



Report of NDT Testing on Existing Structure

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Abstract

Non-Destructive test: A non-destructive test of concrete is a method to the to know compressive strength and other properties of concrete from the existing structure without destructive Testing. (UPV) test is an in situ, non destructive test to check the strength and quality of concrete. It is based on the pulse velocity method to provide information on the uniformity of concrete cavities, cracks and defects. It can be used to evaluate the quality and homogeneity of concrete materials, predict the strength of concrete, evaluate dynamic modules of elasticity of concrete estimate the depth of cracks in concrete and detect internal flaws, cracks, honey combing and poor patches. We performed this test using the following procedure: This machine was calibrated using a calibration rod & after the calibration, we saw the readings on the actual concrete.

I Introduction

Non-Destructive test: A non-destructive test of concrete is a method to the to know compressive strength and other properties of concrete from the existing structure without destructive Testing

Various NDT methods:

1. Ultra-sonic pulse velocity (UPV) test.
2. Rebound concrete hammer test.
3. Rebar locator test.
4. Crack detection micro-scope test.
5. Chloride test.
6. Sulphate attack test.
7. Ph measurement test.
8. Half-cell potential meter test.

Ultrasonic pulse velocity (UPV) test:

- 1.(UPV) test is an in situ, non destructive test to check the strength and quality of concrete.
- 2.It is based on the pulse velocity method to provide information on the uniformity of concrete cavities, cracks and defects.
- 3.It can be used to evaluate the quality and homogeneity of concrete materials, predict the strength of concrete, evaluate dynamic modules of elasticity of concrete estimate the depth of cracks in concrete and detect internal flaws, cracks, honey combing and poor patches.

Pulse velocity and quality of concrete

Pulse velocity (km/sec)	Concrete quality (grading)
Above 4.5	Excellent
3.5 to 4.5	Good
3.0 to 3.5	medium
Below 3.0	Doubtful

- Advantages of UPV test:-
 1. Internal defects can be detected.
 2. This method is quick and less expensive.
 3. It is a simple procedure of testing and commonly adopted equipment.
 4. It is applicable to any surface of testing.
 5. It is used to find the concrete uniformity and quality is well.
- Dis-advantages of UPV Test :-
 1. Need to correlate the rebound value to the crushing strength value very precisely.

Procedure of Test :-

- We performed this test using the following procedure
 1. This machine was calibrated using a calibration rod.
 2. After the calibration, we saw the readings on the actual concrete by using UPV Tester.

Results :

Location 1:-

Name of school: Kalmeshwar Prashala Sulerjavalge.

Year of construction: 2001

The total no of students studying in this school: 247

Location : At 9 Km away from Tadwal Railway Station.

Result:

Location	Time (μ /s).	Length (MM)	Pulse Velocity $V=L/T$	Quality of Concrete
Column	53	260	4.9	Excellent
Beam	59	250	4.23	Good

➤ Location 2:-

Name of school: Basavraj Prashala, karajgi. (Pin: 413215)

Year of construction: 1961

The total no of students studying in this school : 590

Location: This school is 22.1 km away from the Vatavriksha Swami Samarth Maharaj, temple, Akkalkot.

Result:

Location	Time (μ/s)	Length (MM)	Pulse velocity $V=L/T$	Quality of concrete
column	90	286	3.18	Medium
Paving block	42	55	1.2	Poor/Doubtfull

➤ Location 3:-

Name of School: Nutan Vidyalay Mangrul (Pan)

Year of construction:2008

The total no of students studying in the school :593.

Location this school is 3.2 km from Gokul Mauli sugar factory, Tadwal.

Result:

Location	Time (μ/s).	Length (mm)	Pulse velocity $V=L/T$	Quality of Concrate
Column	113	360	3.18	medium
Column	70.8	262	3.7	good

➤ Location 4:-

Name of the school: Jai Shankar prashala , Tadwal.

Year of construction :2005

The total no of students studying this school: 505

Location: Near at Tadwal Railway Station:

Result:

Location	Time (μ/s).	Length (mm)	Pulse velocity $V=L/T$	Quality of Concrate
Column	83.80	352	4.2	good
wall	105	485	4.6	Excellent

Conclusion

➤ From the above test we conclude that :

The Ultrasonic test is nearly much accuracy among The Non-destructive testing method sinceit gives the nearly correct information needed from the object without damaging it

- Uneven settlement takes place due to B.C. type of soil at the site
- Sludge in the sand had an effect on the strength of the concrete

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