Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, **NAAC** Accreditated Institute,ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- Date:-

1.3.3 Number of the student studied course on experimental learning through Project Work / Internship

Programme Name: Civil Engineering
Programme Code: 1-1408968331

Year of offering: 2019-2020

Sr. No.	Name of the Course that include experiential learning through project work/field work/internship	Course code	Number of the student studied course on experiential learning through project work/field work/internship
1.	Building Construction and Drawing	CV213	69
2.	Engineering Geology	CV215	
3.	Water Supply Engineering	CV221	
4.	Environmental Engineering-I	CV313	72
5.	Water resources Engineering-II	CV314	
6.	Environmental Engineering-II	CV323	
7.	Mini Project in SM-III/GE-II/EE-II/EMII using Application Software	CV328	
8.	Assessment of field training report	CV329	
9.	Project Work	CV417	76
10.	Assessment of Report on Field Training-II	CV418	
11.	Project Work	CV426	

B. Range
PRINCIPAL,
College of Engineering
PANDHARPUR

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College of Engineering, Pandharpur
Civil Engineering Department

Project

Class: BE (Civil)

A.Y.: 2019-2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUBE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

Department of Civil Engineering

Project work-I, Assessment of report on field training-II, Project work-II

BE Project Groups

Class: BE **Academic Year 2019-20**

Sr. No.	Group No.	NAME OF STUDENT	Project Title	NAME OF GUIDE
1	BE-1	/DESHMUKH SNEHA SHIVAJIRAO	Strainthning of black cotton soil using different additive.	PROF. P. D. TARALGATTI
2		/KATE PRANITA ANAND		
3		/PAWAR MRUNAL MADHUKAR		
4		/POLAS POOJA PRUSHOTTAM		
5		/MASAL AISHWARYA NILKANTH		
6		/SHINDE PRIYADARSHANI RAVINDRA		
7	BE-2	/BHISE KIRAN KISAN	Simulation and analysis of dispersion of brine water from a desalination plant	PROF. Y. B. PATEL
8		/DAHIHANDE JYOTI GAURISHANKAR		
9		/DESHMUKH SUSHAMA MAHADEV		
10		/SARTAPE PRANALI RAJENDRA		
11		/PUJARI PRIYANKA TUKARAM		
12	BE-3	/JAGTAP PRAGATI MITHU	Experimental Investigation on concrete by using Zama Bricks as a partial replacement of course aggregate in concrete	PROF. S. P. PATIL
13		/KAMBLE ASHWINI ARVIND		
14		/KUMBHAR ANJALI GANPAT		
15		/PAWALE SHRADDHA RAJENDRA		
16		/SARVAGOD PRACHI JITENDRA		
17		/SHIKHARE SADHANA NAGNATH		
18	BE-4	/BHOSALE KAJAL BHARAT	Design of flexible pavement by using west plastics, flag and rap.	PROF. C. R. LIMKAR
19		/PAREKAR MRUNALI BIRUDEV		
20		/RONGE POOJA BABRUVAHAN		
21		/WAGHMODE PRAJAKTA SOPAN		
22		/ZENDE PRIYA BRAMHADEO		
23	BE-5	/CHIKMANE ANKITA ANIL	The Strength analysis of bubbled beams	PROF. S. A. GOSAVI
24		/PATIL RUTUJA NAGESH		
25		/DHUMAL HARSHADA PANDURANG		
26		/TEKE MADHURI KISHOR		
27	BE-6	BHARTI SHRINIVAS VISHNU	Design and analysis of continues reinforced concrete pavement using RAP.	PROF. R. S. SATHE
28		GORE SUDHIR PARMESHWAR		
29		GURAV SANKET SHRIRANG		
30		SAWANT GAURAV VITTHAL		
31		SAWANT SHAILESH SHASHIKANT		
32	BE-7	KADAM SHUBHAM SUNIL	Ultrasonic pulse velocity performance analysis for various loading condition.	PROF A. B. KOKARE
33		BABAR GANESH SHANKAR		
34		KALE VAIBHAV VASANT		
35	BE-8	MULANI MOIN LATIF	Houses on Floating Bottles	PROF. S.R. PATHAN
36		WAGHAMODE ANANDA BALASAHEB		
37		GADASE AKASH SURESHRAO		
38	BE-9	GAIKWAD PRASHANT MANIK	Effect of Geometric Irregularities on RCC multi-storey framed structures.	PROF. M.S. SURVASE
39		MULE AVINASH SITARAM		
40		NARSALE SUHAS JAYHIND		
41		SHINDE GANESH MADAN		
42		SHAIKH SHOAIB SALIM		
43	BE-10	GORE KRISHNA DEVIDAS	Characterization of Quality control of concrete	PROF. S.P. PATIL
44		JADHAV VAIBHAV DEVIDAS		
45		MALI PRATHAMESH KRISHANA		
46		PAWAR SAURABH BABAN		
47		PUJARI HANAMANT SHRISHAIL		
48		SOUDAGAR PRASAD SHIVAJI		

HEAD,
Dept. of Civil. Engg.
C.O.E. Pandharpur

Sr. No.	Group No.	NAME OF STUDENT	Project Title	NAME OF GUIDE
49	BE-11	GAIKWAD KAPIL VIJAY	Design and analysis of continues reinforced concrete pavement using RAP.	PROF. S. D. JAGDALE
50		LONDHE AVINASH RAJENDRA		
51		GAIKWAD PAWAN A		
52		PAWAR SWAPNIL JIBENDRA		
53		SHINDE SUSHANT RAMASH		
54	BE-12	MANE SHITAL	An experimental Study on Black Cotton Soil Treated with GGBS and Renolith	PROF. M.G. DESHMUKH
55		/DONGARE SHUBHANGI KANHOBARAO		
56		/THORAT AISHWARAYA ANAND		
57		/VIBHUTE JYOTI ASHOK		
58	BE-13	SARVADE AKASH PANDURANG	waste water treatment using moringa seed powder	Dr. V.S. KSHIRSAGAR
59		PUJARI PRAKASH RAJKUMAR		
60		GADADE ABASAHEB DADASO		
61		GODASE SANDIP SUKHADEO		
62	BE-14	GUNDRE RAMDAS SANJIV	Numerical study on strenghtning of composit bridges.	Prof. P. B. Bhaganagare
63		KULKARNI SHUBHAM RAJENDRA		
64		PATIL PRASAD MANIKRAO		
65		Kadam Sagar		
66		Kapil Jagtap		
67		Bandgar Shubham		
68	BE-15	GADAVE AJINKYA	Application of Remote Sensing and Geographical Information System for Environmental Management	Dr. R.S. PAWAR
69		MANE AMIT		
70		KIRAN SANGLE		
71		SANKET UBALE		
72		MAHESH MUTYAL		
73	BE-16	GAWADE AJAY SANTOSH	Design of public transit system for cities in India.	PROF. C.R. LIMKAR
74		HONMANE SAGAR SIDDHESHWAR		
75		KADAM VIRAJ MARUTI		
76		KANGUDE YOGESH BALKRISHNA		
77		ATKALE AKASH SHASHIKANT		

(S.A. GOSAVI)
Project Co-ordinator

(Dr. P.M. Pawar)
H.O.D. Civil Dept.

HEAD
Dept. of Civil. Engg.
C.O.E. Pandharpur

SVERI

Engineering for Excellence

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Strengthening of Black Cotton Soil using different additives"

has been submitted by

Project Group No.:- 01

1) /Deshmukh Sneha S
2) /Kate Pranita A
3) /Pawar Mrunal M
4) /Polas Pooja P
5) /Masal Aishwarya N
6) /Shinde Priyadarshani R

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. P D Taralgatti)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

SVERI

Engineering for Excellence

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Simulation and analysis of dispersion of brine water from a desalination plant"

has been submitted by

Project Group No.:- 2

1) /BHISE KIRAN KISAN
2) /DAHIHANDE JYOTI G
3) /DESHMUKH SUSHAMA M
4) /SARTAPE PRANALI R
5) /PUJARI PRIYANKA T

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

Patel

(Prof. Y B Patel)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Experimental Investigation on concrete by using Zama Bricks as a partial replacement of course aggregate in concrete"

has been submitted by

Project Group No.:- 03

1) /JAGTAP PRAGATI M
2) /KAMBLE ASHWINI A
3) /KUMBHAR ANJALI G
4) /PAWALE SHRADDHA R
5) /SARVAGOD PRACHI J
6) /SHIKHARE SADHANA N

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

Patil

(Prof. /S P Patil)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Design of flexible pavement by using waste plastics, fly-ash and RAP"

has been submitted by

Project Group No.:- 04

1) /Bhosale Kajal B
2) /Parekar Mrunali B
3) /Ronge Pooja B
4) /Waghmare Prajakta S
5) /Zende Priya B

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. C R Limkar)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"The Strength analysis of bubbled beams"

has been submitted by

Project Group No.:- 05

1) /CHIKMANE ANKITA A
2) /PATIL RUTUJA N
3) /DHUMAL HARSHADA P
4) /TEKE MADHURI K

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. S A Gosavi)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"Design and analysis of continues reinforced concrete pavement using RAP"

has been submitted by

Project Group No.:- 06

1) BHARTI SHRINIVAS V
2) GORE SUDHIR P
3) GURAV SANKET S
4) SAWANT GAURAV V
5) SAWANT SHAILESH S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. R S Sathe)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"Ultrasonic pulse velocity performance analysis for various loading condition"

has been submitted by

Project Group No.:- 07

1) KADAM SHUBHAM S
2) BABAR GANESH S
3) KALE VAIBHAV V

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. A B Kokare)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"Houses on Floating Bottles"

has been submitted by

Project Group No.:- 08

1) MULANI MOIN LATIF
2) WAGHAMODE ANANDA B
3) GADASE AKASH S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

Saddam

(Prof. S R Pathan)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Effect of Geometric Irregularities on RCC multi-storey framed structures"

has been submitted by

Project Group No.:- 09

1) GAIKWAD PRASHANT M
2) MULE AVINASH S
3) NARSALE SUHAS J
4) SHINDE GANESH M
5) SHAIKH SHOAIB S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. M S Survase)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled
"Characterization of Quality control of concrete"
has been submitted by

Project Group No.:- 10

1) GORE KRISHNA D
2) GORE KRISHNA D
3) MALI PRATHAMESH K
4) PAWAR SAURABH B
5) PUJARI HANAMANT S
6) SOUDAGAR PRASAD S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. / S P Patil)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"Design and analysis of continues reinforced concrete pavement using RAP"

has been submitted by

Project Group No.:- 11

1) GAIKWAD KAPIL V
2) LONDHE AVINASH R
3) GAIKWAD PAWAN A
4) PAWAR SWAPNIL J
5) SHINDE SUSHANT R

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. S D Jagdale)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled

"An experimental Study on Black Cotton Soil Treated with GGBS and Renolith"

has been submitted by

Project Group No.:- 12

1) MANE SHITAL
2) /DONGARE SHUBHANGI K
3) /THORAT AISHWARAYA A
4) /VIBHUTE JYOTI A

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. M G Deshmukh)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled
"waste water treatment using moringa seed powder"
has been submitted by

Project Group No.:- 13

1) SARVADE AKASH P
2) PUJARI PRAKASH R
3) GADADE ABASAHEB D
4) GODASE SANDIP S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. Dr. V S Kshirsagar)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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CERTIFICATE

This is to certify that the dissertation entitled
"Numerical study on strengthening of composite bridges"
has been submitted by

Project Group No.:- 14

1) GUNDRE RAMDAS S
2) KULKARNI SHUBHAM R
3) PATIL PRASAD M
4) KADAM SAGAR
5) JAGTAP KAPIL
6) BANDGAR SHUBHAM

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

PBB
(Prof. P B Bhaganagare)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge
(Prof. Dr. B. P. Ronge)
Principal

SVERI

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SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled

"Application of Remote Sensing and Geographical Information System for Environmental Management"

has been submitted by

Project Group No.:- 15

1) GADAVE AJINKYA
2) MANE AMIT
3) KIRAN SANGLE
4) SANKET UBALE
5) MAHESH MUTYAL

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. Dr. R S Pawar)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge

(Prof. Dr. B. P. Ronge)
Principal

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SVERI's COLLEGE OF ENGINEERING, PANDHARPUR.

CERTIFICATE

This is to certify that the dissertation entitled
"Use of waste polystyrene as a partial replacement for fine aggregate in concrete"
has been submitted by

Project Group No.:- 16

1) Gawade Ajay S
2) Honmane Sagar S
3) Kadam Viraj M
4) Kangude Yogesh B
5) Atkale Akash S

For partial fulfillment of Bachelor Degree in Civil Engineering as per curriculum laid by the Punyashlok Ahilyadevi Holkar Solapur University, Solapur during the academic year 2019-2020.

(Prof. C R Limkar)
Project Guide

(Prof. Dr. P M Pawar)
Head, Civil Engg.

B-Ronge
(Prof. Dr. B. P. Ronge)
Principal

SVERI's
College of Engineering, Pandharpur

Civil Engineering Department

Mini Projects

Class: TE (Civil)

A.Y.: 2019-2020

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COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District:** Solapur (Maharashtra)
Tel.: 7755990201 **Toll Free No.:** 1800-3000-4131 **e-mail.:** coe@sveri.ac.in **Website.:** www.sveri.ac.in
(Approved by A I C T E , New Delhi and Affiliated to Solapur University, Solapur)
Accreditated by The Indian institution of Engineers (India), Kolkata and TCS, Pune.
NAAC Accreditated Institute. **NBA** Accredited All UG Programmes.
ISO 9001:2008 Certified Institute.

Department of Civil Engineering

Date: 06/01/2020

Notice

As per Punyashlok Ahilyadevi Holkar Solapur University's curriculum of TY (Civil), a Mini Project task is assigned to all the TY (Civil) students. In the view of this engg surveys are to be conducted on 09th & 10th Jan 2020. The details of the tasks are as follow:

Sr. No.	Name of Village	Title of Mini Project	Groups of the students	Name of Guides and Coordinator
1	Gopalpur	Survey for Design of Sewerage system for Gopalpur Village	Roll No. T1- Roll No. T12	Prof. Taralgatti P D, Prof. Londhe S N Prof. Bhaganagare P B
2	Gopalpur	Survey for Design of Water supply system for Gopalpur Village	Roll No. T13- Roll No. T25	Prof. Kokare A B, Prof. Sathe R S, Prof. Patil S S
3	Anawali	Survey for Design of Sewerage system for Anawali Village	Roll No. T26- Roll No. T40	Prof. Surwase S S, Prof. Pawar R S Prof. Pathan S R
4	Anawali	Survey for Design of Water supply system for Anawali Village	Roll No. T41- Roll No. T56	Prof. Limkar C R, Prof. Deshmukh M G, Prof. Basavraj M
5	Anawali	Survey for Watershed Management of Anawali Village	Roll No. T57- Roll No. T72	Prof. Jagdale S D, Prof. Pawar H R, Prof. Patel Y B

All the concerned students and faculty members are hereby informed to take the note of the same and act accordingly.

Prof. S A Gosavi
Project Coordinator

Dr. P M Pawar
HOD

SHRI VITHAL EDUCATION & RETEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

Department of Civil Engineering

List of Students for Mini Project

Class- TE(Civil) **Academic Year: 2019-20**

Sr. No.	Group No.	NAME OF STUDENT	Project Title	Name of Guides & Coordinators
1	TE-1	PAWAR PRAVIN RAGHUNATHRAO	Survey for Design of Sewerage system for Gopalpur Village	Prof. Taralgatti P D (Coordinator), Prof. Londhe S N Prof. Bhaganagare P B
2		PADOLE DIGAMBAR CHANDRAHARSHA		
3		SHIVPUJE SURAJ SUNIL		
4		TARANGE VIJAYKUMAR SHAM		
5		SHINDE SHUBHAM HARI		
6		PUJARI PRAFULL PRASHANT		
7		SHAIKH AMIR SHILAVAR		
8		SURWATE AJINKYA ANAND		
9		RAUT HARSHAD DATTATRAY		
10		RONGE KAPIL BHIMRAO		
11		GHODAKE SACHIN SHIVAJI		
12		MULLA SAQIB SAJID		
13	TE-2	MAHESH CHABUKSWAR	Survey for Design of Water supply system for Gopalpur Village	Prof. Kokare A B (Coordinator), Prof. Sathe R S, Prof. Patil S S
14		Rohit Lengare		
15		/PAWAR RUTUJA BHASKAR		
16		/PARTE KAVITA BHIMA		
17		/VAYADANDE MANISHA BHAUSAHEB		
18		/LAWATE AHILYABAI MOHAN		
19		/MADANE GEETANJALI DATTA		
20		/DESHMUKH PRANJALI SATISH		
21		/GADADE AMRUTA AUDUMBAR		
22		/KEMKAR SAYALI VISHWANATH		
23		/KECHE ANJALI DATTATRAY		
24		/JADHAV ASMITA SANJAY		
25		JADHAV AJIT ANNA		
26	TE-3	JAYKAR SAJAN ANIL	Survey for Design of Sewerage system for Anawali Village	Prof. Surwase S S (Coordinator), Prof. Pawar R S Prof. Pathan S R
27		BADGUDE ROHIT RAMESH		
28		CHATE DNYANESHWAR DINKAR		
29		KAMBLE MANTHAN LAXMAN		
30		BANSODE LAXMAN PANDURANG		
31		/LANGOTE SHWETA ASHOK		
32		/BENARE SHIVANI VIVEK		
33		/CHAVAN ROHINI RAMCHANDRA		
34		/NAGTILAK PRANALI KAMLAKAR		
35		/PRATIKSHA PARBHAT		
36		/BODAKE SANJIVANI SAMBHAJI		
37		/JADHAVAR AISHWARYA DINKAR		
38		/KAMBLE DNYANESHWARI KRUSHNA		
39		/PRANALI SWAMI		
40		DOLLE SANTOSH ISHWAR		
41	TE-4	GANGA SHIVANAND BASAVRAJ		
42		GORE AMIT SAJJAN		
43		Nitin Sawant		
44		GURAV SATYAJEET BHARATRAO		
45		SUSHANT SHINDE		

Sr. No.	Group No.	NAME OF STUDENT	Project Title	NAME OF GUIDE
46	TE-4	AAFAQ AHMED	Survey for Design of Water supply system for Anawali Village	Prof. Limkar C R (Coordinator), Prof. Deshmukh M G, Prof. Basavraj M
47		ATKALE PRAMOD PRADHAN		
48		MORE SATYAWAN TUKARAM		
49		KALE PRAMOD BIRUDEV		
50		BABAR SWAPNIL BALASAHEB		
51		BHARATI MAHESH PANDURANG		
52		BHOSALE PRAVIN BHARAT		
53		NAGANE RANJEET RAOSAHEB		
54		TARAPURKAR ANIKET VISHWAS		
55		VITEKARI SHUBHAM R		
56		URADE VIJAY JAMBUVANT		
57	TE-5	BURADE ASHISH PRAMOD	Survey for Watershed Management of Anawali Village	Prof. Jagdale S D (Coordinator), Prof. Pawar H R, Prof. Patel Y B
58		BHOSALE ABHAYRAJE RAMESH		
59		BORAMANIKAR AKASH MADHUKAR		
60		CHAVAN MALHARI BHAGWAN		
61		KALBHOR JAGDISH PANDURANG		
62		LAKHOLE SAURABH DINKAR		
63		PAWAR AVINASH VISHNU		
64		SADDALGI SAMARTH SHIVKUMAR		
65		SAVANT PRATIK ANILKUMAR		
66		WAGHMARE VIKRAMSHEEL SUNIL		
67		PAWAR SUBHAS SUKHDEV		
68		/GAIKWAD MAYURI PRATAP		
69		/MALAVE AMRUTA NAGESH		
70		/SARODE PRAJAKTA BABASAHEB		
71		/WAGHMARE ROHINI HANUMANT		
72		/KHUNE POOJA BALASAHEB		

(S.A. GOSAVI)
Project Co-ordinato

(Dr. P.M. Pawar)
H.O.D. Civil Dept.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District:** Solapur (Maharashtra)
Tel.: 7755990201 **Toll Free No.:** 1800-3000-4131 **e-mail.:** coe@sveri.ac.in **Website.:** www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
Accreditated by The Indian Institution of Engineers (India), Kolkata and TCS, Pune.
NAAC Accreditated Institute, **NBA** Accredited All UG Programmes,
ISO 9001:2008 Certified Institute.

Ref No: COEPR/CIVIL/2019-20/

Department of Civil Engineering

Date: 02/01/2020

To,
The Sarpanch,
Gopalpur Grampanchayat
Gopalpur,
Tal: Pandharpur

Subject: Getting permission for the Surveying in Gopalpur Village.

Dear Sir/Madam,

Shri. Vithal Education and Research Institute's College of Engineering, Pandharpur was established in the year 1998 by a group of qualified and experienced Technocrats. Since its inception, the college has been maintaining very high standard of results in the university and is well known for its unique culture and disciplined overall development of the students. All the UG Courses of the college have been accredited by NBA.

As a part of Punyashlok Ahilyadevi Holkar Solapur University's TY(Civil) curriculum we would like to conduct the survey in your village for the design of Sewerage system and water supply system on 09th & 10th Jan 2020. This survey will be very useful at time of execution of water supply or drainage system work in your village.

So you are requested to permit our TY(Civil) students to perform the survey work.

Thanking you,

Yours faithfully,

Dr. P M Pawar
HOD

SVERI
Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
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NAAC Accreditated Institute, **NBA** Accredited All UG Programmes.
ISO 9001:2008 Certified Institute.

Ref No: COEPR/CIVIL/2019-20/

Department of Civil Engineering

Date: 10/01/2020

To,
The Sarpanch,
Gopalpur Grampanchayat
Gopalpur,
Tal: Pandharpur

Subject:- Thanks Letter with immense pleasure.

Dear Sir/Madam,

This is to express our heartfelt gratitude towards you for permitting and supporting our students for performing the surveying work in your village. We will provide you the details of the surveying work for your future help.

Your kind support and helping nature will always keep us inspiring and motivated.

I request the same kind of co-operation in future also.

Thanking you,

Yours faithfully,

Dr. P M Pawar
HOD

SVERI
Engineering for Excellence

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
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NAAC Accreditated Institute. **NBA** Accredited All UG Programmes.
ISO 9001:2008 Certified Institute.

Ref No: COEPR/CIVIL/2019-20

Department of Civil Engineering

Date: 02/01/2020

To,
The Sarpanch,
Anawali Grampanchayat
Anawali,
Tal: Pandharpur

Subject: Getting permission for the Surveying in Anawali Village.

Dear Sir/Madam,

Shri. Vithal Education and Research Institute's College of Engineering, Pandharpur was established in the year 1998 by a group of qualified and experienced Technocrats. Since its inception, the college has been maintaining very high standard of results in the university and is well known for its unique culture and disciplined overall development of the students. All the UG Courses of the college have been accredited by NBA.

As a part of Punyashlok Ahilyadevi Holkar Solapur University's TY(Civil) we would like to conduct the survey in your village for the design of Sewerage system and water supply system and Watershed Management on 09th & 10th Jan 2020. This survey will be very useful at time of execution of water supply or drainage system work in your village.

So you are requested to permit our TY (Civil) students to perform the survey work.

Thanking you,

Yours faithfully,

Dr. P M Pawar
HOD

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Engineering for Excellence

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District:** Solapur (Maharashtra)
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NAAC Accreditated Institute, **NBA** Accredited All UG Programmes
ISO 9001:2008 Certified Institute

Ref No: COEPR/CIVIL/2019-20/

Department of Civil Engineering

Date: 10/01/2020

To,

The Sarpanch,

Anawali Grampanchayat

Gopalpur,

Tal: Pandharpur

Subject:- Thanks Letter with immense pleasure.

Dear Sir/Madam,

This is to express our heartfelt gratitude towards you for permitting and supporting our students for performing the surveying work in your village. We will provide you the details of the surveying work for your future help.

Your kind support and helping nature will always keep us inspiring and motivated.

I request the same kind of co-operation in future also.

Thanking you,

Yours faithfully,

Dr. P M Pawar

HOD

SVERI's
College of Engineering, Pandharpur

Civil Engineering Department

Industrial Visit

Class: BE-(Civil)

A.Y.: 2019-2020

SVERI
Engineering for Excellence

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, **Toll Free No.:** 1800-3000-4131 **e-mail.:** coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, **NAAC** Accreditated Institute,ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- COEPR/CIVIL/2019-20/338 Date:- 23/02/202

To,
The General Manager(human resourse),
Maha Metro Rail Corporation Ltd,
Pune.

Subject: Permission to Visit Metro work, Pune

Respected sir,

As per curriculum of Punyashlok Ahilyadevi Holkar Solapur University, students of BE civil class are interested to visit Metro work, Pune to study Method of execution , design and construction processes of Metro.

So I kindly request you to permit us for this technical visit and spare one technical person to give information.
Your help in this regard is highly appreciated.

Thanking you in anticipation.

Date of visit:- 03/03/2020

BE student:-45

No of faculty members:-04

Waiting for your reply.

Thanking You,

Yours faithfully,

Dr. P M Pawar
(HOD Civil & Dean Academics)

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

Department of Civil Engineering

SVERI

Academic Year 2019-20 BE-II

Date:- 27-12-2019

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	
1	/BHISE KIRAN KISAN		39	GORE SUDHIR PARMESHWAR	
2	/BHOSALE KAJAL BHARAT		40	GURAV SANKET SHRIRANG	
3	/CHIKMANE ANKITA ANIL		41	HONMANE SAGAR SIDDHESHWAR	
4	/DAHIHANDE JYOTI GAURISHANKAR		42	JADHAV VAIBHAV DEVIDAS	
5	/DESHMUKH SNEHA SHIVAJIRAO		43	KADAM SHUBHAM SUNIL	
6	/DESHMUKH SUSHAMA MAHADEV		44	KADAM VIRAJ MARUTI	
7	/DHUMAL HARSHADA PANDURANG		45	KALE VAIBHAV VASANT	
8	/KAMBLE ASHWINI ARVIND		46	KANGUDE YOGESH BALKRISHNA	
9	/KATE PRANITA ANAND		47	LONDHE AVINASH RAJENDRA	
10	/KUMBHAR ANJALI GANPAT		48	MALI PRATHAMESH KRISHANA	
11	/MASAL AISHWARYA NILKHANT		49	MULANI MOIN LATIF	
12	/PAREKAR MRUNALI BIRUDEV		50	MULE AVINASH SITARAM	
13	/PATIL RUTUJA NAGESH		51	NARSALE SUHAS JAYHIND	
14	/PAWALE SHRADDHA RAJENDRA		52	PAWAR SAURABH BABAN	
15	/PAWAR MRUNAL MADHUKAR		53	PAWAR SWAPNIL JITENDRA	
16	/POLAS POOJA PRUSHOTTAM		54	PUJARI HANAMANT SHRISHAIL	
17	/PUJARI PRIYANKA TUKARAM		55	SAWANT GAURAV VITTHAL	
18	/RONGE POOJA BABRUVAHAN		56	SAWANT SHAILESH SHASHIKANT	
19	/SARVAGOD PRACHI JITENDRA		57	SHAIKH SHOAIB SALIM	
20	/SHIKHARE SADHANA NAGNATH		58	SHINDE GANESH MADAN	
21	/SHINDE PRIYADARSHANI RAVINDRA		59	SOUDAGAR PRASAD SHIVAJI	
22	/TEKE MADHURI KISHOR		60	WAGHAMODE ANANDA BALASAHEB	
23	/WAGHMODE PRAJAKTA SOPAN		61	Sarvade Akash Pandurang	
24	/ZENDE PRIYA BRAMHADEO		62	PUJARI PRAKASH RAJKUMAR	
25	/JAGTAP PRAGATI MITU		63	GADADE ABASAHEB DADASO	
26	/DONGARE SHUBHANGI KANHOBARAO		64	GODASE SANDIP SUKHADEO	
27	/ THORAT AISHWARYA ANAND		65	GUNDRE RAMDAS SANJIV	
28	/SARTAPE PRANALI RAJENDRA		66	KULKARNI SHUBHAM RAJENDRA	
29	/VIBHUTE JYOTI ASHOK		67	PATIL PRASAD MANIKRAO	
30	/ Mane Shital Kerappa		68	SANGALE KIRAN	
31	BABAR GANESH SHANKAR		69	GAIKWAD PAWAN ANAND	
32	ATKALE AKASH SHASHIKANT		70	UBALE SANKET	
33	BHARTI SHRINIVAS VISHNU		71	GADAVE AJINKYA VIJAY	
34	Gadase Akash Sureshrao		72	MANE AMIT LAXMAN	
35	GAIKWAD KAPIL VIJAY		73	Mutyal Mahesh	
36	GAIKWAD PRASHANT MANIK		74	JAGTAP KAPIL	
37	GAWADE AJAY SANTOSH		75	Kadam Sagar Tatyyasaheb	
38	Gore Krishna Devidas		76	BANDGAR SHUBHAM SHIVAJI	

B1- 1 to 30 **B2- 31 to 53** **B3 - 54 to 76**

(Prof. S. R. Pathan)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

HEAD,
Dept. of Civil. Engg.
C.O.E. Pandharpur

SCHEDULE OF INDUSTRIAL VISIT

Day 0 (03/03/2020) 01.00 AM: Pandharpur- Pune (211 KM)

Day 1 (03/03/2020): at Pune –Bitumen plant (5KM), Metro work (5KM)

Day 2 (04/03/2020):at Mabaleshwer -Building site visit, Rajapuri cave

Day 3 (05/03/2020):at sindhudurg – Sindhudurg port and Rock garden.departure towards Pandharpur.

Class-co-coordinator

Date: 27/02/2020

To,

The Principal/Dean Students,

SVERI's CoE Pandharpur.

Subject: Permission for Industrial Visit of BE Civil.

Respected Sir,

As per curriculum laid down by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for BE Civil (Part II), the subject of Transportation Engg , Traffic Engg and control and Design of concrete structure include visits. In the Processing of same we have sent letter related to Industrial spot. In view of this, we requested you to grant us the permission to arrange visit of BE Civil on 03/03/2020 to 05/03/2020.

Thanking You,

Saddam
Prof. S. R .Pathan
Class-co-coordinator

Saddam
Subject Teacher

Pawar
Dr.P.M.Pawar
HOD-Civil

- permitted for Industrial Visit
- [illegible] schedule 'A' attached
- Night travel be avoided.

