



Center For Concrete Research And Testing



**AARUPADAI VEEDU
INSTITUTE OF TECHNOLOGY**
(An Constituent College of Vinayaka Mission's Research Foundation)



**VINAYAKA MISSION'S
RESEARCH FOUNDATION**
(Deemed to be University under section 3 of the UGC Act 1956)



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PAIYANOOR – 603 104**



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About the centre

The Department of Civil Engineering has established a Centre for Concrete testing and research in 2015. The centre provides technical support to all projects related to special subjects of testing of materials, structural components, and field assessments. It is consistently providing the services to various construction companies and conducts material testing. The centre also offers solutions and bridges the gaps in implementation of new technologies in construction. The centre inspires the young engineers to conduct innovation works, imparts training and adopt best quality standards and motivates them to address challenging tasks in innovation of new construction materials. Concrete Research and Testing Laboratory has significantly advanced the performance of concrete and driven the creation of new, innovative and cost-effective solutions that are making an impact today. The department has engineered superior concrete mixes using alternative cement materials. These new mixes not only outperform traditional concrete mixes relative to set times and early strength, but significantly reduce the products carbon footprint. Many of these products have sprung from our Environmentally-Friendly Initiative.

Our Mission at Center for Concrete Research and Testing Laboratory is to initiate and work with partners on fundamental research and then pursue and develop commercially viable solutions that address the needs of owners, developers, architects and engineers. We are proud to have established an academic-industrial partnership with

research teams at Dalmia and Ramco cements to develop alternative building materials . These efforts will focus on identifying and developing alternative supplemental materials that can be used to replace cement in concrete.

Major Equipments Available In The Centre

Though the centre is equipped with all necessary equipments for concrete quality testing a few major equipments are listed below.

Loading Frame

Loading Frame of 50 Tonne capacity is installed which is used to test the various structural elements like Beams, columns, Slabs and portal frames and other structural elements for its structural stability.



Loading Frame – 50 Tonne capacity

Computerised Universal Testing Machine (UTM)

A universal testing machine of 100 tonnes capacity is used to test the tensile and compressive strength of all materials. It can perform standard tensile and compression tests on materials, components, and construction elements. The operation of the UTM is by hydraulic transmission of load from the test specimen to a separately housed load indicator. A microcontroller based data acquisition system is available for data acquisition and indication. The Equipment has an extensometer and shear testing facility.



Computerised Universal Testing Machine (UTM) -100 Tonnes capacity

Compaction Factor Apparatus

Compaction factor is the ratio of the weight of partially compacted concrete to the weight of the concrete when fully compacted in the same mould. The weight of partially compacted concrete in relation to its fully compacted state is a reasonably good indication of the workability of concrete

Slump Cone Apparatus

Concrete slump test or slump cone test is to determine the workability or consistency of concrete mix prepared at the laboratory or the construction site during the progress of the work. Concrete slump test is carried out from batch to batch to check the uniform quality of concrete during construction

Flow Table For Self Compacting Concrete

Flow table is used to determine the flow of fresh mixed super plasticized concrete to high working. The slump cone is placed centrally on the table of to be held position by standing on the two foot pieces. A wooden tamping bar is provided for lightly tamping for each layer.

Vicats Needle Apparatus

To determine the quantity of water required to produce a cement paste of standard consistence. After achieving the consistent condition, samples are prepared in the Vicat mould to estimate the initial and final setting times. The results obtained from these empirical tests throw light on the quality of cement

Blaine's Air Permeability Apparatus

This instrument comprises of a manometer 'U' tube, mounted on a polished wooden stand, a permeability cell with a perforated disc and plunger, a suction bulb and connecting rubber tube, but without the manometer fluid and filter discs.

Vee-Bee Consistometer Test

The main objective of Vee-Bee test is to determine the workability of the freshly mixed concrete. The Vee-Bee test gives an indication about the mobility and the compatibility aspect of the freshly mixed concrete.

Highlights Of The Centre

1. Consultancy works on concrete quality testing are being carried out for many construction companies.

2. Studies and Research works related to the following areas are being carried out:

- Fresh properties of concrete
- Compressive strength of concrete
- Tensile strength of concrete
- Flexural strength of concrete subjected to static loading conditions
- Stress strain relationships
- Moment curvature Relationship
- Pozzalanic Concrete
- Light weight concrete
- Fibre Reinforced concrete
- Self compacting Concrete

Skill Development Training

- For a fast growing and evolving industry like the construction industry, the need for skilled labor is paramount and as leader, the centre is playing a key role in creating skilled labor in association with Ramco cements and conducts skill development programs for masons educating them on new construction and concreting techniques.
- The centre organizes skill development program on non destructive testing in collaboration with Lawrence & Mayo and Dalmia cements for the engineering students.



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