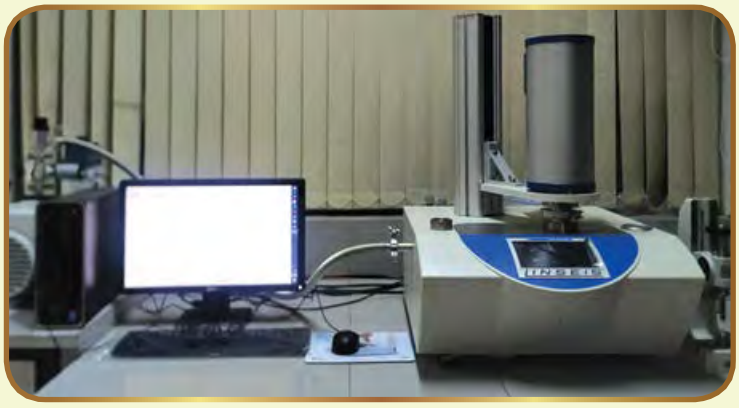
Model Scale Testing Facilities

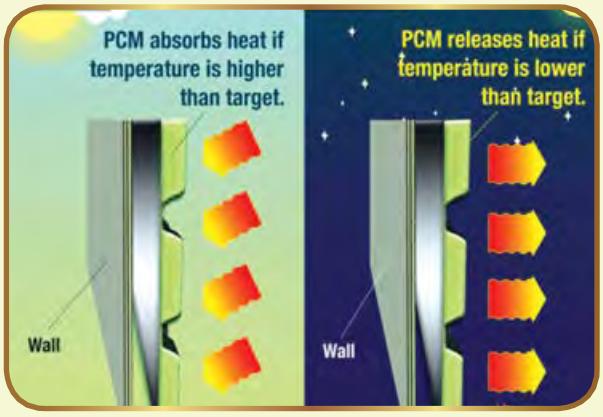
R&D Groups

Innovative Building Materials (IBM) Group

Focused Research Areas:

- Nanotechnology Based Building Materials
- Heritage Materials
- Bio-Based Building Materials
- Phase Change Materials
- Construction Chemicals
- Building Bricks
- Waste to Wealth





R&D Groups

Organic Building Materials (OBM) Group

Activities:

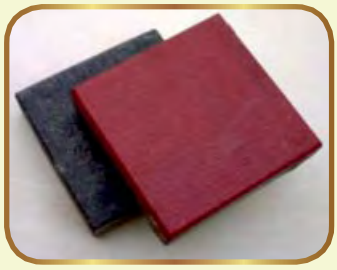
- Alternative Sustainable Building Materials Through Value Addition
- Light Weight Concrete Using Stone Waste
- Composites with Natural and Man-Made Fibers
- Agro-Industrial Waste Utilization for Building Materials
- Repair Materials for Heritage Buildings
- Protective and Decorative Coatings
- Sealants and Water-Proofing Materials
- Low Energy-Low Carbon Eco Cementitious Binder Using Industrial Waste
- Recycling of C&D and Plastic Waste Through Value Addition
- Performance Evaluation of Building Materials for Quality Improvement

Mosaic Flooring Tiles from Marble Stone Waste

Building Products from Stone Waste

EPS Door Sutter

IPNet Coating for Rebar



Thermal Insulated Tiles

Vermiculite Tiles

Laying of Paver Blocks

Coir CNSL Board

Polycem Tiles

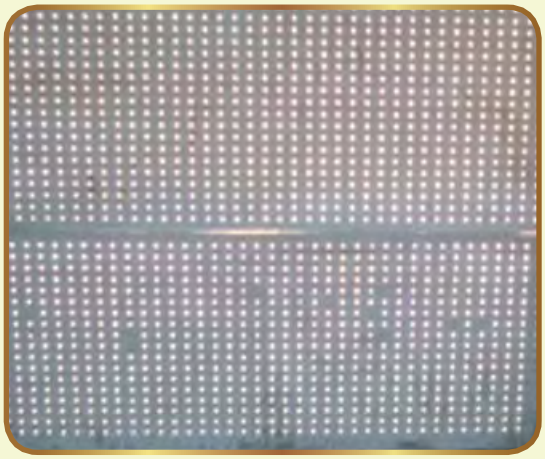
MDF Board from Bagasse

R&D Groups

Polymers, Plastics and Composites (PPC) Group

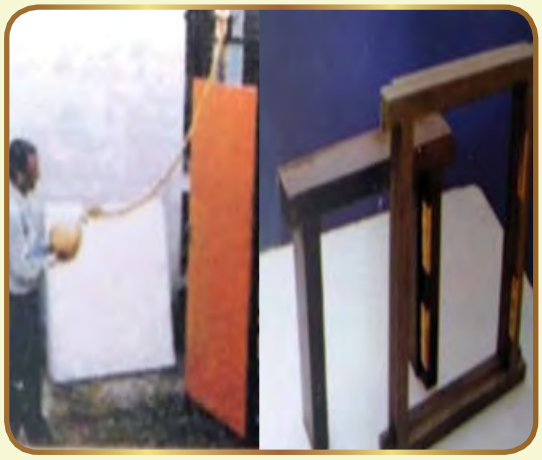
Major R&D Areas:

- Plastic Building Products
- Timber Substitutes
- Polymer Composites Based on Natural/Synthetic Fibers
- Polymer Modified Bitumen/Water Proofing Compounds
- Sealants and Adhesives
- Recycling and Reuse of Plastic Wastes
- Weathering of Plastics/Composites
- Newer Cementitious Binders
- Geo-Polymer Concrete
- Coal Bottom Ash Based Geo-Polymer Mortar
- FRP Composites
- Low Temperature Concrete Admixture
- Bamboo Composites




Sealing Compound


Balcoa
Balcoa
Tulda
Tulda



R&D Groups

Skill Development Group

Aims to enhance the knowledge and skills of the construction workforce to integrate disaster resilient, environment friendly building construction practices and to mitigate the risk in existing buildings; and thereby creating trained and certified skilled human resource for better employment opportunities across the country.

Key Achievements:

- 47 Master Trainers developed on Earthquake Resistant Construction Practices for the Himachal Pradesh Government.
- Trained 100 Engineers of Arunachal Pradesh on the latest knowledge and skills on Multi-Hazard Resistant Construction Practices.
- Skill up gradation of 30 engineers of Tribal Welfare Department of Madhya Pradesh was imparted on Innovative Technologies for Construction of Rural Houses.
- Series of skill development program for 191 Engineers of Uttarakhand state on Multi-Hazard Resistant Housing and Habitat was successfully accomplished.
- A total of 1900 individuals in various capacities such as engineers, masons & workers have been trained in different construction techniques in states such as Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Odisha, Madhya Pradesh, Maharashtra & parts of Karnataka etc.
- CSIR-CBRI Webinar Series covering different aspects of Building Science Technologies being organised since the Covid-19 pandemic outbreak emerged and till now 1982 participants across the country have attended.

Group of Participants

Technical Session

Live Demonstration

R&D Groups

Structural Engineering Group

Thrust Areas:

- Studies on Heritage Structures
- Non Destructive Testing Structures.
- Rehabilitation / Strengthening of Distressed Structures
- Structural Health Monitoring
- Earthquake and Wind Engineering
- Full Scale Testing Under Static and Dynamic Loading
- Numerical Analysis (FEM/FVM/FDM) of Structures
- High-Performance Concrete
- Cold Form Steel (CFS) Structures

INFRASTRUCTURE & TESTING FACILITIES

Heavy Testing Laboratory

- Heavy Duty Test Floor (8.5 M X 18.3 M)
- 300 T UTM (Dynamic)
- Eot Crane of 10 T Capacity
- Loading Frame Upto 600 T Capacity
- 50 T Lateral Load Testing
- Data Loggers

Heritage Testing Laboratory

- Ultrasonic Imaging Testing Facility
- 80 Channel Data Acquisition System
- Fibre Optic Sensors
- Diagonal and Settlement Testing
- Ground Penetrating Radar
- Thermal Imaging Camera

Building Dynamics Laboratory

- Servo-Hydraulic Actuators (10 & 50 T)
- Lazan Oscillator
- FFT Analyser
- Accelerometers
- Vibration Meters
- LVDTs
- Wireless Health Monitoring System

NDT Laboratory

- Corrosion Monitoring Instruments
- CANIN & Multi Cell Surveyor
- Ultrasonic Concrete Testers
- Schmidt Rebound Hammers
- Rebar Locator
- Core Drilling Machine
- Crack Measuring Microscope

Concrete Laboratory

- Auto-Titrator
- Chloride Permeability Apparatus
- Concrete Permeability (Water) Apparatus
- Carbonation Chamber
- Set up for Accelerated Durability Tests
- Concrete Slicing Machine
- Guniting Machines (Wet & Dry Types)

R&D Groups

3D CONCRETE PRINTING

Focus:

- 3D Printed Demo Building
- Materials Development & Characterization: Drying shrinkage and creep, compressive strength, splitting tensile strength, flexural/ bending strength modulus of elasticity
- Automation in 3D Printer:
  - Integration of modular design; 3.0m x 3.0m Print Bed
  - Crane Features: Lateral movement, counter weight platform
  - Quick assembly/ disassembly of boom with end-effector and mast for lifting, positioning placing
- Functionality Test : Permeability, Durability, Fire Rating.

3D Printed Toilet Block (Courtesy: TVEATA, Chennai)

Supporting Groups and Infrastructure

Rabindra Nath Tagore Auditorium

Golden Jubilee Guest House

Supporting Groups and Infrastructure

C.V. Raman Guest House

Supporting Groups and Infrastructure

Residential Colony

Dispensary

Supporting Groups and Infrastructure

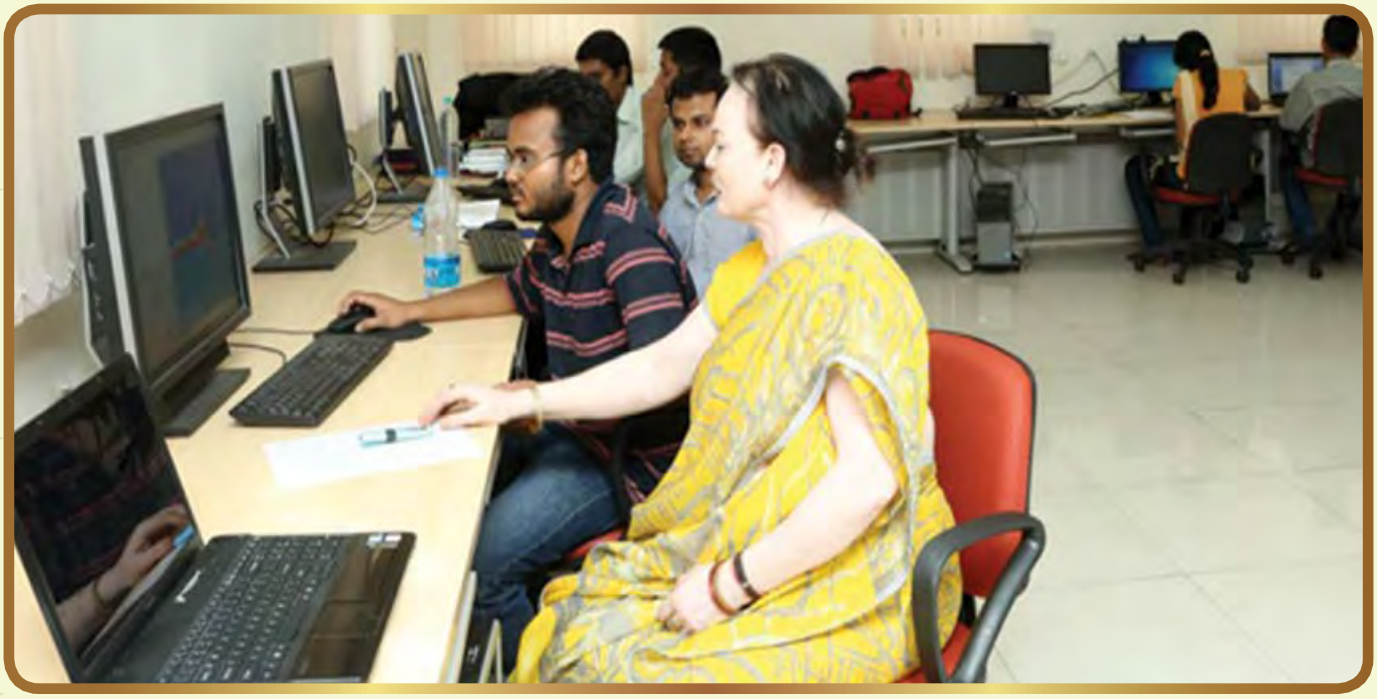
Community Centre

Play Ground

Supporting Groups and Infrastructure

Multipurpose Hall (Indoor Game)

Supporting Groups and Infrastructure



Computer Centre

Supporting Groups and Infrastructure

Knowledge Resource Centre

Along with the Building Research Unit in 1947, a library was also formed with personal books, standards and references. In 1953, a formal library was opened. In 1956, Mr. A. Rahman was appointed as the Assistant Director (information & survey) Division and Mr. M.I. Ansari joined as Librarian in the same year. At that time, the library housed nearly 3000 books and over 150 subscribed journals. In 1997, the automation work was taken up. Bibliographic database of books, bound volumes and other materials were digitized for easy retrieval. OPAC services opened for users in 1998 and Web OPAC was released in 2009 which helped the scientific staff to access the book inventory online. In 2008, CSIR changed the nomenclature of library as knowledge Resource Centre (KRC).

The present collection of library counts a huge number of resources, consisting of around 45000 books, 21000 bound volumes of various specialized topics and standards. Beyond the print collections, 1000's of full text of e-journals from different S&T publishers, science e-database, e-standards and e-patents have been made available. In 2013, the KRC was facilitated using RFID (Radio Frequency Identification) for automatic issue return with smart cards and EVIS security. CBRI-KRC has also created Institutional Repository (IR) through DSpace.

Beyond the routine activities and services, KRC also organizes in-house training programs. Yearly book exhibitions are also organized, notably during Hindi Week's celebration for promoting Hindi literature.

Supporting Groups and Infrastructure

Prof. R.N. Iyengar, Director, CSIR-CBRI, inaugurating the computerized system of CBRI Library ,1999

Prof. Prem Krishna, Chairman, Research Council, CSIR-CBRI inaugurating RFID system in KRC, 2013

Supporting Groups and Infrastructure

Five Days Training Programme Organized for School Librarians for Uttrakhand State in 2010

Dr. Gopalakrishnan, Director, CSIR-CBRI inaugurating the Book Exhibition

Supporting Groups and Infrastructure

Administration

Finance & Accounts Section

Supporting Groups and Infrastructure

Store, Purchase & Estate Division

Technical Services Group

Security & Reception

LIST OF PATENTS

Sl. No.	Patent No/ Application No.	Patent Title
		Patent Granted
1.	54361	Construction of Flat or Arched Roof or Like Structures
2.	54907	An Under Reaming Tool
3.	55602	A Brick and Block Making Machine
4.	58909	New Foaming Agent for the Production of Low Density Foamed Concrete
5.	61645	A New Process for the Manufacture of Precast Doubly Curved Shell Elements for Roofs, Floors and Panel Walls
6.	63865	A Tensioning Screw Jack
7.	66079	Improvement in or Modification of a Tensioning Screw Jack with Particular Reference to a Pressure Measuring Device for Recording the Tension
8.	82303	A Guide for Making Holes with Augers
9.	85447	Heat Flow Transducer
10.	91411	A Thin Tube Soil Sampler
11.	100676	A Pressure Measuring Device
12.	107725	A Tamping Machine
13.	111492	A New Asbestos Sprayer
14.	112617	A Unit Frame for Scaffolding
15.	115207	A Flushing Cistern
16.	116928	Scaffold Hoist (Powered)
17.	117404	A New Machine (Manual Scaffold Hoist) for Lifting Construction Material and Equipment
18.	118570	A Brick Extrusion Machine
19.	126179	An Improved Method of Constructing Bored Compaction Piles
20.	126664	An Automatic Flushing Cistern for Urinals
21.	132327	Light Weight Clay Bricks, Blocks and Tiles for Insulation and Multistoreyed Construction
22.	132445	An Automatic Cutting Table
23	134557	Improvements in or Relating to Methods of Making Water Permeable Drains
24.	137375	Improvements in or Relating to Process for Constructing
25.		Thin Impermeable and Durable Cut-off Walls
26.	139230	Improvements in or Relating to Making Sand-Lime Type Bricks
27.	145032	A Sub-Soil Deformeter
28	150816	Improvements in or Relating to Granular Piles