2/3/2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE S
COLLEGE OF ENGINEERING

PANDHARPURGopalpur- RanjaniRoad, Gopalpur, P.B. No.54 Tal – Pandharpur – 413304 Dist – Solapur (Maharashtra) Ph :02186 325782 Fax : 02186 225082
(Approved by AICTE, New Delhi and MSBTE Mumbai)

Industrial Visit

BE Civil (2019-20)

Route: - Pandharpur – kholapur -Sindhudurg-Pandharpur (App.: 663Km)

Place: - Departure from Pandharpur

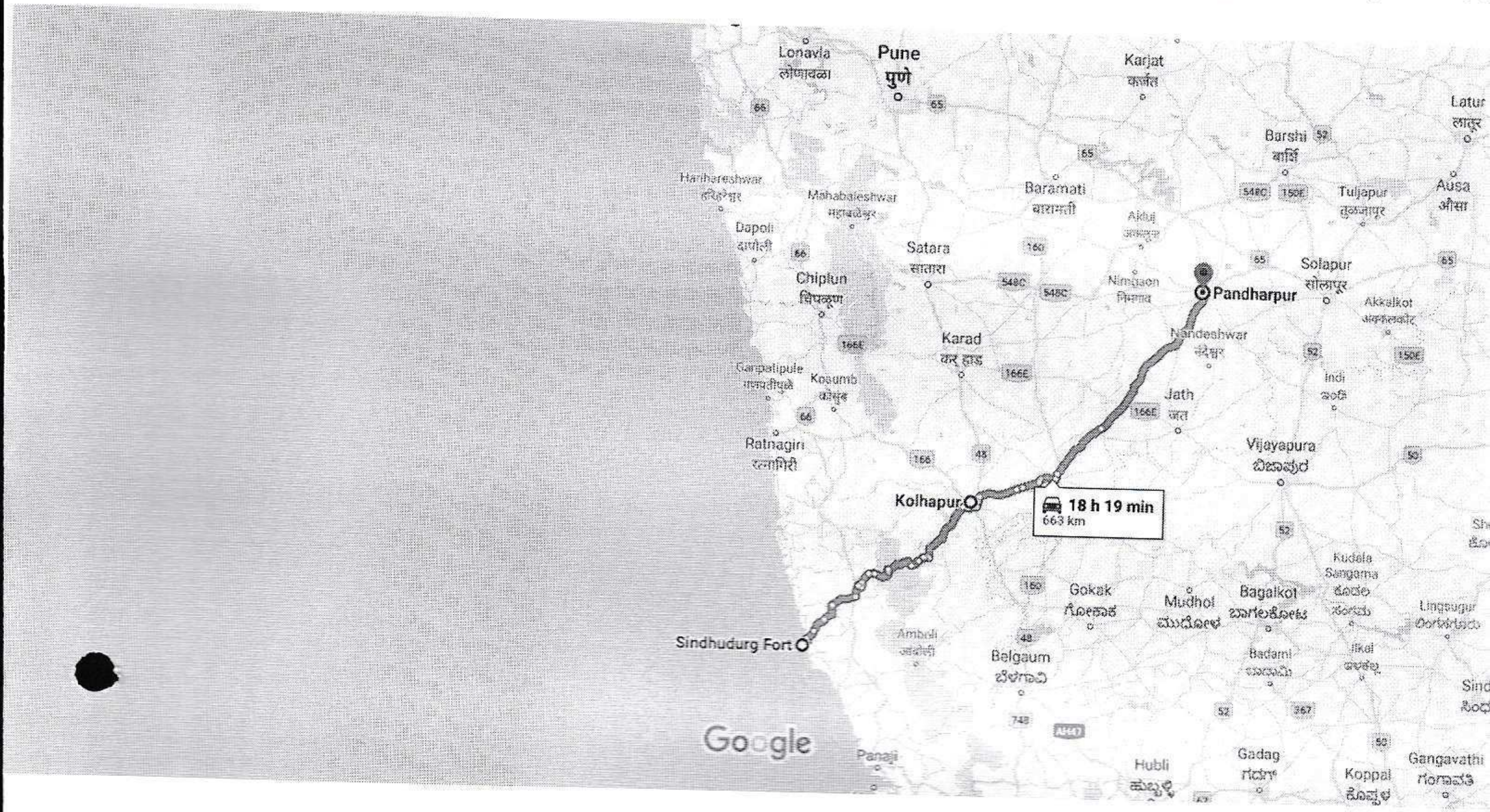
Day	Place to visit	Subject
03/03/2020	Departure from Pandharpur towards kholapur At 01:00AM. 9 Arrival at kholapur 6:00AM (179 Km) via sangali.	
1st Day 03/03/2020 2hrs for fresh and breakfast	Hault to **Radhanagari dam** 01:00PM Departure for lunch Departure towards **shahupalace ,rankala .**	**CPTP**
# Hault and dinner	Hault At kholapur	

Continue

2nd Day 04/03/2020	06:00am Departure towards **Sindudurge port** Departure for lunch at 1.00pm. Departure towards **Rock garden**	**1) Structure of port and its necessity.** **2)Study of rock masonry structure**
#Hault and Dinner	departure towards Hault.	CPTP and GEOLOGY
3rd Day 05/03/2020	Departure toward Ancient temple,market. departure towards Pandharpur at 1.00PM 10.00 PM arrival time.	**1) Structure of Ancient structure and its necessity.** SWHM

HoD Civil

Google Maps Pandharpur, Maharashtra 413304 to Pandharpur, Maharashtra 413304 Drive 663 km, 18 h 19



Map data ©2020 50 km

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR

Department of Civil Engineering

Academic Year 2019-20 BE-II

Date:- 28-02-2020

Intersted student list for Industrial visit Schedule from 3-3-2020 to 5-3-20

Roll No.	NAME OF STUDENT	Sign	Roll No.	NAME OF STUDENT	
1	/BHISE KIRAN KISAN	Kiran	39	GORE SUDHIR PARMESHWAR	
2	/BHOSALE KAJAL BHARAT	Kajal	40	GURAV SANKET SHRIRANG	
3	/CHIKMANE ANKITA ANIL	AAC.	41	HONMANE SAGAR SIDDHESHWAR	
4	/DAHIHANDE JYOTI GAURISHANKAR	JyotiG.	42	JADHAV VAIBHAV DEVIDAS	
5	/DESHMUKH SNEHA SHIVAJIRAO		43	KADAM SHUBHAM SUNIL	
6	/DESHMUKH SUSHAMA MAHADEV		44	KADAM VIRAJ MARUTI	
7	/DHUMAL HARSHADA PANDURANG	H.P.Dhumal	45	KALE VAIBHAV VASANT	
8	/KAMBLE ASHWINI ARVIND	KAA.	46	KANGUDE YOGESH BALKRISHNA	
9	/KATE PRANITA ANAND	KatePA	47	LONDHE AVINASH RAJENDRA	Londhe.
10	/KUMBHAR ANJALI GANPAT	Anjali	48	MALI PRATHAMESH KRISHANA	Mali
11	/MASAL AISHWARYA NILKHANT		49	MULANI MOIN LATIF	
12	/PAREKAR MRUNALI BIRUDEV		50	MULE AVINASH SITARAM	
13	/PATIL RUTUJA NAGESH	R.N.Patil	51	NARSALE SUHAS JAYHIND	
14	/PAWALE SHRADDHA RAJENDRA	Pawale	52	PAWAR SAURABH BABAN	
15	/PAWAR MRUNAL MADHUKAR	MMP.	53	PAWAR SWAPNIL JITENDRA	
16	/POLAS POOJA PRUSHOTTAM	PolasPP	54	PUJARI HANAMANT SHRISHAIL	
17	/PUJARI PRIYANKA TUKARAM	Pujari	55	SAWANT GAURAV VITTHAL	
18	/RONGE POOJA BABRUVAHAN	Ronge-	56	SAWANT SHAILESH SHASHIKANT	
19	/SARVAGOD PRACHI JITENDRA		57	SHAIKH SHOAIB SALIM	
20	/SHIKHARE SADHANA NAGNATH	Sadhana.	58	SHINDE GANESH MADAN	Shinde
21	/SHINDE PRIYADARSHANI RAVINDRA	Shinde	59	SOUDAGAR PRASAD SHIVAJI	Prasad S.
22	/TEKE MADHURI KISHOR	M.Teke	60	WAGHAMODE ANANDA BALASAHEB	
23	/WAGHMODE PRAJAKTA SOPAN		61	Sarvade Akash Pandurang	Akash
24	/ZENDE PRIYA BRAMHADEO	Zende	62	PUJARI PRAKASH RAJKUMAR	PPR
25	/JAGTAP PRAGATI MITU	Pragati	63	GADADE ABASAHEB DADASO	
26	/DONGARE SHUBHANGI KANHOBARAO		64	GODASE SANDIP SUKHADEO	
27	/ THORAT AISHWARYA ANAND		65	GUNDRE RAMDAS SANJIV	
28	/SARTAPE PRANALI RAJENDRA	Pranali.	66	KULKARNI SHUBHAM RAJENDRA	
29	/VIBHUTE JYOTI ASHOK		67	PATIL PRASAD MANIKRAO	
30	/ Mane Shital Kerappa		68	SANGALE KIRAN	
31	BABAR GANESH SHANKAR		69	GAIKWAD PAWAN ANAND	
32	ATKALE AKASH SHASHIKANT	Atkale	70	UBALE SANKET	
33	BHARTI SHRINIVAS VISHNU		71	GADAVE AJINKYA VIJAY	
34	Gadase Akash Sureshrao	G.A.S.	72	MANE AMIT LAXMAN	
35	GAIKWAD KAPIL VIJAY	Kapil	73	Mutyal Mahesh	
36	GAIKWAD PRASHANT MANIK		74	JAGTAP KAPIL	
37	GAWADE AJAY SANTOSH		75	Kadam Sagar Tatyyasaheb	
38	Gore Krishna Devidas		76	Bandegar shubham b.	Bandegar

48

Jadhav

(Prof. S.R. Pathan)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

SVERI
Engineering for Excellence
Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: 7755990201 **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in **Website.**: www.sveri.ac.in
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Accreditated by The Indian Institution of Engineers (India), Kolkata and TCS, Pune.
NAAC Accreditated Institute, **NBA** Accredited All UG Programmes,
ISO 9001:2008 Certified Institute.

Date:- 02/03/2020

Office Order

Following faculty members has deputed for Industrial visit from 03/03/2020 to 05/03/2020. So you are requested to act accordingly.

Sr. No.	Class	Name of Faculty	Sign
01	B.E.	Prof. C.R.Limkar	
02		Prof. S.R.Pathan	
03		Ms.C.R.Abhangrao	
04		Ms.T.S.Thite	

Thanking you.

Yours faithfully,

HOD CIVIL ENGG.

Date:- 03/03/2020

COEPR/CIVIL/2019-20/339

To,
Executive Engineer,
Radhanagari Dam,
Kolhapur

Subject: Permission to Visit Radhanagari Dam, Kolhapur.

Respected sir,
As per curriculum of Punyashlok Ahilyadevi Holkar Solapur University, students of BE civil class are interested to visit Radhanagari Dam, Kolhapur to study components of Dam,Hydro Power Project.
So I kindly request you to permit us for this technical visit and spare one technical person to give information.
Your help in this regard is highly appreciated.
Thanking you in anticipation.
Date of visit:- 03/03/2020
BE student:-48
No of faculty members:-04
Waiting for your reply.

Thanking You,

Yours faithfully,

(HOD Civil) (VSK)

SVERI’s
College of Engineering, Pandharpur
Civil Engineering Department

Industrial Visit

Class: TE (Civil)

A.Y.: 2019-2020

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

Department of Civil Engineering

Academic Year 2019-20 TE- I

Industrial Visit Students List

Payment Towards Industrial Visit of T.E.(CIVIL) Students For The Academic Year2019-2020. Visit date on 31/08/2019 to 03/09/201 9. Students 47 X 600 = 28200.

Sr.no	NAME OF STUDENT	Amount	Sign
1	BENARE SHIVANI VIVEK	600	
2	BODAKE SANJIVANI SAMBHAJI	600	
3	CHAVAN ROHINI RAMCHANDRA	600	
4	DESHMUKH PRANJALI SATISH	600	
5	GADADE AMRUTA AUDUMBAR	600	
6	GAIKWAD MAYURI PRATAP	600	
7	JADHAV ASMITA SANJAY	600	
8	KECHE ANJALI DATTATRAY	600	
9	KEMKAR SAYALI VISHWANATH	600	
10	Langote Shweta Ashok	600	
11	NAGTILAK PRANALI KAMLAKAR	600	
12	VAYADANDE MANISHA BHAUSAHEB	600	
13	MALAVE AMRUTA NAGESH	600	
14	SARODE PRAJAKTA BABASAHEB	600	
15	WAGHMARE ROHINI HANUMANT	600	
16	SWAMI PRANALI SHASHIKANT	600	
17	Parbat Pratiksha Prabhakar	600	
18	AAFAQ AHMED	600	
19	ATKALE PRAMOD PRADHAN	600	
20	BABAR SWAPNIL BALASAHEB	600	
21	BADGUDE ROHIT RAMESH	600	
22	BANSODE LAXMAN PANDURANG	600	
23	BHOSALE PRAVIN BHARAT	600	
24	BURADE ASHISH PRAMOD	600	
25	CHATE DNYANESHWAR DINKAR	600	
26	DOLLE SANTOSH ISHWAR	600	
27	SAWANT NITIN RAJA	600	
28	GANGA SHIVANAND BASAVRAJ	600	
29	JADHAV AJIT ANNA	600	
30	Kale Pramod Birudev	600	
31	More Satyawan Tukaram	600	
32	Shinde Sushant Ramesh	600	
33	PAWAR PRAVIN RAGHUNATHRAO	600	
34	PUJARI PRAFULL PRASHANT	600	
35	SHAIKH AMIR SHILAVAR	600	
36	SHINDE SHUBHAM HARI	600	
37	SHIVPUJE SURAJ SUNIL	600	
38	SURWASE AJINKYA ANAND	600	
39	VITEKARI SHUBHAM RAVINDRA	600	
40	URADE VIJAY JAMBUVANT	600	
41	CHAVAN MALHARI BHAGWAN	600	
42	KALBHOR JAGDISH PANDURANG	600	
43	PAWAR AVINASH VISHNU	600	
44	SADDALGI SAMARTH SHIVKUMAR	600	
45	SAVANT PRATIK ANILKUMAR	600	
46	Pawar Subhash Sukhadev	600	
47	Bhosale Abhayraje Ramesh	600	
	TOTAL=	28200	
	(Rs.Twenty Eight Thousand Two Hundred Only)		

Prof.S.M. Patil
Class Co-ordinate

Dr P.M.Pawar
HOD Civil Dept.

Mr. R G Zarkar
REGISTRAR

Dr B P Ronge
PRINCIPAL

Department Of Civil Engineering

Class: - TE Civil

Expenditure of industrial visit Academic Year 2019-20 SEM I

Sr. No	Particular	Amount
1.	Travelling	69750
2.	Toll	1600
3.	Hault	18240
4.	Parking	80
5.	Entry Fee	8725
6.	RTO State Crossing	18000+2800
7.	Driver Lunch,Breakfast ,Dinner	1728
	Total Amount	120923/-

Prof .S.M.PATIL

Class-co-Ordinator

Dr P M Pawar

HOD

Date: 26/8/2019

To,

The Principal/Dean Students,

SVERI's CoE Pandharpur.

Subject: Permission for Industrial Visit of TE Civil.

Respected Sir,

As per curriculum laid down by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for TE Civil (Part II), the subject of Geotechnical Engg I, Water Resource Engineering-II, Building Planning Design and Drawing include visits. In the Processing of same we have sent letter related to Industrial spot. In view of this, we requested you to grant us the permission to arrange visit of TE Civil on 31/8/2019 to 3/9/2019.

Thanking You,

Patil.
Prof. S M Patil
Class-co-ordinator

Prof.C R Limkar
Subject-Teacher

Prof A B Kokare
Subject-Teacher

Prof. P S Lachyan
Subject-Teacher

Dr. P M Pawar
HoD-Civil Engg.

permitted for industrial visit as per schedule 'A' & instructions 'B'.

27/8/19

SCHEDULE OF INDUSTRIAL VISIT

Day 0 (31/8/2019) 11.00 PM: Pandharpur- Hyderabad (410 KM)

Day 1 (1/8/2019): Birla Science Museum (3KM), Golconda Fort (10KM)

Day 2 (2/8/2019): Building site visit, Charminar and then Salar Jung Museum

Day 3 (3/8/2019): Nagarjuna Sagar Dam and then towards Pandharpur.

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Patil

Prof. S M Patil
Class-co-coordinator

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

Department of Civil Engineering

Academic Year 2019-20 TE- I

Date:- 26-08-2019

Industrial Visit

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	Sign.
T-1	/BENARE SHIVANI VIVEK		T-41	GURAV SATYAJEET BHARATRAO	
T-2	/BHOSALE KAJAL SANJAY		T-42	JADHAV AJIT ANNA	Jadhav
T-3	/BODAKE SANJIVANI SAMBHAJI		T-43	JAYKAR SAJAN ANIL X	
T-4	/CHAVAN ROHINI RAMCHANDRA		T-44	KALE PRAMOD BIRUDEV	
T-5	/DESHMUKH PRANJALI SATISH		T-45	KAMBLE MANTHAN LAXMAN	
T-6	/GADADE AMRUTA AUDUMBAR	A Gadade	T-46	MORE SATYAWAN TUKARAM	S.T More
T-7	/GAIKWAD MAYURI PRATAP	Gaikwad	T-47	MULLA SAQIB SAJID	
T-8	/GAIKWAD SRUSHTI JALINDAR		T-48	Shinde Sushant	Shinde
T-9	/JADHAV ASMITA SANJAY	Jadhav	T-49	CHABUKSWAR MAHESH	
T-10	/JADHAVAR AISHWARYA DINKAR		T-50	NAGANE RANJEET RAOSAHEB	
T-11	KAMBLE DNYANESHWARI KRUSHNA		T-51	PADOLE DIGAMBAR CHANDRASHARSHA	X
T-12	/KECHE ANJALI DATTATRAY	Kech	T-52	PAWAR PRAVIN RAGHUNATHRAO	
T-13	/KEMKAR SAYALI VISHWANATH		T-53	PUJARI PRAFULL PRASHANT	
T-14	/KHUNE POOJA BALASAHEB		T-54	RAUT HARSHAD DATTATRAY	
T-15	/LANGOTE SHWETA ASHOK X		T-55	RONGE KAPIL BHIMRAO	
T-16	/MADANE GEETANJALI DATTA		T-56	SHAIKH AMIR SHILAVAR	Shaikh
T-17	/NAGTILAK PRANALI KAMLAKAR		T-57	SHINDE SHUBHAM HARI	Shinde
T-18	/PARSE KAVITA BHIMA		T-58	SHIVPUJE SURAJ SUNIL	
T-19	/PAWAR RUTUJA BHASKAR		T-59	SURWASE AJINKYA ANAND	
T-20	/VAYADANDE MANISHA BHAUSAHEB		T-60	LARANGE VIJAYKUMAR SHAM	
T-21	/LAWATE AHILYABAI MOHAN		T-61	TARAPURKAR ANIKET VISHWAS	
T-22	/MALAVE AMRUTA NAGESH		T-62	GHODAKE SACHIN SHIVAJI	
T-23	/SARODE PRAJAKTA BABASAHEB		T-63	VITEKARI SHUBHAM RAVINDRA	
T-24	/WAGHMARE ROHINI HANUMANT		T-64	URADE VIJAY JAMBUVANT	Vijay
T-25	/SWAMI PRANALI SHASHIKANT		T-65	BHOSALE ABHAYRAJE RAMESH	
T-26	/Parbat Pratiksha		T-66	BORAMANIKAR AKASH MADHUKAR	
T-27	AAFAQ AHMED		T-67	CHAVAN MALHARI BHAGWAN	Malhari
T-28	ATKALE PRAMOD PRADHAN	Pramod	T-68	KALBHOR JAGDISH PANDURANG	
T-29	BABAR SWAPNIL BALASAHEB		T-69	LAKHOLE SAURABH DINKAR	
T-30	BADGUDE ROHIT RAMESH		T-70	PAWAR AVINASH VISHNU	
T-31	BANSODE LAXMAN PANDURANG		T-71	SADDALGI SAMARTH SHIVKUMAR	
T-32	BHARATI MAHESH PANDURANG X		T-72	SAVANT PRATIK ANILKUMAR	
T-33	BHOSALE PRAVIN BHARAT		T-73	WAGHMARE VIKRAMSHEEL SUNIL	
T-34	BURADE ASHISH PRAMOD	Burade	T-74	Pawar Subhash Sukhadev	
T-35	CHATE DNYANESHWAR DINKAR		T-75	Lengare Rohit	
T-36	DOLLE SANTOSH ISHWAR		T-76		
T-37	SAWANT NITIN	Sawant	T-77		
T-38	GANGA SHIVANAND BASAVRAJ		T-78		
T-39	GAVALI SAURABH ASHOK		T-79		
T-40	GORE AMIT SAJJAN		T-80		

T-1:- 01 to 19
T-2:- 20 to 38
T-3:- 39 to 57
T-4:- 57 to Onwards

Patil
(Prof. S. M. Patil)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: 7755990201 **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in **Website.**: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
Accreditated by The Indian Institution of Engineers (India), Kolkata and TCS, Pune.
NAAC Accreditated Institute, **NBA** Accredited All UG Programmes,
ISO 9001:2008 Certified Institute.
SVERI
Engineering for Excellence

Date:- 28/08/2019

Office Order

Following faculty members has deputed for Industrial visit from 31/08/2019 to 3/09/2019. So you are requested to act accordingly.

Sr. No.	Class	Name of Faculty	Sign
1.	T.E.	Prof. C.R.Limkar	
2.		Prof.S M Patil	
3.		Prof.A.B Kokare	
4.		Prof./P S Lachyan	

Thanking you.

Yours faithfully,

(Dr. P.M.Pawar)
HOD CIVIL ENGG.

Department of Civil Engineering

Academic Year 2019-20 TE- I

Date:- 26-08-2019

Industrial Visit

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	Sign.
T-1	/BENARE SHIVANI VIVEK	Shivani	T-41	GURAV SATYAJEET BHARATRAO	
T-2	/BHOSALE KAJAL SANJAY		T-42	JADHAV AJIT ANNA	Jadhav
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T-6	/GADADE AMRUTA AUDUMBAR	A. Gadade	T-46	MORE SATYAWAN TUKARAM	S.T. More
T-7	/GAIKWAD MAYURI PRATAP	Gaikwad	T-47	MULLA SAQIB SAJID	
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T-11	/KAMBLE DNYANESHWARI KRUSHNA		T-51	PADOLE DIGAMBAR CHANDRAHARSHA	
T-12	/KECHE ANJALI DATTATRAY		T-52	PAWAR PRAVIN RAGHUNATHRAO	
T-13	/KEMKAR SAYALI VISHWANATH	Sayali	T-53	PUJARI PRAFULL PRASHANT	
T-14	/KHUNE POOJA BALASAHEB		T-54	RAUT HARSHAD DATTATRAY	
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T-24	/WAGHMARE ROHINI HANUMANT		T-64	URADE VIJAY JAMBUVANT	Vijay
T-25	/SWAMI PRANALI SHASHIKANT		T-65	BHOSALE ABHAYRAJE RAMESH	
T-26	/Parbat Pratiksha		T-66	BORAMANIKAR AKASH [illegible]	
T-27	AAFAQ AHMED		T-67	CHAVAN MALHARI BHAGWAN	Malhari
T-28	ATKALE PRAMOD PRADHAN	Pramod	T-68	KALBHOR JAGDISH PANDURANG	
T-29	BABAR SWAPNIL BALASAHEB		T-69	LAKHOLE SAURABH DINKAR	
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SHRI VITHAL EDUCATION & RESEARCH INSTITUTE S
COLLEGE OF ENGINEERING

PANDHARPURGopalpur- RanjaniRoad, Gopalpur, P.B. No.54 Tal - Pandharpur - 413304 Dist - Solapur (Maharashtra) Ph :02186 325782 Fax : 02186 225082
(Approved by AICTE, New Delhi and MSBTE Mumbai)

Industrial Visit

TE Civil (2019-20)

Route: - Pandharpur – Solapur-Hyderabad –Solapur-Pandharpur (Appx: 1100Km)

Place: - Departure from Pandharpur

Day	Place to visit	Subject
31/08/2019	Departure from Pandharpur towards Hyderabad At 10:30PM. Arrival at Hyderabad 8:00AM (410 Km) via Bidar.	
1st Day 01/09/2019 2hrs for fresh and breakfast # Hault and dinner	08:00am – 10:00am Hault to Birla Science Museum(3KM) 01:00PM Departure for lunch Departure towards GolcondaFort (10KM) At 07:00PM departure towards Dinner from 08:00pm to 10:00pm Hault Youth Hostel,Secundarabad	WRE-II (Hydraulic structures). DOSS, Architectural planning of buildings. Acoustic structures

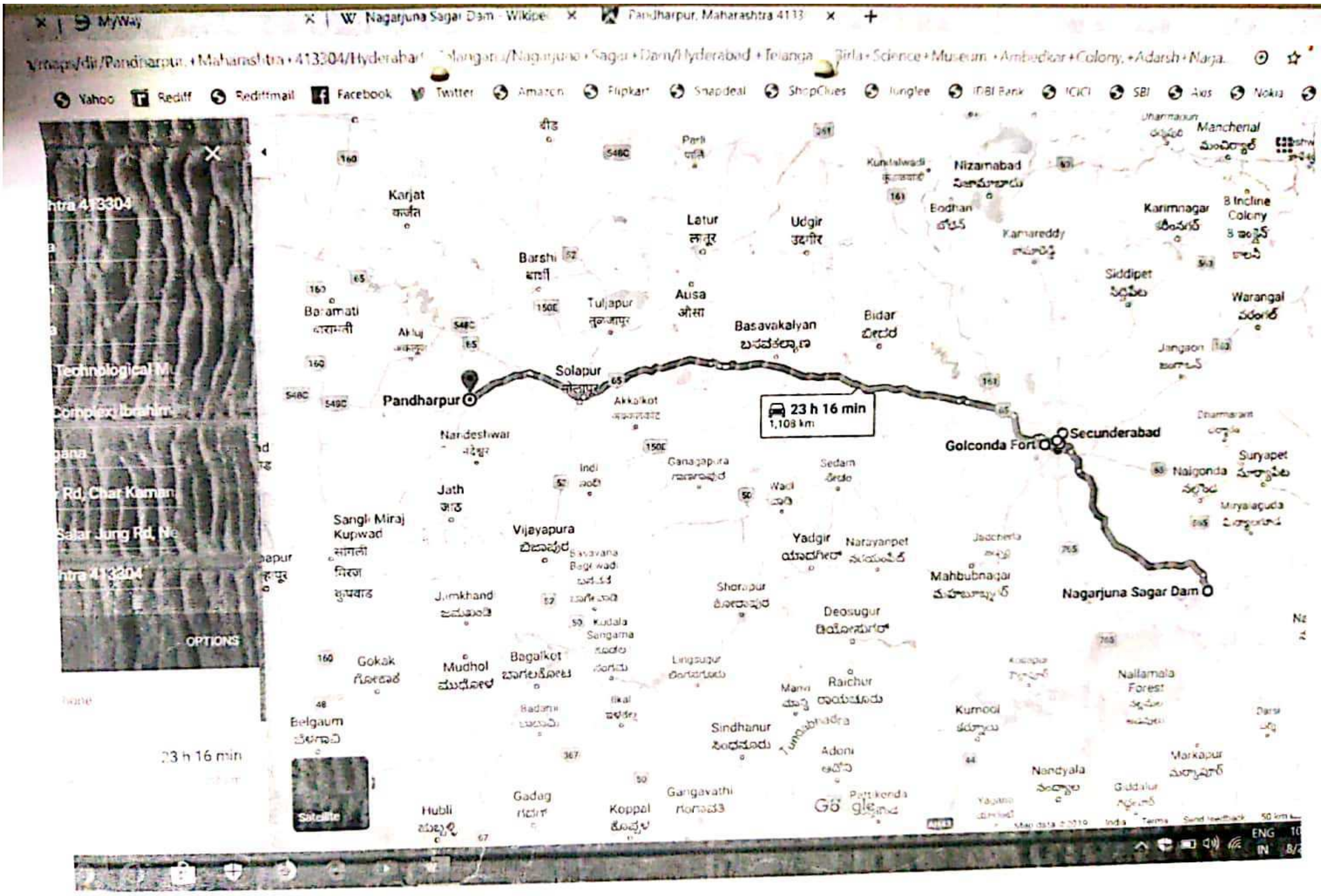
2nd Day 02/09/2019	09:00am Departure towards Building site visit Departure for lunch Departure towards Charminar and then Salar Jung Museum	BPDD
#Hault and Dinner	Hault Youth Hostel,Secundarabad	
3rd Day 03/09/2019	Departure towards Nagarjuna Sagar Dam ~~At 05:00pm~~ 9am departure towards Hyderabad at 2pm.	1) Structure of dam and its component parts. 2)Electricity generation Hydroelectric Power Plant
	Dinner from 08:00PM to 10:00PM departure towards Pandharpur 6.00 AM arrival time.	

A

- Night Journey be avoided ~~as possible~~ & if unavoidable, care be taken
- Special care be taken near Dam sites
- Return Journey must be started on 03/09/19 in such a way that all students & staff will reach pandharpur upto evening on same day.

B

27/8/19


MyWay
Nagarjuna Sagar Dam - Wikipe
Pandharpur, Maharashtra 4133
/maps/dir/Pandharpur,+Maharashtra+413304/Hyderabad+Telangana/Nagarjuna+Sagar+Dam/Hyderabad+Telangana/Birla+Science+Museum+Ambedkar+Colony,+Adarsh+Naga
Yahoo
Rediff
Rediffmail
Facebook
Twitter
Amazon
Flipkart
Snapdeal
ShopClues
Junglee
IDBI Bank
ICICI
SBI
Axis
Nokia
htra 413304
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Complex, Ibrahim
gana
Rd, Char Kaman
Salar Jung Rd, Ne
htra 413304
OPTIONS
23 h 16 min
23 h 16 min
1,108 km
Pandharpur
Solapur
Akkalkot
Basavakalyan
Bidar
Golconda Fort
Secunderabad
Nagarjuna Sagar Dam
Karjat
Baramati
Barshi
Tuljapur
Latur
Ausa
Udgir
Parli
Nizamabad
Bodhan
Kamareddy
Karimnagar
Siddipet
Warangal
Mancherial
Jangaon
Nalgonda
Suryapet
Miryalaguda
Nandeshwar
Jath
Sangli Miraj Kupwad
Vijayapura
Indi
Ganagapura
Sedam
Wadi
Yadgir
Narayanpet
Mahbubnagar
Jadcherla
Shorapur
Deosugur
Jamkhandi
Mudhol
Bagalkot
Gokak
Belgaum
Badami
Lingsugur
Manvi
Raichur
Sindhanur
Adoni
Kurnool
Nandyala
Markapur
Nallamala Forest
Gadag
Hubli
Koppal
Gangavathi
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P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, **NAAC** Accreditated Institute,ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- COEPR/CIVIL/2019-20/271 Date:- 28/8/2019

To,
Chief Engineer,
Nagarjuna Sagar Dam Circle,
Hill Colony, Nalconda
Hyderabad

Subject: Permission to Visit Nagarjuna Sagar Dam, Nalconda

Respected sir,
As per curriculum of Punyashlok Ahilyadevi Holkar Solapur University, students of TE civil class are interested to visit Nagarjuna Sagar Dam,Nalconda to study components of Dam,Hydro Power Project.
So I kindly request you to permit us for this technical visit and spare one technical person to give information.
Your help in this regard is highly appreciated.
Thanking you in anticipation.
Date of visit:- 03/09/2019
TE student:-45
No of faculty members:-05
Waiting for your reply.

Thanking You,

Yours faithfully,
Dr. P M Pawar
(HOD Civil & Dean Academics)

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

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ISO 9001-2000 Certified Institute & Accredited by Institutes of Engineers, India,
Gopalpur -Ranjani Road, Gopalpur, P.B. No. 54, Tal - Pandharpur- 413 304,
Dist. Solapur (Maharashtra) Ph.: (02186) 225083, Fax: (02186) 225082.
(NBA Accredited and NACC Accredited)
Approved by AICTE, New Delhi and affiliated to Solapur University, Solapur)
E-mail : coe@sveri.ac.in Website: www.sveri.ac.in

Date: 07/09/2019

To,
The Head Civil Engg.Dept
SVERI's COE Pandharpur.

Subject: T.E. Civil Industrial visit report of academic year 2019-2020 SEM-I.

Respected sir,

We have organized an industrial visit for the class T.E. Class From date. 31/8/2019 to 04/9/2019.Under this industrial visit we have made arrangement to give the practical expose to the students for the following points and ANNEXURE-I is attached with important photographs during visit,

1)Birla Science Museum : we have visited Birla Science Museum which is an Indian science museum located in Hyderabad, India. Constructed by civil engineer P. A. Singaravelu, it comprises a planetarium, museum, science centre, art gallery as well as a dinosaurium. The museum itself was the second phase of the science centre when it opened in 1990.

2) Nagarjun sagar Dam: We have visited Nagarjun sagar dam and students got practical approach of components of dam and Hydropower generation. Nagarjuna Sagar Dam is a masonry dam across the Krishna river at Nagarjuna Sagar which straddles the border between Nalgonda district, Telangana and Guntur district, Andhra Pradesh. Constructed between 1955 and 1967, the dam created a water reservoir with gross storage capacity of 11.472 billion cubic metres.and Height 124 metres (407 ft) from river level.

3) Golconda Fort : we have visited Golconda Fort Architectural and Acoustic wonder in Hyderabad. In the 16th century, Golkonda was the capital and fortress city of the QutbShahi kingdom, near Hyderabad. The city and fortress are built on a granite hill that is 120 meters (400 ft) high and is surrounded by massive crenelated ramparts.

Yours Sincerely

Mr.S.M.Patil
Class Coordinator

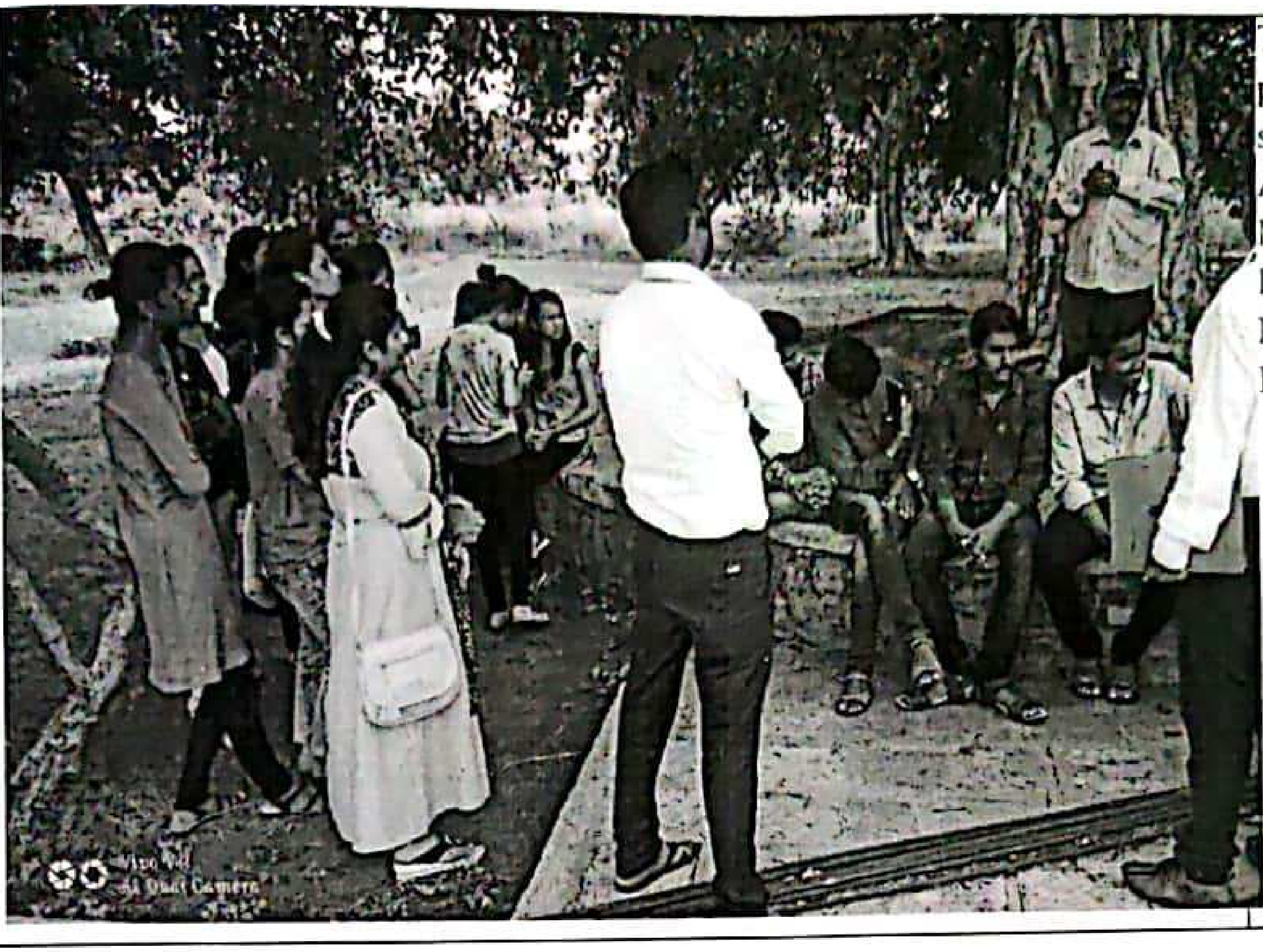
ANNEXURE-I

Important photographs during industrial visit and description.

