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AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY

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

CENTRE FOR CONCRETE RESEARCH AND TESTING

AARUPADAI VEEDU INSTITTUTE OF TECHNOLOGY
VINAYAKA MISSION'S RESEARCH FOUNDATION

DEPARTMENT OF CIVIL ENGINEERING

CENTRE FOR CONCRETE RESEARCH AND TESTING

The Department of Civil Engineering has established the **Centre for Concrete Testing and Research** in 2013. The Centre provides technical support to all projects related to material testing, structural components experimentation, and field assessments. It is consistently providing 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 adopts best quality standards and motivates them to address challenging tasks in innovation of new construction materials. The Centre for Concrete Research and Testing has significantly advanced the performance of concrete and driven the creation of new, innovative and cost-effective solutions that has made an impact in the industry. The Centre has engineered superior concrete mixes using alternative cement materials; where these new mixes not only outperform traditional concrete mixes related to setting times and early strength, and significantly reduce the products carbon footprint. Many of these products have sprung from our Environmentally-Friendly Initiative.

Our **Mission** at CENTRE for Concrete Research and Testing Laboratory is to initiate and work with partners on fundamental research, and develop commercially viable solutions that address the needs of clients, developers, architects and engineers. We are proud to have established an academic-industrial partnership with research teams at Dalmia Cements Ltd., Ramco Cements Ltd., and few other active industries to developalternative building materials. These efforts will focus on identifying and developing alternative supplemental materials that can be used to replace/reduce cement in concrete.

HIGHLIGHTS OF THE CENTER

1. **Research Works under Various Funded and Ph.D. Projects.**
2. **Casting and Testing of specimens for PG and UG Projects.**
3. **Concrete Research Areas**
   - ❖ **Pozzolanic Concrete**
   - ❖ **Light Weight Concrete**
   - ❖ **Fibre Reinforced Concrete**
   - ❖ **Self-Compacting Concrete**
   - ❖ **Self-Healing Concrete**
   - ❖ **High Strength Concrete**
   - ❖ **High Performance Concrete**
   - ❖ **Bio Concrete**
   - ❖ **Light Transmission Concrete**
   - ❖ **Sustainable Concrete**
4. **Consultancy Works for Construction Companies on Concrete Quality Testing.**
5. **Loading Frame and Universal Testing Machine equipment are available.**
6. **Performing Non-Destructive Testing.**

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.

TESTS ON MATERIALS

TEST ON AGGREGATES

- **IMPACT TEST**
- **CRUSHING VALUE TEST**
- **SIEVE ANALYSIS TEST**

TEST ON CEMENT

- **SPECIFIC GRAVITY TEST**
- **SETTING TIME TEST**
- **CONSISTENCY TEST**
- **SOUNDNESS TEST**
- **FINENESS TEST**

TEST ON FRESH CONCRETE

- **SLUMP CONE TEST**
- **VEE BEE CONSISTOMETER TEST**
- **FLOW TABLE TEST**
- **COMPACTION FACTOR TEST**

TEST ON HARDENED CONCRETE

- **COMPRESSION TEST**
- **SPLIT TENSILE TEST**
- **FLEXURE TEST**
- **NON-DESTRUCTIVE TEST**
- **STRUCTURAL BEAM TEST**

MAJOR EQUIPMENTS AVAILABLE IN THE CENTRE

The Centre is equipped with all necessary equipment for concrete quality testing.

COMPUTERISED UNIVERSAL TESTING MACHINE (UTM)

A universal testing machine of 100 tonnes capacity is available in the Centre. Standard tensile tests and compression tests on materials, components, and construction elements can be performed with precise results. Also the equipment has an extensometer and shear testing facility. The UTM is hydraulic operated for load application with computerized load indicator. A microcontroller based data acquisition system facility is available for data acquisition and indication

Computerized Universal Testing Machine (UTM) -100 Tonne capacity

LOADING FRAME

Facility for flexural loading on beams and slabs, Compression loading on columns, loading simulations for portal frames or other structural elements are available in the Centre using the Loading Frame having a capacity of 50 Tonne. Structural behaviour under the applied load, can be observed using Strain indicator and deflectometer.

Loading Frame - 50 Tonne capacity

LABORATORY EQUIPMENTS

IMPACT VALUE

To measure the resistance of sudden impact or shock load on aggregates

CRUSHING VALUE

To measure the resistance of an aggregate to crushing under a gradually applied compressive load

VEE BEE CONSISTOMETER

To measure the relative effort led by concrete to change from one definite shape to another definite shape by conducting vibration

FLOW TABLE

To measure the consistency of freshly made concrete or mortar

COMPACTION FACTOR

To measure the degree of workability of fresh concrete

REBOUND HAMMER

To measure the convenient and rapid indication of the compressive strength of the concrete with destruction

SLUMP CONE

To measure consistency of concrete

MOULDS

To cast concrete

L – BOX

To assess the flow of the self-compacting concrete and to which extent subjected to blocking by reinforcement

U - BOX

To measure the filing ability of self compacting concrete.

V-FUNNEL

To determine the filling ability (flow ability) of the concrete with a maximum aggregate size.

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