Sl. No.	Patent No/ Application No.	Patent Title
29.	159540	An Improved Boring and Skirting Device for Making Skirting Type Foundations in Civil Engineering Works
30.	172047	Mini Climbing Crane
31.	172108	Automatic Free Fall Hammer
32.	187931	An Improved Device Useful for Pollution Control in Vertical Shaft Kilns
33.	195175	An Improved Process for the Manufacture of Natural Fibre Based Composite Laminates Useful for Making Plain/Corrugated Sheets and Products thereof
34.	215676	An Improved Process for Purification of Phospho gypsum
35.	226284	A Novel High Strength Anhydrite Plaster Composition for Making Floor Tiles
36.	231647	A Machine for Manufacturing Flyash-Lime/Cement Bricks
37.	232132	A Device Useful as a Concrete Blockmaker
38.	232333	A Device for Efficient Air Pollution Control in Brick Kilns
39.	275932	A Process for the Manufacture of Rice Husk-Thermoplastic Composites, Composites Made Thereby for Making Extruded Sheets/Profiles and Products Thereof
40.	43866	Improvements in or Relating to Soil Stabilization
41.	48923	Production of Single-twisted or Twin twisted Steel Bars
42.	49353	Construction of Floors
43.	49880	Improvements in and Relating to the Manufacture of Pre-stressed Concrete
44.	51026	Improvements in or Relating to Reinforced Concrete Structures
45.	55510	A Process for Preparing Foamed Concrete
46.	59630	An Improved Process of Making Bricks from Sticky Clays
47.	62490	A Process for Creating Deformations in the Cable Ducts in Prestressed Concrete Structures
48.	69165	A Method of Making Binding Material from Blast Furnace Slag
49.	70030	A Method of Making Lightweight Aggregate from Indian Clays
50.	70173	Two Wire Anchorage Grips
51.	70479	Preparation of a Non-shrinking and Low Expanding Cement
52.	72639	A Method of Making Yellow Coloured Bricks from Alluvial Soil
53.	74184	A New Process for Manufacture of Asbestos Cement Sheets, Tiles and Similar Material Having Improved Transverse Strength Using either Chrysotile or Amphibole Variety of Asbestos
54.	76018	New Hydrophobic Cement
55.	78778	A Method of Making Chocolate Coloured Bricks from Alluvial Soils

Sl. No.	Patent No/ Application No.	Patent Title
56.	79388	A Process for the Manufacture of a Bloated Clay Aggregate (Gaylite) from the Silt Deposited by the River Hoogly
57.	93575	Improvements in or Relating to the Manufacture of Tiles from Plastic Clays
58.	95182	A Torque Limiting Spanner
59.	98142	An Instrument Designated as "Archo Solslider" for Making Calculations of Shadow Coverages and Values of Direct Solar Radiations on Surfaces
60.	102675	Electronic Over - Voltage Protection Device
61.	105894	A Process for Improvement of Strength of Asbestos Cement Products from Asbestos Fibres and Normal Portland Cement
62.	106805	A Sand Sampler
63.	107058	An Improved Load Cell
64.	109364	A Volume Change Measuring Apparatus
65.	110835	New Corrosion-Inhibiting Pigment and a Paint Containing it
66.	110854	New Corrosion Inhibiting Pigment and a Paint Containing it
67.	126708	A Method of Electroplating a Heat Flow Meter
68.	127706	A Power Trowel
69.	131843	A Coconut Husk Chipping Machine
70.	132237	Method of Making Gypsum Plaster Retarder
71.	133518	A Process for Making Large Size Clay Products with Improved Strength
72.	136613	Improvement in or Relating to Hollow Concrete Units
73.	137425	Improvements in or Relating to the Manufacture of Asbestos-Cement Products such as Sheets, Pipes or Accessories i.e Pipe Junctions
74.	137538	A Device for Assessing Daylight Availability and for Sunlight Penetration
75.	133778	Production of Cement Clinker from Flyash
76.	141977	Improvements in or Relating to Methods of Strengthening Soil by Wick/ Rope Made of Water Permeable Material
77.	143818	A Process for Preparing a New Fire Extinguishing Material for Extinction of Fires in Flammable Liquids
78.	143994	Pile Boring Rig
79.	148932	A Portable Device for Filling of Compressed Air in Containers Suitable for Breathing Apparatus
80.	150817	A Retrievable Foundation
81.	151381	An Improved Table Press Machine for the Manufacture of Sand/Lime Bricks
82.	155159	Crack Free Lime Kilns of the Vertical Masonry Shaft Type
83.	156876	A Protection Device for Civil Structures and Electrical equipment

Sl. No.	Patent No/ Application No.	Patent Title
84.	159758	Improvements in or Relating to Improved Assemblies of Granular Piles for the Reinforcement of Weak Soils and the Provision of Firm Settlement-free Foundations and Process for Forming such Assemblies
85.	161452	Improved Automatic Water Sprinkler for Use as a Fixed Fire Protection Device Protection Device
86.	165155	An Improved Device for Joining Precast Piles in Segments
87.	165156	An Improved Device for Joining Precast Concrete Piles
88.	165157	Improved Device for Joining Precast Piles
89.	165158	An Improved Device for Joining of Precast Piles
90.	177234	An Apparatus for Automatic Extinguishment of Flammable Liquid Fires in Fixed/Floating Roof Oil Storage Tanks by Injecting Foam.
91.	177235	A Fixed Roof Flammable Liquid Storage Tank with a Fire Extinguishing Device
92.	178024	An Automatic Guarded Hot Plate Equipment for the Measurement of Thermal Conductivity of Building and Insulating Materials
93.	178323	A Process for the Preparation of Polymeric Sulphonates Useful as Surfactant from Cashewnut Shell Liquid (CNSL) or Bilawan Nut Liquid (BNL)
94.	183628	An Improved Process for the Formation of Self Setting Soil Slurry Piles
95.	184099	An Improved Process for the Preparation of Granular Pile for Reinforcement of Week Soils and for Providing Firm Settlement Free Foundation
96.	185504	An Improved Process for the Formation of a Mini Grouted Pile for Reinforcement of Weak Soils
97.	185535	A Device for Casting Monolithic Containers
98.	186986	A Process for the Manufacture of a Medium Density Fibre Board Based on Renewable Raw Materials
99.	190173	Novel Alternative Building Material for Acoustic Thermal Insulation & False Ceiling Purposes Using Cellulosic Refuge of Paper Industry & the Process for the Manufacture thereof
100.	191621	A Process for the Preparation of an Extract from Zanthoxylum Alatum (Family: Rutaceae) Having Termite Resistant Properties and a Termite Resistant Formulation Prepared Using the Said Extract
101.	196927	A Composition Useful as Flame Retardant and Smoke for Plasticized PVC
102.	215103	A Novel Molding Composition, a Process for Making Industrial Products Using a Novel Molding Composition Substrates
103.	215661	A Herbal Formulation Useful as Termite-Resistant Coating for
104.	216750	A Process for Production of Reactive Silica

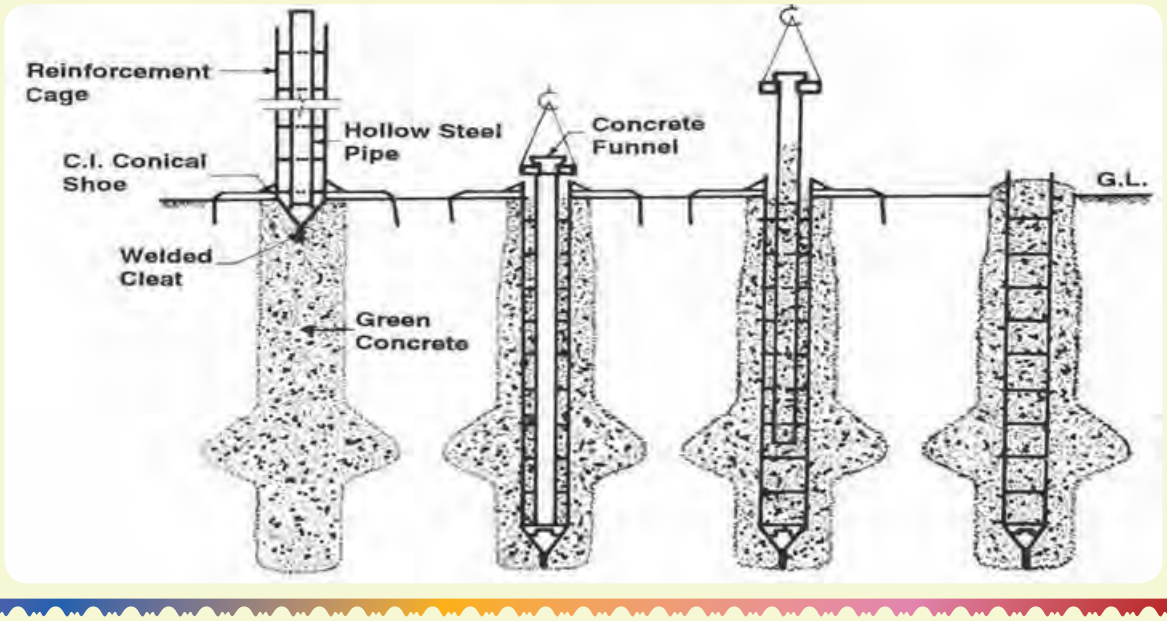
Sl. No.	Patent No/ Application No.	Patent Title
105.	219632	An Improved Process for Making Pulp from Fibrous Biomass Useful for Making Paper
106.	226275	A Composition for Making Cementitious Binders Based on High Fly Ash Content, Clay Pozzolana and Other Mineral or Industrial Wastes for Use in Cement Mortars and Concrete
107.	237111	A Process for Making Slag-lime Sand Bricks
108.	242187	A Process for Manufacture of Water Reducing Agent from Coal Tar Waste
109.	277636	A Process for the Manufacture of Pine Needle Isocyanate Prepolymer Composite Boards/Panels and Products thereof
110.	305105	A Device Useful for Making Horizontal Bores Under the Ground
111.	306940	Grooved building blocks for concealed utility services
112.	350586	A Room Temperature Cured Flyash Based Geopolymer Composition for Concrete & Building Materials & A Process thereof
Patent Filed		
113.	3178/ DELI2010	An Improved Process for the Preparation of Building Boards and Panels from Plywood/vineer Industry Waste
114.	444/DEL/2015	Three Dimensional Deformometer for Measurement of Displacement Response of Masonry Prisms along 3-axes
115.	201611000547	A Process for the Preparation of an Anti-Termite Barrier for New Buildings
116.	201611022642	Optical Based Velocity Sensor for Measuring Instantaneous Velocity of a Dropping Object Velocity of a Dropping Object
117.	201611022643	A Pullout Device for Soil Nails & Anchors
118..	201611042095	Translucent concrete composition using pre-treated plastic optical fibers and a process thereof
119.	201911008656	An end openable helical anchor and the mechanism thereof
120.	201911012435	Round Boulders Mortar (RBM) Units and Production Method Thereof
121.	201911019105	An Improved Process for the Preparation of Silica Nanoparticles for Applications in Cement Based Materials
122.	201911048284	Method for Strengthening Coal Pillars to Improve Underground Coal Recovery
123.	201911052507	A Hybrid Robotic Device and Method for Climbing with Multiple Degrees of Freedom
US Patent		
124.	5573068	Apparatus for Extinguishing Fires in Oil Storage Tanks
125.	5548933	Fixed Roof Type Flammable Liquid Storage Tank

R & D Achievements: Technologies

C- Brick Machine

Production of bricks utilizing flyash and other siliceous and calcareous wastes
Indian Patent No. 231647

Bored Compaction Piles



Used for foundation of structures of various types such as residential and industrial buildings, overhead tanks, towers, substations, gantry foundations, underground tanks, over bridges etc.
Indian Patent No. 126179

R & D Achievements: Technologies

Brick Making Machine (Extrusion Type)

The machine is suitable for producing clay bricks using inferior soils based on extrusion process with de-airing facility followed by natural drying and burning in the kiln.
Indian Patent No. 118570

Stationary Concrete Block Maker

Suitable for on-site production of solid and hollow concrete blocks.
Indian Patent No. 232132

Mini Climbing Crane

Light duty material handling device for building construction
Indian Patent No. 172047

R & D Achievements: Technologies

High Draught Kiln for Burning Bricks

Application: For efficient firing of bricks and tiles

Energy Efficient Gypsum Calcinator

Calcination of quarry gypsum, marine gypsum, phospho-gypsum into plaster of Paris of various grades for use in building, pottery, ceramic and surgical

R & D Achievements: Technologies

Solar Water Heater

Application: Water heating for use in residential and institutional buidlings such as hospitals, hotels, canteens etc.

EPS Door Shutters

Application: Door shutters, panels partitions, table tops, cupboards, etc.

Bricks from Inferior Soils/ Industrial Waste

Application: Housing and Building

Gravitational Settling Chamber for Efficient Pollution Control in Fixed Chimney Brick Kilns

Application: Pollution control in Brick Kilns & other low stack furnaces/kiln

Indian Patent No. 232333

R & D Achievements: Technologies

Roof Cooling Device

Provides a cool roof in buildings for thermal comfort of occupants saves electrical energy in air-conditioned buildings

Natural Fibre Composite Door/Panel

Application: Door shutters, Panels, Laminates and Corrugated sheets

Indian Patent No. 195175

R & D Achievements: Technologies

Lightweight Sandwich Panel Using Paper Industry Waste

Application: Acoustics, Thermal insulation, False ceiling, Partitioning and Cabins

Indian Patent No. 190173

Cable Penetration Seal System (Cable Fire Stop)

Application: To restrict the spread of fire through openings around the cables

R & D Achievements: Technologies

Improved Kiln for Burning Limestone

Application: Building, chemical and allied process industries

Automatic Free Fall Hammer for SPT & DCPT

Used for conducting Standard Penetration Test (SPT) and Dynamic Cone Penetration Test (DCPT) for sub-surface investigations for routine foundation design

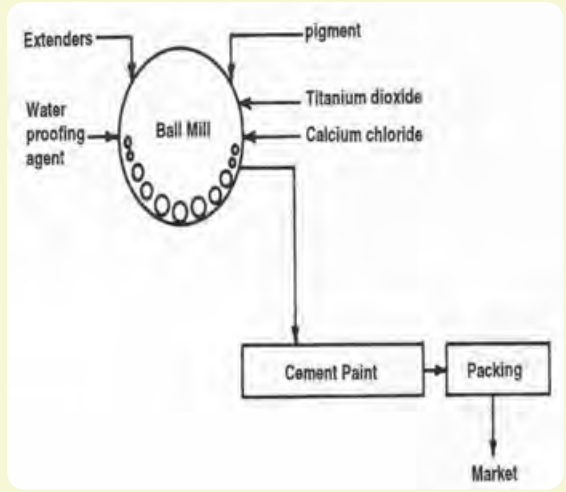
Indian Patent No.172108

R & D Achievements: Technologies

Semi-Automatic Cutting Table for Extruded Clay Products

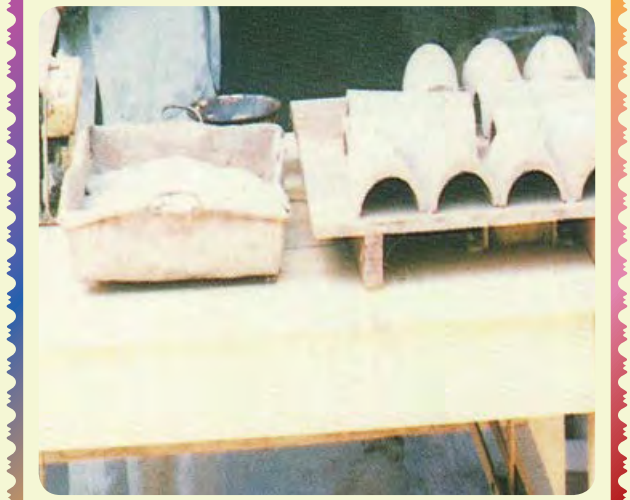
Pneumatically operated cutting table.
Used for cutting extruded clay column from extrusion machines into bricks/tiles/blocks etc.
Indian Patent No.132445

Cement Paint



Exterior coating for cement concrete, cement plastered wall, AC sheets, brick work etc. for decorative as well as water resistant purposes.