The photograph shows Golconda Fort at Hyderabad, Telangana.

	The photograph shows Nagarjun Sagar Dam at Nalgonda Dist. <u>Telangana</u>

The photograph shows Hussain Sagar Lake at Hyderabad



The photograph shows Archeological Museum in I Land of Nagarjun Dam.

సాగర్‌లో మహారాష్ట్ర ఇంజనీరింగ్ విద్యార్థుల సందడి

నాగార్జునకొండ సింహళీయంలోని బుద్ధ విగ్రహం వద్ద విద్యార్థులు

నాగార్జునసాగర్ : మహారాష్ట్రలోని శ్రీవిఠల్ ఎడ్యుకేషన్ అండ్ రిసర్చ్ ఇనిస్టిట్యూషన్స్ ఇంజనీరింగ్ కాలేజ్ విద్యార్థులు అంతర్జాతీయ పర్యాటక కేంద్రమైన నాగార్జునసాగర్‌ను మంగళవారం సందర్శించారు. ఎడ్యుకేషన్ టూర్‌లో భాగంగా సాగర్‌డ్యాం నిర్మాణం, క్రస్ట్‌గేట్ల అమరికను పరిశీలించారు. ప్రాజెక్టు వివరాలను అడిగి తెలుసుకున్నారు. అనంతరం తెలంగాణ లాంచీలో నాగార్జునకొండకు వెళ్లారు. అక్కడ మ్యూజియంలోగల అలనాటి నాగరికత విశేషాలను తెలుసుకున్నారు. బుద్ధుడి విగ్రహాలు, శిలాశాసనాలు పరిశీలించారు. కొండపైగల సింహళీయం వద్దగల నిలువెత్తు బుద్ధుడి విగ్రహం వద్ద విద్యార్థులంతా ఫొటోలు దిగారు. వీరికి పర్యాటకశాఖ గైడ్ సత్యనారాయణ వివరాలను తెలియజేశారు. వీరివెంట అసిస్టెంట్ ప్రొఫెసర్లు చేతన్, స్మితపాటిల్ తదితరులు ఉన్నారు.

ల, సంప్రదాయాలు ప్రతిబింబి
నిర్వహించుకోవాలని కోరారు. ఎవి
రూపాల్‌రెడ్డి మాట్లాడుతూ ఘ
ఘనంగా నిర్వహించుకోవాలని.

పలువురికి ఎం

నల్లగొండ : జిల్లా పరిషత్ పరిధిలో పనిచేస్తున్న మండల పంచాయతీ అధికారులు, పర్యవేక్షకులకు పదోన్నతులు కల్పించారు. పంచాయతీ రాజ్ కమిషనర్ ఈ మేరకు వారికి పదోన్నతులు కల్పిస్తూ జాబితాను విడుదల చేశారు. జిల్లాలో 11 మందికి ఎంపీఓలుగా పదోన్నతులు కల్పించి జిల్లాలోనే పోస్టింగ్ ఇచ్చారు. ఒకరు హైదరాబాద్ నుంచి పదోన్నతిపై నల్లగొండకు రాగా, చండూరులో పనిచేస్తు నరేందర్ ఐటీడీఏ పోస్టల్ వి

ఇంజనీరింగ్ విద్యార్థుల సందర్శన

సాగర్ డ్యాం వద్ద ఇంజనీరింగ్ విద్యార్థులు

Our industrial visit at Nagarjuna sagar Dam is published in their daily newspaper.At Telangana.

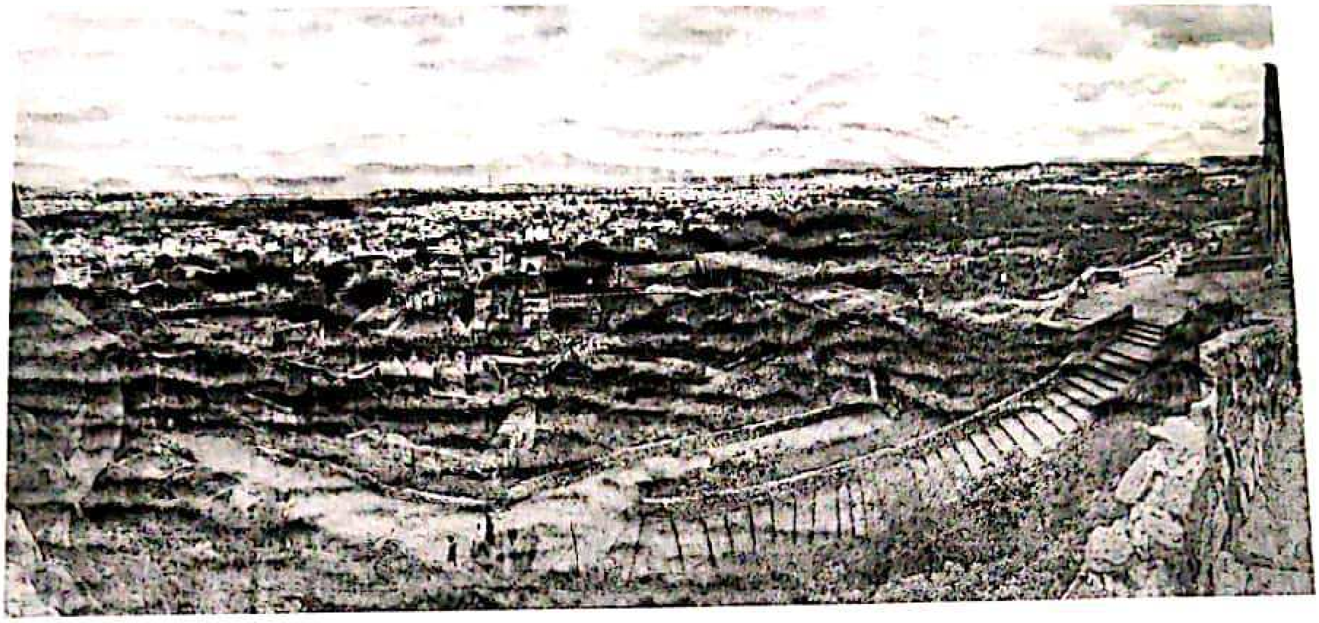
INDUSTRIAL VISIT

T.E CIVIL

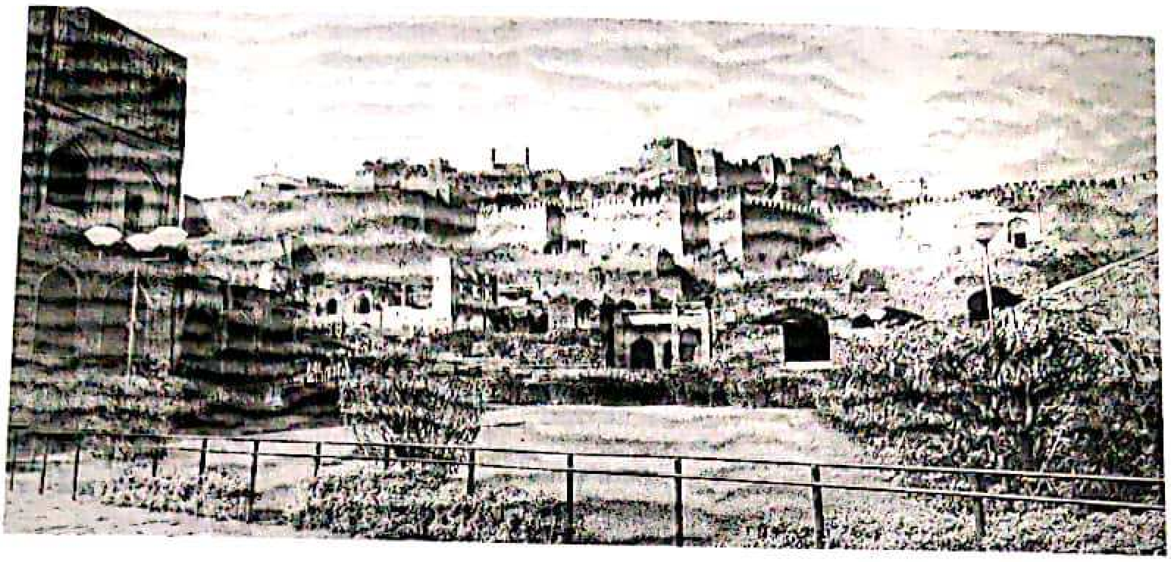
INDEX

- Pandharpur
- Birla Science Museum, Hyderabad
- Golconda Fort, Hyderabad
- Salar Jung Museum, Hyderabad
- Charminar
- Nagarjuna Sagar Dam
- Pandharpur

Golconda fort



Golconda Fort is a very large fort consisting of temples, mosques, palaces, halls, apartments and other structures. The fort is spread in around 11km area and has beautiful architecture. The fort is divided into four forts each having apartments. The ringing phones, the slamming doors, the screeching chairs. Aah! unending noise all around. In the cacophony of different deafening sounds in today's world, it is hard to believe for you and me that even a sound of clap can be used as a signal. But the acoustic marvels of India like Golconda Fort is like an awakening. Ibrahim Quli Qutb Shah, the King who built the Golkonda Fort was believed to be the expert of physics. The anecdote of his intelligence was quite evident to me from the very first sight of the fort. When you enter the fort its acoustic effects are all ready to astound you to the deepest core. Golconda Fort, also known as Golkonda or Golla Konda, is a fortified citadel and an early capital city of the Qutb Shahi dynasty, located in Hyderabad, Telangana, India.

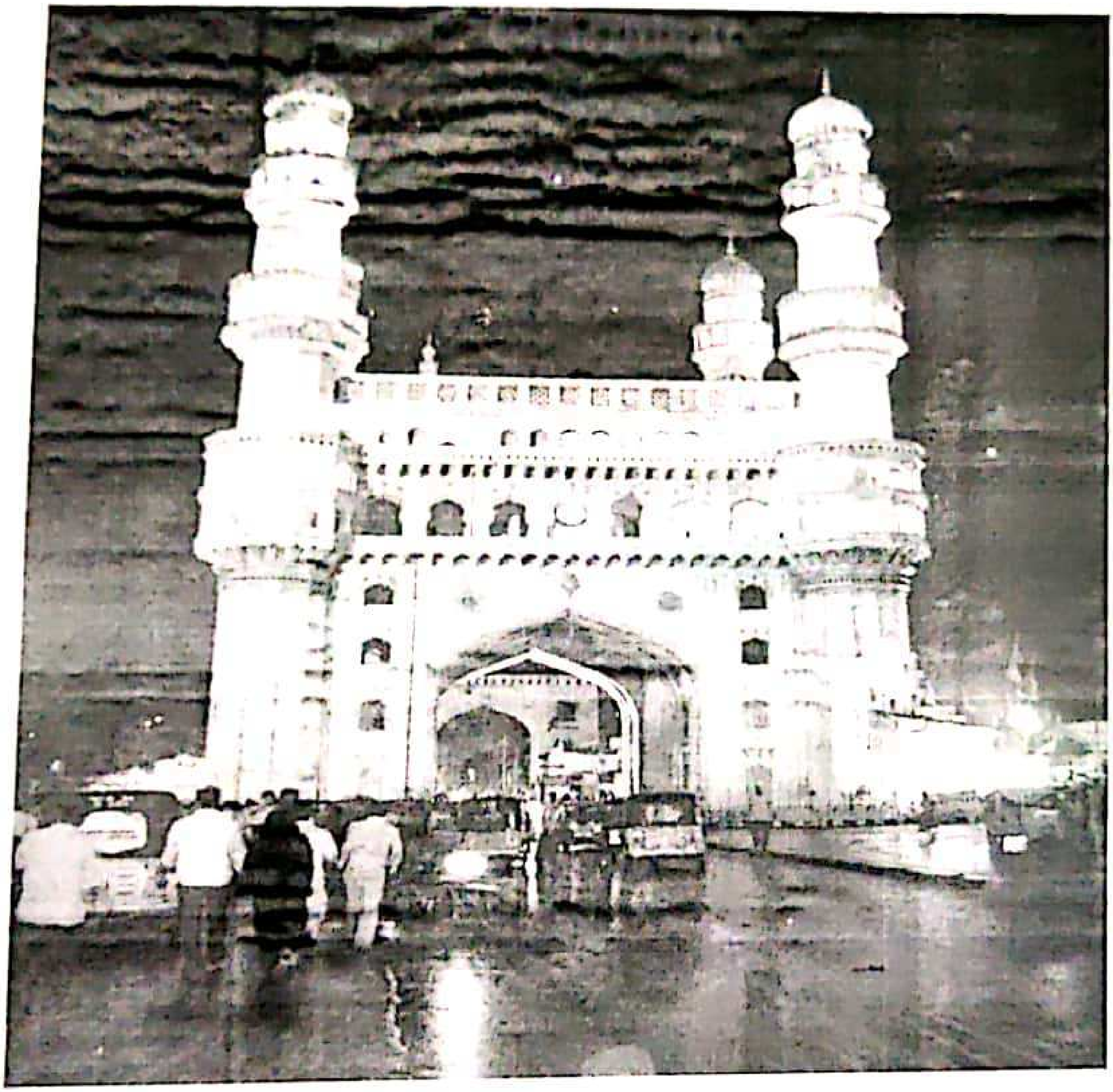


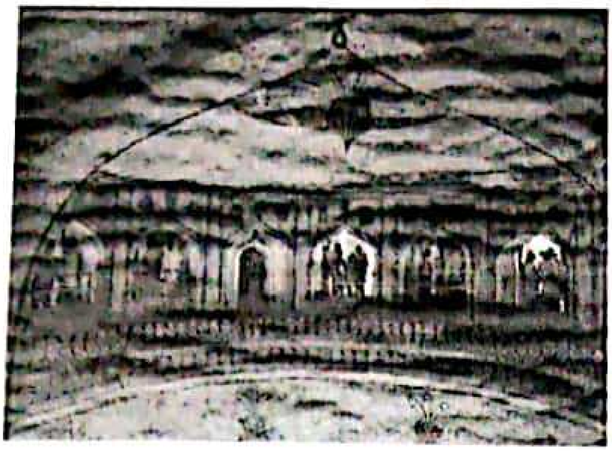
REALATED TO BPDD WHAT WE CAN SEE IN GOLCONDA FORT

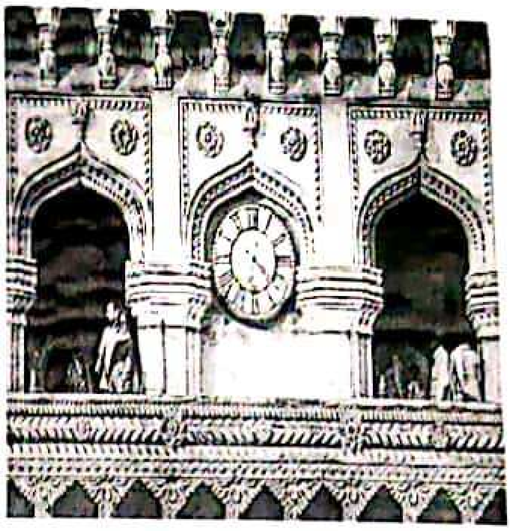
- Acoustic Structures.
- Architectural planning of building.

Charminar

The Charminar, constructed in 1591, is a monument and mosque located in Hyderabad, Telangana, India. The landmark has become known globally as a symbol of Hyderabad and is listed among the most recognized structures in India.



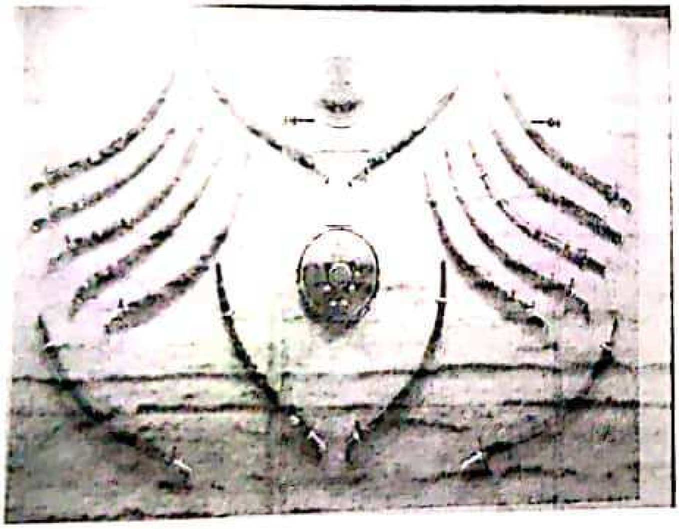


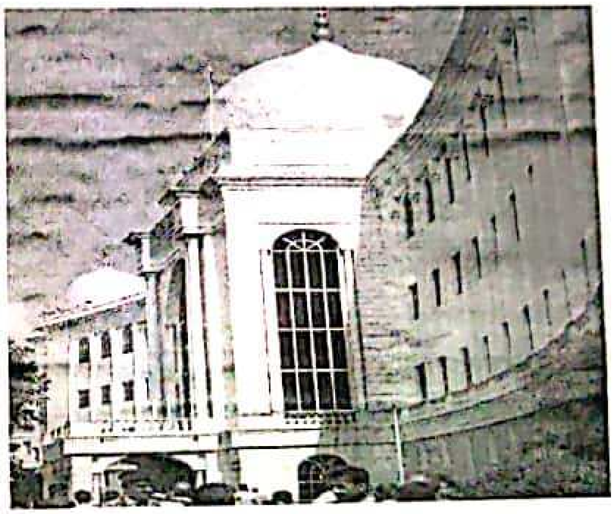


The Charminar's long history includes the existence of a mosque on its top floor for more than 400 years. While both historically and religiously significant, it is also known for the popular and busy local markets surrounding the structure, and has become one of the most frequented tourist attractions in Hyderabad.The Charminar was constructed at the intersection of the historical trade route that connects the markets of Golkonda with the port city of Machilipatnam. The Old City of Hyderabad was designed with Charminar as its centerpiece. The city was spread around the Charminar in four different quadrants and chambers, segregated according to the established settlements. Towards the north of Charminar is the Char Kaman or four gateways, constructed in the cardinal direction. The structure is made of granite, limestone, mortar, and pulverized marble, weighing approximately 14,000 tones apiece. Initially the monument was so proportionately planned that when the fort first opened, one could see all four corners of the bustling city of Hyderabad through each of its four grand arches, as each arch faced one of the most active royal ancestral streets.

Salar Jung Museum

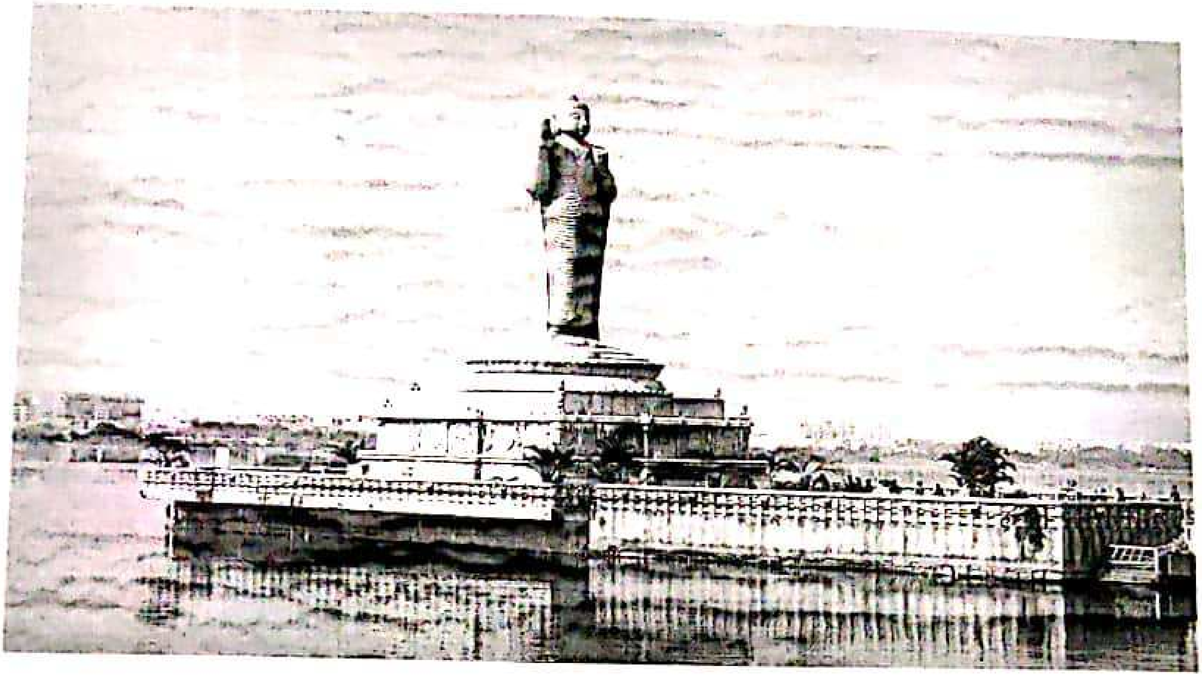
The Salar Jung Museum is an art museum located at Dar-ul-Shifa, on the southern bank of the Musi River in the city of Hyderabad, Telangana, India. It is one of the three National Museums of India. This museum is the also the third largest museum in India and it houses a collection of ancient manuscripts, ceramics, metallic artifacts, carpets, sculptures, textiles, paintings and clocks. Most of the articles treasured in this museum, belong to different civilizations. Daggers belonging to Empress Noor Jahan, Emperor Jehangir and Emperor Shah Jahan are among the important historical antiques found in the museum. The ancient artifacts held in the museum belong to the Salar Jung family and these collections dates back to the 1st century. Under the Salar Jung Museum Act of 1961, the museum is maintained by the Board of Trustees with the Governor of Andhra Pradesh as ex-officio chairperson. Apart from the thirty eight galleries containing precious artifacts, the museum also has a library, cafeteria, sales counter and a reading room. The Salar Jung Museum is one of the best tourist attractions in Hyderabad and it attracts about ten lakh visitors every year.





Salar Jung Museum contains thirty eight galleries, which are spread on two floors. There are twenty galleries on the ground floor and eighteen galleries on the first floor. Each gallery in the museum exhibits artifacts that are under separate subjects. The museum also has an education section, a laboratory for chemical conservation, a reading room, library, cafeteria and a salescounter. Salar Jung Museum is one of the most highly visited places in Hyderabad. This museum houses many historical articles collected by Nawab Mir Yousuf Ali Khan Salar Jung III during his lifetime. Some of the oldest artifacts treasured in the museum dates back to the 1st century, and one can find many antiques that belong to Middle East, Europe and Asia as well. Visit this museum with your friends and family and admire a world of ancient civilization.

Hussain Sagar



Hussain Sagar is a heart-shaped lake in Hyderabad, Telangana. built by Ibrahim Quli Qutb Shah in 1563. It is spread across an area of 5.7 square kilometers and is fed by the River Musi. A large monolithic statue of the Gautama Buddha, erected in 1992, stands on Gibraltar Rock in the middle of the lake. It also separates the city centre of Hyderabad from its neighborhood Secunderabad.The maximum depth of the lake is 32 feet. Hussain Sagar was built across a tributary of the river Musi river in 1563 by Ibrahim Quli Qutb Shah. The lake was named after Hussain Shah Wali, who helped to design it. It is an artificial lake that holds water perennially fed by canals from Musi river. Hussain Sagar was the main source of water supply to Hyderabad before Himayat Sagar and Osman Sagar were built on river Musi.

Birla Mandir

Birla Mandir is a Hindu temple, built on a 280 feet (85 m) high hillock called *Naubath Pahad* on a 13 acres (53,000 m^2) plot. The construction took 10 years and was opened in 1976 by Swami Ranganathananda of Ramakrishna Mission. The temple was constructed by Birla Foundation, which has also constructed several similar temples across India, all of which are known as Birla Mandir.

Birla Science Museum

B. M. Birla Science Museum is an Indian science museum located in Hyderabad, India. Constructed by civil engineer P. A. Singaravelu, it comprises a planetarium, museum, science centre, art gallery as well as a dinosaurium. The museum itself was the second phase of the science centre when it opened in 1990.

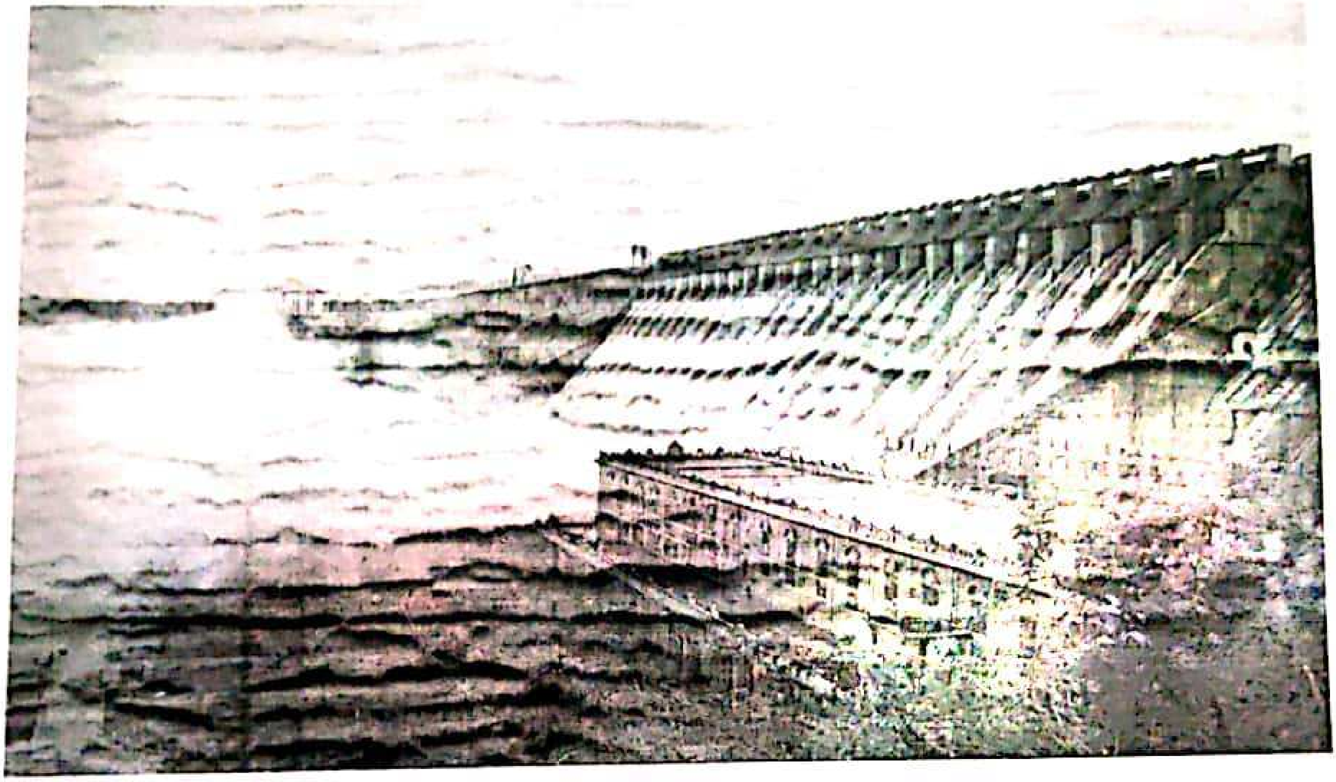
REALATED TO DOSS WHAT WE CAN SEE IN:-

Birla Science Museum

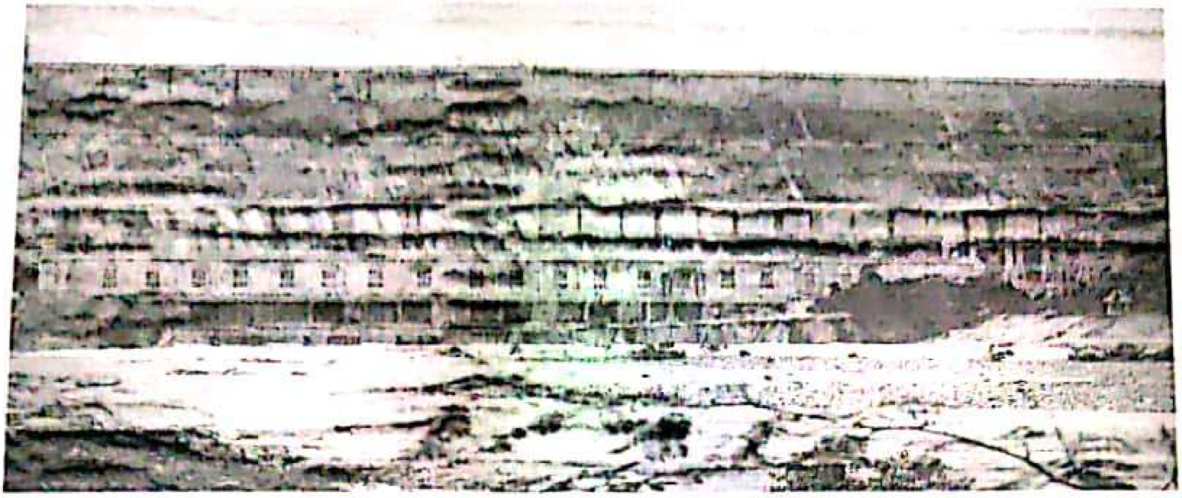
- Architectural planning of building.

Nagarjuna Sagar Dam

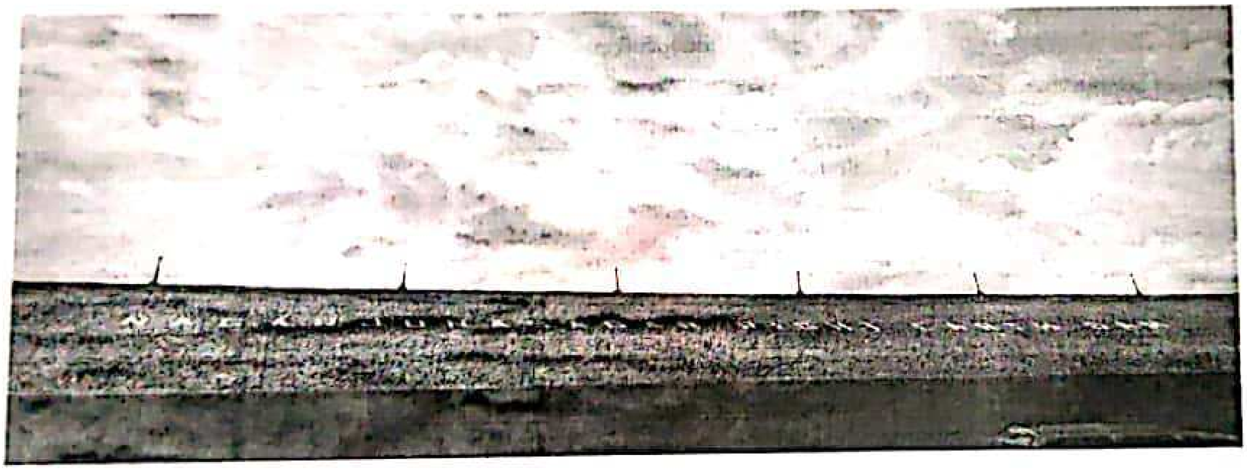
Nagarjuna Sagar Dam is a masonry dam across the Krishna river at Nagarjuna Sagar which straddles the border between Guntur district, Andhra Pradesh and Nalgonda district, Telangana. Constructed between 1955 and 1967, the dam created a water reservoir with gross storage capacity of 11.472 billion cubic metres.



Nagarjuna Sagar was the earliest in a series of large infrastructure projects termed as "modern temples" initiated for achieving the Green Revolution in India. It is also one of the earliest multi-purpose irrigation and hydro-electric projects in India.The dam provides irrigation water to the Nalgonda, Suryapet, Krishna, Khammam, West Godavari, Guntur and Prakasam districts along with hydro electricity generation. Nagarjuna Sagar dam is designed and constructed to use all the water impounded in its reservoir of 312 TMC gross storage capacity which is the second biggest water reservoir in India.



The hydroelectric plant has a power generation capacity of 815.6 MW with 8 units (1x110 MW+7x100.8 MW). First unit was commissioned on 7 March 1978 and 8th unit on 24 December 1985. The right canal plant has a power generation capacity of 90 megawatts (120,000 hp) with 3 units of 30 megawatts (40,000 hp) each. The left canal plant has a power generation capacity of 60 megawatts (80,000 hp) with 2 units of 30 MW each.The tail pond is under advanced stage of construction to put to use the pumped storage features of 7 x 100.8 MW units.



The right canal (Jawahar canal) is 203 km (126 mi) long with maximum 311.5 cumecs capacity and irrigates 1.117 million acres (4,520 km^2) of land in Guntur and Prakasam districts. The left canal (Lalbahadur Shastri canal) is 179 km (111 mi) long with maximum 311.5 cumecs capacity and irrigates 1.008 million acres (4,080 km^2) of land in Nalgonda, Suryapet, Krishna, West Godavari and Khamman districts.The project transformed the economy of above districts. 54 villages (48 in Nalgonda and 6 in Guntur) were submersed in water and 24,000 people were affected. The relocation of the people was completed by 2007.

SVERI's
College of Engineering, Pandharpur

Civil Engineering Department

Industrial Visit

Class: SY-(Civil) Div-A & B

A.Y.: 2019-2020

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: (02186) 216063, 9503103757, **Toll Free No.:** 1800-3000-4131 **e-mail.:** coe@sveri.ac.in
Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
NBA Accredited all eligible UG Programmes, **NAAC** Accreditated Institute,ISO 9001:2015 Certified Institute.
Accredited by The Institution of Engineers (India), Kolkata and TCS, Pune.

