

**CASE STUDY ON ICE CONCRETE**  
**By TIFR (Tata institute of Fundamental Research)**

**Ice Concrete case study**



**TIFR (Tata institute of Fundamental Research)**  
(Dept of Atomic Energy)

**Location:** Gopanpally Village, Serilingampally Mandal,  
Ranga Reddy District, Hyderabad

TIFR became the cradle of the country's atomic energy endeavor. The Institute wasn't just about sciences, it was also about discovering and delivering the benefits drawn from science to Indian society. Given that there was little scientific and industrial infrastructure at the time, TIFR came to play a crucial role.

#### **Project Details and specifications:**

- Expansion of work & construction of research center (Bunker)
- Required Mass concrete.
- Required temperature control concrete.
- Concrete temperature should be <25 degrees Celsius.
- Slump of the concrete as per IS 4926
- Grade of the concrete M25 as per Customer Specified Mix

#### **Scope of Work:**

- Procurement of Ice cubes for reducing water temperature
- Sprinkling of Aggregates with water
- Storage of Cement well in advance for dropping temperature
- To control and maintain water temperature.
- Unloading of Tm without any delay in site
- Ice breaking and dumping in water to reduce water temperature.

#### **Photos:**



- Above photos show temperature of concrete after unloading at site.
- Slump was maintained at site  $120 \pm 20\text{mm}$ .
- Total concrete qty for raft achieved 671cum.
- Ambient temperature at night is 22 deg C to 24 deg C.
- Deployed one boom Pump 36m and static pump.
- 16Tm deployed for continues supply.

**Application Area:**

- Can be used for all Mass concreting irrespective of type of structure.
- Structures like Raft Foundations, Shear Walls, Core Walls etc.
- Structures like Fly Over's Structural Element Works like Girders, Pier Caps.
- This is an ideal solution wherever High-grade concrete is implemented.
- Helps in Prevention of Evolving radiation to outer surface during the operational working process of Oncology hospitals, Atomic Research Center etc.,

**Uses / Advantages:**

- Minimizes Cracks Formation like Thermal Cracks, Shrinkage Cracks etc.,
- reduces the Temperature difference between Outer Concrete Surface and Core Concrete.
- Minimizes Loss of workability in concrete and promotes workability retention.
- Reduces water demand during batching process in Hot weather concreting.
- Enhances the Durability of the concrete structure.