Lightweight Clay Bricks, Blocks &Tiles



Used for roofing, terracing, flooring and lining.
Indian Patent No. 132327

R & D Achievements: Technologies

Burnt Clay Flyash Bricks

Application: Building Construction Industry

Production of Solid Pre-stressed Concrete Poles Employing Direct Electric Curing

Used for accelerated curing of the pre-cast concrete poles and like products

Lime Hydrating Machine

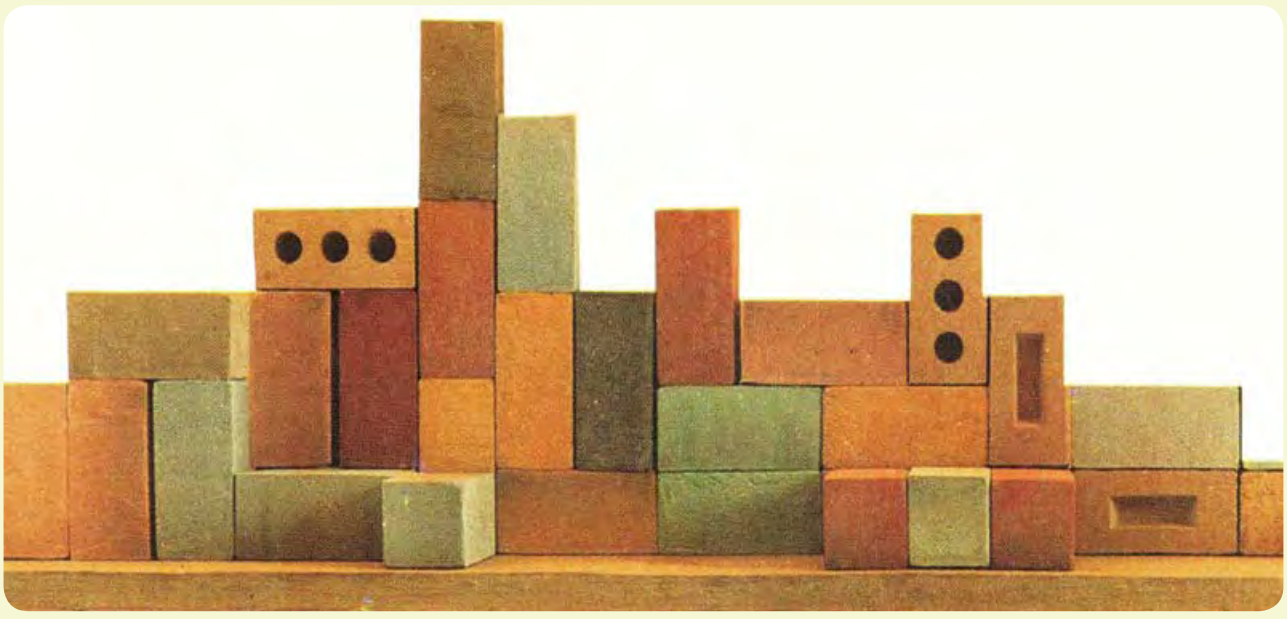
Application: Building and chemical industries

R & D Achievements: Technologies

COIR-CNSL BOARD

Application: Paneling, surfacing, partitioning, doors and window shutters, false ceiling, furniture, cabinets etc.
Indian Patent Application No. 301/DEL/93

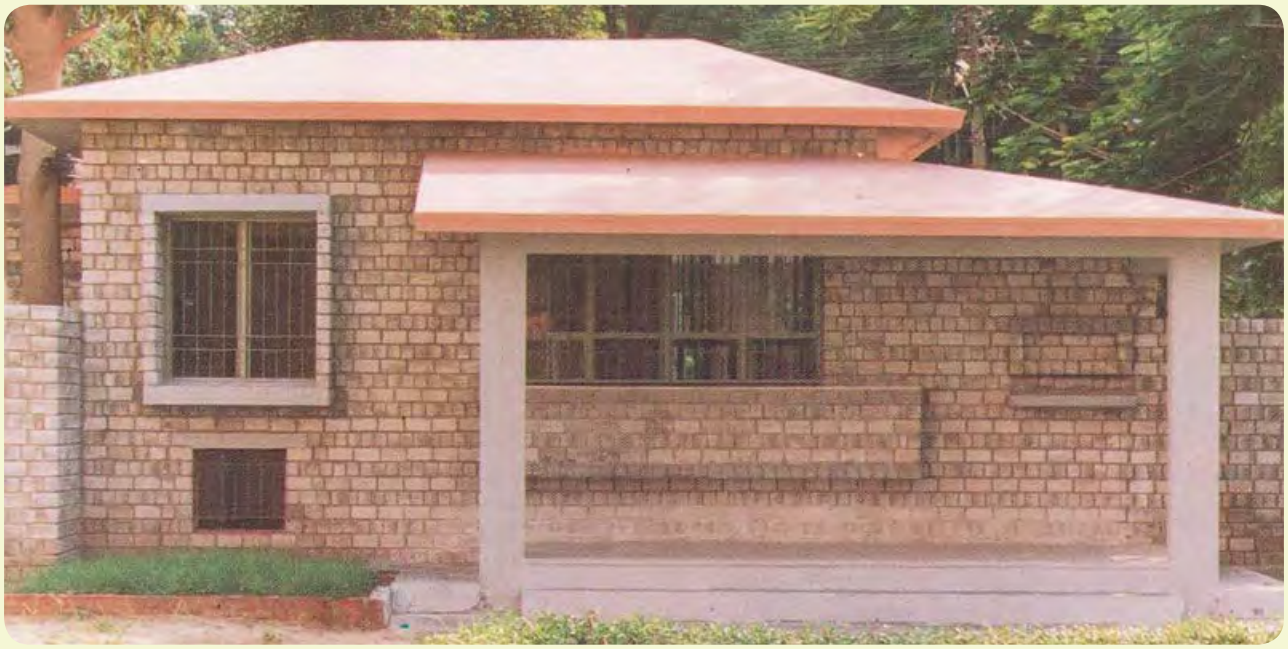
Flyash Sand Lime Bricks



Application: Building industry
Indian Patent No.139230

R & D Achievements: Technologies

Sand Lime Bricks



Application: Building industry

Fibrous Gypsum Plaster Boards

Application: Lightweight partitions, false ceiling and lining in interior decoration of buildings

Spliced Piles

Suitable for use in foundation of structure of various types including residential and industrial buildings in deep deposits of soft clays

Indian Patent Nos. 165155, 165156, 165157 and 165158

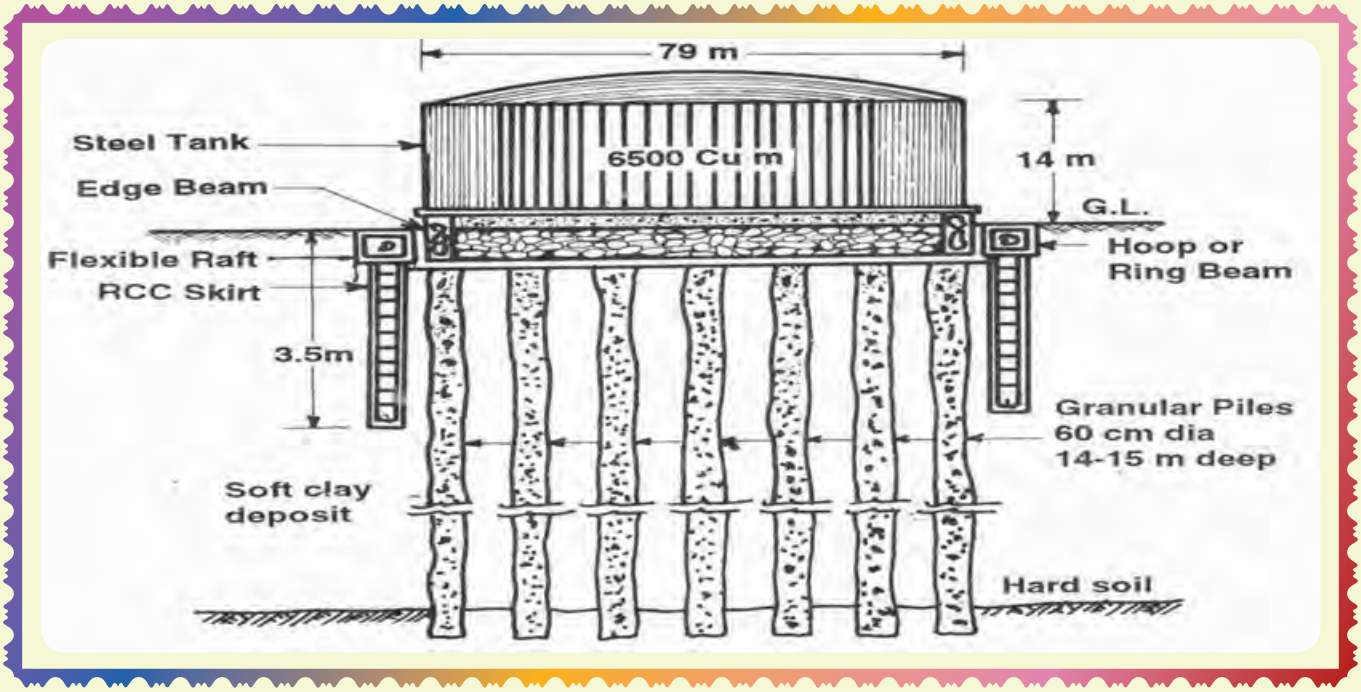
R & D Achievements: Technologies

Boring and Skirting Machine

For making vertical and battered bores for casting in-situ concrete pile foundation in cohesionless soil

Indian Patent No. 159540

Skirted Granular Pile Foundation



Used for strengthening of weak soil deposits such as loose cohesionless soil deposits and soft cohesive deposits which usually pose problem in foundation laying

Indian Patent No. 150816

R & D Achievements: Technologies

Plant for Shaping Building Bricks from Inferior Soils/ Industrial Waste by Extrusion Process

For Shaping building bricks and other structural clay Products

Pollution Control Unit for Vertical Shaft Lime Kilns

he pollution control system is useful for building lime industry for control of suspended particulate matter(SPM) emissions comprising kiln dust and tarry organic matter for lime kilns of capacity 10 ton

Indian Patent No. 187931

Epoxy-phenolic IPNet-RB Coating for Steel Reinforcement in RCC

Corrosion protection of steel reinforcement

R & D Achievements: Technologies

High Strength Plaster from Fluoro-gypsum

Suitable for use in plastering – Finish coat & Base coat

Direct Foam Injection (DFI) technology for the Petroleum Oil Tank Fire Safety

For fire protection of Class B Flammable Liquid Storage Tank Fires in Petroleum refineries, Oil storage depots & Terminals, Chemical, Petro-chemical & allied industries.

Indian Patent No. 177234, US Patent No.5573068

R & D Achievements: Technologies

Liquid Extinguishant Fire Extinguisher

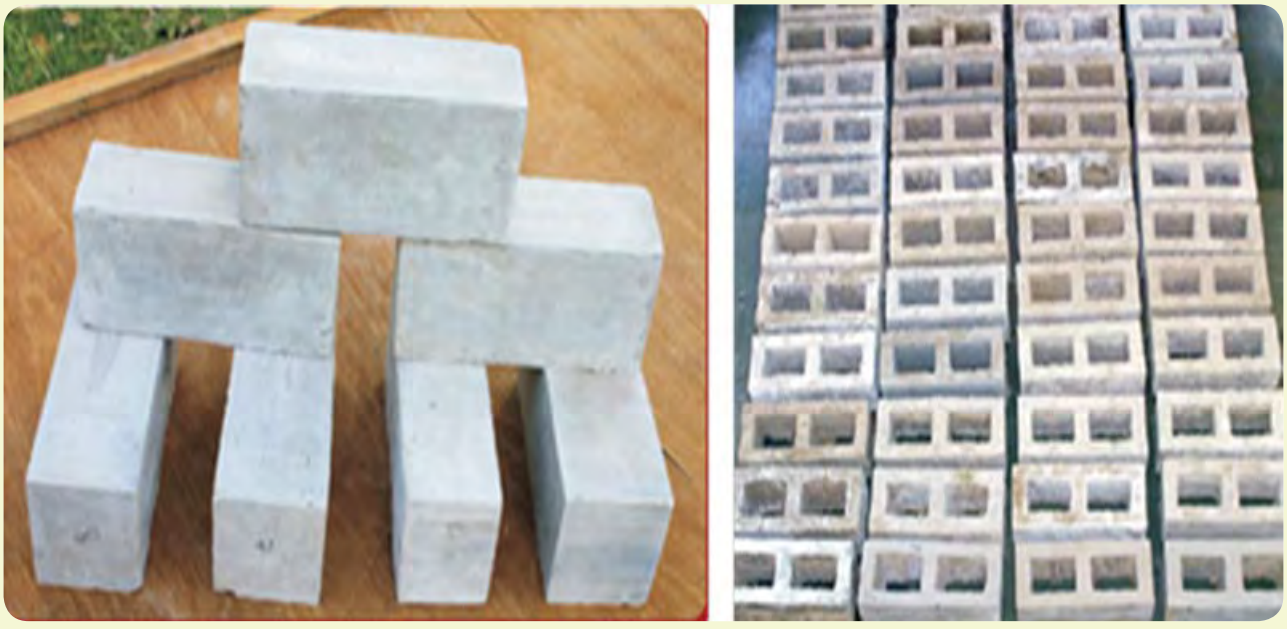
Suitable to combat the following fires with the following key uses/application areas: Class A all-type Combustible material Fires" such as paper, wood, cloth, etc; Class B Flammable Liquid Fires" such as petrol, diesel, kerosene; Class K Kitchen-Pan Fires for women's fire safety" and the "Electrical fires" due to short-circuits.

Pine Needle Composite Board/Panel

Boards, Panels, door panel insert and furniture items
Indian Patent Application No.0531/DEL/2010

R & D Achievements: Technologies

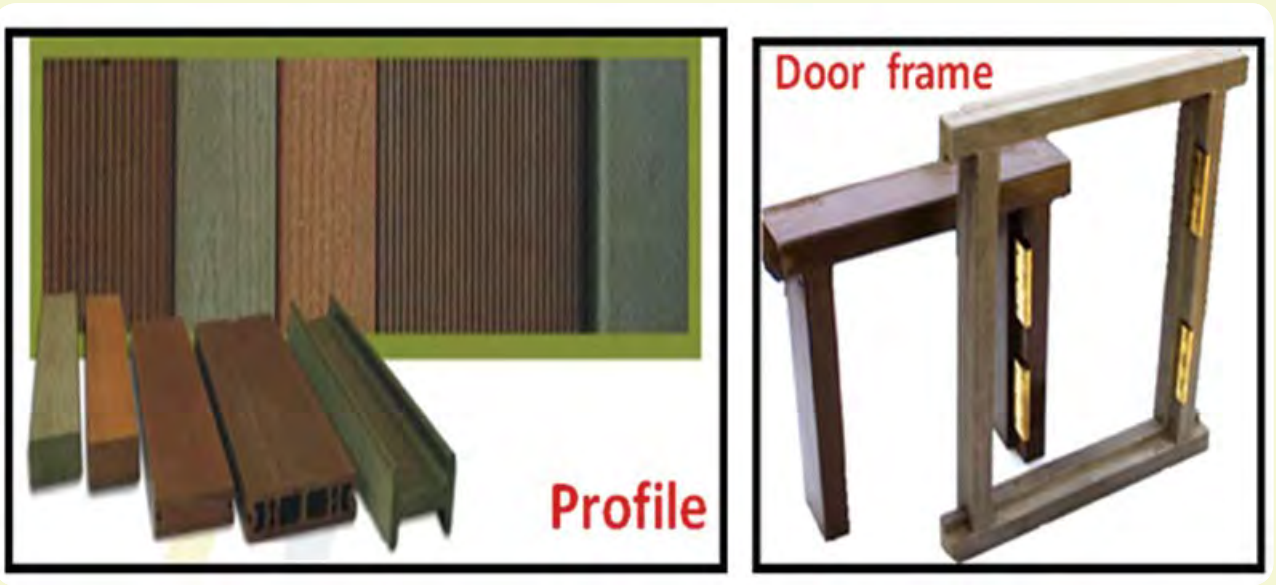
Geopolymeric Building Materials



Bricks, blocks, concrete, reinforced concrete, light weight concrete etc.

Indian Patent Application No. 3368/DEL/2014

Rice Husk Plastic Composite (Wood without tree)



Window & door frames, profile panels, decking, fencing, flooring, park benches etc.

Indian Patent Application No. 2193/DEL/2008

R & D Achievements: Technologies

Modified Epoxy Cardinal IPN Protective System for Concrete Structures

Application: Corrosion Protection

Cement Based Vermiculite Tiles

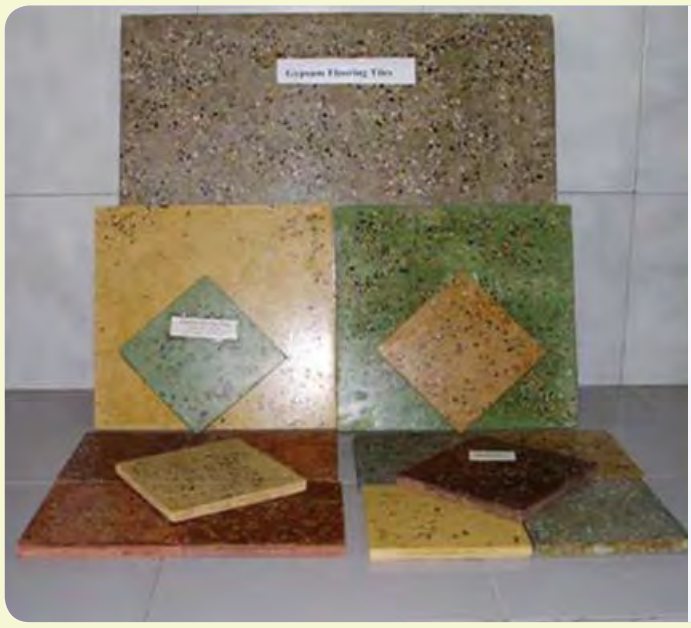
Suitable for thermal insulation in residential, commercial & industrial buildings

Fire Resistant Metallic Door

A fire door with a specific fire-resistance rating is used as part of a passive fire protection system to reduce the spread of fire from one compartment to other and to enable safe egress from a occupancy.