Ref.:- COEPR/CIVIL/2019-20/328 Date:-06/02/2020

To,
Chief Engineer,
Nagarjuna Sagar Dam Circle,
Hill Colony, Nalconda
Hyderabad

Subject: Permission to Visit Nagarjuna Sagar Dam, Nalconda

Respectedsir,

As per curriculum of Punyashlok Ahilyadevi Holkar Solapur University, students of SE civil class are interested to visit Nagarjuna Sagar Dam, Nalconda to study components of Dam, Hydro Power Project.

So I kindly request you to permit us for this technical visit and spare one technical person to give information.
Your help in this regard is highly appreciated.

Thanking you in anticipation.

Date of visit:- 11/02/2020

SE student:-100

No of faculty members:-06

Waiting foryour reply.

Thanking You,

Yours faithfully,

Dr. P M Pawar
(HOD Civil & Dean Academics)

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

SVERI

Department of Civil Engineering

Academic Year 2019-20 S.Y. B.Tech- Div. A Sem - II

Date: 17/12/2019

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	Sign.
SA-1	BHOSALE VAISHNAVI SIDDHESHWAR		SA-36	MHETRE POONAM BHARAT	
SA-2	KALE PRAJAKTA SHARAD		SA-37	SURWASE SHRADDHA ANNARAO	Surwase
SA-3	LENDAVE TEJASHRI BHARAT		SA-38	DEVMARE NANDITA BASWESHWAR	Devmare
SA-4	MANE NISHA VIKAS	Mane	SA-39	SUHAIB TANTRY	
SA-5	NAGTILAK MONALI ARJUN		SA-40	KAVADE AARAVI RAJESH	Kavade.
SA-6	RONGE KOMAL RAOSAHEB		SA-41	JADHAV KEDAR RAJENDRA	
SA-7	WANGDE SHRADDHA		SA-42	CHAVAN ABHIJEET APPA	
SA-8	ADHATRAO AISHWARYA VAIBHAV		SA-43	PAWAR JANMEJAY VIJAYKUMAR	
SA-9	DHOTRE SHITAL SHAM		SA-44	JADHAV HANUMAN MANOHAR	
SA-10	MANGRULE KAVYANJALI CHANDRAKANT	Mangrule	SA-45	PATIL HARSHAD DEVIDAS	
SA-11	JADHAV PRANITA JOTIRAM		SA-46	SAWANT AJAY DNYANDEO	
SA-12	BHONG BHAGYSHRI RAMESHWAR	Bhong	SA-47	TANK GAURAV PRAVIN	
SA-13	SWAMI POOJA SHRISHAIL		SA-48	KUSUMADE HARSHAL UTTAM	Harshal
SA-14	YADAV MEGHA AUDUMBAR		SA-49	MISAL MANDAR JIVAJI	
SA-15	BHAGAT RUTUJA ASHOK		SA-50	PADAVALE AMAR VITTHAL	Padval
SA-16	CHAVAN AKANKSHA AVINASH		SA-51	BAGAL GANESH BALASAHEB	Bagal
SA-17	CHAVAN SHRADDHA SANJAY		SA-52	THORBOLE MAHESH ANIL	
SA-18	CHORAMALE SNEHAL SAMBHAJI		SA-53	AIWALE PRITISH BABU	
SA-19	DESHMUKH DHANASHREE PRAKASH	Desh	SA-54	NIMBALKAR GANESH SHIVAJI	Nimbalkar
SA-20	MANE PRANALI SANJAY	Mane	SA-55	KAKADE SWAPNIL SUDHIR	
SA-21	MULANI NAZNEEN KAYYUM		SA-56	ANDESO PUL	
SA-22	RAUT SNEHAL SANJAY		SA-57	SHINDE SATYAM MAHADEV	Shinde
SA-23	SAKHARE MADHURI NEMINATH		SA-58	SIKCHI KEDAR JAGDISH	
SA-24	TATE SHITAL BALIRAM	Tates	SA-59	SADIQ ALI	
SA-25	ROTE VAISHNAVI KIRAN	V.K.R.	SA-60	CHAVAN SHAILESH VILAS ✓	
SA-26	INGAWLE DESHMUKH PRIYADRSHNI	P.S.I.D	SA-61	JADHAV DHAVAL PRABHAKAR	
SA-27	TAKMOGE MAYURI JAGANNATH	M.T.T.	SA-62	JADHAV HARSHVARDHAN NITIN X.	—
SA-28	BAGWAN ESHA SALIM	Bagwan	SA-63	INAMDAR REHAN IRFAN	R.Inamdar.
SA-29	BORADE SNEHAL SHIVAJI		SA-64	KHADE SUSHIL MADHAV ✓	
SA-30	GHAYTIDAK SHIVANI RAJKUMAR		SA-65	MAHAJAN AADITYA ABHAY	
SA-31	SALUNKHE ARTI HARIDAS	A.H.Salunkhe	SA-66	SURVASE MAHESH BALASO	
SA-32	SADGAR TANYA RAVINDRA		SA-67	KODAG SHANKAR SUBHAS ✓	
SA-33	TAMBOLI SIMRAN BAKAS		SA-68	DHEKALE PRASAD RAJARAM	
SA-34	JADHAV PRERANA TUKARAM	Jadhav	SA-69	GHOLAVE DEEPAK PRAMOD	
SA-35	DESHMUKH DIVYA BHALCHANDRA	D.Desh.			

Patil

(Prof. / S. P. Patil)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S
COLLEGE OF ENGINEERING, PANDHARPUR.
Department of Civil Engineering

Industrial Visit

Academic Year 2019-20 S.Y. B.Tech- Div. B Sem - II

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	Sign.
SB-1	DUDHAL PRAPTI PRAVIN		SB-35	BURANGE ANIKET SUBHASH	
SB-2	BAHIRWADE SHITAL NAGESH		SB-36	DOKE PRATIK BAJIRAO	
SB-3	BIRAJDAR PRATIBHA VENKAT	PVB.	SB-37	PATIL KAPIL VIJAY	Patil: k.
SB-4	DESAI BHAGYASHRI PANDURANG		SB-38	KOTALKAR ASHUTOSH SANTAJI	
SB-5	DHOLE SHIVANI RAJENDRA		SB-39	KADAM NIKHIL NAVNATH	Nikhil-k.
SB-6	JADHAV VAISHNAVI MANOJ	Jadhav	SB-40	GATKAL PRAJYOT RAMAKANT	Gatkal. P
SB-7	KAMBLE ANJALI SHAHAJI	Akambly	SB-41	MULLA AMEER SULEMAN	
SB-8	KSHIRSAGAR PRAGATI PANDURANG		SB-42	INGALE RUTVIK BHARAT	
SB-9	METKARI KSHITIJA NARAYAN		SB-43	RASALE NIRAJ RUSHIKESH	Rasale
SB-10	PATIL AISHWARYA PANDIT		SB-44	DONGARE SWAPNIL SHANKAR	Dongar-S.
SB-11	PATIL SONALI TANAJI		SB-45	MASKE ONKAR SANJAY	
SB-12	PULA PRIYANKA GURUCHARAN		SB-46	DODTALLE NIKHIL SUNIL	
SB-13	PUKALE AISHWARYA SHYAM		SB-47	GAYALI OMKAR BHARAT	Omkar.G.
SB-14	SAPKAL MAYURI DILIPKUMAR		SB-48	KAZI SAYYADNAVID MAHAMAD	
SB-15	SHAIKH NIKHAT LALSAB		SB-49	GIRI Kiren Panchanan	
SB-16	SHEKH SHAHEEN JAKIRHUSEN		SB-50	MALI PRASHANT VIJAY	
SB-17	SHIVSHARAN VRUSHALI SUNIL		SB-51	SATPUTE RUSHIKESH KISHOR	YD
SB-18	SONY KOTWAL		SB-52	SAKHARE SHREYASH SOMNATH	
SB-19	SURWASE PRATIKSHA DATTATRAY	P.D. Surwase	SB-53	NAVALE AKASH APPASAHEB	
SB-20	SHINDE ASHA KISAN		SB-54	AOUSEKAR GAURAV GANESH	
SB-21	KHARAT SHRIKANT KALYAN	YD	SB-55	BHAIKATTI SWAPNIL APPASHA	
SB-22	BHUMKAR MANOJ DNYANESHWAR	MBhumkar	SB-56	DHAVARE UMESH MARYAPPA	
SB-23	HARWALKAR SAMARTH ANAND		SB-57	DHOTRE BHADRI SHRIKANT	
SB-24	DANDAGE HARSHVARDHAN SHIVAJI		SB-58	GAVALI SUJIT KESHAV	
SB-25	JAGADALE PRANAV VIVEKANAND		SB-59	GOSAVI SHRIYASH AMOL	
SB-26	MASAL VIVEK DATTATRAYA		SB-60	JADHAV SHAILESH DHARMRAJ	
SB-27	BHANGE SURAJ SIDDHESHWAR	Bhange	SB-61	KAMBLE KATEPPA AMBANNA	
SB-28	ADMANE SAURABH VITTHAL		SB-62	LENDAVE MAYUR VASANT	Mayur
SB-29	NAMADE SOHAM DHANAJI		SB-63	PAWAR AMOL MARUTI	
SB-30	ALDAR SHANKAR ASHOK	Aldar	SB-64	PATIL JITENDRA SANJEEV	
SB-31	BHOSALE SURAJ DEEPAK	Bhosale. S	SB-65	SALUNKHE MAHESH DATTATRAYA	
SB-32	DUDHANI SIDDHESHWAR PRASADBABU		SB-66	SHINDE AKSHAY JAGNNATH	
SB-33	RAUT DNYANESHWAR NAVANATH		SB-67	UTAGI SWAROOP MALLINATH	
SB-34	PAWAR SUMIT ARUN				

(Prof. C. R. Limkar)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P.B.No.54, Gopalpur - Ranjani Road, Gopalpur, Pandharpur - 413304, **District**: Solapur (Maharashtra)
Tel.: 7755990201 **Toll Free No.**: 1800-3000-4131 **e-mail.**: coe@sveri.ac.in **Website.**: www.sveri.ac.in
(Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
Accreditated by The Indian Institution of Engineers (India), Kolkata and TCS, Pune.
NAAC Accreditated Institute, **NBA** Accredited All UG Programmes,
ISO 9001:2008 Certified Institute.

Date:- 06/02/2020

Office Order

Following faculty members has deputed for Industrial visit from 09/02/2020 to 12/02/2020. So you are requested to act accordingly.

Sr. No.	Class	Name of Faculty	Sign
01	S.E.	Prof. C.R.Limkar	
02		Prof. G. S. Pawar	
03		Prof. S. J. Shinde	
04		Prof. / S. P. Patil	
05		Prof. / P. D. Taralgatti	

Thanking you.

Yours faithfully,

(Dr. P.M.Pawar)
HOD CIVIL ENGG.

Date: 06/02/2020

To,

The Principal/Dean Students,

SVERI's CoE Pandharpur.

Subject: Permission for Industrial Visit of SE Civil.

Respected Sir,

As per curriculum laid down by Punyashlok Ahilyadevi Holkar Solapur University, Solapur for SE Civil (Part II), the subject of Hydraulic Engineering, Building Planning Design and Drawing include visits. In the Processing of same we have sent letter related to Industrial spot. In view of this, we requested you to grant us the permission to arrange visit of SE Civil on 08/2/2020 to 11/2/2020.

Thanking You,

Prof.C R Limkar
Class-co-ordinator

Sahil
Subject Teacher

Dr.P.M.Pawar
HoD-Civil

S.D. Jagdale [illegible]

Permitted for Ind. visit with following conditions:-

- Undertaking be collected for All students @ visit
- care be taken near dam site & other places
- All concern should attend college on 08/02/2020.

SCHEDULE OF INDUSTRIAL VISIT

Day 0 (08/02/2020) 06.00 PM: Pandharpur- Hyderabad (410 KM)

Day 1 (9/2/2020): Birla Science Museum (3KM), Golconda Fort (10KM)

Day 2 (10/2/2020): Building site visit, Charminar and then Salar Jung Museum

Day 3 (11/2/2020): Nagarjuna Sagar Dam and then towards Pandharpur.

Prof. C.R. Limkar

S P Patil

Class-co-coordinator

Shri Vithal Education & Research Institute's

COLLEGE OF ENGINEERING, PANDHARPUR

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Website.: www.sveri.ac.in (Approved by A.I.C.T.E., New Delhi and Affiliated to Solapur University, Solapur)
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Ref.:- COEPR/CIVIL/2019-20/328

Date:-06/02/2020

To,
Chief Engineer,
Nagarjuna Sagar Dam Circle,
Hill Colony, Nalconda
Hyderabad

Subject: Permission to Visit Nagarjuna Sagar Dam, Nalconda

Respectedsir,

As per curriculum of Punyashlok Ahilyadevi Holkar Solapur University, students of SE civil class are interested to visit Nagarjuna Sagar Dam, Nalconda to study components of Dam, Hydro Power Project.

So I kindly request you to permit us for this technical visit and spare one technical person to give information.

Your help in this regard is highly appreciated.

Thanking you in anticipation.

Date of visit:- 11/02/2020

SE student:-100

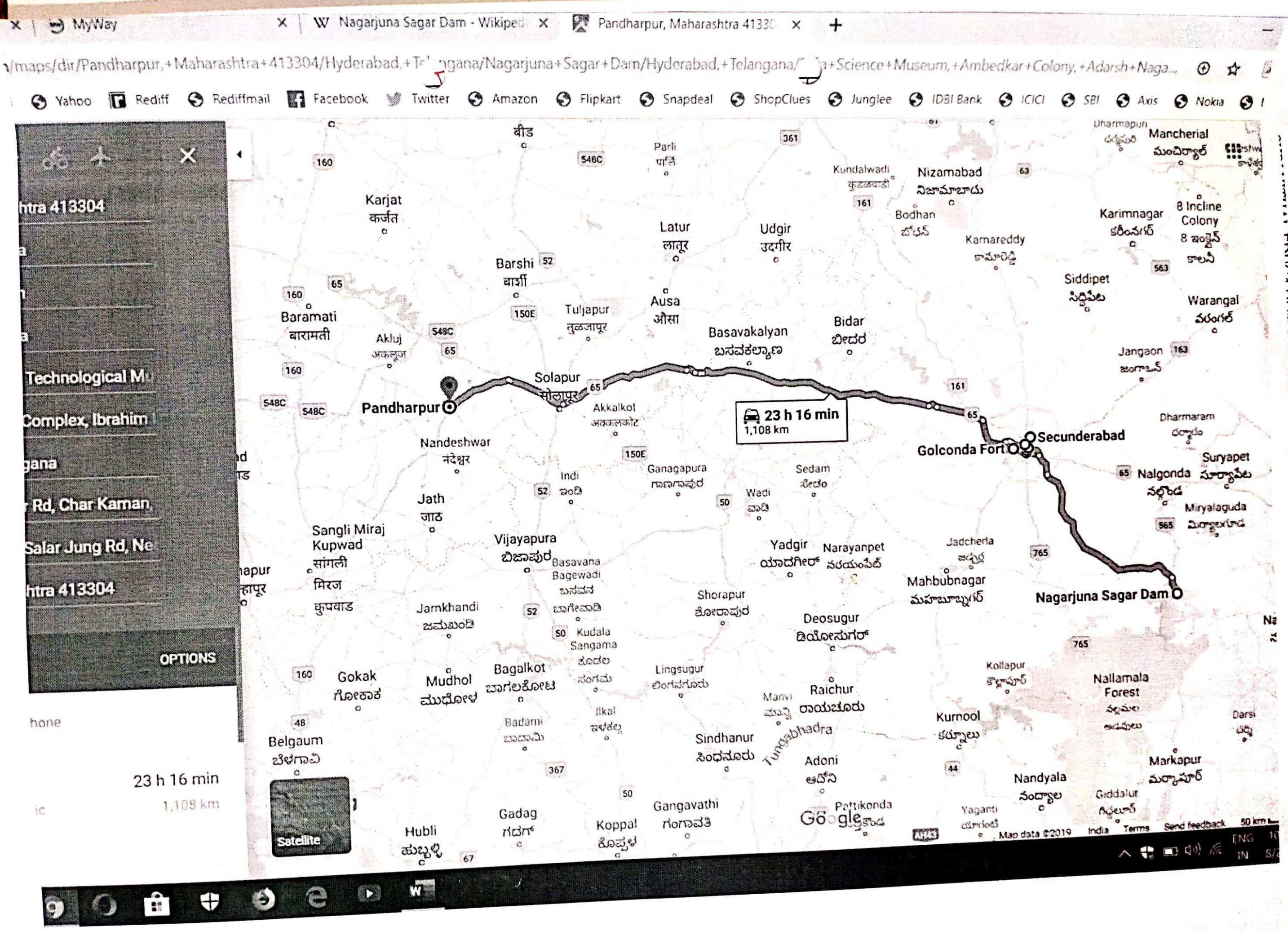
No of faculty members:-06

Waiting foryour reply.

Thanking You,

Yours faithfully,

Dr. P M Pawar
(HOD Civil & Dean Academics)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Nalgonda
Suryapet
Miryalaguda
Karjat
Barshi
Latur
Udgir
Ausa
Tuljapur
Baramati
Akluj
Parli
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Nizamabad
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Karimnagar
Mancherial
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Siddipet
Warangal
Jangaon
Dharmaram
Nandeshwar
Jath
Indi
Ganagapura
Sedam
Wadi
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Vijayapura
Basavana Bagewadi
Jamkhandi
Kudala Sangama
Yadgir
Narayanpet
Jadcherla
Mahbubnagar
Shorapur
Deosugur
Kollapur
Nallamala Forest
Gokak
Mudhol
Bagalkot
Lingsugur
Manvi
Raichur
Kurnool
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Sindhanur
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SHRI VITHAL EDUCATION & RESEARCH INSTITUTE'S

COLLEGE OF ENGINEERING, PANDHARPUR.

SVERI

Department of Civil Engineering

Academic Year 2019-20 S.Y. B.Tech- Div. A Sem - II

Date: 06/02/2020

Roll No.	NAME OF STUDENT	Sign.	Roll No.	NAME OF STUDENT	Sign.
SA-1	BHOSALE VAISHNAVI SIDDHESHWAR		SA-36	MHETRE POONAM BHARAT	
SA-2	KALE PRAJAKTA SHARAD		SA-37	SURWASE SHRADDHA ANNARAO	Surwase
SA-3	LENDAVE TEJASHRI BHARAT		SA-38	DEVMARE NANDITA BASWESHWAR	Devmare
SA-4	MANE NISHA VIKAS	Mane	SA-39	SUHAIB TANTRY	
SA-5	NAGTILAK MONALI ARJUN	Monali	SA-40	KAVADE AARAVI RAJESH	
SA-6	RONGE KOMAL RAOSAHEB		SA-41	JADHAV KEDAR RAJENDRA	
SA-7	WANGDE SHRADDHA		SA-42	CHAVAN ABHIJEET APPA	Abhijeet
SA-8	ADHATRAO AISHWARYA VAIBHAV		SA-43	PAWAR JANMEJAY VIJAYKUMAR	
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SA-10	MANGRULE KAVYANJALI CHANDRAKANT	Mangrulkar	SA-45	PATIL HARSHAD DEVIDAS	
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SA-32	SADGAR TANYA RAVINDRA		SA-67	KODAG SHANKAR SUBHAS	
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SA-34	JADHAV PRERANA TUKARAM	Jadhav	SA-69	GHOLAVE DEEPAK PRAMOD	Gholave D.P.
SA-35	DESHMUKH DIVYA BHALCHANDRA				

Patil

(Prof. S. P. Patil)
Class Coordinator

(Dr. P. M. Pawar)
HOD Civil Engg

SHRI VITHAL EDUCATION & RESEARCH INSTITUTE S
COLLEGE OF ENGINEERING

SVERI

PANDHARPURGopalpur- RanjaniRoad, Gopalpur, P.B. No.54 Tal – Pandharpur – 413304 Dist – Solapur (Maharashtra) Ph :02186 325782 Fax : 02186 225082
(Approved by AICTE, New Delhi and MSBTE Mumbai)

Industrial Visit

SE Civil (2019-20)

Route: - Pandharpur – Solapur-Hyderabad –Solapur-Pandharpur (Appx: 1100Km)

Place: - Departure from Pandharpur

Day	Place to visit	Subject
08/02/2020	Departure from Pandharpur towards Hyderabad At 05:30PM. Arrival at Hyderabad 8:00AM (410 Km) via Deglur.	
1st Day 09/02/2020 2hrs for fresh and breakfast	08:00am – 10:00am Hault to Birla Science Museum(3KM) 01:00PM Departure for lunch Departure towards GolcondaFort (10KM)	WRE-II (Hydraulic structures), DOSS, Architectural planning of buildings. Acoustic structures
# Hault and dinner	At 07:00PM departure towards Dinner from 08:00pm to 10:00pm Hault Hyderabad.	

2nd Day 10/02/2020	09:00am Departure towards Building site visit Departure for lunch Departure towards Charminar and then Salar Jung Museum	BPDD
#Hault and Dinner	Hault Youth Hostel, Nagarjuna Sagar Dam	
3rd Day 11/02/2020	Departure towards Nagarjuna Sagar Dam At 05:00pm departure towards Hyderabad	1) Structure of dam and its component parts. 2)Electricity generation Hydroelectric Power Plant
	Dinner from 08:00PM to 10:00PM departure towards Pandharpur 6.00 AM arrival time.	

Sahil

SVERI's
College of Engineering, Pandharpur

Department of Civil Engineering

Sample Project Report

A.Y.: 2019-2020

SVERI's COLLEGE OF ENGINEERING, PANDHARPUR-413304
2019-2020.

SVERI
Shri Vithal Education & Research Institute

"Experimental Analysis of ordinary concrete using destructive and non destructive testing."

A DISSERTATION
SUBMITTED TO PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
FOR THE DEGREE OF
BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING
UNDER THE FACULTY OF ENGINEERING AND TECHNOLOGY

PREPARED BY

1)Mr SHUBBHAM SUNIL KADAM,
2)Mr GANESH SHANKAR BABAR,
3)Mr VAIBHAV VASANT KALE ,
4)Mr GANESH MADAN SHINDE.

UNDER THE GUIDANCE
OF
PROF. AVINASH B. KOKARE

DECLARATION

We hereby declare that the dissertation entitled **"Experimental Analysis of ordinary concrete using destructive and non destructive testing."**Completed and written by us has not previously formed the basis for the award of any Degree or Diploma or other similar title of this or any other University or examining body.

Members:-

1) **Mr. SHUBBHAM SUNIL KADAM,**
2) **Mr. GANESH SHANKAR BABAR,**
3) **Mr. VAIBHAV VASANT KALE ,**
4) **Mr. GANESH MADAN SHINDE.**

Place: Pandharpur
Date:

Acknowledgement

While working on the current dissertation on “Experimental analysis for Compressive Strength of Concrete using Destructive and Non-Destructive Testing”, we got exposed to a field of testing and inspection due to support of various teachers and friends.

First and foremost, we would like to take this opportunity to express our gratitude to our guide Prof.A.B.Kokare for providing all resources and great platform to accomplish our target. We are also thankful to him for constant valuable guidance and encouragement during this course period. He always appreciated whatever little progress we have achieved, and continuously gave us new energy by sharing his precious knowledge and experience. Apart from technical skills, He has also introduced professional skills and confidence in us.

We would like to acknowledge our Head of Department Dr.P.M.Pawar and Principal Dr.B.P.Ronge for spending his valuable time to go through our report and providing many helpful suggestions. We would also like to acknowledge Department of Civil Engineering who provide us the facilities for completion of this project.

Specially, we would like to express our deep, incomplete appreciation and gratitude to our family members for their constant spiritual support and encouragement and to pursue the higher technical education.

Group Members:-

1) **Mr. SHUBBHAM SUNIL KADAM,**
2) **Mr. GANESH SHANKAR BABAR,**
3) **Mr. VAIBHAV VASANT KALE ,**
4) **Mr. GANESH MADAN SHINDE.**

ABSTRACT

Assessment of in-situ concrete, a major building material in construction has been of considerable interest in Construction Industry, mainly for quality control as well as to find in-situ strength. The measurement of strength and other performance parameters is generally done by normal destructive tests. However load tests or core tests are not always possible or practicable. Since last decade, non-destructive testing (NDT) has been widely accepted throughout the world to assess the quality of in-situ concrete. The NDT technique includes Rebound hammer, Ultrasonic Pulse Velocity tests, Penetration tests, radiography tests etc. However none of these tests can be used independently to yield reliable quantitative results.

Generally combination of a few Non-destructive tests yields results of acceptable levels. A number of Correlations between Rebound hammer test and Ultrasonic pulse velocity test results have been developed to obtain reliable results. Recently a combination of NDT techniques like Rebound hammer, Ultrasonic pulse velocity has been used to evaluate the quality of few distressed structures in India, successfully to recommend their restoration. Supplementary CTM test results confirmed the reliability of the correlation between the different NDT techniques used.

This thesis describes a study carried out to investigate the effects of some factors that have significant influence on Rebound Hammer and Ultrasonic Pulse Velocity results. Therefore, test cubes were cast and tested for ordinary grades of concrete for different curing conditions and age of testing in order to obtain correlations of concrete strength with Rebound Hammer and Ultrasonic Pulse Velocity test results. Further, adopting the test results a comparison is made between destructive and non-destructive testing to predict concrete strength with a reasonable accuracy.

Also we have replaced 30% of fly ash and 2% fibers are added to the concrete and same procedure is repeated and results are compared with curing and without curing.

The results are also compared as destructive and non destructive test.

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Chapter1

Introduction

The main objective of this project is to identify the strength of ordinary concrete and concrete using admixture such as combination of fly ash and synthetic fibers. For this study available data is clustered. The compressive strength results obtained from Destructive and Non Destructive Testing methods are compared.

General Information

It is often necessary to test concrete structures after the concrete has hardened to determine whether the structure is suitable for its designed use. Ideally, such testing should be done without damaging the concrete. The test available for testing concrete range from completely non-destructive tests, where there is no damage to the concrete, through those where the concrete surface is slightly damaged to partially destructive tests, such as core tests and pull-out and pull-off tests, where the surface has to be repaired after the test.

What is mean by NDT?

Nondestructive testing (NDT) is the process of inspecting, testing, or evaluating materials, components or assemblies for discontinuities, or differences in characteristics without destroying the serviceability of the part or system. In other words, when the inspection or test is completed the part can still be used. Non-Destructive Testing (NDT) is a wide group of analysis techniques used in science and technology industry to evaluate the properties of a material, component or system without causing damage. The term nondestructive inspection (NDI), and nondestructive evaluation (NDE) are also commonly used to describe this technology. Because NDT does not permanently alter the article being inspected, it is a highly valuable technique that can save both money and time in product evaluation, troubleshooting, and research. NDT plays a crucial role in everyday life and is necessary to assure safety and reliability. Typical examples are found in aircraft, spacecraft (shuttle), motor vehicles, pipelines, bridges, trains, power stations, refineries, buildings and oil platforms which are all inspected using NDT.

NDT is a Quality Assurance management tool which can give impressive results when used correctly. It requires an understanding of the various methods available, their capabilities and limitations, knowledge of the relevant standards and specifications for performing the tests. Materials, products and equipment which fail to achieve their design requirements or projected life due to undetected defects may require expensive repair or early replacement. Such defects may also be the cause of unsafe conditions or catastrophic failure, as well as loss of revenue due to unplanned plant shutdown. Non-destructive testing can be applied to each stage of an item's construction. The materials and welds can be examined using NDT and either accepted, rejected or repaired.

NDT techniques can then be used to monitor the integrity of the item or structure throughout its design life. Today modern nondestructive tests are used in manufacturing, fabrication and in-service inspections to ensure product integrity and reliability, to control manufacturing processes, lower production costs and to maintain a uniform quality level. During construction, NDT is used to ensure the quality of materials and joining processes during the fabrication and erection phases, and in-service NDT inspections are used to ensure that the products in use continue to have the integrity necessary to ensure their usefulness and the safety of the public.

Applications and Importance of Non-destructive Tests on Concrete

- Situations in which non-destructive testing is used are presented below:
- Assessment of the quality of construction like in situ constructions and precast units.
- Evaluate the location and the extent of defects such as honeycombing, cracks, voids, and other defects within concrete elements.
- Ensure the acceptability of materials supplied in case of apparent non-compliance with the specification.
- Monitoring strength development of concrete in relation to formwork removal, cessation of curing, prestressing, load application, and other similar activities.

- Confirm or negate any doubts concerning the workmanship involved in batching, mixing, placing, compacting, or curing of concrete.
- Specify the position and condition of steel reinforcements.
- Increase the level of confidence of smaller number of destructive tests.
- Evaluate the potential durability of concrete.
- Locating and/or confirming suspected concrete deterioration due to overloading, fire, explosion, fatigue, external or internal chemical attack or change, and environmental effects.
- Monitor long term changes in concrete properties.
- Determine the extent of concrete variability so as to help in the selection of sample locations representative of the quality to be assessed.
- Obtain information for any suggested changes of use of a structure for insurance or for change of ownership.
- Specify the concrete uniformity, possibly preliminary to core cutting, load testing, and other more expensive or disruptive tests

Advantages of NDT

1. Safety

Nondestructive testing is conducted to determine whether the component is compromised and need to be in repair. The tests are designed to maximize both tester and tested products safety. In other words, most tests are completely harmless to humans (radiographic testing must be conducted under strict settings), and all tests leave tested products completely undamaged. Additionally, in industries with volatile or high pressure equipment and machinery, nondestructive testing as a preventive measure saves lives. Aim of nondestructive testing, when properly implemented and acted upon, is to identify and resolves compromises that otherwise would prove disastrous.

2. Reliability

When it comes to accurate results, Nondestructive testing is reliable because of the variety of available complementary options. Any given piece of equipment or machinery can be subjected to number of nondestructive tests, which eliminates the risk of oversight or inaccuracy.

3. Affordability

Different industries have different safety standards, and different types of machinery have to be regularly inspected at different intervals. But regardless of what has to be inspected, a nondestructive test will always be the most affordable option.

4. Peace of mind

The final benefit of nondestructive testing may be hard to quantify, but it's the most important of all. Knowing the equipment is functioning the way it should (and that future accidents can be prevented with simple checkups) adds years to the life of a beleaguered manager. And when workers know they're safe, work productivity goes up all around.

Methods of NDT

1. Rebound Hammer Test

To assess the quality and strength of site concrete

2. Ultrasonic Pulse Velocity Test :

To assess the quality and strength of site concrete

3. Concrete Core Extraction :

To assess the In-situ strength of concrete, Making holes in RCC for Plumbing / Electrical purpose

4. Rebar Location & Cover-meter :

Locating Reinforcement in the concrete

5. Half-cell potential Test & Resistivity Test :

For Corrosion Mapping of reinforcement

6. Magnetic particle testing:

7. Visual Testing:

8. Eddy Current Testing

What is mean by Destructive test?

In contrast to NDT, other tests are destructive in nature and are therefore done on a limited number of samples ("lot sampling"), rather than on the materials, components or assemblies actually being put into service. These destructive tests are often used to determine the physical properties of materials such as impact resistance, ductility, yield and ultimate tensile strength, fracture toughness and fatigue strength, but discontinuities and differences in material characteristics are more effectively found by NDT.

In destructive testing (or destructive physical analysis, DPA) tests are carried out to the specimen's failure, in order to understand a specimen's performance or material behavior under different loads. These tests are generally much easier to carry out, yield more information, and are easier to interpret than non-destructive testing. Destructive testing is most suitable, and economic, for objects which will be mass-produced, as the cost of destroying a small number of specimens is negligible. It is usually not economical to do destructive testing where only one or very few items are to be produced (for example, in the case of a building). Analyzing and documenting the destructive failure mode is often accomplished using a high-speed camera recording continuously (movie-loop) until the failure is detected. Detecting the failure can be accomplished using a sound detector or stress gauge which produces a signal to trigger the high-speed camera. These high-speed cameras have advanced recording modes to capture almost any type of destructive failure. After the failure the highspeed camera will stop recording. The capture images can be played back in slow motion showing precisely what happen before, during and after the destructive event, image by image.

Objectives

1. To assess the uniformity of concrete.

2. To know the concrete quality grading.

3. To determine the compressive strength of concrete by destructive testing method.

4. To compare the compressive strengths of concrete obtained from Destructive and Non-Destructive testing.

Methodology

1. To assess the uniformity of concrete

To achieve this objective we have casted six numbers of cubes for curing period of 7 days, 28 days and without curing tested for compressive strength using rebound hammer test.

2. To know the concrete quality grading.

To achieve this objective we have casted six numbers of cubes for curing period of 7 days, 28 days and without curing tested for pulse velocity by Ultrasonic pulse velocity test and compressive strength is calculated.

3. To determine the compressive strength of concrete by destructive testing method.

To achieve this objective we have casted six numbers of cubes for curing period of 7 days, 28 days and without curing tested under compressive testing machine and compressive strengths of concrete are calculated.

4. To compare the compressive strengths of concrete obtained from Destructive and Non-Destructive testing.

To achieve this objective we have compared results obtained of compressive strengths by using rebound hammer test, Ultrasonic pulse velocity test and compressive testing machine.

Chapter 2

Literature Review

Nondestructive techniques are useful evaluating the condition of structure, by performing indirect assessment of concrete properties. These techniques have been improved in last few years and the best part is that NDT avoids concrete damage for evaluation. Several researchers perform NDT tests to evaluate the condition of concrete structures. Methods range from very simple to technical depending on the purpose. Several mechanical and physical properties of concrete structures can be used to assess the condition and capacity of the structures.

1. Non-Destructive Testing of Concrete: A Review of Methods

J. Helal, M. Sofi, P. Mendis, et. al. [1] This paper reviews the most common non-destructive testing (NDT) methods of concrete structures as utilized by the structural engineering industry. The fundamentals of NDT methods are explored in regards to their potential, limitations, inspection techniques and interpretations. The factors that influence the success of NDT methods are discussed and ways to mediate their influence are recommended. Reference is made to standard guidelines for the application and interpretation of the discussed NDT methods. NDT of concrete was found to be gaining increasing acceptance as a means of evaluating the strength, uniformity, durability and other properties of existing concrete structures. Perceptions of NDT inadequacy were attributable to lack of understanding construction materials and NDT methods themselves. The intent of this paper is to address these concerns by identifying and describing the most common successful methods of NDT as applied to concrete structures.

2. Reliability of Rebound Hammer Test in Concrete Compressive Strength Estimation

Kristine Sanchez, and Nathaniel Tarranza et. al.[2]The reliability of the non-destructive Schmidt Hammer Test as a means of estimating the compressive strength of concrete is investigated by testing three groups of concrete cube specimens. The first group was exposed to cycles of alternate drying and wetting in brackish water; the second group, to continuous immersion in brackish water;

and the third (control) group, to normal room condition. Results show that the average Schmidt Hammer Rebound Number (RN) for samples in the first and second group is significantly less than that of the third group. These indicate the reliability of the Schmidt Hammer Test in predicting the reducing effect of exposure to brackish water on the compressive strength of concrete. Moreover, results show that in each of the three groups, the average estimated compressive strength of concrete based on Schmidt Hammer Test (using the rebound curve provided by the manufacturer of the device) underestimates the average actual compressive strengths based on direct compression test. Thus, in a quick strength and safety assessment of existing concrete structures, the Schmidt Hammer Test is fairly reliable in determining whether the further use of the structure would still be safe, but may not be so in concluding whether the use is no longer safe. In the latter case, the Schmidt Hammer Test should be supplemented by core sampling and testing.

3. Review of Nondestructive Testing Methods for Condition Monitoring of Concrete Structures.

Sanjeev Kumar Verma and Saleem Akhtar et. al.[3]Nondestructive techniques are useful for evaluating the condition of structure, by performing indirect assessment of concrete properties. These techniques have been improved in last few years and the best part is that NDT avoids concrete damage for evaluation. Several researchers perform NDT tests to evaluate the condition of concrete structures. Methods range from very simple to technical depending on the purpose.

4. Toughness study on fly ash based fiber reinforced concrete

A Sofi,K Swathy and G Srija et. al.[4] The objective of the present investigation is to study the toughness of steel fiber-reinforced fly ash concrete based on the Japan Society of Civil Engineers (JSCE) approach. Fly ash is also considered as a hazardous waste due to the probable aching of potentially toxic substances into the surface water, ground water, and soil. The ash content of the Indian coal (30% to 50%) contributes to these large volumes of fly ash. This paper highlights about the behavior of concrete when fly ash and steel fiber are added in concrete. Fiber-reinforced concrete is a concrete containing fibrous material which increases its structural integrity. The addition of random fibers to concrete considerably improves its structural characteristics such as static flexural strength, impact strength, tensile strength, ductility, and flexural toughness (Qian and Stroeven, Cem. Concr. Res. 30:63–68, 2000). Fly ash has been used by replacing cement in percentages, and steel fibers are added by volume of concrete in different percentages. Grooved type of steel fibers of aspect ratio 50 was used in this study. Flexural strength test was carried out for the specimens, and its results were highlighted. The toughness factor as measured by the JSCE approach is reported, and there is a good correlation between the steel fibers added in various percentages such as 1.5%, 2%, and 2.5% and the calculated toughness factor.

5. Ultrasonic Pulse Velocity Analysis in Concrete Specimens

Alexandre Lorenzi, Francisco Teston Tisbierek et. al.[5] Concrete is a basic material used for the great amount of engineering projects. The concrete performance is influenced by some building variables, such as: the water/cement ratio, the aggregate type and size, the humidity and the cement type. These variables affect directly the compressive strength and make difficult the identification of the concrete properties. Focusing on it, the ultrasonic tests allow to estimate a correlation between the variables and the compressive strength. Once concrete is a heterogeneous material, the interpretation of the relation between the strength and the Ultrasonic Pulse Velocity (UPV) becomes complex. Aiming to understand how some parameters influence the UPV, this work studied different concrete types, with different characteristics, manufactured with portland cement and various types of aggregates. The data had been analyzed aiming to establish models to understand how the results of UPV are affected by variations at concrete conditions. The results show that it is possible to understand how the test condition variations affect the UPV outputs. This study indicates that UPV gives an important result of decisionmake about the conditions of concrete structures. It can be concluded that, by means of UPV, it is possible to contribute with the deterioration control and concrete structures quality.

Chapter 3

Methods of Destructive and Non-destructive Testing

Equipments for Non-Destructive Testing of Concrete

1. Rebound Hammer

What is Rebound Hammer Test?

Rebound Hammer test is a Non-destructive testing method of concrete which provide a convenient and rapid indication of the compressive strength of the concrete. The rebound hammer is also called as Schmidt hammer that consist of a spring controlled mass that slides on a plunger within a tubular housing,

The operation of rebound hammer is shown in the fig.1. When the plunger of rebound hammer is pressed against the surface of concrete, a spring controlled mass with a constant energy is made to hit concrete surface to rebound back. The extent of rebound, which is a measure of surface hardness, is measured on a graduated scale. This measured value is designated as Rebound Number (rebound index). A concrete with low strength and low stiffness will absorb more energy to yield in a lower rebound value.

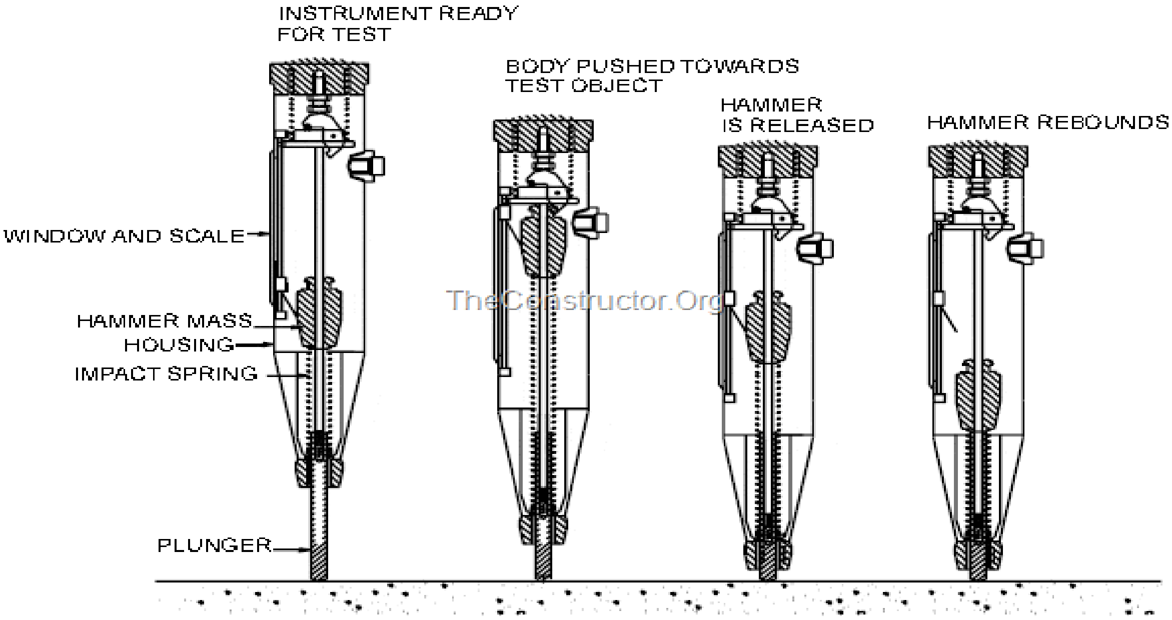


Fig. Operation of the rebound hammer

Objective of Rebound Hammer Test

As per the Indian code IS: 13311(2)-1992, the rebound hammer test have the following objectives:

1. To determine the compressive strength of the concrete by relating the rebound index and the compressive strength
2. To assess the uniformity of the concrete
3. To assess the quality of the concrete based on the standard specifications
4. To relate one concrete element with other in terms of quality

Rebound hammer test method can be used to differentiate the acceptable and questionable parts of the structure or to compare two different structures based on strength.

Principle of Rebound Hammer Test

Rebound hammer test method is based on the principle that the rebound of an elastic mass depends on the hardness of the concrete surface against which the mass strikes. The operation of the rebound hammer is shown in figure-1. When the plunger of rebound hammer is pressed against the concrete surface, the spring controlled mass in the hammer rebounds. The amount of rebound of the mass depends on the hardness of concrete surface.

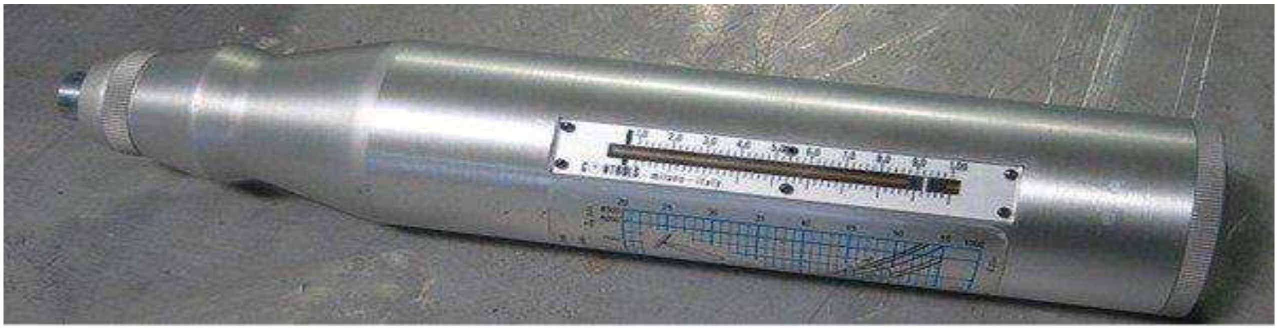
Thus, the hardness of concrete and rebound hammer reading can be correlated with compressive strength of concrete. The rebound value is read off along a graduated scale and is designated as the rebound number or rebound index. The compressive strength can be read directly from the graph provided on the body of the hammer.

Procedure for Rebound Hammer Test

Procedure for rebound hammer test on concrete structure starts with calibration of the rebound hammer. For this, the rebound hammer is tested against the test anvil made of steel having Brinell hardness number of about 5000 N/mm2.

After the rebound hammer is tested for accuracy on the test anvil, the rebound hammer is held at right angles to the surface of the concrete structure for taking the readings. The test thus can be conducted horizontally on vertical surface and vertically upwards or downwards on horizontal surfaces as shown in figure below.

If the rebound hammer is held at intermediate angle, the rebound number will be different for the same concrete.



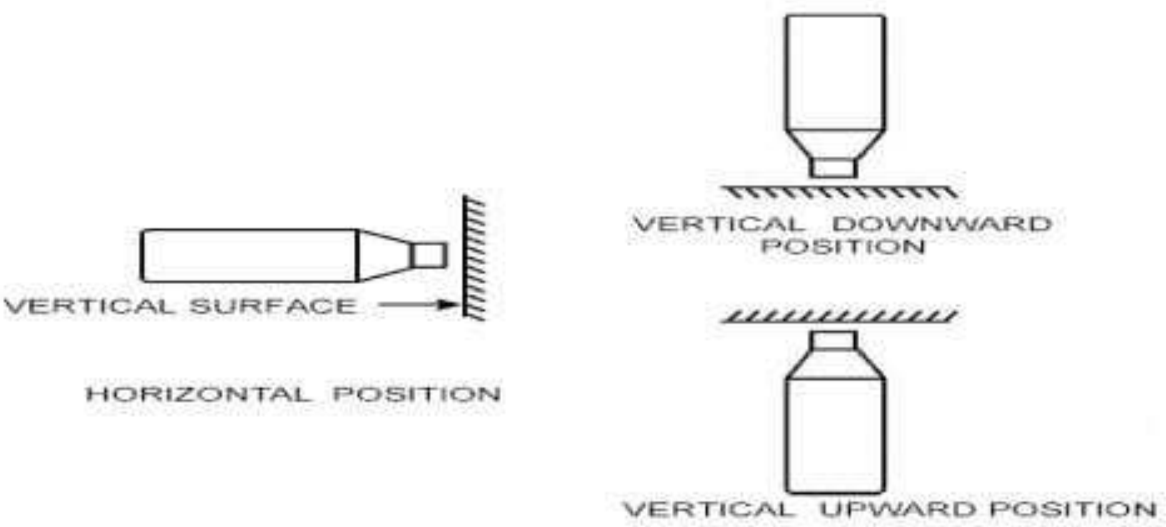


Fig. Rebound Hammer Positions for Testing Concrete Structure

The impact energy required for the rebound hammer is different for different applications. Approximate Impact energy levels are mentioned in the table-1 below for different applications.

Impact Energy for Rebound Hammers for Different Applications as per IS: 13311(2)-1992

Sr.No	Applications	Approximate Impact Energy for Rebound Hammer in Nm
1	For Normal Weight Concrete	2.25
2	For light weight concrete / For small and impact resistive concrete parts	0.75
3	For mass concrete testing Eg: In roads, hydraulic structures and pavements	30.00

Points to Remember in Rebound Hammer Test

1. The concrete surface should be smooth, clean and dry.
2. Ant loose particles should be rubbed off from the concrete surface with a grinding wheel or stone, before hammer testing.
3. Rebound hammer test should not be conducted on rough surfaces as a result of incomplete compaction, loss of grout, spelled or tooled concrete surface.
4. The point of impact of rebound hammer on concrete surface should be at least 20mm away from edge or shape discontinuity.
5. Six readings of rebound number is taken at each point of testing and an average of value of the readings is taken as rebound index for the corresponding point of observation on concrete surface.

Correlation between compressive strength of concrete and rebound number

The most suitable method of obtaining the correlation between compressive strength of concrete and rebound number is to test the concrete cubes using compression testing machine as well as using rebound hammer simultaneously. First the rebound number of concrete cube is taken and then the compressive strength is tested on compression testing machine. The fixed load required is of the order of 7 N/ mm2 when the impact energy of the hammer is about 2.2 Nm.

The load should be increased for calibrating rebound hammers of greater impact energy and decreased for calibrating rebound hammers of lesser impact energy. The test specimens should be as large a mass as possible in order to minimize the size effect on the test result of a full scale structure. 150mm cube specimens are preferred for calibrating rebound hammers of lower impact energy (2.2Nm), whereas for rebound hammers of higher impact energy, for example 30 Nm, the test cubes should not be smaller than 300mm.

The concrete cube specimens should be kept at room temperature for about 24 hours after taking it out from the curing pond, before testing it with the rebound hammer. To obtain a correlation between rebound numbers and strength of wet cured and wet tested cubes, it is necessary to establish a correlation between the strength of wet tested cubes and the strength of dry tested cubes on which rebound readings are taken.

A direct correlation between rebound numbers on wet cubes and the strength of wet cubes is not recommended. Only the vertical faces of the cubes as cast should be tested. At least nine readings should be taken on each of the two vertical faces accessible in the compression testing machine when using the rebound hammers. The points of impact on the specimen must not be nearer an edge than 20mm and should be not less than 20mm from each other. The same points must not be impacted more than once.

Interpretation of Rebound Hammer Test Results

After obtaining the correlation between compressive strength and rebound number, the strength of structure can be assessed. In general, the rebound number increases as the strength increases and is also affected by a number of parameters i.e. type of cement, type of aggregate, surface condition and moisture content of the concrete, curing and age of concrete, carbonation of concrete surface etc.

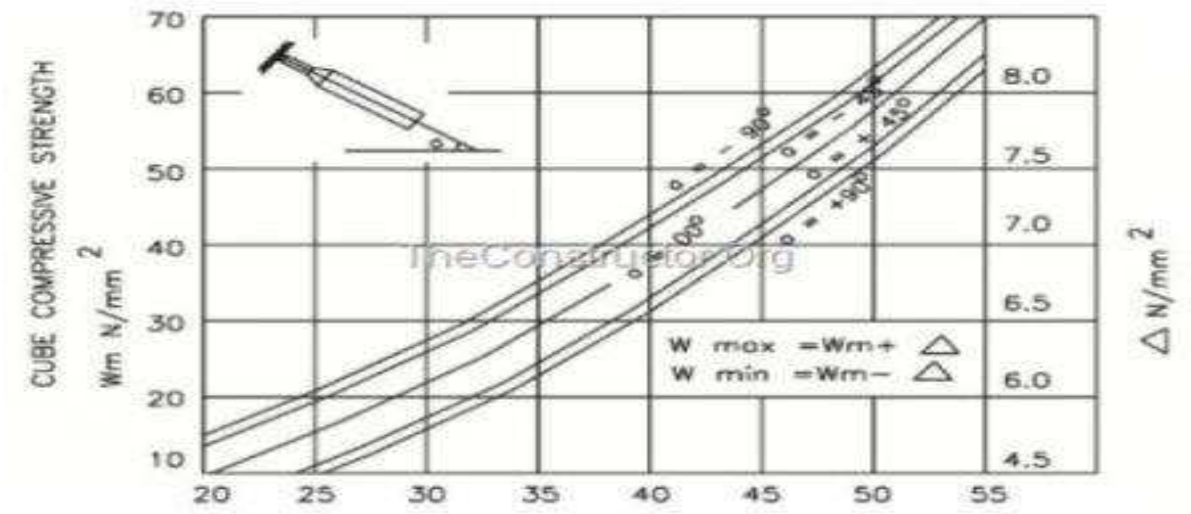


Fig. Relationship Between Cube Strength and the Rebound Number

Moreover the rebound index is indicative of compressive strength of concrete up to a limited depth from the surface. The internal cracks, flaws etc. or heterogeneity across the cross section will not be indicated by rebound numbers

Table. Quality of Concrete for different values of rebound number

Average Rebound Number	Quality of Concrete
>40	Very good hard layer
30 to 40	Good layer
20 to 30	Fair
< 20	Poor concrete
0	Delaminated

As such the estimation of strength of concrete by rebound hammer method cannot be held to be very accurate and probable accuracy of prediction of concrete strength in a structure is ± 25 percent. If the relationship between rebound index and compressive strength can be found by tests on core samples obtained from the structure or standard specimens made with the same concrete materials and mix proportion, then the accuracy of results and confidence thereon gets greatly increased.

Advantages and Disadvantages of Rebound Hammer Test

The advantages of Rebound hammer tests are:

1. Apparatus is easy to use
2. Determines uniformity properties of the surface
3. The equipment used is inexpensive
4. Used for the rehabilitation of old monuments

The disadvantages of Rebound Hammer Test

1. The results obtained is based on a local point
2. The test results are not directly related to the strength and the deformation property of the surface
3. The probe and spring arrangement will require regular cleaning and maintenance
4. Flaws cannot be detected with accuracy

2. Ultrasonic pulse velocity test

What is Ultrasonic Testing of Concrete for Compressive Strength?

Ultrasonic testing of concrete or ultrasonic pulse velocity test on concrete is a non-destructive test to assess the homogeneity and integrity of concrete.

With this ultrasonic test on concrete, following can be assessed:

1. Qualitative assessment of strength of concrete, its gradation in different locations of structural members and plotting the same.
2. Any discontinuity in cross section like cracks, cover concrete delimitation etc.
3. Depth of surface cracks.

Ultrasonic Testing of Concrete

Ultrasonic pulse velocity test consists of measuring travel time, T of ultrasonic pulse of 50 to 54 kHz, produced by an electro-acoustical transducer, held in contact with one surface of the concrete member under test and receiving the same by a similar transducer in contact with the surface at the other end.

With the path length L, (i.e. the distance between the two probes) and time of travel T, the pulse velocity (V=L/T) is calculated.

Higher the elastic modulus, density and integrity of the concrete, higher is the pulse velocity. The ultrasonic pulse velocity depends on the density and elastic properties of the material being tested.

The pulse velocity in concrete may be influenced by:

a. Path length
b. Lateral dimension of the specimen tested
c. Presence of reinforcement steel
d. Moisture content of the concrete

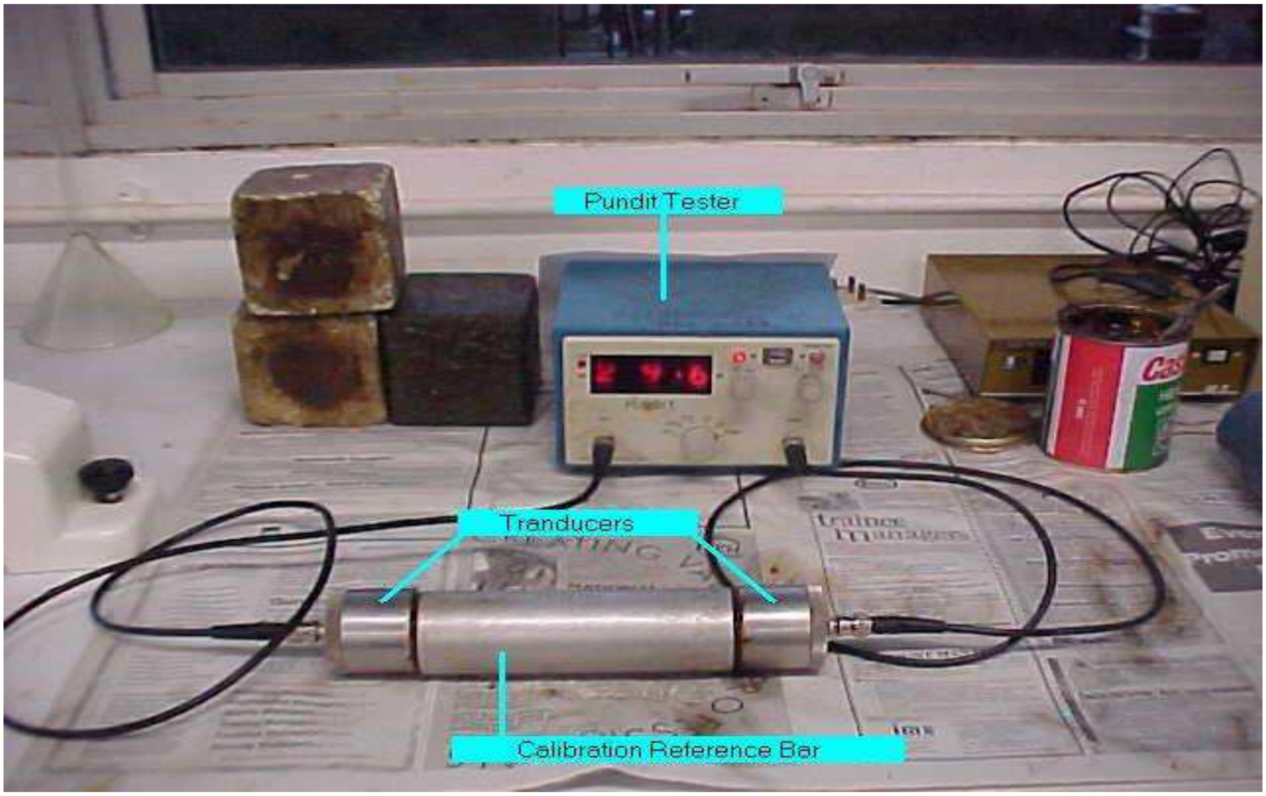


Fig. Ultrasonic Pulse Velocity Testing Instrument

The influence of path length will be negligible provided it is not less than 100mm when 20mm size aggregate is used or less than 150mm for 40mm size aggregate.

Pulse velocity will not be influenced by the shape of the specimen, provided its least lateral dimension (i.e. its dimension measured at right angles to the pulse path) is not less than the wavelength of the pulse vibrations.

For pulse of 50Hz frequency, this corresponds to a least lateral dimension of about 80mm. the velocity of pulses in steel bar is generally higher than they are in concrete. For this reason pulse velocity measurements made in the vicinity of reinforcing steel may be high and not representative of the concrete.

The influence of the reinforcement is generally small if the bars runs in a direction at right angles to the pulse path and the quantity of steel is small in relation to the path length. The moisture content of the concrete can have a small but significant influence on the pulse velocity.In general, the velocity is increased with increased moisture content, the influence being more marked for lower quality concrete.

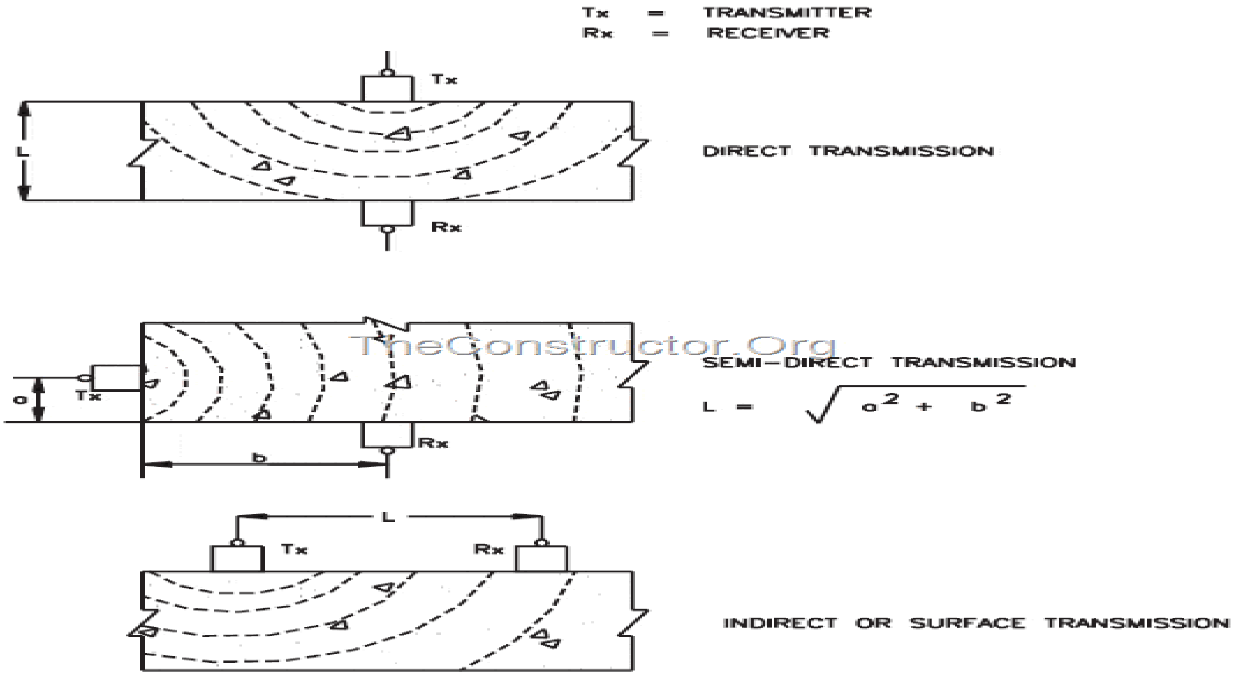


Fig. Method of propagating and receiving pulses

Measurement of pulse velocities at points on a regular grid on the surface of a concrete structure provides a reliable method of assessing the homogeneity of the concrete.

The size of the grid chosen will depend on the size of the structure and the amount of variability encountered.

Table. Concrete Quality based on Ultrasonic Pulse Velocity Test

ULSE VELOCITY	CONCRETE QUALITY
>4.0 km/s	Very good to excellent
3.5 – 4.0 km/s	Good to very good, slight porosity may exist
3.0 – 3.5 km/s	Satisfactory but loss of integrity is suspected
<3.0 km/s	Poor and los of integrity exist.

Above table shows guidelines for qualitative assessment of concrete based on UPV test results.

Below table shows the guidelines for identification of corrosion prone locations by combining the results of pulse velocity and rebound number.

Identification of Corrosion Prone Location based on Pulse Velocity and Hammer Readings

Sr.No.	Test Results	Interpretations
1	High UPV values, high rebound number	Not corrosion prone
2	Medium range UPV values, low rebound numbers	Surface delimitation, low quality of surface concrete, corrosion prone
3	Low UPV, high rebound numbers	Not corrosion prone, however to be confirmed by chemical tests, carbonation, pH
4	Low UPV, low rebound numbers	Corrosion prone, requires chemical and electrochemical tests.

Detection of Defects with Ultrasonic Test on Concrete

When ultrasonic pulse travelling through concrete meets a concrete-air interface, there is a negligible transmission of energy across this interface so that any air filled crack or void lying directly between the transducers will obstruct the direct beam of ultrasonic when the void has a projected area larger than the area of transducer faces.

The first pulse to arrive at the receiving transducer will have been directed around the periphery of the defect and the time will be longer than in similar concrete with no defect.

Estimating the depth of cracks

An estimate of the depth of a crack visible at the surface can be obtained by the transit times across the crack for two different arrangements of the transducers placed on the surface.

One suitable arrangement is one in which the transmitting and receiving transducers are placed on opposite sides of the crack and distant from it. Two values of X are chosen, one being twice that of the other, and the transmit times corresponding to these are measured.

An equation may be derived by assuming that the plane of the crack is perpendicular to the concrete surface and that the concrete in the vicinity of the crack is of reasonably uniform quality. It is important that the distance X be measured accurately and that very good coupling is developed between the transducers and the concrete surface.

The method is valid provided the crack is not filled with water.

This ultrasonic test is done as per IS: 13311 (Part 1) – 1992.

Procedure for Ultrasonic Pulse Velocity

i) **Preparing for use**: Before switching on the 'V' meter, the transducers should be connected to the sockets marked "TRAN" and " REC".

ii) The 'V' meter may be operated with either:

- The internal battery,
- An external battery or
- The A.C line.

ii) **Set reference**: A reference bar is provided to check the instrument zero. The pulse time for the bar is engraved on it. Apply a smear of grease to the transducer faces before placing it on the opposite ends of the bar. Adjust the 'SET REF' control until the reference bar transit time is obtained on the instrument read-out.

iii) **Range selection**: For maximum accuracy, it is recommended that the 0.1 microsecond range be selected for path length upto 400mm.

iv) **Pulse velocity**: Having determined the most suitable test points on the material to be tested, make careful measurement of the path length ‘L’. Apply couplant to the surfaces of the transducers and press it hard onto the surface of the material.

Do not move the transducers while a reading is being taken, as this can generate noise signals and errors in measurements. Continue holding the transducers onto the surface of the material until a consistent reading appears on the display, which is the time in microsecond for the ultrasonic pulse to travel the distance ‘L’.The mean value of the display readings should be taken when the units digit hunts between two values.

v) Separation of transducer leads: It is advisable to prevent the two transducer leads from coming into close contact with each other when the transit time measurements are being taken.If this is not done, the receiver lead might pick-up unwanted signals from the transmitter lead and this would result in an incorrect display of the transit time.

Pulse velocity=(Path length/Travel time)

Used destructive test

1. Compression Testing Machine(CTM)

The digital compression testing machine is used to determine the compressive strength of cube and cylinder (i.e. hardened concrete).

CTM Machine Set up

Procedure as per IS 516 – Methods of tests for strength of concrete

1. Keep the specimen to be tested centrally on the clean lower platen so that small clearance is left between the upper platen and the top the specimen under test.

2. Close the pressure release valve.

3. Make the digital display to read “Zero” by adjusting the zero knobs.

4. Put the display unit on “Peak Hold” mode to hold the maximum load reading.

5. Start applying the load at the specified pace rate, which could be maintained by adjusting the slow fast knob.

6. If the pace rate is on higher side the indicator displays red color and the pace rate is on lower side the indicator will display yellow color.

7. If the pace rate is exactly equal to set rate then the indicator will display green color.

8. As soon as sample fails, release the pressure slowly by opening valve.

9. The digital display will be holding the maximum load reading at which sample has failed. Note down the pattern of failure and calculate the compressive strength in N/mm^2 or kg/cm^2.

10. Pace rate for 15 cm cube is 5.15 kN/s.

11. Before starting another test, clean the lower platen and bring the digital display to “Zero” position by depressing the “Reset” switch.

Chapter 4

Experimental work

Material used

Cement

Table. Physical Properties of cement

Sr. No	Properties	Chart results
1	Specific gravity	3.11
2	Fineness	2.00%
3	Normal Consistency	33.00%
4	Initial setting time	34 minutes

Fine Aggregates

Locally available river sand, passing through 4.75mm sieve and retained on 150 micron and free from impurities is used for the work. The tests were conducted as per IS 2386-1975 and result of sieve analysis and physical properties of fine aggregates are shown below

Table. Physical Properties of Fine Aggregate

Sr no	Property	Chart results
1	Specific gravity	2.416
2	Water absorption	2.04%
3	Bulk density	1720 Kg/m3

Table. Sieve Analysis Results of Fine Aggregates

Sr no	IS Sieve Size	Cumulative % passing
1	10mm	100
2	4.75mm	97
3	2.36mm	92.4
4	1.18mm	69.2
5	600 micron	39.8
6	300 micron	3.4
7	150 micron	0.02
8	Pan	0

Coarse aggregate

Crushed stone of 20mm down size and 12.5mm were used in this present work. The sieve analysis result and physical properties of coarse aggregate of 20mm down and 12.5mm size are shown in following tables.

Table. Physical Properties of Coarse Aggregate

Size of aggregate	20 mm	12.5 mm
specific gravity	2.773	2.8
water absorption	1.50%	2.53
bulk density	1570 kg/m^3	1562 kg/m^3

Table. Sieve Analysis Results of Coarse Aggregate

Sr.No	IS Sieve size	Cumulative % passing	
		20mm	12.5mm
1	40mm	100	100
2	20mm	61.62	100
3	12.5mm	3.04	96.7
4	10mm	1.02	88.89
5	4.75mm	0.01	2.03
6	Pan	0	0

Mix design

Using the physical properties of cement, fine aggregate and coarse aggregate concrete mix was designed for M- 20 grade concrete. The concrete mix is designed as per IS 10262:2009 for the M-20 Grade of concrete for two different water-cement ratios such as 0.55 and 0.53.The mix proportions are presented in following table.

Table. Mix proportions

Sr no	w/c ratio	Cement	FA	CA
1	0.53	361.67	378.78	1150.83
2	0.55	348.32	689.42	1149.79

Casting

Six numbers of cubes of size 150*150*150 were casted which are tested by Rebound hammer test, Ultrasonic pulse velocity test and by Compression testing machine for getting compressive strength of concrete.