R & D Achievements: Technologies

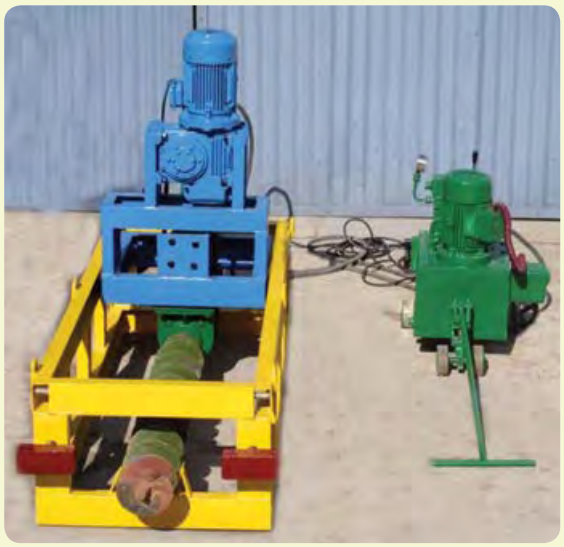
Flooring Tiles from Fluoro-Gypsum



Suitable for use in flooring and general-purpose as a replacement to ceramic and cement tiles

Indian Patent No. 226284

Horizontal Boring Machine



Suitable for making bores under the ground in horizontal direction at required depth (a Trenchless construction) for installing underground facilities i.e. electric cables, sewer pipes, water lines etc. without disturbing surface structure

Indian Patent Application No. 0488/DEL/2009

R & D Achievements: Technologies

Fire Blocking Layer

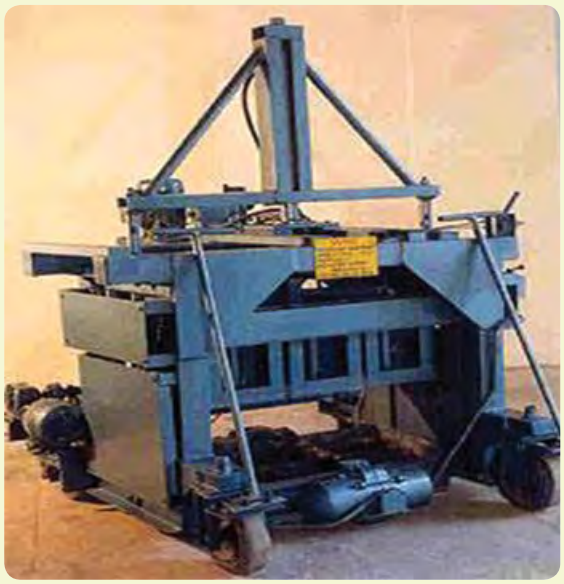
Suitable for intermittent lining materials, curtains, sofa covers and temporary shelters etc

Polytiles

Suitable for floors and walls of residential, commercial and industrial buildings

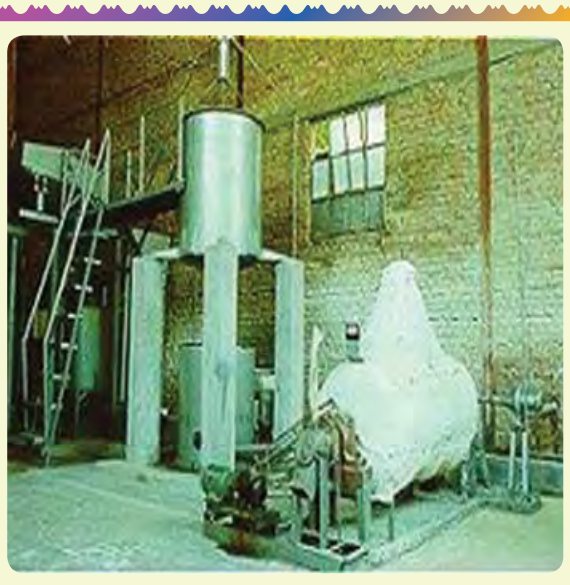
R & D Achievements: Technologies

Concrete Block Making Machine



Suitable for casting solid and hollow concrete blocks

Beneficiation of Phospho-Gypsum



Substitute for high natural gypsum, suitable for plaster and plaster products

Epoxy-phenolic IPN Coating for Concrete and Steel Structures

Protection of concrete and steel structures exposed to aggressive environment e.g. chemical and fertilizer industries and structures in coastal regions

R & D Achievements: Technologies

A Pullout Device for Soil Nails and Anchor

Application(s) Installation and pullout of helical, screw, ribbed & smooth nail measurement of torque, installation and pullout force useful for design of nails, conventional and helical anchors

Indian Patent No.: 0049NF2016

An End Open-able Helical Anchor

Application(s)

- Openable anchor with minimum vibration & soil disturbance during installation.
- Pre-engineered, reusable system with faster installation and induces immediate loading, having better compressive as well as uplift load capacities than conventional system.

Indian Patent No.: 0158NF2018

R & D Achievements: Technologies

Underground Horizontal Boring Machine

For Full Video visit https://youtu.be/hJV41AyRMtk

For laying underground services (sewer pipelines, conduits, water pipelines, Cables etc.) under the buildings/roads without disturbing the surface structures

Gypsum Panel making Machine

For making interlocking type Hollow Gypsum Panels to be used as load / non-load bearing walls in the building construction

R & D Achievements: Technologies

C-Brick Machine (Upgraded Version)

Suitable for producing flyash-sand-cement bricks and bricks with other industrial wastes in place of flyash
Capacity : 5000 bricks per shift (8 Hours)

Autonomous Climbing Robot

Application: For autonomous visual inspection of large vertical/ inclined ferrous wall surface
Other applications will be non-destructive testing of structures by mounting sensors, painting and cleaning at unreachable locations of steel structures

R & D Achievements: Technologies

Manufacture of paver blocks and other building components i.e. tiles & bricks from construction and demolition waste

Application: Building Components, Paver blocks, tiles and bricks. Used in surface area, road side

Fire Retardant Water Based Clear/Transparent Coating for Wood & Wood Based Interiors

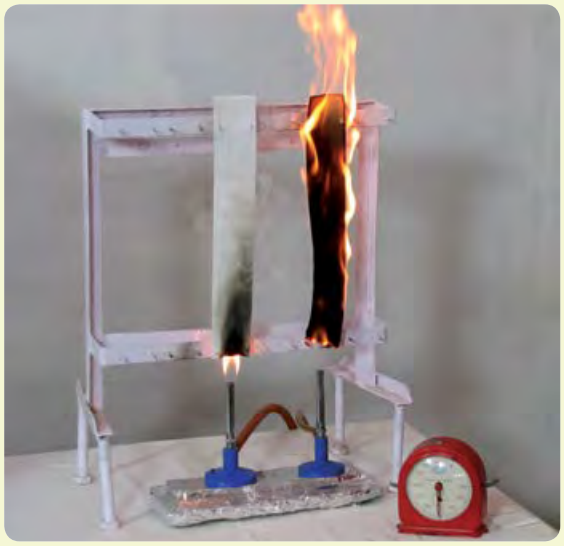
Untreated Shisham wood

Fire Retardant coated Shisham wood

Application: Wooden Industry especially making for building materials, furniture, fittings

R & D Achievements: Technologies

Fire-Retardant Water-Repellent Canvas

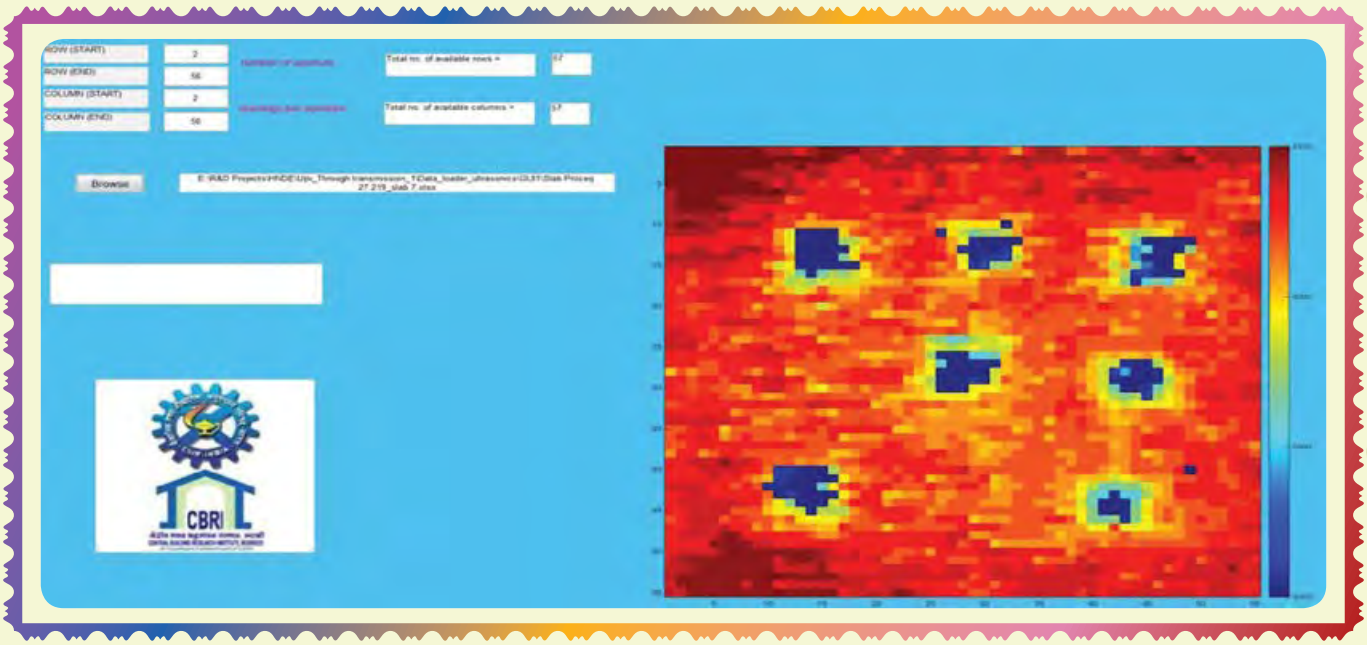


Suitable for temporary shelters, make-shift structures, tents, pandals, hangers for military personals and railway vestibules

Hybrid Rebar Coupler

Applications: To connect two adjacent rebars in new RCC constructions, retrofitting works

Imaging of hidden anomalies in concrete and stone masonry structures using ultrasonic pulse velocity



Standalone software and NDT data acquisition schemes for imaging of defects inside masonry and concrete structures. It can also be used for Quality assurance and certification

R & D Achievements: Technologies

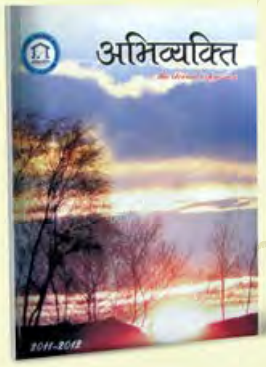
Test Setup for simulating controlled settlement of Civil Structures

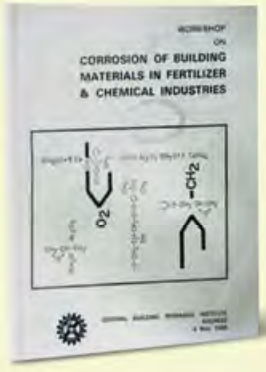
Test Setup

Masonry Arch under Support Settlement

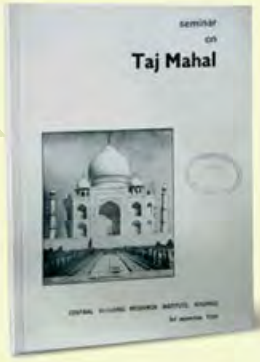
For testing of civil structures under the controlled settlement. Can be used for predicting the behaviour of any type of structure: Walls, Arch, Vaults, Domes etc.

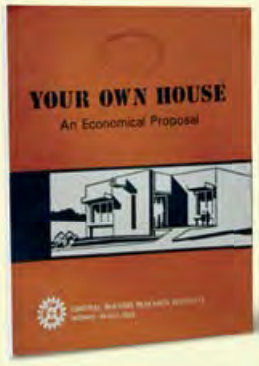
CSIR - CBRI PUBLICATIONS



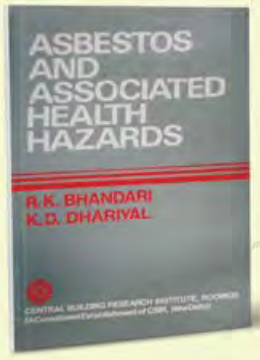


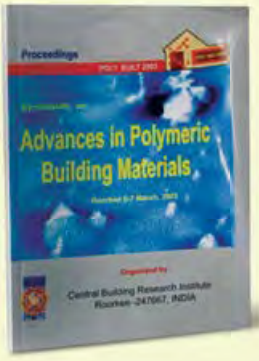
CSIR - CBRI PUBLICATIONS

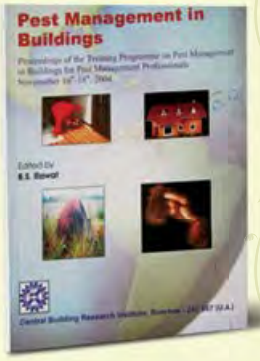


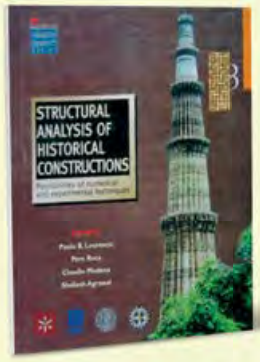


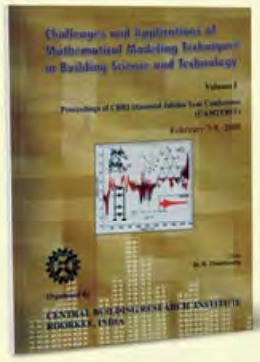
CSIR - CBRI PUBLICATIONS



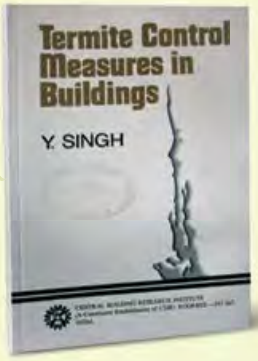


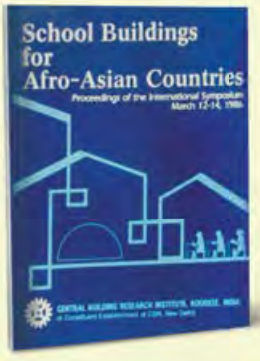


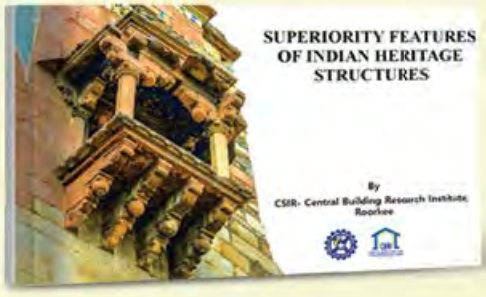


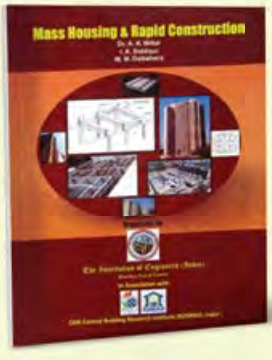


CSIR - CBRI PUBLICATIONS









Awards & Prizes

PADMA SHRI AWARD

Prof. Dinesh Mohan, Director, CBRI (1964-1982)
Recipient of Padma Shri Award in 1976

OM PRAKASH BHASIN AWARD

Dr. R.K. Bhandari receiving the Om Prakash Bhasin Award

LIFE TIME ACHIEVEMENT AWARD

Prof. R.N. Iyengar, Director was felicitated by Hon'ble Sri H.D. Deve Gowda, the Then Chief Minister, Karnataka with Sir M. Visvesvaraya Award for the life time achievements in Science and Technology on National Science Day, 28 Feb., 1996

M.S. NARAYAN MEMORIAL AWARD

Dr. A.P.J. Abdul Kalam , Secretary, Defence, Govt. of India Giving Away the M.S. Narayan Memorial Award to Prof. R.N. Iyengar, Director, CBRI, 1996

CSIR YOUNG SCIENTIST AWARD


COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH, INDIA

CSIR YOUNG SCIENTIST AWARD 1997

Dr Snehashish Chakraverty

The CSIR Young Scientist Award for the year 1997 in Physical Sciences has been awarded to Dr Snehashish Chakraverty of the Central Building Research Institute, Roorkee. He has carried out sustained work on the vibration characteristics of plates of different shapes using orthogonal polynomials.