Curing

The casted concrete cubes demoded after 24 hours. Out of which two are kept in water tank for 7 days, two for 28 days and 2 are tested for 7 days without curing.

Fly ash

Fly ash can be used as prime material in many cement-based products, such as poured concrete, concrete block, and brick. One of the most common uses of fly ash is in Portland cement concrete pavement or PCC pavement.

Nylon fibers

The nylon fiber is used in variety of applications owing to its high strength, resilience and durability but their disposals pose a serious threat in environment. The use of nylon fiber in concrete hence gives good alternative to the disposal and fibers in turn impart useful characteristics to concrete. In present study, various proportions of nylon fiber are added in concrete and its effect on workability, compressive strength and tensile strength is reported.

Compressive Strength of Concrete -Cube Test, Procedure, Results

Compressive strength of concrete cube test provides an idea about all the characteristics of concrete. By this single test one judge that whether Concreting has been done properly or not. Concrete compressive strength for general construction varies from 15 MPa (2200 psi) to 30 MPa (4400 psi) and higher in commercial and industrial structures.

Compressive strength of concrete depends on many factors such as water-cement ratio, cement strength, quality of concrete material, and quality control during production of concrete etc.

Test for compressive strength is carried out either on cube or cylinder. Various standard codes recommend concrete cylinder or concrete cube as the standard specimen for the test. American Society for Testing Materials ASTM C39/C39M provides Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

Compressive Strength Definition

Compressive strength is the ability of material or structure to carry the loads on its surface without any crack or deflection. A material under compression tends to reduce the size, while in tension, size elongates.

Compressive Strength Formula

Compressive strength formula for any material is the load applied at the point of failure to the cross-section area of the face on which load was applied.

Compressive Strength = Load / Cross-sectional Area

Procedure: Compressive Strength Test of Concrete Cubes

For cube test two types of specimens either cubes of 15cm X 15cm X 15cm or 10cm X 10cm x 10cm depending upon the size of aggregate are used. For most of the works cubical moulds of size 15cm x 15cm x 15cm are commonly used.

This concrete is poured in the mould and tempered properly so as not to have any voids. After 24 hours these moulds are removed and test specimens are put in water for curing. The top surface of these specimens should be made even and smooth. This is done by putting cement paste and spreading smoothly on whole area of specimen.

These specimens are tested by compression testing machine after 7 days curing or 28 days curing. Load should be applied gradually at the rate of 140 kg/cm2 per minute till the Specimens fails. Load at the failure divided by area of specimen gives the compressive strength of concrete.

Following are the procedure for testing Compressive strength of Concrete Cubes

Apparatus for Concrete Cube Test

Compression testing machine

Preparation of Concrete Cube Specimen

The proportion and material for making these test specimens are from the same concrete used in the field.

Specimen

6 cubes of 15 cm size Mix. M15 or above

Mixing of Concrete for Cube Test

Mix the concrete either by hand or in a laboratory batch mixer

Hand Mixing

Mix the cement and fine aggregate on a water tight none-absorbent platform until the mixture is thoroughly blended and is of uniform color

1. Add the coarse aggregate and mix with cement and fine aggregate until the coarse aggregate is uniformly distributed throughout the batch
2. Add water and mix it until the concrete appears to be homogeneous and of the desired consistency

Sampling of Cubes for Test

1. Clean the mounds and apply oil
2. Fill the concrete in the molds in layers approximately 5 cm thick
3. Compact each layer with not less than 35 strokes per layer using a tamping rod (steel bar 16mm diameter and 60cm long, bullet pointed at lower end)
4. Level the top surface and smoothen it with a trowel

Curing of Cubes

The test specimens are stored in moist air for 24 hours and after this period the specimens are marked and removed from the molds and kept submerged in clear fresh water until taken out prior to test.

Precautions for Tests

The water for curing should be tested every 7 days and the temperature of water must be at 27+-2oC.

Procedure for Concrete Cube Test

1. Remove the specimen from water after specified curing time and wipe out excess water from the surface.
2. Take the dimension of the specimen to the nearest 0.2m
3. Clean the bearing surface of the testing machine
4. Place the specimen in the machine in such a manner that the load shall be applied to the opposite sides of the cube cast.
5. Align the specimen centrally on the base plate of the machine.
6. Rotate the movable portion gently by hand so that it touches the top surface of the specimen.
7. Apply the load gradually without shock and continuously at the rate of 140 kg/cm^2/minute till the specimen fails
8. Record the maximum load and note any unusual features in the type of failure.

Note:

Minimum three specimens should be tested at each selected age. If strength of any specimen varies by more than 15 percent of average strength, results of such specimen should be rejected. Average of three specimens gives the crushing strength of concrete. The strength requirements of concrete.

Calculations of Compressive Strength

Size of the cube =15cmx15cmx15cm

Area of the specimen (calculated from the mean size of the specimen)=225 cm^2
Characteristic compressive strength(f ck)at 7 days =

Expected maximum load =fck x area x f.s

Range to be selected is …………………..

Similar calculation should be done for 28 day compressive strength

Maximum load applied =……….tones = ………….N

Compressive strength = (Load in N/ Area in mm$^{2)}$=…………..N/mm^2
=……………………….N/mm^2

Reports of Cube Test

1. Identification mark
2. Date of test
3. Age of specimen
4. Curing conditions, including date of manufacture of specimen
5. Appearance of fractured faces of concrete and the type of fracture if they are unusual

Results of Concrete Cube Test

Average compressive strength of the concrete cube = ………….N/ mm^2 (at 7 days)
Average compressive strength of the concrete cube =………. N/mm^2 (at 21 days)
Average compressive strength of the concrete cube =………. N/mm^2 (at 28 days)

Table. Compressive Strength of Concrete at Various Ages

Age	**Strength percent**
1 day	16%
3 days	40%
7 days	65%
14 days	90%
28 days	99%

The strength of concrete increases with age. Table shows the strength of concrete at different ages in comparison with the strength at 28 days after casting.

Table. Compressive Strength of Different Grades of Concrete at 7 and 28

days Grade of Concrete	Minimum compressive strength N/mm² at 7 days	Specified characteristic compressive strength (N/mm²) at 28 days
M15	10	15
M20	13.5	20
M25	17	25
M30	20	30
M35	23.5	35
M40	27	40
M45	30	45

Chapter 5

Result and discussion

Readings are as given below…

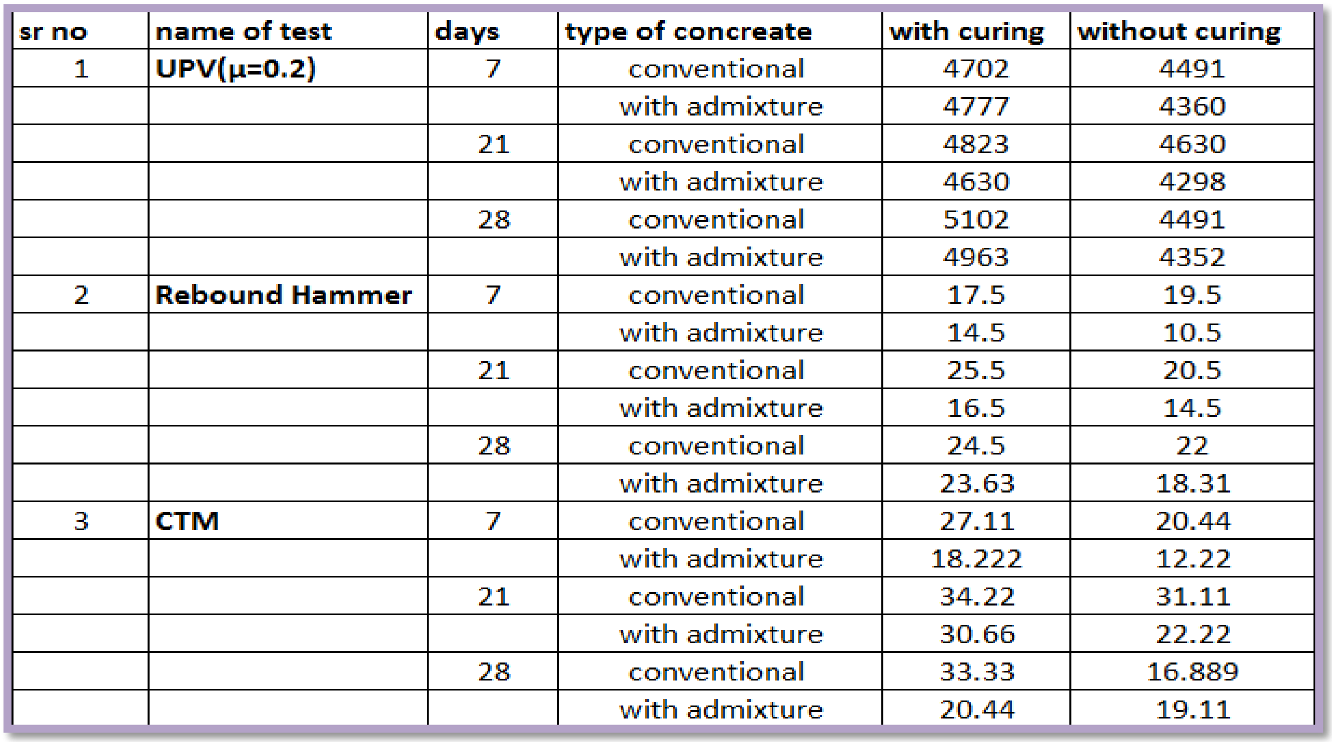
For M20 grade μ=0.2

Sr.no.	name of test	days	type of concrete	with curing	without curing
1	UPV(μ=0.2)	7	conventional	4854	4491
			with admixture	4559	4630
		21	conventional	4808	4559
			with admixture	3538	3856
		28	conventional	4054	4559
			with admixture	4630	4065
2	Rebound Hammer	7	conventional	19	21
			with admixture	13.5	14
		21	conventional	22	18
			with admixture	16.5	15.5
		28	conventional	20	24.5
			with admixture	17.5	18.5
3	CTM	7	conventional	26.667	21.12
			with admixture	15.111	15.111
		21	conventional	25.778	25.778
			with admixture	25.77	16
		28	conventional	36.889	37.778
			with admixture	22.22	18.66

For M20 grade μ=0.5

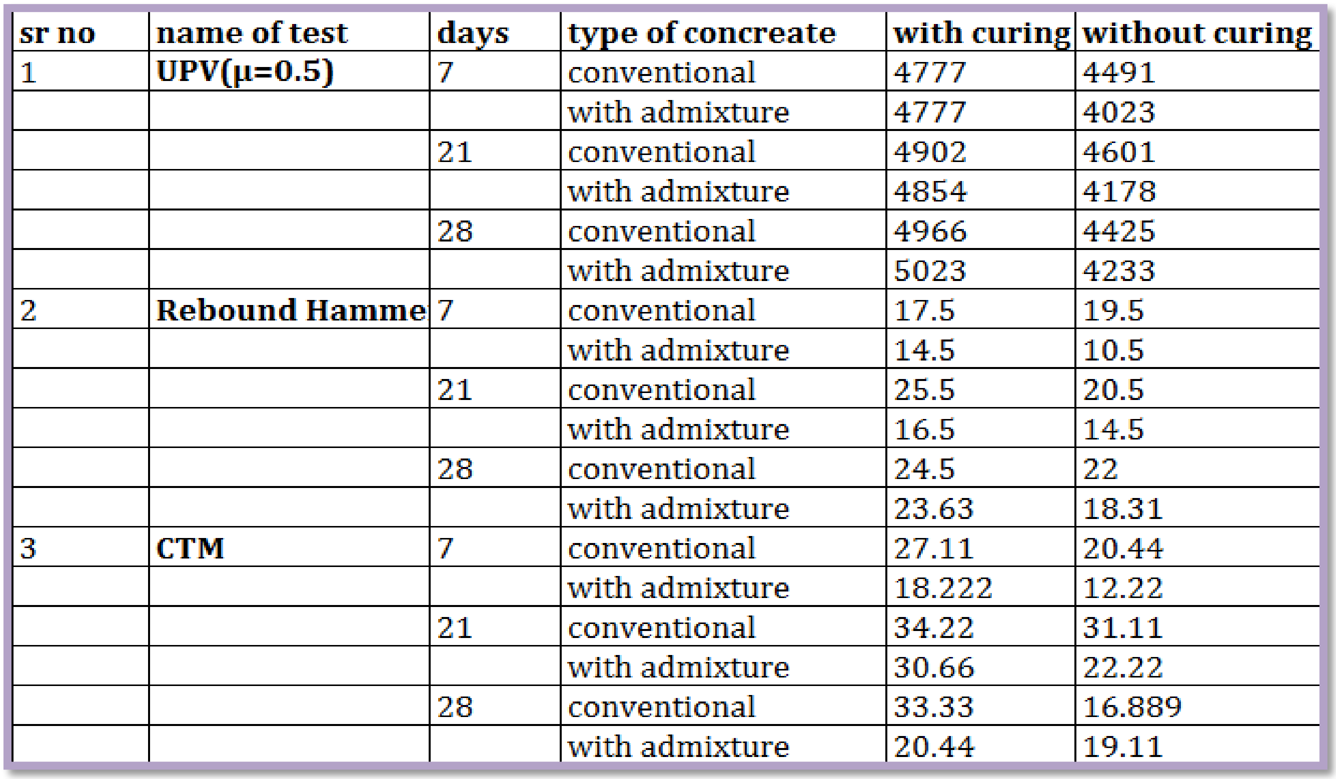
sr no	name of test	days	type of concrete	with curing	without curing
1	UPV(μ=0.5)	7	conventional	4934	4559
			with admixture	4425	4425
		21	conventional	5017	4491
			with admixture	4491	3807
		28	conventional	4934	4425
			with admixture	4777	4178
2	Rebound Hammer	7	conventional	19	21
			with admixture	13.5	14
		21	conventional	22	18
			with admixture	16.5	15.5
		28	conventional	20	24.5
			with admixture	17.5	18.5
3	CTM	7	conventional	26.667	21.12
			with admixture	15.111	15.111
		21	conventional	25.778	25.778
			with admixture	25.77	16
		28	conventional	36.889	37.778
			with admixture	22.22	18.66

For M25 grade μ=0.2



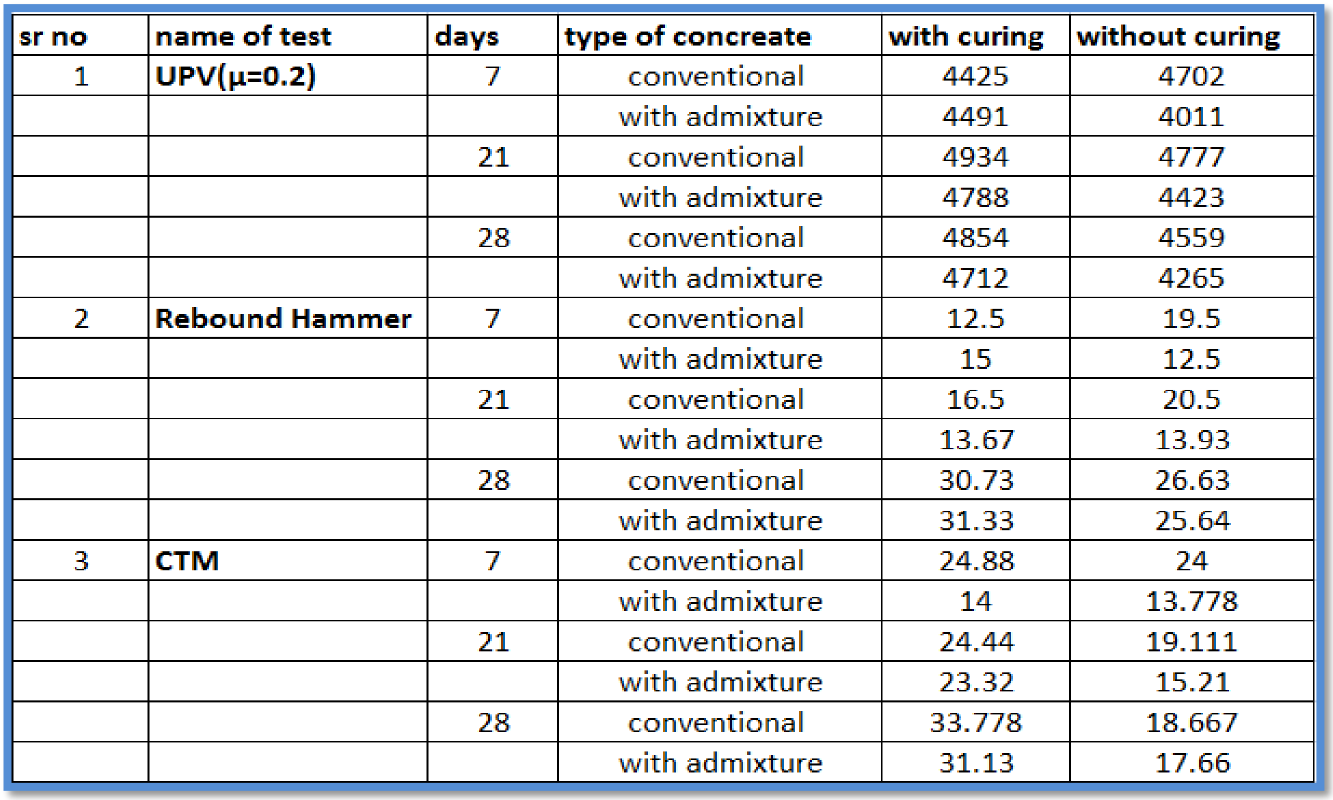
sr no	name of test	days	type of concreate	with curing	without curing
1	UPV(μ=0.2)	7	conventional	4702	4491
			with admixture	4777	4360
		21	conventional	4823	4630
			with admixture	4630	4298
		28	conventional	5102	4491
			with admixture	4963	4352
2	Rebound Hammer	7	conventional	17.5	19.5
			with admixture	14.5	10.5
		21	conventional	25.5	20.5
			with admixture	16.5	14.5
		28	conventional	24.5	22
			with admixture	23.63	18.31
3	CTM	7	conventional	27.11	20.44
			with admixture	18.222	12.22
		21	conventional	34.22	31.11
			with admixture	30.66	22.22
		28	conventional	33.33	16.889
			with admixture	20.44	19.11

For M25 grade μ=0.5



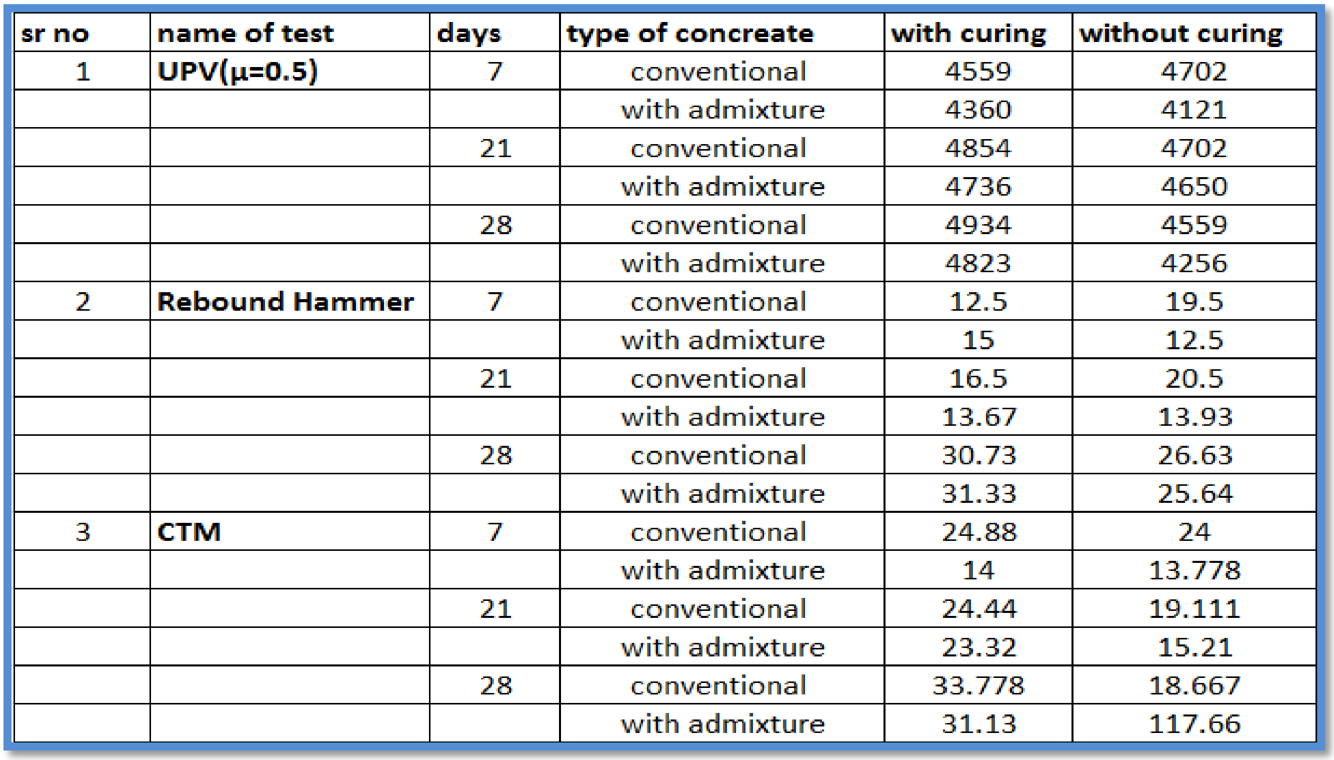
sr no	name of test	days	type of concreate	with curing	without curing
1	UPV(μ=0.5)	7	conventional	4777	4491
			with admixture	4777	4023
		21	conventional	4902	4601
			with admixture	4854	4178
		28	conventional	4966	4425
			with admixture	5023	4233
2	Rebound Hamme	7	conventional	17.5	19.5
			with admixture	14.5	10.5
		21	conventional	25.5	20.5
			with admixture	16.5	14.5
		28	conventional	24.5	22
			with admixture	23.63	18.31
3	CTM	7	conventional	27.11	20.44
			with admixture	18.222	12.22
		21	conventional	34.22	31.11
			with admixture	30.66	22.22
		28	conventional	33.33	16.889
			with admixture	20.44	19.11

For M30 μ=0.2



sr no	name of test	days	type of concreate	with curing	without curing
1	UPV(μ=0.2)	7	conventional	4425	4702
			with admixture	4491	4011
		21	conventional	4934	4777
			with admixture	4788	4423
		28	conventional	4854	4559
			with admixture	4712	4265
2	Rebound Hammer	7	conventional	12.5	19.5
			with admixture	15	12.5
		21	conventional	16.5	20.5
			with admixture	13.67	13.93
		28	conventional	30.73	26.63
			with admixture	31.33	25.64
3	CTM	7	conventional	24.88	24
			with admixture	14	13.778
		21	conventional	24.44	19.111
			with admixture	23.32	15.21
		28	conventional	33.778	18.667
			with admixture	31.13	17.66

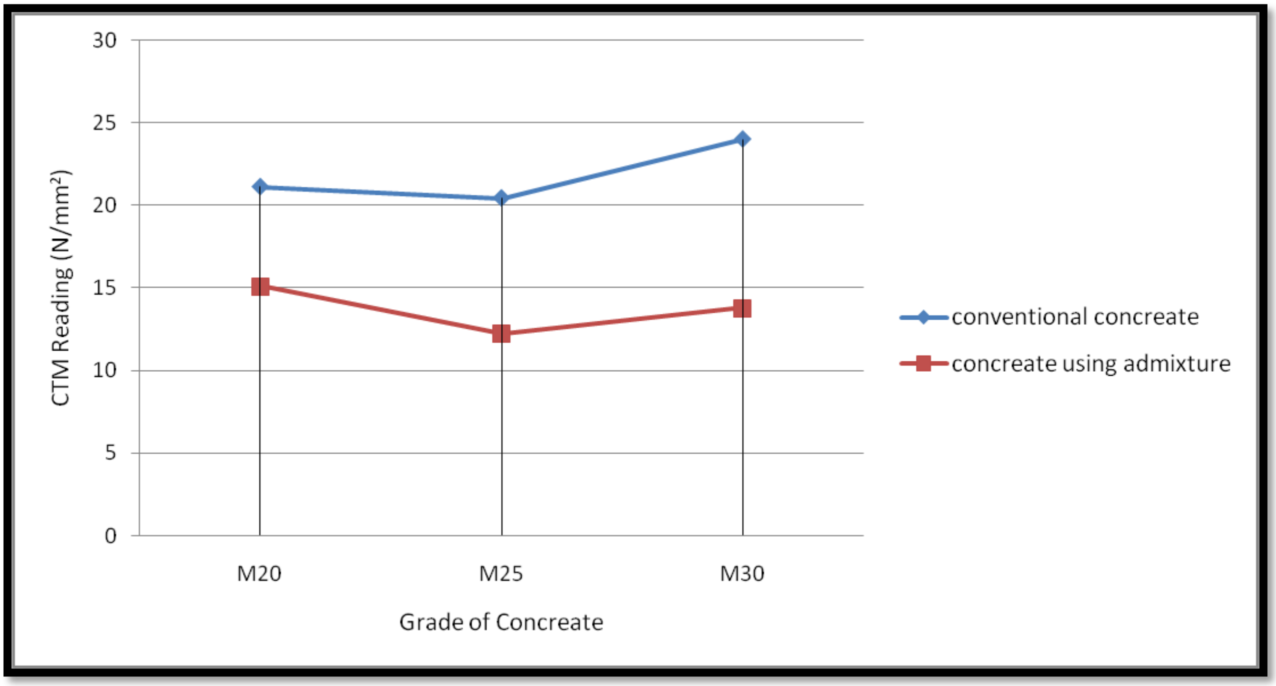
For M30 μ=0.5



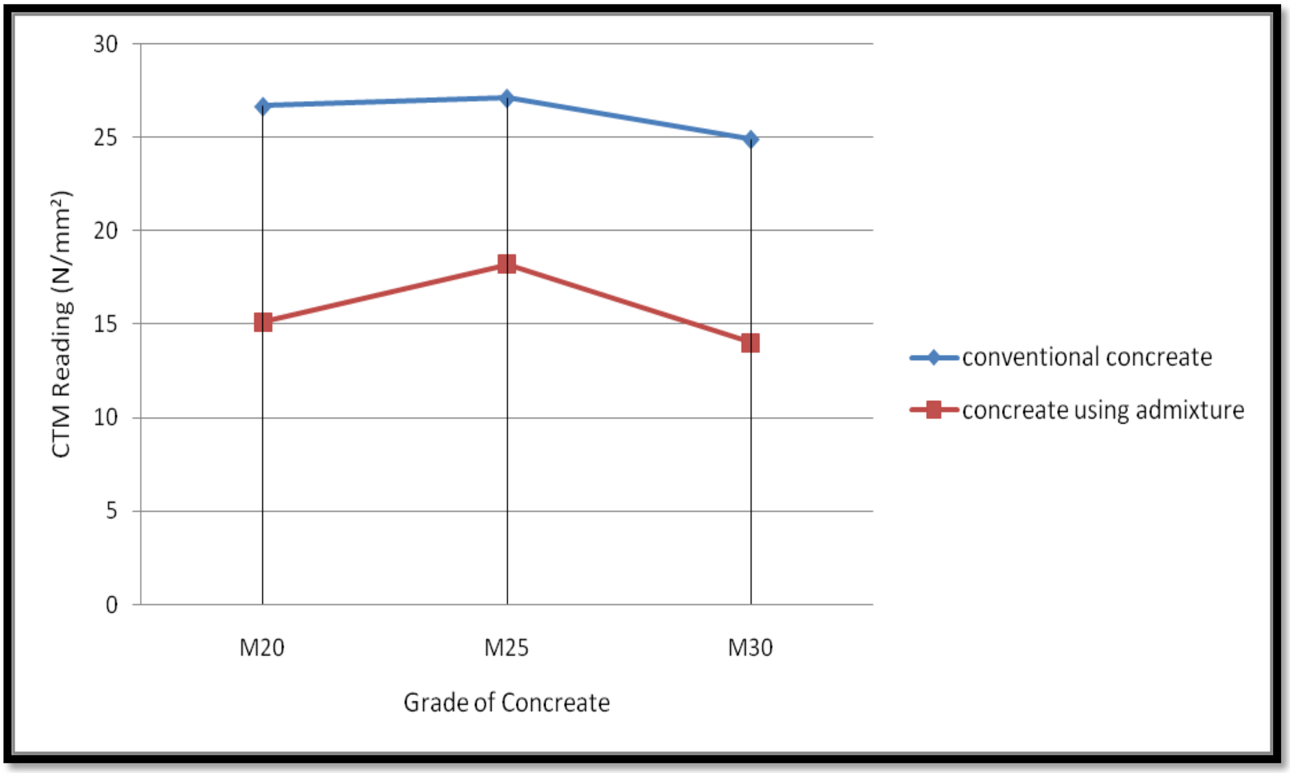
sr no	name of test	days	type of concreate	with curing	without curing
1	UPV(μ=0.5)	7	conventional	4559	4702
			with admixture	4360	4121
		21	conventional	4854	4702
			with admixture	4736	4650
		28	conventional	4934	4559
			with admixture	4823	4256
2	Rebound Hammer	7	conventional	12.5	19.5
			with admixture	15	12.5
		21	conventional	16.5	20.5
			with admixture	13.67	13.93
		28	conventional	30.73	26.63
			with admixture	31.33	25.64
3	CTM	7	conventional	24.88	24
			with admixture	14	13.778
		21	conventional	24.44	19.111
			with admixture	23.32	15.21
		28	conventional	33.778	18.667
			with admixture	31.13	117.66

Compression Testing Machine (CTM)

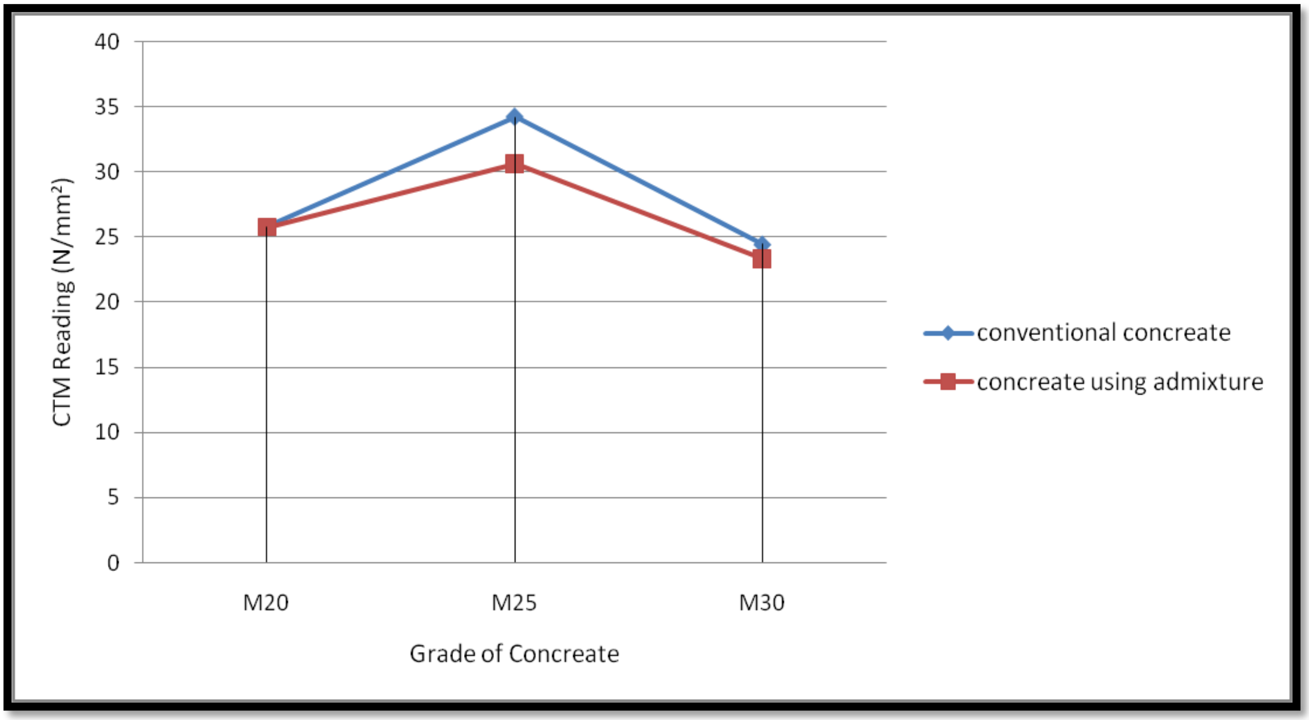
CTM 7 day with curing



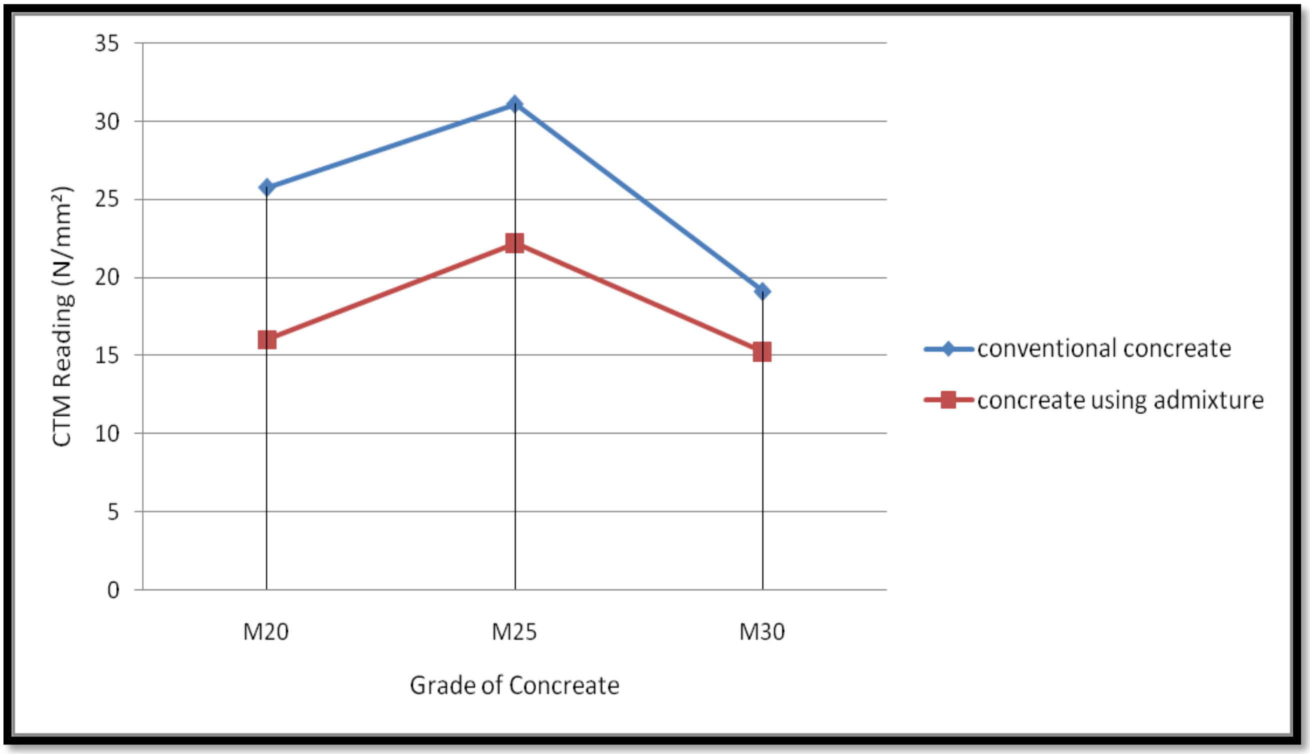
CTM 7 day without curing



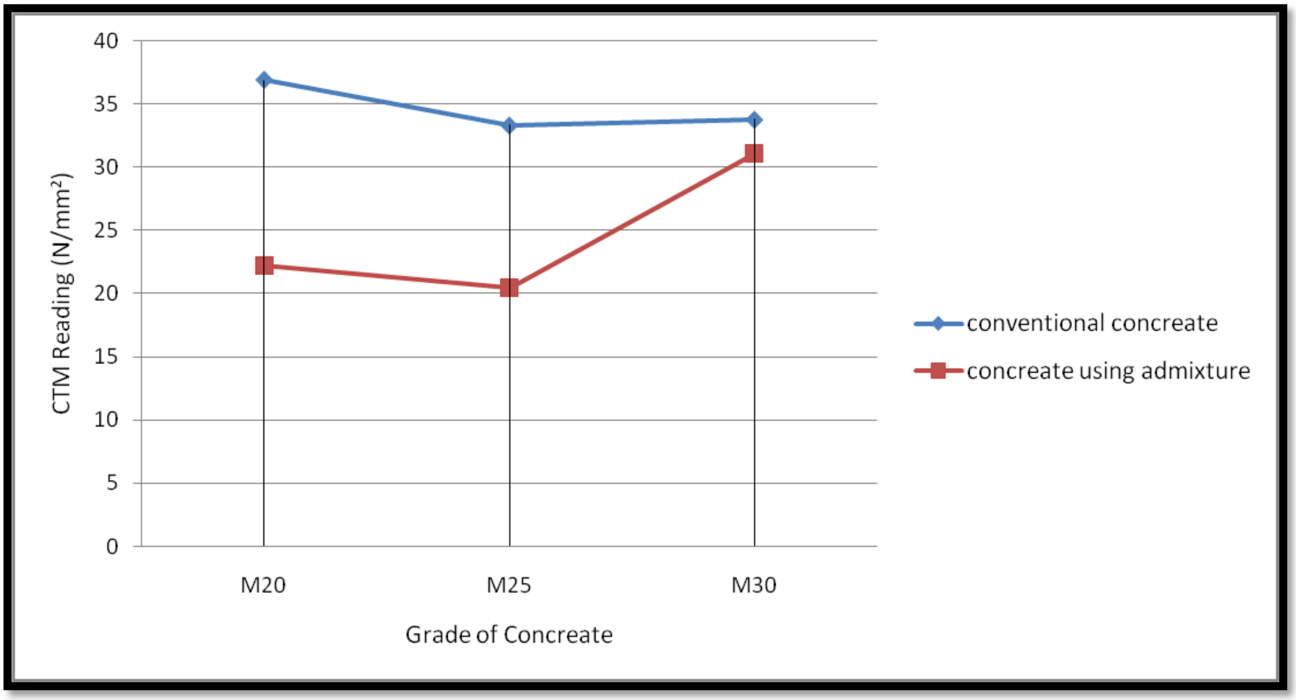
CTM 21day with curing



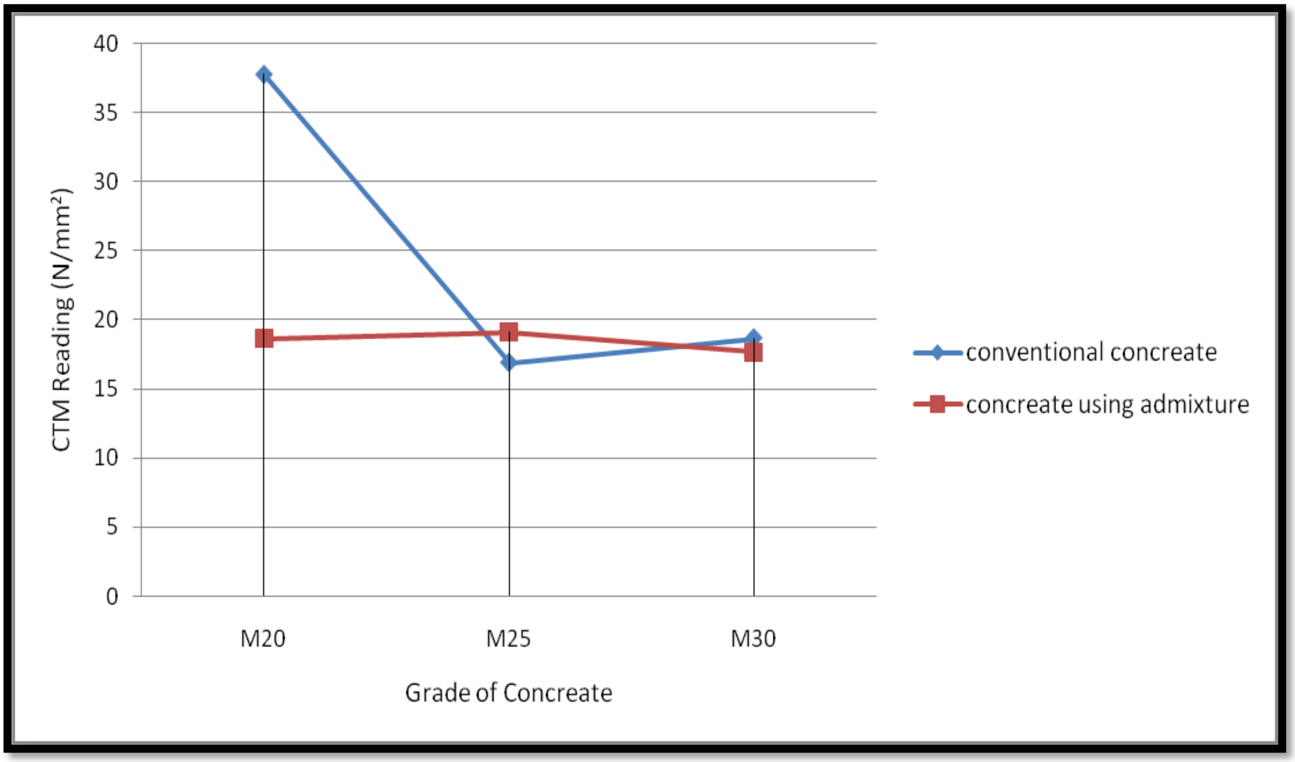
CTM 21day without curing



CTM 28day with curing

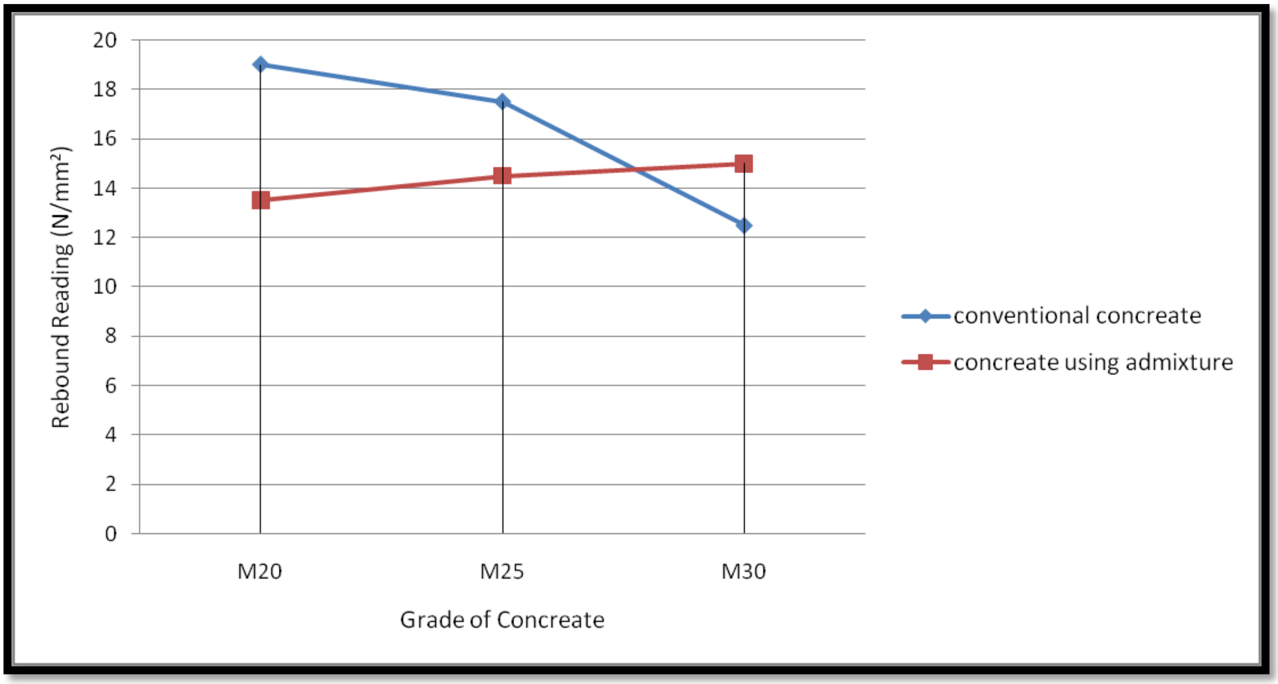


CTM 28day without curing

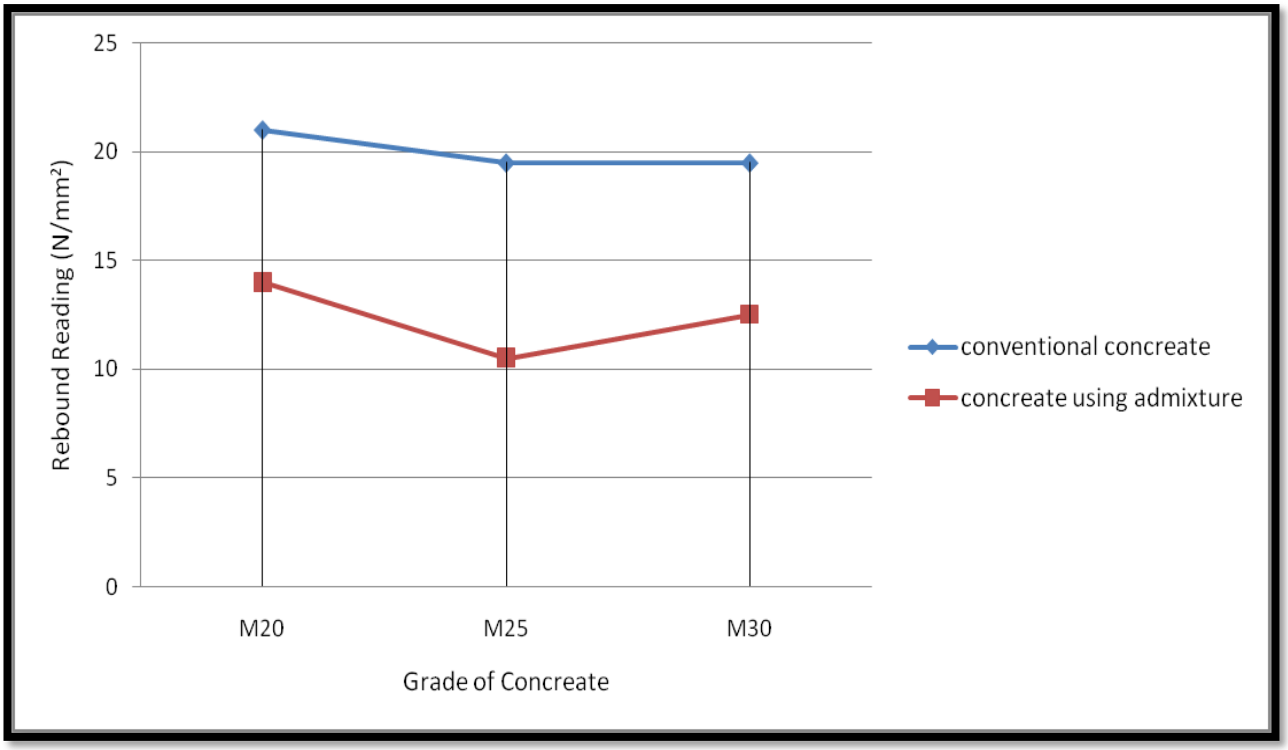


Rebound hammer 7 day with curing

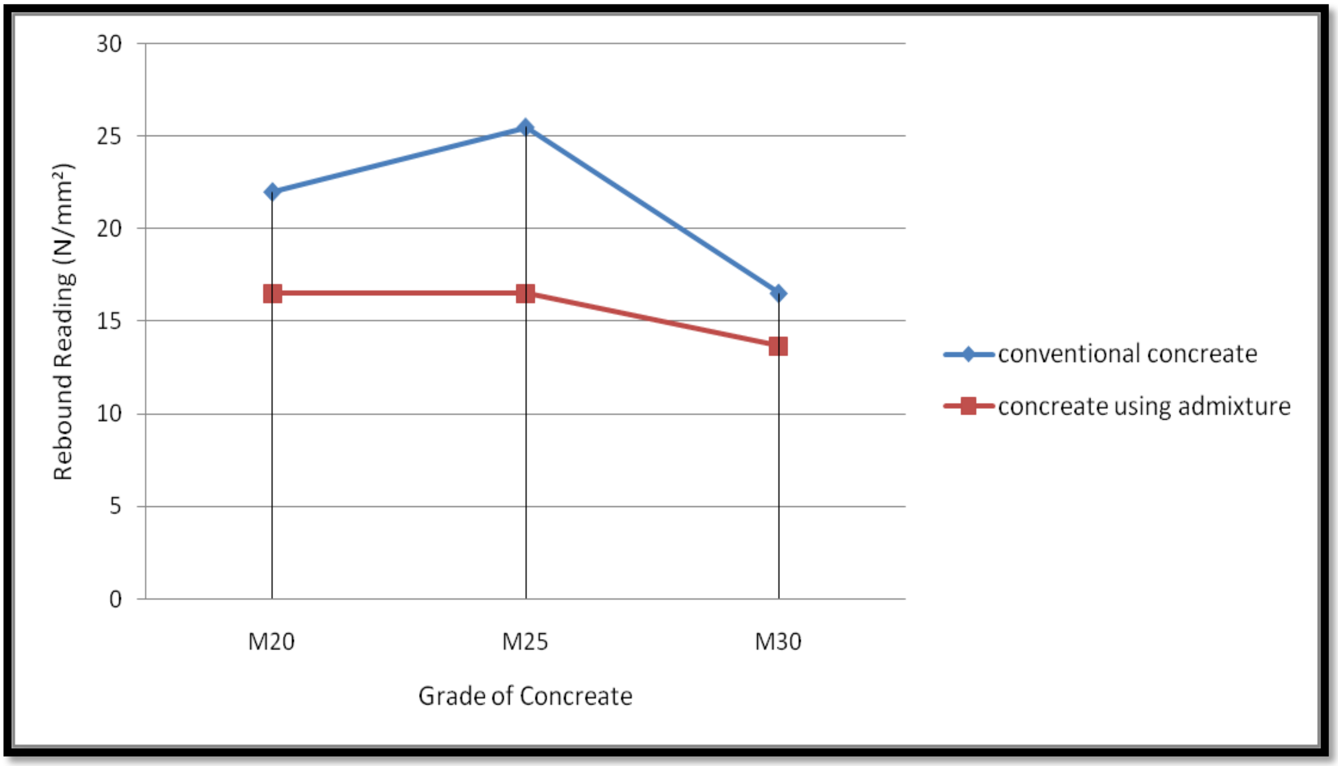
Rebound hammer 7 day with curing



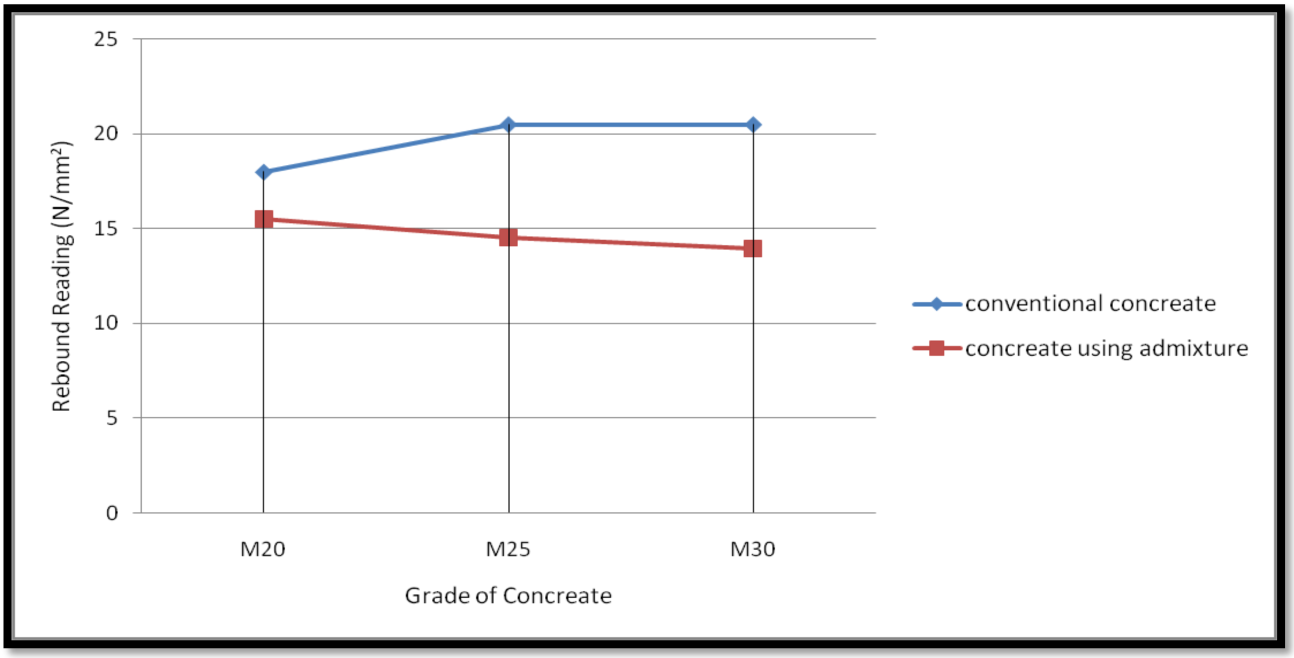
Rebound hammer 7 day without curing



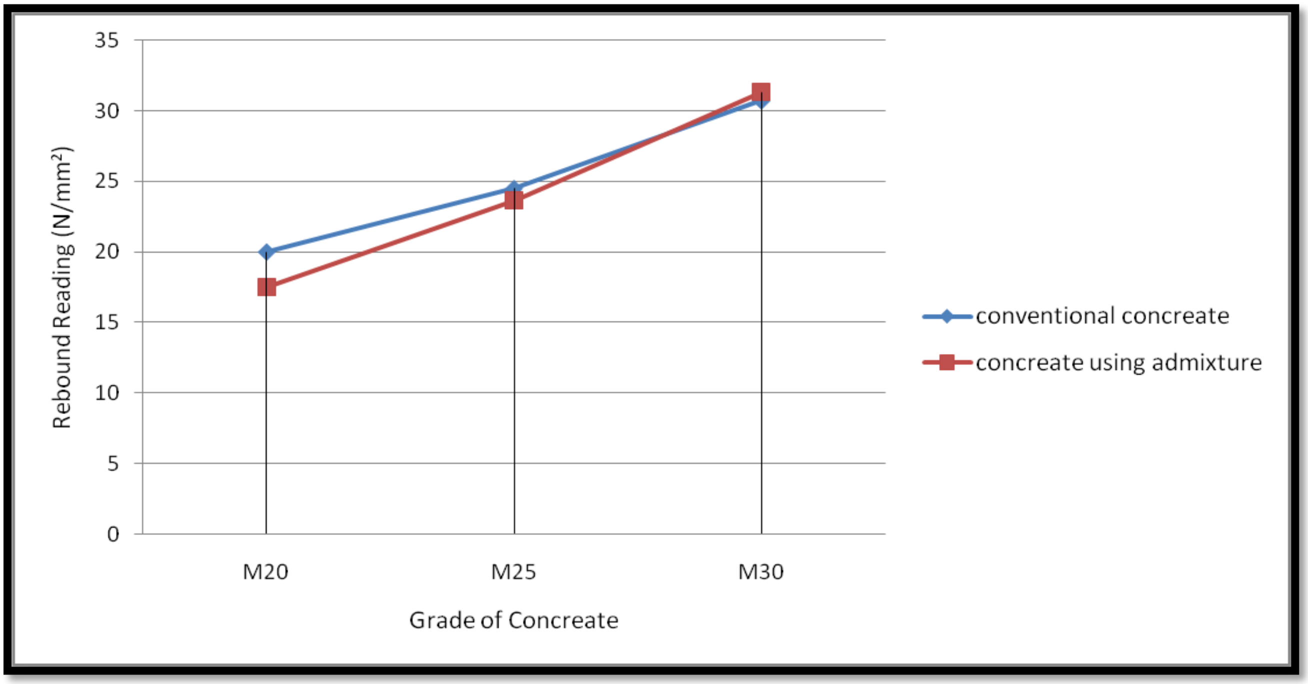
Rebound hammer 21day with curing



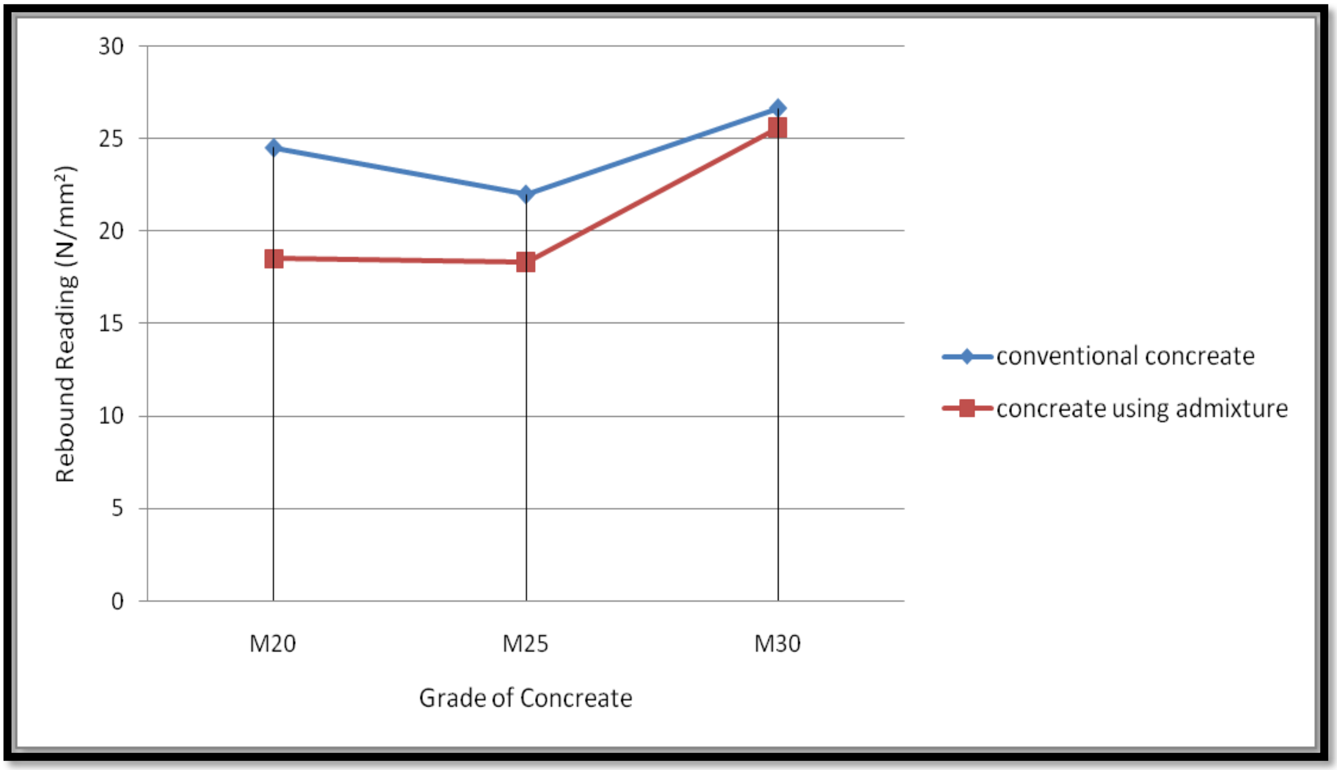
Rebound hammer 21day without curing



Rebound hammer 28 day with curing

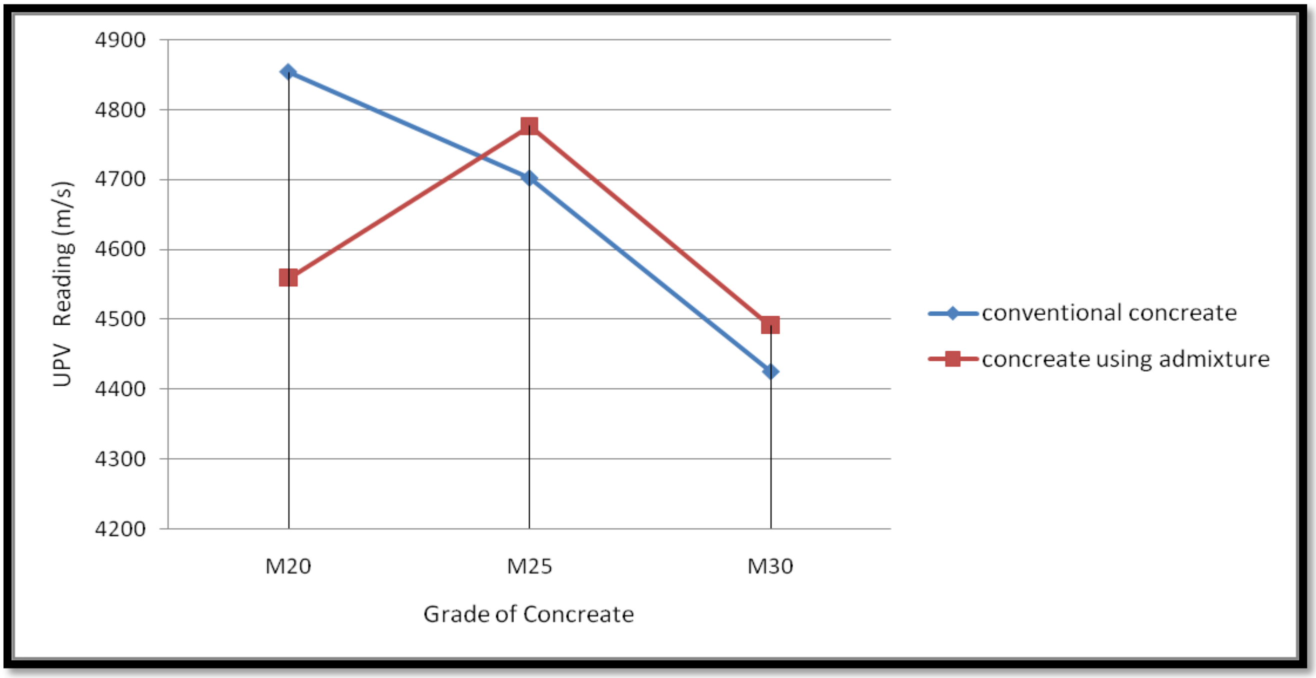


Rebound hammer 28 day without curing

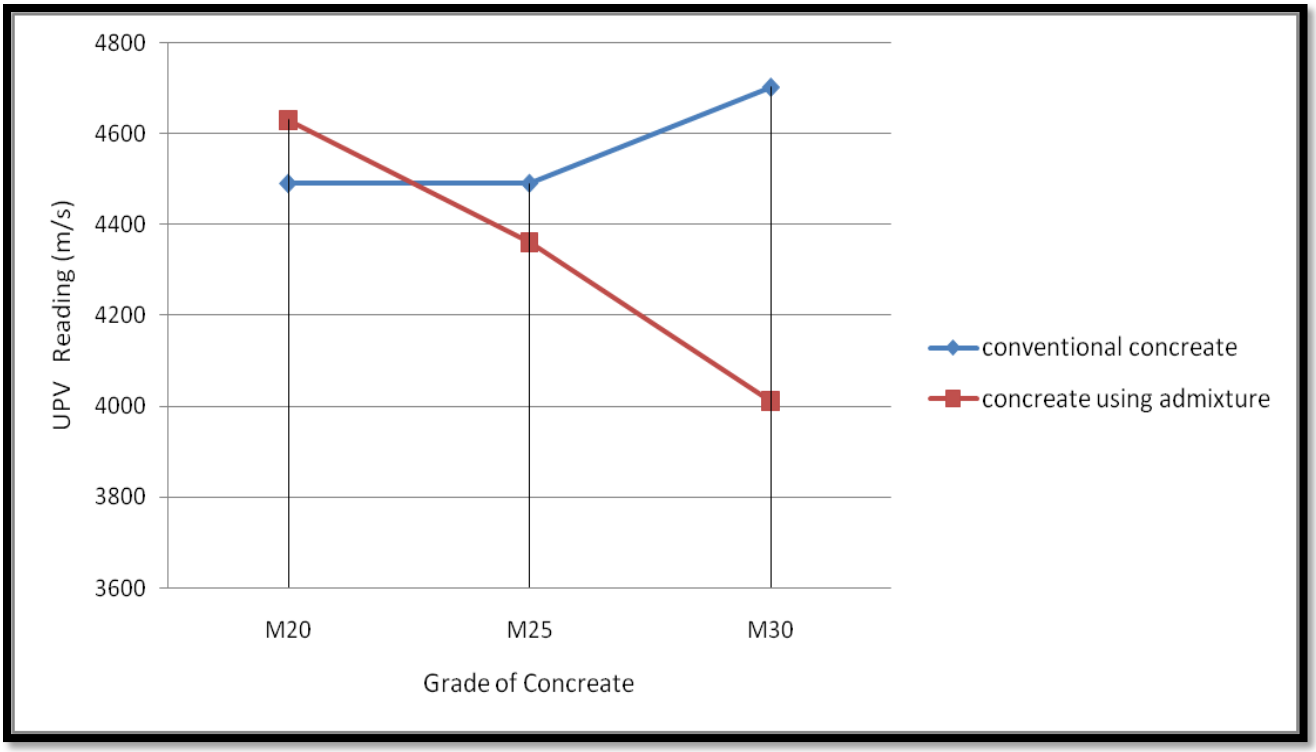


Ultrasonic pulse velocity

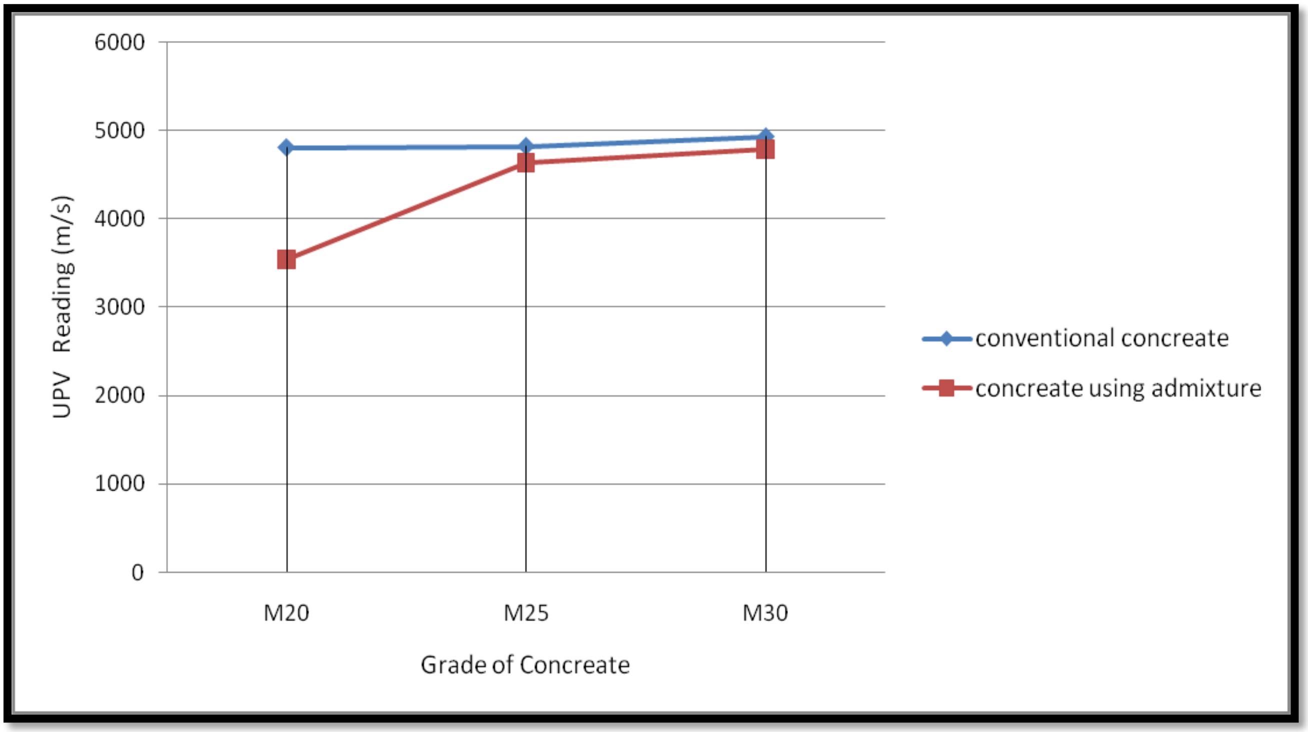
7 days ultrasonic pulse velocity μ=0.2 with curing