(R A Mashelkar)
Director-General
Council of Scientific & Industrial Research
Secretary, Department of Scientific & Industrial Research

(Y K Alagh)
Vice-President
Council of Scientific & Industrial Research &
Minister of State for Science & Technology

New Delhi
26 September 1997

Dr Snehashis Chakraverty receiving the CSIR Young Scientist Award from Prof. Yash Pal on 26th September, 1997

NRDC TECHNOLOGY DAY INVENTION AWARD

NRDC Technology Day Invention Award for "Technology on Pollution Control in Brick Kilns" – May 2001

NATIONAL GEOSCIENCE AWARD


भारत सरकार
खान मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF MINES

राष्ट्रीय भूविज्ञान पुरस्कार-2011
National Geoscience Award-2011

The National Geoscience Award-2011 is conferred upon Dr Shantanu Sarkar in recognition of his outstanding contribution in the field of Disaster Management.

Dr Shantanu Sarkar receiving the National Geoscience Award from Minister of Mines, Govt. of India on 19th March, 2013

OUTSTANDING ACHIEVEMENT AWARD


Department of Scientific and Industrial Research
Ministry of Science and Technology
Government of India

Outstanding Achievement Award

CSIR CENTRAL BUILDING RESEARCH INSTITUTE

For their Inspiring Institutional Leadership
Demonstrated in Championing
the Transition to an Electronic Work Culture,
embracing performance driven evidence based operations
& transcending beyond conventional confines

Prof Samir K Brahmachari
Secretary

EXEMPLARY PERFORMANCE AWARD


CSIR

Award For
Exemplary Performance

CSIR acknowledges with immense appreciation, the exemplary work and commitment that has been demonstrated by Team **CSIR-Central Building Research Institute** in the preparatory realm of population of the data bases and priming the ERP Application with the configuration of data, for the commencement of seamless integrated online operations under the CSIR Transformation & ICT interventions Project.

In recognition of such outstanding work as trail blazing fore-runners in the transformation to an arena of digital collaborative workspace, for the progressive strides they have taken in contributing to the promotion of electronic work culture and to the cause of green growth, **CSIR-CBRI** is awarded the **Silver Icon Award** this day the 25 Sept 2012, on the occasion of the 70th CSIR Foundation Day 2012.

(Dr. G Radhakrishnan)
Project Leader

(Dr. K. Jayakumar)
Joint Secretary & Head IT

(Dr. Nagesh R Iyer)
Chairman PCTB

(Dr. Gangan Prathap)
Director NISCAIR

(Prof. Samir Brahmachari)
Director General

CSIR TECHNOFEST AWARD

IITF AWARD

EMINENT ENGINEER AWARD-2016

The Institution of Engineers (India) awarded ''Eminent Engineer Award'' to Er. S. K. Singh, by Hon'ble Governor of Goa, Dr (Smt) Mridula Sinha on the occasion of 32nd National Convention of Civil Engineers held at Goa on 21 October, 2016.

CERTIFICATE OF APPRECIATION

CSIR-CBRI receiving award from Hon. Minister of Rural Development, Agriculture and Farmers Welfare & Panchayati Raj

National Design Award-2019

Dr Ashok Kumar receiving National Design Award in Architectural Engineering

Meritorious Award (2018)

Dr S.R. Karade received 'Meritorious Award' of National Corrosion Council of India from Hon. Shri Dharmendra Pradhan, Cabinet Minister, Govt. of India (2018)

INAE PhD Thesis Award -2017

Dr. Anindya Pain receiving Innovative student project award at Doctoral level from INAE

हरिद्वार द्वारा वर्ष 2017–18 में भी 'नराकास राजभाषा वैजयंती' पुरस्कार

सीबीआरआई टीम राजभाषा शील्ड प्राप्त करते हुए

समन्वयकर्ता सम्मेलनों एवं प्रतियोगिताओं में सक्रिय भूमिका निर्वहन करने हेतु वर्ष 2018–19 के लिए
'नराकास राजभाषा वैजयंती' पुरस्कार

SC Bose Aapda Prabandhan Puraskar

The Subhash Chandra Bose Aapda Prabandhan Puraskar 2021 has been conferred upon Dr Rajendra Kumar Bhandari (Former Director, CSIR-CBRI) in the Individual category

Celebrations

Republic Day Celebration

Observance of Independence Day

Celebrations

CSIR Foundation Day Observance

CSIR-CBRI Foundation Day Observance

Celebrations

Technology Day Celebration

National Science Day Celebration

Celebrations

Environment Day Celebration

Hindi Week Celebration

Celebrations

International Yoga Day Celebration

Vigilance Awareness Week Celebration

Celebrations

International Women's Day Celebration

Swacchh Bharat Abhiyaan Observance

AcSIR

The Academy of Scientific and Innovative Research (AcSIR)

Post Graduate Research Programme in Engineering

The Academy of Scientific and Innovative Research (AcSIR), the academic arm of CSIR is permitted to confer Post-graduate degree by an act of Parliament. Different Institutions of CSIR are offering Post -graduate programme through the Academy of CSIR. CSIR-CBRI has started a post-graduate programme in 2010 to impart training to the young Civil Engineering professionals in the field of 'Building Engineering and Disaster Mitigation (BEDM)', which subsequently changed to "Building Engineering & Construction Technology (BECT)" in 2018.

Faculty and first batch (2010-12) of students

AcSIR

CSIR-Central Building Research Institute (CBRI), Roorkee and CSIR-Central Road Research Institute (CRRI), New Delhi, the two Civil Engineering laboratories of CSIR jointly started the two years PG Research Programme in Engineering (PGRPE) on "Engineering of Infrastructure and Disaster Mitigation (Buildings / Roads)" from August 2010 at CSIR-CBRI, Roorkee. Recognising the importance of housing and road sectors, the two major areas required for the growth of the country, the 'Engineering of Infrastructure and Disaster Mitigation (EIDM)' course at CBRI and CRRI was designed to offer the students the required knowledge as well as field experience. The area of disaster mitigation addresses adequately the requirement of engineering aspects of mitigating the risk of earthquake, landslide, cyclone and fire, which often destroy the infrastructural facilities and create enormous losses.

Students in classroom

Students in lab

AcSIR

The multidisciplinary expertise required to tackle such a situation are available in these two Institutes and the course was designed to impart training to the students in these areas. Drawing from the rich experience of scientists, in both the laboratories, the course was designed to offer the participants sound theoretical knowledge and practical experience. Such a unique opportunity is not available anywhere in the country.

Based on the experience gained in the first two years, it was felt that the two Institutes namely CSIR-CBRI and CSIR-CRRI are poised to take challenges of offering the programme of their own and accordingly from 2012, CSIR-CBRI is offering an integrated M.Tech-Ph.D programme in BEDM/ BECT. The programme is continuing very successfully for the last 11 years. 38 No. of MTech and 5 PhD are awarded so far.

Field excursion in Himalayas and site investigation

AcSIR

Students of 2011-13 batch

AcSIR

Students of 2012-14 batch

Students of 2013-15 batch

AcSIR

M.Tech student presenting his thesis work

Award of M.Tech degree during convocation

CSIR – CBRI FAMILY

GROUP-IV: SCIENTIFIC STAFFS

DIRECTOR:	
1.	Dr. N. Gopalakrishnan
CHIEF SCIENTISTS:	
2	Sh. R.S. Chimote
3.	Dr. Suvir Singh
4.	Dr. Shantanu Sarkar
5.	Dr. Ashok Kumar
6.	Sh. S.K. Negi
7.	Dr. Harpal Singh
8.	Dr. R. Dharmaraju
SR. PRINCIPAL SCIENTISTS:	
9.	Dr. Atul Kumar Agarwal
10.	Dr. Pradeep Kumar
11.	Sh. A. A. Ansari
12.	Dr. Rajni Lakhani
13.	Dr. D. P. Kanungo
14.	Dr. Achal Kumar Mittal
15.	Dr. S. R. Karade
16.	Sh. S.K. Singh
17.	Dr. Purnima Parida
18.	Sh. Nadeem Ahmed
19.	Dr. Rajesh Deoliya
20.	Dr. A. P. Chaurasia
21.	Dr. P. C. Thapliyal
22.	Dr. Navjeev Saxena
23.	Dr. B. S. Rawat
24.	Dr. Shorab Jain
25.	Dr. S. K. Panigrahi
26.	Dr. L. P. Singh
PRINCIPAL SCIENTISTS:	
27.	Dr. Sujit Kumar Saran
28.	Dr. Rajesh K. Verma
29.	Dr. P.K.S. Chauhan
30.	Dr. H.C. Arora
31.	Dr. Leena Chaurasia
32	Dr. Neeraj Jain
33.	Dr. Vineet Kumar Saini
SENIOR SCIENTISTS:	
34.	Mr. Ravindra Singh Bisht
35.	Mr. Nagesh Babu Balam
36.	Mr. Manojit Samanta
37.	Mr. Soumitra Maiti
38.	Mr. Soju Joseph Alexander
39.	Mr. Srinivasa Rao Naik B.
40.	Mr. Subash Chandra Bose Gurram
41.	Dr. A. Arvind Kumar
42.	Dr. Anindya Pain
43.	Mr. Mickey Mecon Dalbehera
44.	Mr. Siddharth Behera
45.	Mr. Siddharth
SCIENTISTS:	
47.	Ms. Ishwarya G.
48.	Dr. Monalisa Behera
49.	Mr. Rajesh Kumar
50.	Mr. Rakesh Paswan
51.	Mr. Chanchal Sonkar
52.	Mr. Mohd. Reyazur Rahman
53.	Dr. Santha Kumar G.
54.	Mr. Koushik Pandit
55.	Ms. Hina Gupta
56.	Dr. Debdutta Ghosh
57.	Ms. Surya M.
58.	Ms. Sayantani Lala
59.	Mr. Ashish Pippal
60.	Dr. Shermi C.
61.	Dr. S. Ganesh Kumar
62.	Dr. Chandan Swaroop Meena
63.	Dr. Banti A Gedam
64.	Dr. Kishore S. Kulkarni
65.	Dr. Mohammad Jeeshan Khan

66.	Mrs. Aswathy M.S.
67.	Dr. Tabish Alam
68.	Dr. R. Siva Chidambaram
69.	Dr. Hemlata
70.	Mr. M. Vinoth
GROUP-III: TECHNICAL STAFFS	
PRINCIPAL TECHNICAL OFFICERS:	
1.	Sh. Narendra Kumar
2.	Sh. Rajesh Kumar
3.	Dr. P.K. Yadav
4.	Sh. Dalip Kumar
5.	Dr. S.K. Senapati
SENIOR TECHNICAL OFFICERS (3):	
6.	Sh. Rajeev Kumar Sharma
7.	Sh. Sushil Kumar
8.	Dr. M.K. Sinha
9.	Sh. Zamir Ahmad
10.	Sh.Vivek Sood
11.	Sh. Jalaj Prashar
12.	Sh. Rakesh Kumar-II
SENIOR TECHNICAL OFFICERS (2):	
13.	Sh. Ram Ashray Rai
14.	Sh. Bharat Bhushan
15.	Sh. Naresh Kumar
16.	Sh. Rajesh R. Ghadse
SENIOR TECHNICAL OFFICERS (1):	
17.	Sh. B.K. Kalra
18.	Sh. Itrat Amin
19.	Sh. Amit Kush
20.	Mrs. Gayatri Devi
21.	Mrs. Deepti Karmakar
22.	Sh. Ajay Dwivedi
TECHNICAL OFFICERS:	
23.	Sh. Sameer
24.	Sh. D.S. Dharamshaktu
TECHNICAL ASSISTANTS:	
25.	Sh. Sugam Kumar
26.	Sh. Sachin Kumar
27.	Ms. Bhawna
28.	Sh. Dinesh Kumar
29.	Sh. Anil Kumar
30.	Sh. Seraj Alam
GROUP-II: TECHNICAL STAFFS	
SENIOR TECHNICIAN (2):	
1.	Ms. Neelam Gupta
2.	Smt. Sangeeta Sharma
3.	Sh. Sheeraj Ahmad
4.	Smt. Saroj Rani
5.	Sh. Anil Kumar Sharma
6.	Sh. Manmeet Singh
7.	Smt. Urmila Kotnala
SENIOR TECHNICIAN (1):	
8.	Sh. Rishi Pal Singh
9.	Sh. Sushil Kumar
10.	Sh. Himanshu Sharma
11.	Sh. Amar Singh
12.	Sh. B.S. Bisht
13.	Sh. Rajeev Bansal
14.	Sh. Pradeep Kumar Kapooria
15.	Sh. Arvind Saini
16.	Sh. Harish Kumar
17.	Sh. Sukhbir Sharma
18.	Sh. Arvind Kumar
19.	Sh. Sharad Kumar
20.	Sh. Mam Chand Agarwal
21.	Sh. Arvind Kumar Sharma
22.	Sh. Tahir Husain
23.	Sh. Ghanshyam Mittal
24.	Sh. Iqubal Ahmed
25.	Sh. Manoj Kumar Tyagi
26.	Sh. Jai Pal
27.	Sh. Sohrab Khan
28.	Sh. Jameel Hasan
GROUP-I: SUPPORTING STAFFS	
1.	Sh. Rajeshwar
2.	Sh. Vijay Kumar
3.	Sh. Jagdish Pal
4.	Sh. Rajesh Kumar

ADMINISTRATION STAFF/HOUSE KEEPING

S. No.	NAME	DESIGNATION
	GROUP-A:	
1.	Sh. Anil Kumar	C.O.A.
2.	Sh. Vinod Kumar	C.O.A.
3.	Sh. Ajay Kumar Sharma	S&P.O.
4.	Sh. J.K. Chaurasia	F&P.O.
5.	S.K. Jakhwal	A.O.
	GROUP-B:	
6.	Sh. Lekh Raj Kaushik	S.O.S & P
7.	Sh. Constan Kujur	S.O.(G)
8.	Sh. K. Arora	P.S.
9.	Sh. Satya Pal	P.S.
10.	Sh. Naresh Yadav	P.S.
11.	Sh. V.P.S. Rawat	Security Off.
12.	Smt. Archana	Sr. Steno
13.	Sh. Arvind Kumar	Sr. Steno
14.	Sh. Dalpat Singh	Sr. Steno
15.	Sh. Dharam Singh Negi	Sr. Steno
16.	Smt. Nisha Tyagi	Asstt.(G) Gr.I
17.	Smt. Sarita Khanna	Asstt.(G) Gr.I
18.	Smt. Sheema Farhat	Asstt.(G) Gr.I
19.	Sh. Sudheer Kumar	Asstt.(G) Gr.I
20.	Sh. Shiv Kumar	Asstt.(G) Gr.I
21.	Sh. Pawan Kumar	Asstt.(G) Gr.I
22.	Smt. Mamta Sharma	Asstt.(G) Gr.I
23.	Smt. Savita Vishwakarma	Asstt.(G) Gr.I
24.	Sh. Sushil Kumar	Asstt.(G) Gr.I
25.	Sh. Sanjay Kr. Tyagi	Asstt. (G) Gr.I
26.	Sh. Ravinder Kumar	ASO. (G)
27.	Sh. Virendra Singh	Asstt.(F&A)Gr.I
28.	Sh. Aman Kumar	Asstt.(F&A)Gr.I

ADMINISTRATION STAFF/HOUSE KEEPING

S. No.	NAME	DESIGNATION
29.	Sh. Vipin Kumar Sharma	Asstt.(F&A)Gr.I
30.	Sh. Suraj Pal Singh	Asstt.(F&A)Gr.I
31.	Sh. Satyarth Prakash	Asstt.(F&A)Gr.I
32.	Sh. Rubina Zaidi	Asstt.(F&A)Gr.I
33.	Sh. Sanjeev Bansal	Asstt.(S&P)Gr.I
34.	Smt. Anju Rani Simon	Asstt.(S&P)Gr.I
35.	Sh. Arpan Maheshwari	Asstt.(S&P)Gr.I
36.	Sh. Kalam Singh Chauhan	Asstt.(S&P)Gr.I
37.	Sh. VishvashTyagi	Asstt.(S&P)Gr.I
38.	Sh. Mehar Singh	Hindi Officer
39.	Sh. Suba Singh	Hindi Officer
	GROUP-C:	
40.	Smt. Seema Ahuja	Asstt.(G)Gr.II
41.	Sh. Subhan Singh	JSA
42.	Sh. Mehrajdeen Khan	JSA
43.	Sh. Mukesh Kumar	Asstt.Gr.II
44.	Sh. Radhey Shyam	Driver(NT)Gr.II(2)
	GROUP-D:	
45.	Sh. Satya Pal	D/R-KPR/MTS
46.	Smt. Usha	Farash/MTS
47.	Sh. Subhash Chand	Peon/MTS
48.	Sh. Desh Raj	Peon/MTS
49.	Sh. Rakesh Kumar	Peon/MTS
50.	Sh. Ramesh Kumar	Peon/MTS
51.	Sh. Santosh Kumar	Peon/MTS
52.	Sh. Rakesh Kumar	Peon/MTS
53.	Sh. Krishna Gopal Thakur	Peon/MTS
54.	Sh. Rohitash Kumar	Peon/MTS
55.	Sh. RadheyShyam	Peon/MTS
56.	Sh. Ranbir Singh	Peon/MTS

ADMINISTRATION STAFF/HOUSE KEEPING

S. No.	NAME	DESIGNATION
57.	Sh. Devendra Kumar	Farash/MTS
58.	Smt. Prakash Kaur	Farash/MTS
59.	Smt. Anju	Farash/MTS
60.	Sh. Anit Kumar Pal	Peon/MTS
61.	Sh. Pooranvasi	Farash/MTS
62.	Sh. Kirat Pal	Peon/MTS
63.	Sh. Kiran Pal	Peon/MTS
64.	Sh. Rajesh Kr. Yadav	MTS
65.	Sh. Jai Prakash	MTS
66.	Sh. Ranjeet Singh	MTS
67.	Sh. Satya Pal	MTS
68.	Sh. Satya Pal Singh	MTS
69.	Sh. Sunil Kumar	MTS
70.	Sh. Amit Kumar	MTS
71.	Sh. Rakesh	MTS
72	Sh. Arun Kumar	MTS
73.	Sh. Ravinder Kumar	MTS
74.	Sh. Dil Bahadur	MTS
75.	Sh. Rajinder Pal	MTS
76.	Sh. Malkhan Singh. Wash Boy	MTS
77.	Sh. Dheer Singh	MTS

Appendices

Extracts from speech by

The Hon'ble Shri Jawaharlal Nehru

Prime Minister

LADIES & GENTLEMEN,

The development of research laboratories is very important not only from the practical point of view of keeping pace with developments in the world but also from another point of view, which may perhaps not be so obvious even to the average scientists. It is what I would call the development of the temper of science in all our departments of life.

Science occupies a dominant position in the world today. Nevertheless, it is extraordinary how the temper of science is absent from most of the things we do. It is my firm conviction that the scientific temper could be developed provided a dispassionate research after truth is made. Unless we develop this temper of science, the world will go farther asfray as it is going today. Whether we can catch up with that, I do not know. But the only way to do so is to approach the problem in the particular way which I have described as the temper of science. I hope today's function might draw further attention to this basic question.

Housing is our most important and urgent problem and the Building Research Institute would be doing a national service of enormous importance if it devises means of building durable and cheap houses in the country for the low-income group of people.

Let us not bury ourself under the burden of the past traditions and customs. Old traditions and ways of work had their place in the past. But today in the changing world, they can not be of much use. Of course, what is good in the ancient principles had certainly to be retained. But in many ways we seem to have fallen in the ruts of traditions and customs in which there is hardly any life. With bows and arrows, no country can face modern weapons, although it is true these very bows and arrows were formidable weapons once. So if a country sticks to things old and outdated, it is bound to remain behind and suffer.

Whether it is building houses or anything else in this country, there is a habit, may be derived from old times, of looking to governmental authority, to do it. The capacity of self-help and self-reliance in the people is becoming less and less. Of course, to some extent governmental help is necessary. But without the whole-hearted co-operation of the people nothing much could be achieved.

Mere attainment of academical degrees is not of much use. Unless those who qualify from the universities apply the knowledge in doing creative work, the country would have no use for them. There is a tendency among some people to consider, as a special virtue, not using their hands. They considered it menial work and something which was degrading. A widespread idea is that a clerk sitting at a table and getting a paltry salary, less than that of a factory worker at times, is more respectable than others. In fact, manual labour is looked down upon as menial work. This is an extremely foolish idea. We must get rid of this idea and realise that dignity comes from dignity of labour or not the mind alone but creative effort.

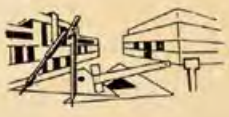
Creative effort means making something out of nothing. Whether you make a house or a road or a factory, you are making something. If you do that thoroughly, you will have added to your status and to the wealth of the nation and the whole world.

Often students come to me with grievances that they lack a proper hostel or a club or a reading room. They want more grants from provincial governments, and expect somebody to come and do that work for them. Of course, it is the function of the government to do so. The point is that the resources of the government are limited, but the resources of men should not be limited. I think it should be a part of the course of students in the university to build hostels, to build houses or whatever they want in their spare time. They should build them with their own hands.

During my visit to the U.S.A., I saw in a college a hostel built by the students. They did so as the college was short of funds. Why do not you do the same in your spare time? The college authorities, will of course, supply you with the necessary material.

Next time I come to Roorkee, I hope to see some buildings set up in the university by the students themselves. I assure you, once you begin to support yourselves in these ways, you will grow in your own estimation.

I would ask the people to keep their minds open to new changing influences in the world and be ready to accept new ideas. India has to learn all that the other countries like the U.S.A., Britain, Russia and China had achieved. The real meaning of Swaraj is not just a change-over of Government, important though it is. The people must feel the effects of the change-over for their good in their daily lives. There are some sections of the people who criticise the government. But I want those critics to come forward with their constructive suggestions to improve things. Mere criticism does not help.



Speech by

The Hon'ble Shri Sri Prakasa

Minister for Natural Resources and Scientific Research

FRIENDS,

It is a matter of great joy and satisfaction to me to be called upon so soon after taking charge of the new Ministry of Natural Resources and Scientific Research, to lay the foundation stone of the Central Building Research Institute here; and I am very grateful to you for the honour you have done me by asking me to do so. This is one of the eleven national laboratories that are being established by the Council of Scientific and Industrial Research for the very laudable purpose of finding out proper and practical methods for making life for us in India worth living. The problem of housing is obviously a very important one; and it has become doubly important because of some factors that have come into existence during recent times.

It is a curious fact that there are always large migrations to urban areas after every great war; and the tremendous increase of population in our own towns in recent years, has been naturally causing great anxiety to all concerned because of the very heavy and sudden pressure it has put on the very limited available accommodation. The Partition of the country resulting as it did in unprecedented exoduses, has complicated the position still further. Then as men's outlook has changed in various directions, and as new inventions and discoveries have made more and more articles available in the world, the standards of life have gone up, and constant demands are being made for amenities and facilities of which the past generations had no idea. With the coming of Freedom that has thrown the full responsibility of the governance of the country on our own shoulders, we have all naturally started thinking furiously as to how things should be done, so that our people could find their fitting place in the world, with a proper appreciation of life's values and the full realization of life's resources.

No nation can afford to live only in and on its past. We can all appreciate the naturalness and even the desirability of a people in bondage, remembering with pride and re-iterating without embarrassment, that despite their unhappy existing status, they too had been something in the past from which they could legitimately imbibe strength to resist the onslaughts of the present. But once free, they have to look constantly and assiduously to the building of the future. One's environments have very great and lasting effects on one's outlook; and the houses in which we are brought up, have an undoubted influence on our thoughts and our activities. It is therefore not surprising that Government should make the utmost effort possible to see that the citizens of Free India are born and brought up in homes that are worthy of them; and I have every confidence that the Central Building Research Institute, at the foundation of which we are all assisting to-day, will fulfil its purpose and offer practical solutions to our building problems.

Ours is a vast country; and though it is dotted with large cities, we are still pre-eminently a rural people, and we mostly live in rural conditions. In every programme that is taken in hand, it is essential that while the needs of the people are being studied, their means to meet those needs, should always be kept in view. If we do not do that and if we always work on the basis of ideals, thinking only of what *should* be and not of what *can* be, then all our schemes are bound to remain on paper and all our labours are equally doomed to failure. Our people spread far and wide in the country side, have so long just lived somehow, devoting their time to agricultural pursuits and raising their little huts—each household with its own hands—to shelter themselves from rain and wind and cold. They have built these on the rule of thumb basis, following traditional methods and working along traditional lines, using materials —clay and thatch and wood—that were locally procurable. I am myself familiar with these village huts being somewhat of a village man myself; and I feel sad that persons who ordinarily pass their time in open fields, should be condemned to the cramping conditions of these dwellings for purposes of their domestic lives.

It is particularly necessary for us today to look into the requirements of our village people carefully and sympathetically, and try to meet them as best possible. They form the bulwark of society, and they can be neglected only at the nation's peril. The Institute must give them proper advice as regards their houses so that within their very limited means, they might be able to build their cottages in a manner that would be conducive to their physical, mental and moral health, and would enable them to live better and more purposeful lives. Suitable houses would induce and encourage village folk to continue to live there; and there would not be that constant incitement to turn to towns, on the least pretext, thus depleting the countryside of its best human material. If the Institute examines the figures of expenditure of our village people on their houses, and is able to help them to build cottages of the approved pattern within the amount they would otherwise spend—or they ordinarily spend—on their dwelling and also teach them how they could build on the new model with their own hands and with local assistance, as they have been used to doing for centuries, this Institute would indeed have been established to good purpose.

The Institute itself has put this matter as amongst its foremost functions; and in order to fulfil its mission, it will embark on an examination of new materials and the evolving of new processes, so that its hopes of building low-cost and durable houses could be implemented. It will disseminate useful information and infuse a scientific spirit in the building industry of the land so that people would take up the task in the proper way and make it possible for the growth of smiling villages besides beautiful cities. Let us not forget that all animals need houses, and either construct them or take advantage of Nature's gifts to utilize these for shelters for themselves. There is however one great difference between man and the other species. The animals of any one variety, all invariably make their dwelling places of one pattern or seek shelter in similar haunts—be they weaver birds or tigers—the necessary skill being endowed in them by Nature in the form of instincts; but we find that every individual man has his own idea of his own necessities and comforts, and is inclined to build his house in a form different to that of his neighbour. The means of different men have also become different in the course of humanity's social and economic evolution; and so also their

notions of taste, propriety and requirements. As different men take up different professions in life, so for their work they have to have different styles of housing. I am sure the Central Building Research Institute will keep all these matters in view as they embark and proceed upon their useful activities.

The task before the Institute will be a difficult and complicated one; and it too has no illusions on the subject. It will be examining the causes of failure of some materials used in building and suggest such others as are expected to be more lasting. There is no doubt that in the past, India has built wonderful edifices, that are the pride of the world to-day; but while on the one hand, we built palaces, mausoleums, temples and mosques, I fear we gave little attention to the needs of the common man who went on living in unhealthy conditions of squalour, and generation after generation grew up without any knowledge of things beyond his immediate ken, fighting hard and incessantly just for leave to live. In fact, we lost all appreciation of beauty as proved by the fact that we deface, destroy and dirty even the most beautiful structures, if we chance to come across them. We have to inculcate in our people a knowledge of right and wrong, for that alone can help us not only to build decent houses but also to keep them perpetually clean and tidy. It breaks one's heart to see the haphazard manner in which our cities have grown and the perpetual state of dilapidation and disrepair in which most of the buildings there, are found.

The art of daily cleaning and polishing and generally of taking care of our things, is, I fear, unknown to us. We build and then we neglect; and to-day we find that for lack of proper and periodical hauling up, some of the most beautiful of our buildings are falling a prey to decay and destruction. Perhaps one of the most impressive and beautiful sites of the world is the river front of my home town of Banaras with its magnificent semi-circular sweep of *ghats*. It makes me unutterably sad to find that literally one *ghat* after another is sinking; and the collapse of one of the minarets of the mosque in the very centre of the semi-circle has deprived not only Banaras but the world of a beautiful scene. If the process continues, in less than a century from now, the whole site would have vanished in the limbo of oblivion. I do hope that the Institute will tell us not only how we are to build our public edifices, our factories and our private houses; how we can within our limited means assure ourselves of proper health and sanitation; what materials we should use for the building of our walls, our floors and our roofs;—but also teach us how necessary it is to have an occasional check-up of the whole building from the foundation to the top; and what we should do in order to keep the whole place perfectly tidy; and how we should take action in time so that all possible danger of collapse may be avoided by keeping our respective places in constant good repair.

Our houses must be durable, comfortable and also beautiful. It is such a pity that beauty should have gone out entirely from our lives. The false idea seems to have obsessed the minds of men that beauty is a luxury that can only be enjoyed by the rich; but surely appreciation of beauty has little to do with the financial position of the individual. The poor neglected person who has no contact with the outside world, living in the distant forests and hills of Assam for example, can turn his jungle grass and bamboo stumps to good purpose, both from the stand-point of utility and of beauty, without the advantage of any proper training and education by any one, while many of us so-called educated persons living in modern towns, seem to have really become quite debased in our tastes and have reduced ourselves into very perverse imitations of other peoples. Let us hope that the houses of the future resulting from the labours of this Institute, will give us that real education of the eye and hand that we so sadly lack to-day. If we are to be a nation of free men, all grades of society have to live healthy physical, mental and moral lives. We cannot build the edifice of true freedom where a limited few have everything and the vast many have practically nothing. We have all — every one of us, high and humble alike — to be sedulously taught our civic duties so that we might learn to help our neighbour and be solicitous of his feelings, and realize that in looking after him and our surroundings, we ultimately help ourselves as well.

I most earnestly and confidently hope as I declare this Foundation well and truly laid, that the Central Building Research Institute that shall rise on it, will always attract to itself bands of earnest men and women, full of sympathy and understanding, who will work here silently—may be even unknown—so that others may be profited; and that the country that through the stress of adverse circumstances, has lost all sense of values, will recover its soul once again. May the houses constructed as recommended by the Institute, be commensurate to the means and meet all the needs of our people, offering them all reasonable facilities and amenities, enabling all, from the humblest to the highest, to live lives of simple nobility and proper decency. May the children born and bred therein be worthy of being the citizens of a free land, fulfilling their duties by themselves and by Society, in a manner that shall enrich our social and economic life in all its varied facets, and ensure our hard won national Liberty, in every sense of the word, for ever.

Speech by

Dr. S. S. Bhatnagar

Director, Scientific & Industrial Research

LADIES & GENTLEMEN,

Once again, we have the good fortune of meeting for the performance of a ceremony which is indicative of our Government's resolve to develop industry and help good living of the inhabitants of India by harnessing research and science to these ends. The presence of our honoured Prime Minister and our Hon'ble Minister for Natural Resources and Scientific Research on this occasion, besides lending grace and dignity to the function, is yet another proof of their abiding faith in the technical man's ability to help them in their stupendous task of raising the country to its proper height in their hierarchy of nations.

Buildings generally and housing in particular have always been a vital necessity. They are assuming added importance in the changing pattern of Indian economy. The emphasis on establishment of industries calls for the erection of factories where the needs for proper ventilation and lighting must be kept in view to maintain the health of the labourers and assure their safety. The transfer of labour from villages and its concentration in places adjacent to the factories and the requirements of efficiency and increased production demands provision of suitable houses with proper amenities for the workers. Gone are the days when the promoters of industry could afford to ignore the convenience of workers and one of the essential requisites of modern industrial planning is provision of labour housing. Even in the case of existing industries, it is apparent that these amenities have to be made available at the earliest possible time and this alone will necessitate the undertaking of a huge building programme by private industry and government. The demands have been accentuated by the urgency of houses for refugee rehabilitation and the total requirements now run into millions of dwellings of various types in different parts of the country.

The vast magnitude of the needs is apparent from the fact that the construction programme of the Central Public Works Department alone costs about 30 crores of rupees every year. Other agencies engaged regularly in buildings and housing are the state Public Works Departments, the railways, industry and the general public. Although no exact data about their expenditure is available, at the lowest the financial implications of all these activities easily total up to Rs. 100 crores every year and if research can bring about even a small reduction in these costs, the resultant savings will run into appreciable amounts each year. This only serves to emphasize the economic aspects of building research.

Draft proposals for the Central Building Research Institute were prepared by the Officer-in-Charge of the Unit and entrusted to a sub-committee composed of Principal B. D. Puri, Shri A. C. Mukherjee, Chief Engineer, U.P. and the Officer-in-Charge of the Building Research Unit for scrutiny. The plan was finally approved by the Governing Body in July 1949 and printed in September 1949.

I would have liked these plans to be executed with the swift magic of Allahdin's lamp but howsoever jet-propelled I may be, I have to take others with me. We have to surmount obstacles and overcome difficulties before our projects take a concrete shape and this has happened in the present case also.

The Building Research Committee after considering various aspects recommended that the institute should be located at Roorkee, the considerations involved being that (i) Thomason College of Engineering, the premier engineering institute of the country is situated here; (ii) the U.P. Government had decided to convert this institution into an engineering university, covering all branches of engineering sciences; (iii) Roorkee is one of the most important centres of the Defence Ministry Engineering Services and (iv) the U.P. Government had also decided to locate their irrigation Research Station at Roorkee.