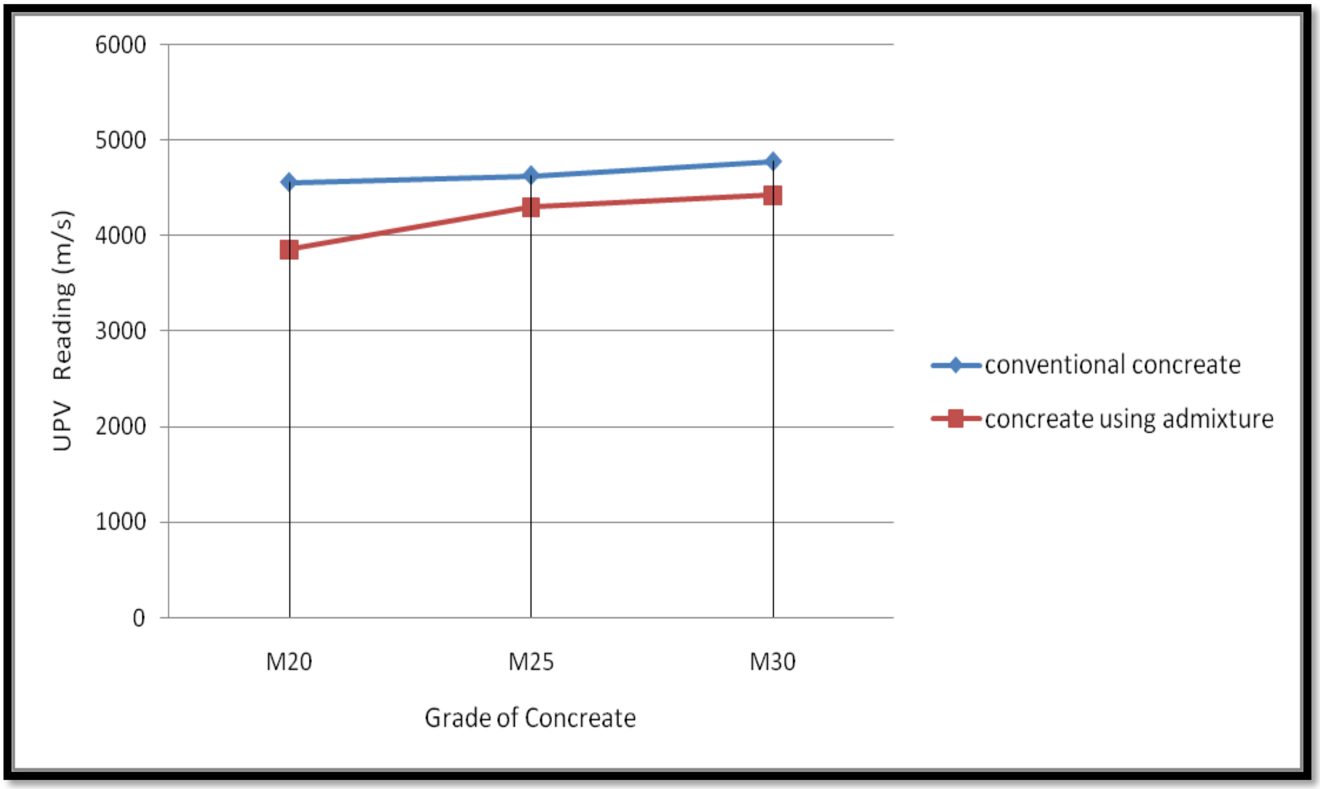
7 days ultrasonic pulse velocity μ=0.2 without curing



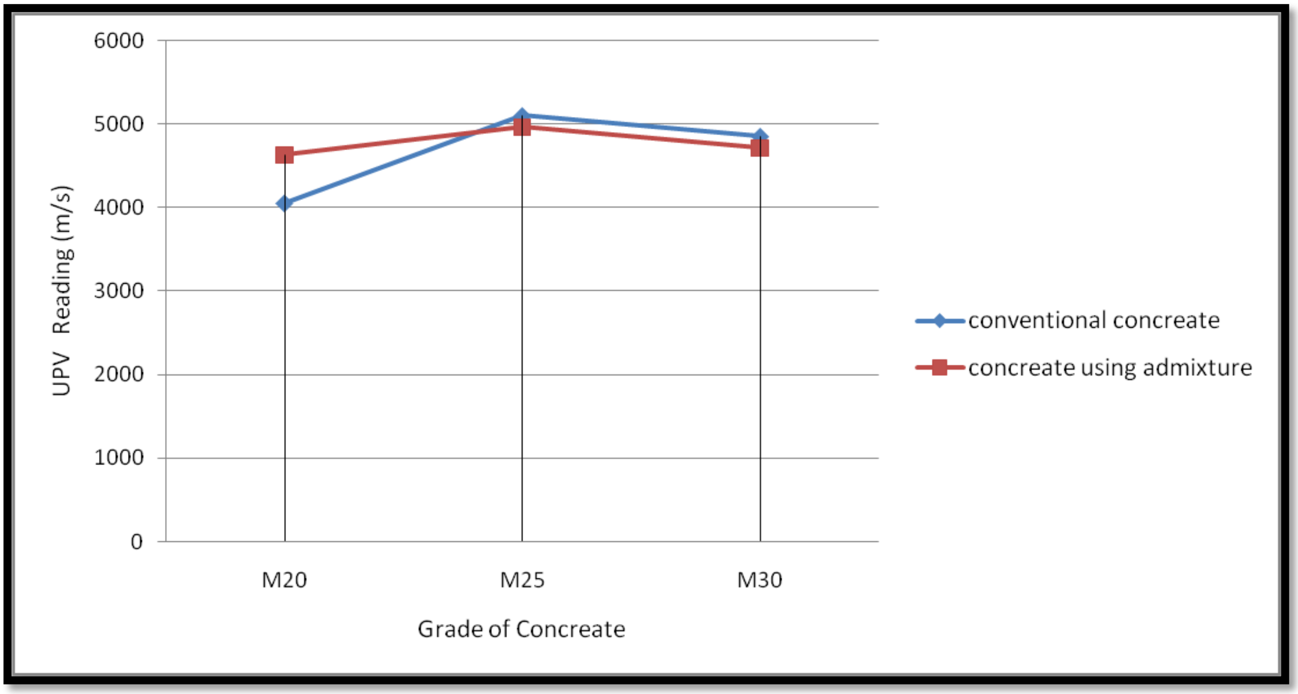
21 days ultrasonic pulse velocity μ=0.2 with curing



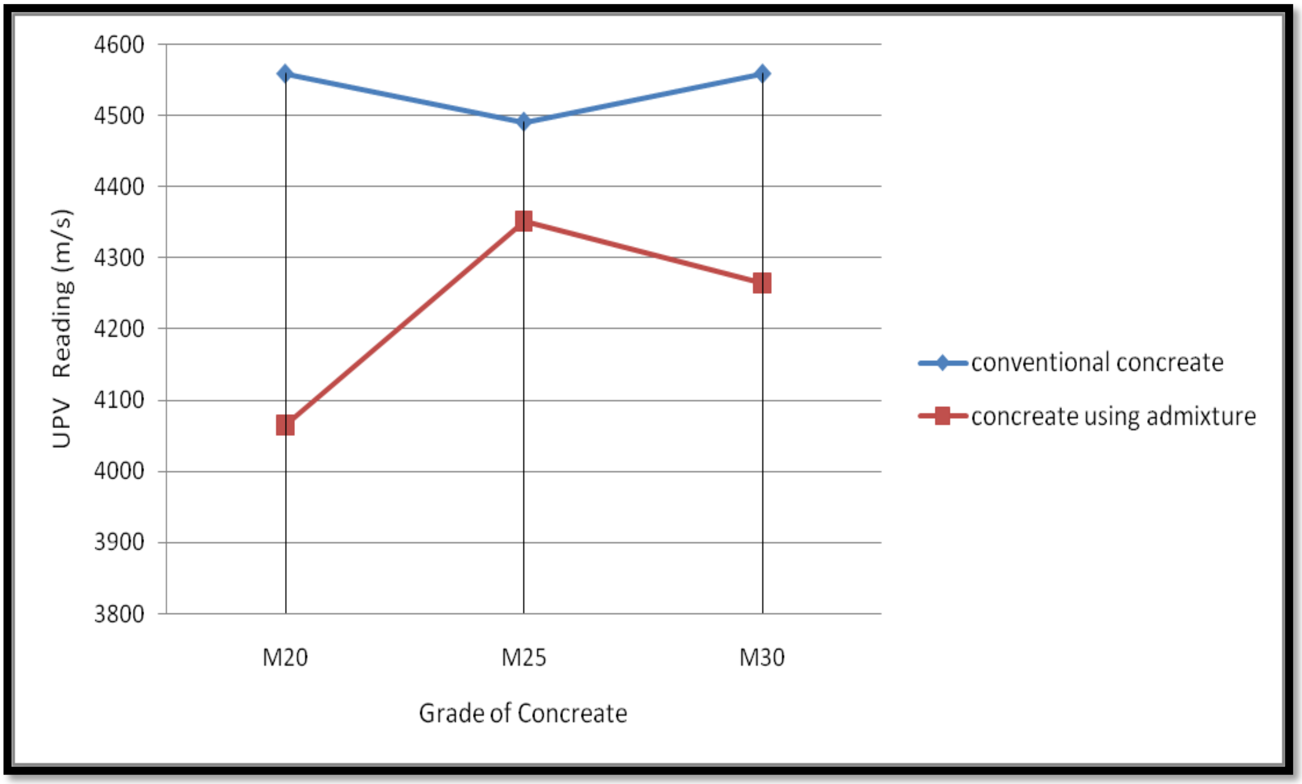
21 days ultrasonic pulse velocity μ=0.2 without curing



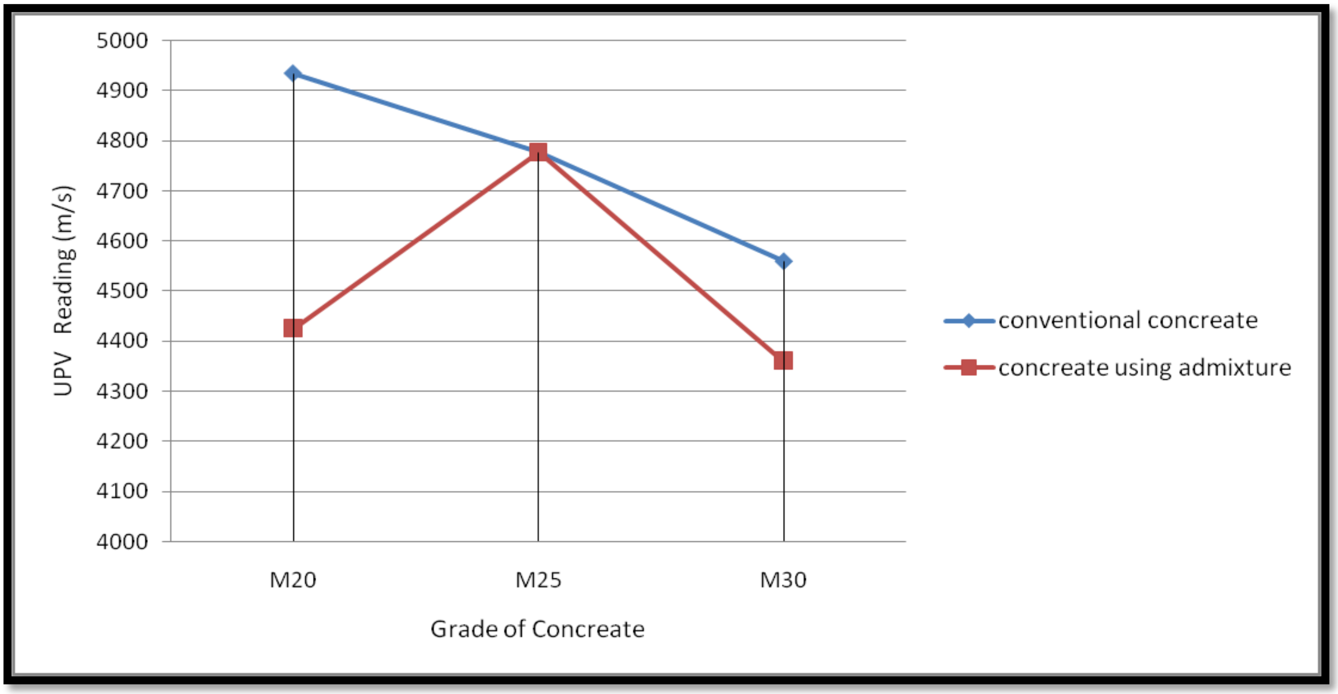
28 days ultrasonic pulse velocity µ=0.2 with curing



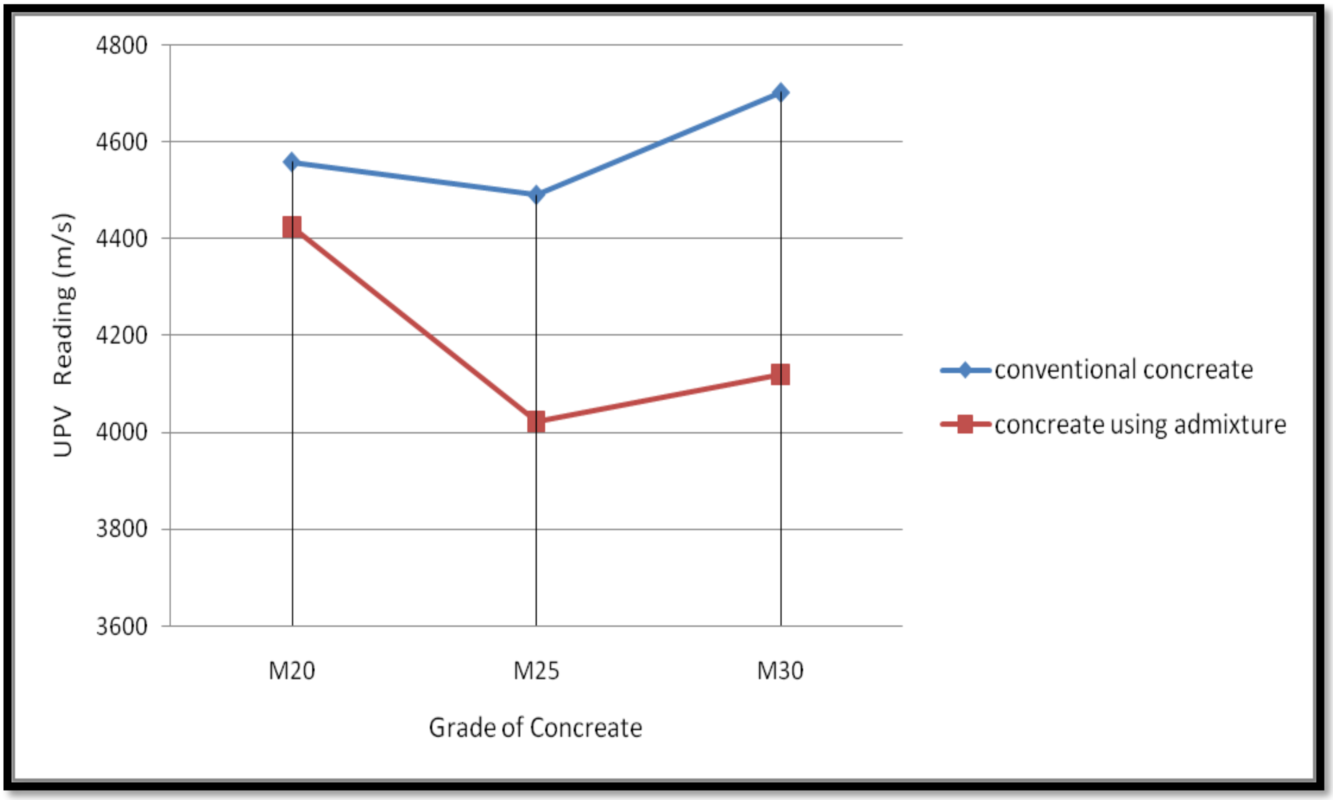
28 days ultrasonic pulse velocity µ=0.2 without curing



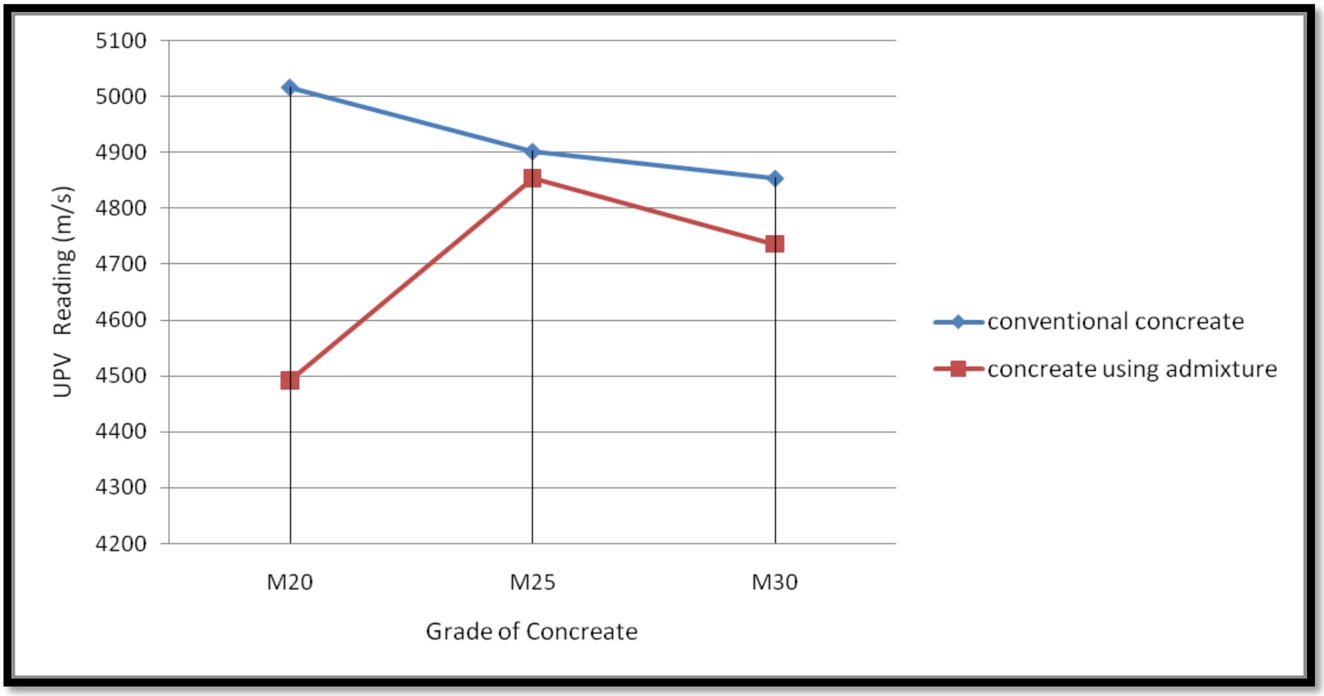
7 days ultrasonic pulse velocity µ=0.5 with curing



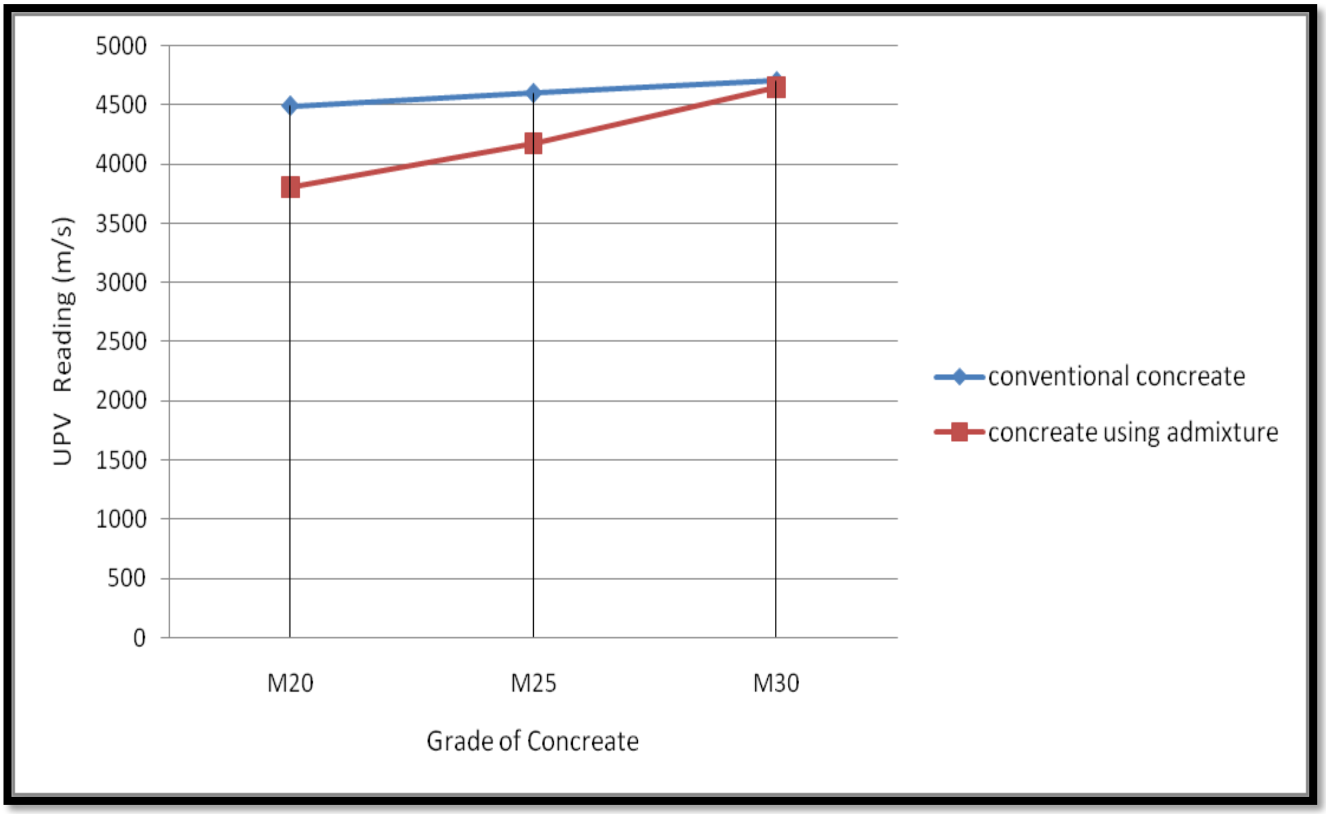
7 days ultrasonic pulse velocity µ=0.5 without curing



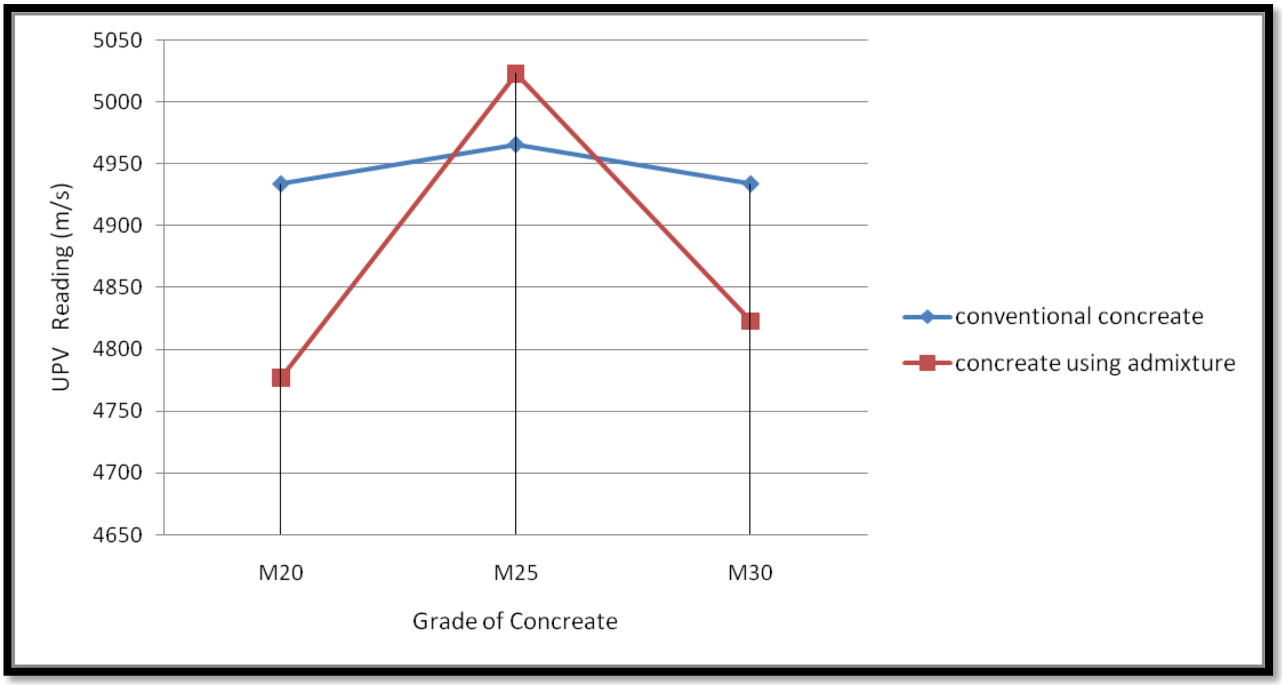
21days ultrasonic pulse velocity μ=0.5 with curing



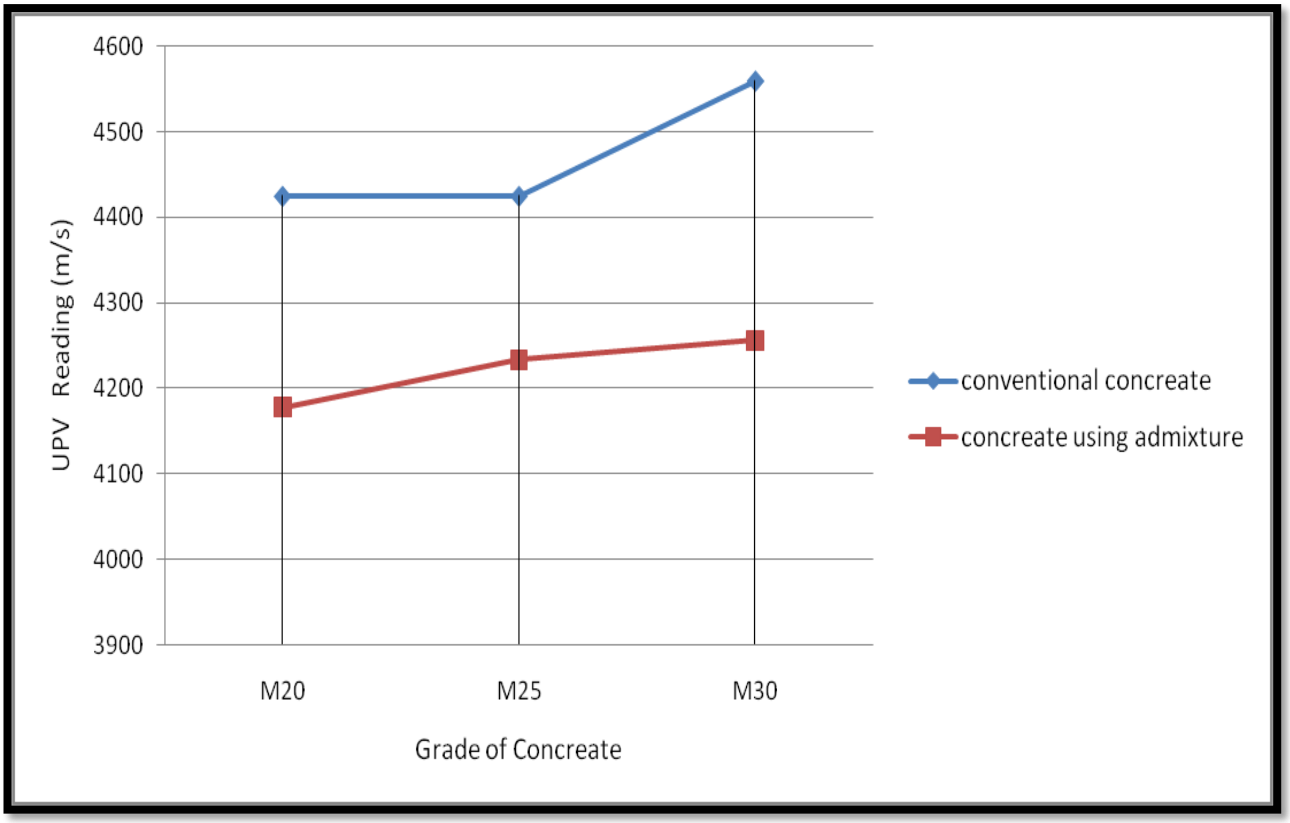
21days ultrasonic pulse velocity μ=0.5 without curing



28days ultrasonic pulse velocity μ=0.5 with curing



28days ultrasonic pulse velocity μ=0.5 without curing



Chapter 6

Conclusion

From the experimental study, we can derive the following conclusions:

1. The readings of UPV increases with age but the change is very small, reason behind it is that the density of the concrete remains same with the increase in age, so UPV alone cannot be used to find out the compressive strength.
2. From results, we firstly confirmed that there exists an exponential relationship between the compressive strength f_{ck} of the concrete cube and the longitudinal speed of propagation of ultrasound in them, v. The equations obtained from exponential regression for all grades of concrete can be used to determine the concrete strengths of the concrete mix proportions.

3. This study proposed a useful mathematical linear relationship that helps the researchers to anticipate confidently the compressive strength of standard concrete cubes, by measuring the ultrasonic pulse velocity with ultrasonic pulse velocity test. The mathematical expression is applicable for a wide range of normal concrete strengths.

4. Because of hardness of concrete increases with age, the readings of rebound hammer increases. We can directly determine the approximate value of compressive strength from the rebound number. But the compressive strength obtained from rebound hammer is less in case of M20 grade concrete and higher in M25 and M30 grades as compared to UPV strength after 28 days of curing.

5. Dependency on just NDT methods (Rebound Hammer Test or Ultrasonic Pulse Velocity Test) to calculate compressive strength of in-situ concrete wills not good results, so we have tested the cubes in CTM to increase the accuracy. And it results that the CTM strength is somewhat less in M20 but it is higher in M25 and M30 as compared with NDT tests at age of 28 days.

Chapter 7
References

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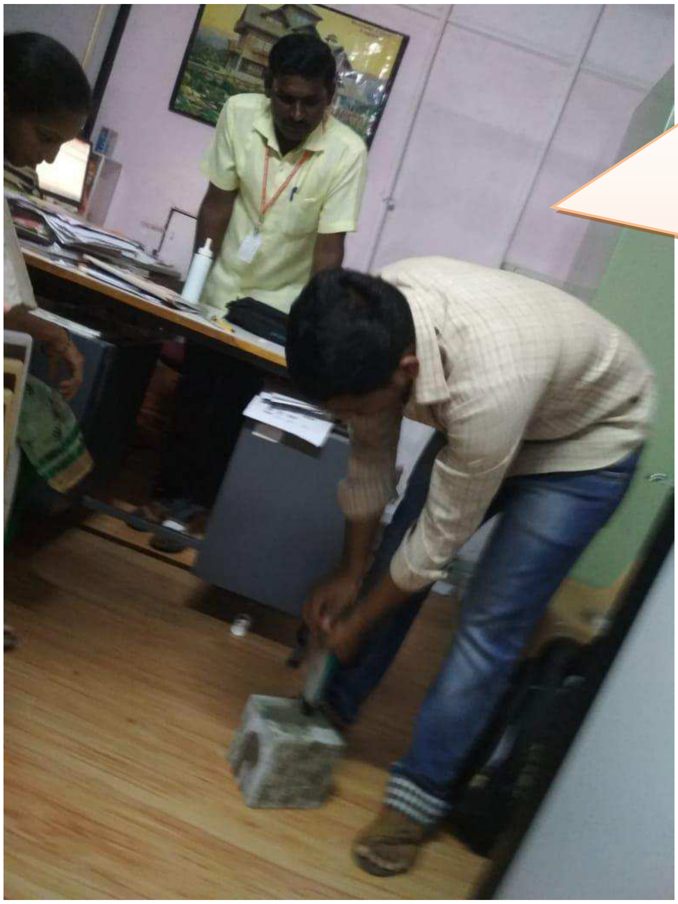
Appendix

Moulds are filled with concreate

During making of concrreate

Providing vibrations to the concreate

Compression testing machine



Using rebound hammer test

Rebound hammer reading

Using ultrasonic pulse velocity test

Curing of blocks