Several sites round about Roorkee were inspected and a piece of land measuring over 250 acres near the university estate was our first choice. This land belonged to the Ministry of Defence who regretted their inability to transfer it to the Council as it formed a part of its training ground. Later on with the assistance of the Government of Uttar Pradesh, a site near the Roorkee Railway Station was acquired. The villagers to whom the land belonged, however, reported that the land allotted was the sole source of their livelihood and offered stiff resistance. Considering that the land was used for production of food grains, we allowed the farmers to continue their possession and released the land. At this stage, the University of Roorkee and its Vice-Chancellor Prof. C. A. Hart again came to our assistance and offered to place a plot of land measuring ten acres for the building of this Institute at the disposal of the Council on long lease. This is the site on which this foundation stone is being laid to-day and I can hardly find sufficient words to express our gratitude to the U.P. Government, the University of Roorkee and particularly to Prof. C. A. Hart. We are extremely grateful to Hon'ble Pandit Gobind Ballabh Pant, Premier of U.P. for the support and assistance he has given us in all stages of our search for land.

The second problem which taxed us was the choice of a director. I always like to have a director whose advice from the very beginning of a project is available to the Government. Ever since this project began to take a concrete shape, we have been on the look out for a suitable person. The post was advertised in India and abroad and negotiations were started with some of the candidates. One of these was Prof. Casagrande, a great authority in Building Research but he was offered a much more alluring post in America and dollars attracted him away. Dr. Kurt Billing, a Viennese engineer or British nationality, was next selected but obtained an assignment in Hong Kong. The post has now been offered for the time being to Dr. J. N. Mukherjee whose work on soil sciences which is related in many ways to building research has earned him a world wide reputation.

The primary function of this Institute is to conduct research on buildings in general with special emphasis on indigenous materials and designing and construction of buildings suited to Indian conditions. In pursuance of this aim, the institute will undertake examination of building materials in common use and the methods of applying them with a view to effecting economy and improvement wherever possible. Other subjects of study include examination of new materials and processes, diagnosis of the causes of difficulties and failures of materials or their application and determination of standards for materials and workmanship. Attention will be directed not only to the development of existing materials but also the evolution of new ones. An important objective is to conduct investigations designed to cater to the needs of villages for cheap houses using readily available material and devising means for cheap air-conditioning of buildings.

The building and equipment is expected to cost Rs. 16 lakhs while the annual recurring expenditure will amount to Rs. 5.10 lakhs.

The Building Research Unit which has been functioning for the last 4 years has some valuable investigations to its credit already and its work has been favourably commented upon by Prof. J. D. Bernal, the famous British scientist. It has already published a brochure on low cost houses. Investigations on the soil stabilization of mud by addition of lime sludge, a waste product of the sugar industry, have yielded very encouraging results which are being further developed. Soil survey and testing for the air field run-way at Hindan near Ghaziabad has been completed on behalf of the Ministry of Defence. Necessary recommendations on soil cement stabilization have been made with a view to improvement of the load-bearing capacity of the soil. A survey on village housing in India is in progress and reports on two states, Madras and Punjab and integrated states have already been compiled and published. Schemes of research on foundations in black cotton soil and use of sea sand in building construction have also been in operation.

In addition to these researches, the Council has sponsored several other investigations connected with building materials. Hard boards for external use and interior decoration were developed in the Delhi laboratories of the Council and a non-technical note on these has recently been published. The boards can also be of use in the construction of railway carriages and it is hoped that enterprising Indian firms will shortly be coming up to take up their commercial development. To meet the demands for insulating materials for building purposes, two new products have been evolved from indigenous resources. These are the insulating boards manufactured from sugar-cane bagasse and foam bricks, a very light variety of glass, almost as light as cork. Both these materials, besides being good insulators of heat are to some extent sound-proof also. They are expected to find use in the construction of radio studios and cinema halls replacing the imported material now being employed for sound-proofing.

To-day's ceremony has a particular significance for me personally. It means the accomplishment of the first stage of our extended scheme of eleven national laboratories. It, however, does not imply that no more laboratories are to be established. A research institute for the silk and art silk industry, sponsored by the Silk and Art Silk Mills Research Association is shortly coming into being. We have also under consideration the establishment of two research institutions specializing in electronic and radio engineering and mechanical engineering with particular reference to promotion of cotton industries. Plans are also in hand to set up a laboratory of the Atomic Energy Commission and a new home for the Tata Institute for Fundamental Research. These are, however, developments for the future and the foundation of the Central Building Research Institute signifies the completion of the present series.

I spent some anxious moments last night and this morning as a severe cloud burst inundated the grounds with water. This was Raja Indra's welcome to the Prime Minister and the Hon'ble Minister for Natural Resources and Scientific Research. Now the sky has cleared up so that this ceremony will take place with due dignity blessed by all the elements constituting the cosmos.

Speech by

Dr. C. A. Hart

Vice-Chancellor, University of Roorkee

LADIES & GENTLEMEN,

On behalf of the University of Roorkee it is my very pleasant duty to welcome the Hon'ble Shri Jawaharlal Nehru, Prime Minister and, Hon'ble Shri Sri Prakasa, Minister for Natural Resources and Scientific Research, and the many other distinguished guests here today.

The particular significance of this ceremony of the laying of the foundation stone of the Central Building Research Institute, is that it is being done within the campus of this University, and this sets a seal upon the intimate association between the two organizations.

I have been greatly impressed and inspired, since I came to India, by the remarkable advances which are being made in providing facilities for and organizing scientific and technical research on a national basis. Establishment of a chain of national research laboratories such as have been planned in the last few years and put into operation, marks an achievement of which any nation in the world could be proud. India, which previously had not had the facilities or opportunity for undertaking research on a national scale, has lost no time in showing that as an independent country she intends in the future to be in the forefront of scientific research and development.

In the provision of these facilities, India owes a great debt to two men, the full extent of which will not be fully realized for years to come. I refer of course firstly to our revered Prime Minister, Pandit Jawaharlal Nehru, who by his personal and direct interest in research has made such advances possible. It is an extraordinary honour to us all that he should have graced this function here today, and we feel that this in itself augurs well for the future since he gave an inspiring address at the inauguration of the University in November 1949.

Secondly, that dynamic and forceful personality in the cause of science, Dr. S. S. Bhatnagar, whose drive, initiative, and persuasion, have produced such remarkable results in so short a time. I should in particular like to pay my personal tribute to him, for his friendly helpfulness and co-operation in the negotiations which have made today's ceremony possible.

Although the construction of this, the Central Building Research Institute now to be undertaken is one of the last of the chain of National Laboratories to be started, work has been in progress at Roorkee by a small unit for some years. Although originally thought of as a section of the National Physical Laboratory, it was felt, and rightly so that such research affecting so closely the everyday lives of the people needed special and independent treatment, as well as active association with advanced engineering training such as found at Roorkee.

At the time when the Building Research Unit was started here, the University was not yet inaugurated, and the Thomason College of Engineerihg was still operating as such. Space was found in the campus for a nucleus of research and so far we have been able to house the staff. A site was searched for which should be in close proximity with the University. At that time the space requirements were rather more than the University itself could relinquish and investigations were made all round the area. Various difficulties were encountered in respect of reserved land and shortly after I arrived, Dr. Bhatnagar and I were able to decide upon the present site, which we both agree is very suitable and has possibilities for the future. Negotiations over the lease of the land have been facilitated by the personal interest in the matter by the Hon'ble Prime Minister and the Hon'ble Govind Ballabh Pant, Chief Minister of U.P., who unfortunately is not able to be with us here today, but who has sent a message.

We have also been able to make it possible for the Institute to acquire a hangar on the University campus for large scale experimental work.

I would however mention that the housing facilities of the University are not elastic, and the increase of personnel brought into Roorkee will have to be housed. I hope therefore that provision of accommodation will be included in the early building programme.

The close association of the University of Roorkee and the Central Building Research Institute, can bring nothing but benefits to both. This University has been founded as the first technical University in India, being based upon the century old Thomason College, the pioneer of top-ranking engineering colleges in India. It has produced many famous engineers and at present trains in the three main groups of Civil, Mechanical and Electrical Engineering. Considerable expansion is planned since now a University has been formed, the scope of training must be greatly broadened, including the pure and applied sciences specialized departments and the humanities introduced, so that we can make an active contribution to the making of good citizens as well as good engineers.

In particular, I find, unfortunately that so far research in engineering in Universities in India is very scanty indeed. This, I think, arises from two main reasons. Firstly, the engineering graduate wishes to earn his living as quickly as possible and engineering research does not often have a readily appreciated market value, and secondly many of the University teachers in engineering have neither had facilities for nor time to take it up. We are, however, making a beginning in a small way here, on some specific problems. The close association of the University with the Building Research Institute will go a long way towards filling the gap, as far as Building and Structural Engineering is concerned.

This University is housed in a campus of some 400 acres. It is a wholly residential University and the policy in the past has always been to keep numbers small and quality high. This we intend to do in the future.

In this country, with its newfound independence, it is certain that if it is to make real economic progress as no doubt it will, then many engineers will be required, and specialized training must be started years ahead of actual requirements, if the country is to be self sufficient in man power.

Our intention in this University therefore is to keep undergraduate numbers small, and provide as many facilities as possible for men in small groups to take post-graduate or Special Honours Courses in special engineering or scientific subjects. Among these would be for example Building and Structural Engineering, Public Health Engineering, Irrigation and Food Production, Agricultural Engineering, Refrigeration Engineering. By such means we should build up specialized Departments with a research outlook, and the closer the integration with Research Institutes the better it will be. We shall exchange facilities of research and teaching. I am hoping that the Building Research Institute will become shortly a fully recognized Institution of this University.

Roorkee, already very important in the engineering world, is well on the way to becoming a centre for engineering training and research. We are in an ideal area for example for developing specialist research in Agricultural Engineering and Soil Conservation and for Public Health Engineering.

It must, however, be emphasized that in general provision of training facilities and research in such subjects can be undertaken only on an all-India basis; also, since the number of men to be so trained must of necessity be small such specializations will have to be selective to a particular University. This is done in other countries.

The Roorkee College, as it was often called, produced engineers who are now found in key positions all over India, and I firmly believe that particularly as far as advanced engineering studies are concerned, there is an important part to be played in the technological development of this country by this University.

We need encouragement and positive help from the Central Government in this respect, which I hope will bear in mind that Roorkee is becoming a very important centre, and is well worthy of practical assistance for the development of training in technology and the applied sciences. In the early days of the University the trend of development should, I am sure, be to facilitate and foster to the maximum possible extent the economic opening up of the country and improvement of standards of living. In this rural aspects and communications are of the greatest importance. The evolution of efficient and cheap building techniques in India and their proper application will be a common platform for the Institute and the University.

The Building Research Institute has many vital problems to tackle for India. Research undertaken elsewhere generally has as its primary object the local conditions, and we are well aware that India has its own special problems owing to its extreme climatic ranges, not only of materials and construction, but also of cost and expendiency. It seems to me that we might be well advised here, at first, to rely upon others for many of the straight-forward structural problems, and concentrate on work which will improve the conditions and amenities of the common man. I have no doubt that the Director, Dr. J. N. Mukherjee and his staff have this very much in mind.

Aspects which spring to my mind are for example :

(1) Cheap and efficient village housing, particularly roofing ;
(2) Use of indigenous materials ; and

(3) Inexpensive comfort cooling.

There is a great deal of work to be done and this Research Institute has a part to play for the future of India, no less important than the chain of other research stations in India.

I see something of the work of the Council, due to my membership of the Engineering Research Board and other bodies, including the Building Research Committee, and am fully appreciative of the great work being done by Dr. S. S. Bhatnagar, and the Secretary of the Council, Mr. Bahadur and their staff.

We in the University, particularly welcome the appointment of that distinguished scientist Dr. J. N. Mukherjee as the first Director of Building Research Institute and we wish his efforts all success.

Also we would wish that the new Ministry of Natural Resources and Scientific Research, may prosper and flourish and that its first Minister the Hon'ble Shri Sri Prakasa, may have a very fruitful and happy term of office.

Finally once again, on behalf of the University of Roorkee, I offer my sincere good wishes for the growth and development of this Central Building Research Institute; may its Director and staff meet with all success in their efforts, to enable it to play its full part for India and for Science and Engineering.

Speech by

Dr. J. N. Mukherjee

Director, Central Building Research Institute, Roorkee

LADIES & GENTLEMEN,

It is a source of great pride and joy to us all in Roorkee that our Prime Minister Shri Jawaharlal Nehru and yourself have been able to find time to come here today on the occasion of the laying of the foundation stone of the Central Building Research Institute. It is no exaggeration to say that scientific workers in India owe the deepest debt of gratitude to our Prime Minister for having made the promotion of science one of his most earnest concerns. Under his inspiring guidance as Chairman of the Planning Committee of the Indian National Congress the first steps were taken in India for an overall survey of the possible applications of science for the betterment of the conditions of living of our countrymen. With the creation of the Ministry of Natural Resources and Scientific Research, science has secured official recognition in a manner which is unique and we greet you, Sir, as the first Minister to take charge of it.

The Central Building Research Institute is the latest link in the chain of National Laboratories of the Council of Scientific & Industrial Research which has been brought into existence through the untiring zeal of my friend Dr. S. S. Bhatnagar under the fostering care of our Prime Minister who is also the President of the Council.

The development of science, technology and industries based on them have created new and complex demands in the field of building construction and has also given us the knowledge and materials for meeting them. Diverse types of construction are required for the functional efficiency, comfort and recreation of man and for his industry and commerce. It has been realized in recent years that planned scientific research is essential for the effective solution of the many problems which arise. Building Research Institutes have, therefore, been established in Australia, Canada, South Africa and the United Kingdom and especial facilities for building research exist in many other countries such as the U.S.A. and France. For constructional purposes we in India have so far drawn on the knowledge and experience of these countries and it is time for the establishment of a National Institute which will afford facilities for research on diverse types of construction and on building materials, and help the creation of a body of men within our country with specialized knowledge in this field.

The scope of a Building Research Institute is not restricted merely to the study and improvement of materials used for constructional purposes. There are also "problems of site and soil, of design and specification of materials according to physical and functional requirements of buildings and of building practice and technique in the assembly of materials on the spot chosen for the building." Its activities thus comprehend not only all engineering and structural aspects of buildings and the suitability and use of building materials but also subjects such as the effect of mechanisation and prefabrication on the technique of the construction of buildings. Of especial interest to us are factors which govern comfort and efficiency under dry or humid tropical conditions, the study of soil stabilization, the use of indigenous materials and the construction of houses on an extensive scale for persons of low income groups.

Moreover, its programme of work is not restricted only to technological aspects. Relevant basic scientific studies have also to be undertaken. The Institute will carry out surveys and disseminate scientific and technical information on building research through an organised information service. It will keep in touch with the problems of the building industry and with the government departments, scientists, engineers and technologists whose help will be fruitful.

As a preliminary step towards the establishment of this Institute the Council of Scientific & Industrial Research established a Building Research Unit at Roorkee with the support of the Hon'ble Shri Govind Ballabh Pant, the Chief Minister of the Uttar Pradesh, to work in close liaison with the Thomason College of Engineering (now the University of Roorkee). The University has also very generously provided for the Institute this plot of ten acres where we have assembled this afternoon. It has one special advantage in that more land adjacent to it is available for the work of the Institute and for residential accommodation which is essentially needed. I take this opportunity of expressing my appreciation for all the support my colleagues and myself have received from the University authorities especially from Dr. Hart its first Vice-Chancellor. The Council has lately purchased from the Defence Ministry a S.W.P. hangar having floor space of about 3,500 square yards and

the engineering division and the workshops of the Institute will be housed in it. The University has also very generously agreed to transfer on a long lease to the Council the land on which the hangar stands. The Council of Scientific and Industrial Research have made a provision of Rs. 16 lakhs for capital expenditure for the Institute to be spread over a period of three years and for an annual recurring expenditure of Rs. 4.5 lakhs. A revised plan for the Institute has recently been prepared. It is expected that the work of construction of the Institute will be taken up shortly.

Vast numbers of our people live under unsatisfactory conditions of housing, and our housing requirements are of colossal dimensions. There is a great shortage of common building materials and the cost of and demand on labour and materials are rapidly increasing. Speedier, economical and improved methods of construction have become an urgent necessity. Even a small per cent reduction in the cost and increase in the speed of construction will result in enormous total savings and effect visible improvements in the living conditions of our countrymen. During the short time of its existence the Building Research Unit has done some useful work in this field. Commendable efforts are being made for housing low income groups of people in several states for example, in the Punjab, Hyderabad and Mysore. It is hoped that the Institute will be able to contribute materially towards the solution of these and other problems.

The first step, however, it seems to me, is to build up the scientific knowledge and technological experience of the men working in this Institute in order that they may undertake the solution of the problems of the industry with assurance and success.

I desire to express my highest appreciation of the help I have received from the University of Roorkee, the officials and engineers of the Uttar Pradesh Government in Roorkee, the Commandant of the Bengal Sappers, the student volunteers, the National Emporium, the Municipal Board, and the staff of the Council of Scientific and Industrial Research and the Central Building Research Institute for the contributions they have made towards the success of this function.

In conclusion, I would thank all our distinguished guests including the citizens of Roorkee who have graced this assembly with their presence wh)d wishes for the success of the Central Building Research Institute.

CENTRAL BUILDING RESEARCH INSTITUTE, INDIA

THE foundation stone of the last of the series of eleven national laboratories being set up by the Council of Scientific and Industrial Research of India was laid at Roorkee by the Hon. Mr. Sri Prakasa, Minister for Natural Resources and Scientific Research, on February 10. Roorkee has long been well known as an engineering centre. The Thomason Civil Engineering College at Roorkee was a pioneer institution in India, and last year it became the University of Roorkee; now it is accommodating the new Research Institute until such time as the Institute's own building is ready.

Building research was originally conceived as one of the nine divisions of the National Physical Laboratory recently set up at Delhi; but the prevailing acute housing shortage has heavily underlined the importance of building research, and quite justifiably it has been decided that building research should have a national laboratory to itself, in accordance with the recommendations made by a Building Research Committee at the end of 1943. A Building Research Unit set up in May 1947 is at present working with a skeleton staff in two hangars loaned for the purpose by the University. The Unit has been carrying on useful investigations into soil stabilization and has already obtained important results on the treatment of lime sludges from sugar factories, on cheap houses and on various problems connected with brick-making. It has also published a few brochures on low-cost housing and village housing.

For an institute devoted to building research, Roorkee was the obvious choice. A suitable 10-acre site on its eastern border has been leased by the University of Roorkee to the Council of Scientific and Industrial Research for housing the Institute. The Council has also purchased from the Defence Ministry an S.W.P. hangar (floor space about 3,500 sq. yards), and this is eventually to house the Institute's engineering division and its workshop.

The Board of Scientific and Industrial Research has made provision for a capital expenditure of Rs. 16 lakhs for the Institute, to be spread over a period of three years, and for an annual recurring expenditure of Rs. 4.25 lakhs.

The Institute will undertake research on building materials, on engineering and structural aspects of buildings and their foundations; on problems of comfort in buildings and their durability and the speed of construction. Its activities will naturally include basic research and fundamental studies, such as X-ray investigations and differential thermal analysis of clays and their electro-chemical and rheological properties, strains and stresses in structures and comfort in buildings. It will afford facilities for training men for diverse types of construction and help in the creation of a body of trained men in India.

The functions of the Institute include: (1) examination of building materials in common use and the methods of applying them with the view of economy and improvements; (2) examination of new materials and processes evolved at the Institute and elsewhere; (3) scientific diagnosis of the causes of failures in materials themselves or in their application; (4) dissemination of useful information and fostering the growth of a scientific spirit and outlook in the building industry in India; (5) preparation of standards of materials and codes of practices for various aspects of building construction.

From a slightly different point of view, the subjects of research may be grouped into three main categories: (i) efficiency of buildings, which includes problems like heating, lighting and ventilation; (ii) properties of materials used in buildings, such as cement, plaster, bricks; and (iii) structure and strength of materials.

Dr. J. N. Mukherjee, a distinguished soil chemist, hitherto working with the Indian Council of Agricultural Research, has been appointed director of the new Institute.

Pandit Jawaharlal Nehru, addressing a large gathering on the occasion of the laying of the foundation stone, said that housing is one of the most pressing problems of India. Millions of houses are needed and it would be futile to expect the Government to construct them. "The resources of the Government may be limited, but the resources of the people should never be limited." He disapproved of the attitude of those who looked towards the Government for "parental" help in everything; "the British Government might have acted in this way, but with the achievement of independence people must learn to be self-reliant". Pandit Nehru stressed that manual work must not be looked down upon. He expressed the desire that by the time he visited Roorkee next the students would have constructed some building with their own hands. He added he had seen such things done in the United States and had been impressed by them.

Sir Shanti Swarup Bhatnagar, director of Scientific and Industrial Research, Government of India, said that the eleven national laboratories are only the first stage, and that some further laboratories were already under active consideration. In particular, funds have been provided by industry for a silk and rayon research centre. A national laboratory for electronics and another for atomic energy are also needed.

Laying the foundation stone, the Hon. Mr. Sri Prakasa remarked that in India great attention has been paid in the past to houses for gods, and it is time now to attend to comfortable housing of the common man. Mr. Hart, vice-chancellor of the University of Roorkee, and Dr. Mukherjee, director of the Institute, also gave addresses.

Jubilees

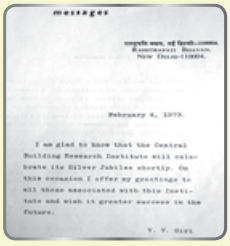
Silver Jubilee Year Celebrations

Buildings account for a large proportion of our expenditure on development. Research on materials and methods of construction can make a distinct contribution to economy in costs, fuller utilisation of locally available resources, improvement of conditions of living and the physical appearance of our landscape. It is with this objective that the Central Building Research Institute was established.

I am glad to know that the Institute has completed twenty-five years. My good wishes to the scientists and others belonging to the Institute.

Indira Gandhi

New Delhi,
January 30, 1975



messages

February 4, 1975.

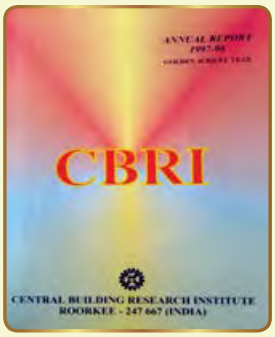
I am glad to know that the Central Building Research Institute will celebrate its Silver Jubilee shortly. On this occasion I offer my greetings to all those associated with this Institute and wish it greater success in the future.

V. V. Giri

Messages from the President & Prime Minister of India

Distinguished guests at the inaugural function

Golden Jubilee Year Celebrations



Jubilees

Diamond Jubilee Year Celebrations

Dignitaries Lighting the Inaugural Lamp on Diamond Jubilee Year Conference

Release of Conference Proceedings on "Landslide Management – Present Scenario & Future Directions"

Platinum Jubilee Year Celebrations (February 10, 2021)

Shri M. Venkaiah Naidu,
Vice President of India
delivering speech

सत्यमेव जयते

SHRI M. VENKAIAH NAIDU
VICE PRESIDENT OF INDIA

"Sisters and brothers,

It is indeed my pleasure to connect with you virtually to inaugurate the Platinum Jubilee Foundation Day celebrations of Central Building Research Institute (CBRI). Started as a 'Building Research Unit' during 1947, CBRI is one of the 37 national laboratories of the prestigious Council of Scientific and Industrial Research (CSIR). I am happy to note that CSIR and CBRI have been greatly contributing to nation building over the decades. I also convey my deep appreciation to the scientists of this institute, for having taken the responsibility of constructing five COVID hospitals in Himachal Pradesh, in a record time. I am also happy to have inaugurated today the makeshift hospitals at Nalagarh and Tanda, Himachal Pradesh, the Platinum Jubilee Pseudo Dynamic Laboratory and the Centre for Excellence in Cultural Heritage at CSIR-CBRI.

The idea of our home evokes a warm feeling in our hearts. Wherever we are and whoever we may become, at the end of the day, it is an amazing feeling to go back to the place we call home. Over the course of human history, people might have progressed from simple mud walled huts to sophisticated skyscrapers, but the emotion remains the same. What has changed of course, in the recent decades, is the criticality of real estate to our economy. Real estate market size in India is expected to reach 1 trillion US Dollar by 2030. It will contribute to nearly 13 percent of the country's GDP by 2025. Housing and construction propels many ancillary sectors and is one of the largest employers in the country- both in the organised and unorganised sectors. The sector's importance- both to the common man and to the macro-economy is bound to grow in the coming years.

With this kind of rapid growth, environmental and energy concerns in the housing sector have taken the center stage. With significant economic growth and a burgeoning middle class over the years, dream of owning a home is not just of the few anymore. It is our Address by Shri M. Venkaiah Naidu, Honourable Vice President at the virtual inauguration of the Platinum Jubilee Foundation Day of Central Building Research Institute (CSIR-CBRI), in New Delhi on February 10, 2021. paramount responsibility to provide affordable housing to an average Indian household. In this regard, the Central government's focus on housing is also clearly evident from the various schemes - Pradhan Mantri Awas Yojana, AMRUT, HRIDAY, aimed at improving the ease of living. We need to further build on this momentum to fulfil the lasting dream of a home for every citizen.

Sisters and brothers,

While we aim to achieve this dream, we have to ask ourselves the following questions:

We have mastered the art of construction, but is it available for all?

What type of buildings we want to envision for our future generations?

What kind of space do we want to live and work in?

We need to ponder over these questions and the related issues. Today, I would try to look into the issue of buildings along three dimensions: equity, quality and sustainability.

The first is equity. With increasing urbanisation and migration from rural areas, our cities are struggling to find sufficient space to accommodate all its residents in a reasonable way. This has led to overcrowding, shortage of dwelling units and high rents. When a family lives in a crammed locality with hardly any ventilation or sunlight reaching the homes, it naturally affects their wellbeing. Our living space certainly leaves an impact on our physical and mental health. The recent COVID-19 pandemic has proved this. It has

highlighted the need for creating living places with ample ventilation and natural light. I suggest that authorities look into the feasibility of making adequate light and air circulation a norm for approval of any building plan.

In a populous country like ours, housing for all is, no doubt, a daunting task. Also, the house we aim to build has to be not only affordable, but also good on aesthetics, safety and durability. For this, we need to take full advantage of latest technological advancements in this area such as

prefabricated buildings, factory made housing and precast stone blocks. I am told that institutes like CBRI have been leading from the front and I call upon you to push further to scale up the application of these technologies. Our aim should be to create 'happy living and working spaces' in cities where individuals, whatever their economic background, are able to deliver their full potential.

The government has been proactive in creating the right ecosystem for the real-estate sector to thrive in India. The progressive RERA Act protects the rights of home buyers at the same time boosting the investments in the real-estate industry.

There is a huge housing shortage in rural areas too. The Government has launched the ambitious PMAY (Gramin) with an aim to provide a pucca house to all, by 2022.

I have time and again reiterated the vision of Shri APJ Abdul Kalam and Shri Atal Bihari Vajpayee who called for providing urban amenities in rural areas. If we can provide good connectivity, employment opportunities and proper housing in villages, we can contain rural-urban migration and reduce the pressure on cities. There is a huge demand in rural areas for improved housing and amenities and the private sector should step up to utilize this opportunity.

The second pertinent issue is - quality. Given that we spend most of our lifetime inside built structures, we have to think about the quality of spaces we are making. Aesthetics are important but it should not take precedence over utility.

Our country is prone to multiple hazards and disaster resilient designs and construction practices must be the norm in all buildings. I have been told that CBRI has been playing an important role in improving Disaster Mitigation in buildings, including Fire Engineering. I appreciate this and would like the CBRI to do research on incorporating resilience in mass housing too.

Finally, we have to address the issue of sustainability. With increasing urbanisation, 60 percent of our population is expected to live in cities by 2060. With 39% of energy related CO2 emissions in the world, buildings are already a major contributor of greenhouse gases. That is why there is an urgent need to make 'green buildings' a new normal by creating awareness about this concept among the people.

Building materials are another area of concern. We do not have an infinite supply of traditional construction materials like brick, wood, cement, steel and sand. Furthermore, their production is often energy intensive. So, it is high time that we revisit our roots and learn from the traditional practices followed by our ancestors. I urge the architects to promote nature friendly homes by increasing the use of locally available materials or 'green materials'. "Reduce, reuse and recycle" should be the mantra and civil engineers should be able to gainfully utilise the by-products of other industries such as fly ash from power plants.

Dear Sisters and brothers,

Along with the principles of equity, quality and sustainability, we need to take a relook at the technology we employ in construction. The construction technologies employed in the country are still largely labour and material intensive and this often leads to time and cost overruns. Institutes like CBRI must lead the way in latest technological advancements in the field of construction such as 3-D printed housing, pre-fabricated housing and net zero energy buildings.

Another area that needs impetus is the skill-development of our masons and construction workers. Our workforce should be well-trained to adopt modern construction techniques in the fast changing scenario. Unskilled manpower in this sector must become skilled manpower.

Dear sisters and brothers,

I have been told about the various efforts of CBRI including your contribution to programmes such as 'Navodya Vidyalaya Schools' and 'Indira Awas Yojana'. I appreciate that your Institute played a pivotal role in reconstruction of earthquake damaged schools & hospitals in Nepal. I once again congratulate CSIR-CBRI for developing technology for construction of lightweight transit hospital structures to support the Government in tackling COVID-19.

I wish your Institute will continue to be at the forefront of the housing revolution in India and work for our shared dream of 'Housing for All'.

My best wishes to all your future endeavours.

Thank You. Jai Hind!"

Address by Shri M. Venkaiah Naidu, Honourable Vice President at the virtual inauguration of the Platinum Jubilee Foundation Day of Central Building Research Institute (CSIR-CBRI), in New Delhi on February 10, 2021.

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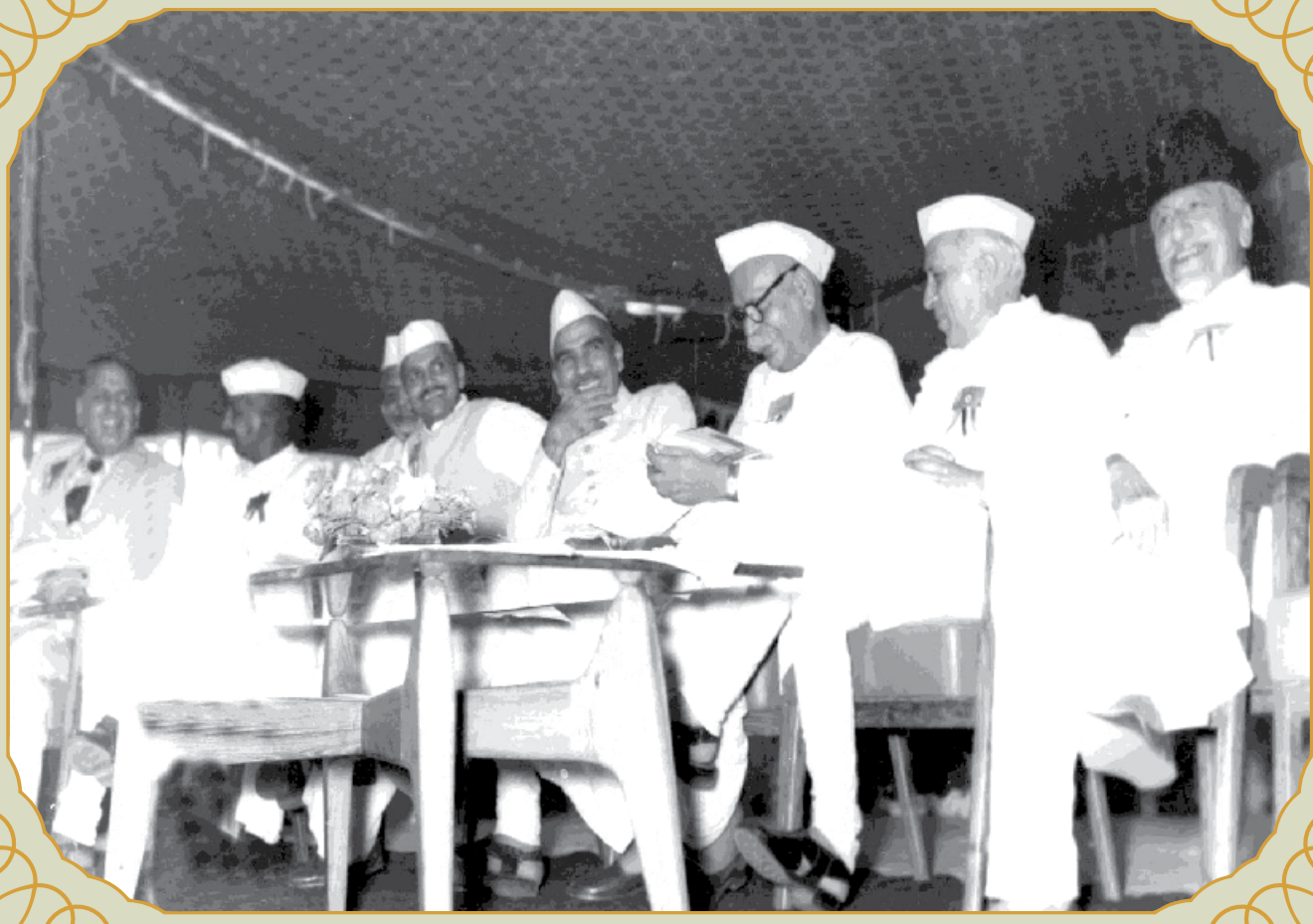
A MURAL OF MR. M. F. HUSSAIN (signed in 1959) FIXED ON INNER WALL OF THE ENTRANCE FOYER OF THE MAIN BUILDING

CSIR-Central Building Research Institute, Roorkee



LUMINARIES ON DIAS DURING OPENING CEREMONY OF CSIR-CBRI BUILDING (APRIL 12,1953)

CSIR-Central Building Research Institute
Roorkee - 247667