

Report on Site Visit to Milan LLP Casting Yard

Site Name: Milan LLP Casting Yard

Location: Bandra-Kurla Complex

Date of Visit: 19-12-2024

1. Purpose of Visit

The purpose of the site visit was to inspect and observe the operational processes involved in the production of pre-stressed concrete elements using both pre-tensioned and post-tensioned methods at the casting yard so as to understand the practical application of pre-stressed concrete apart from theoretical study. The visit aimed to understand the workflow, assess quality control practices, and ensure compliance with the approved construction methods and safety protocols. The visit was mainly arranged to clear all the theoretical doubts by giving exposure to the practical world of pre-stressed concrete. For this purpose, we have visited the casting yard of Milan LLP at Bandra-Kurla Complex, where the production process of post-stressed I-Girder and pre-stressed T-Girder was observed.

2. Introduction to Pre-Stressing Techniques

Pre-stressing is a technique used to enhance the structural capacity of concrete members. Two primary methods are:

- **Pre-Tensioning:** Steel tendons are tensioned before concrete is cast. Commonly used in precast factory settings.
- **Post-Tensioning:** Tendons are tensioned after the concrete has gained strength. Frequently used for cast-in-situ and segmental bridge elements.

The casting yard visited handles both systems efficiently in a controlled environment with dedicated zones and specialized equipment.

3. Activities Observed During the Visit

A. Pre-Tensioned Activities

1. Bed Preparation

- Long-line casting beds cleaned and levelled.
- Anchor blocks at both ends inspected for stability.
- Formwork assembled, cleaned, and oiled.



2. Strand Installation and Tensioning

- High-tensile steel strands laid out on the bed.

- Hydraulic jacks applied tension to the strands to a predetermined load.
- Elongation measurements recorded and verified against design specs.



3. Reinforcement and Concrete Placement

- Reinforcement cages installed over the tensioned strands.
- Concrete mixed on-site using batching plant and transported via transit mixer or pump.
- Vibration tools used to ensure full compaction.



4. Curing and De-Tensioning

- Steam or moist curing methods applied.
- After gaining required strength (usually 24–36 hours), tendons de-tensioned gradually.
- Stress transferred from tendons to concrete.
- Elements demoulded and shifted to storage.



B. Post-Tensioned Pre-Stressed Concrete Activities

1. Duct and Reinforcement Installation

- Post-tensioning ducts (HDPE or galvanized) fixed as per shop drawings.
- Reinforcement bars and spacers placed to maintain duct position.
- Anchorages and trumpets installed at live and dead ends.



2. Concrete Casting

- Concrete poured and compacted using internal vibrators.
- Care taken to avoid duct deformation during vibration.
- Slump and temperature tests conducted.



3. Curing and Strength Testing

- Elements cured using wet hessian cloth or curing compounds.

- Cube samples tested to confirm minimum strength before tensioning (typically ≥ 28 MPa).



4. Tendon Insertion and Tensioning

- Strands inserted into ducts after curing.
- Tensioning performed using calibrated hydraulic jacks.
- Elongation and load readings monitored and recorded.



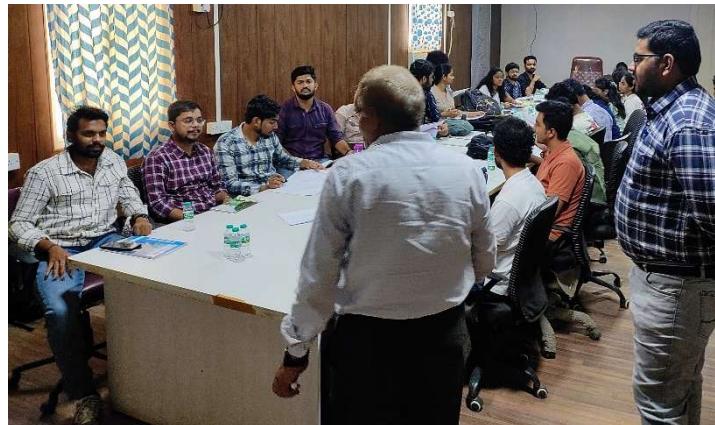
5. Grouting

- After stressing, ducts were pressure-grouted with cementitious grout to:
 - Protect strands from corrosion
 - Fill voids and ensure bonding
- Grout tests (flow, bleed, density) conducted before application.



4. Quality Control Measures

- **Material Testing:** Cement, aggregates, admixtures, and steel strands
- **Concrete Testing:** Slump test, cube casting (7 & 28-day strength) and air content
- **Tensioning Records:** Elongation vs theoretical values checked during each tensioning
- **Dimensional Checks:** Mould dimensions, element geometry, and covers verified.
- **Visual Inspection:** Surface finishes checked for honeycombs, cracks, and alignment



5. Health and Safety Observations

- Workers were equipped with PPE including helmets, gloves, and safety shoes.
- Clear safety signage and access control around tensioning areas.
- Fire extinguishers and first-aid kits were available and accessible.
- However, additional safety measures such as barricading of live tensioning beds and better cable management are recommended.
- We were also provided with PPE with safety helmets and jackets, and also it was made sure we all are wearing shoes.

6. Key Findings and Recommendations

- **Key Findings:**
 - Overall workflow was well-organized and complied with quality control norms.
 - Efficient use of machinery and manpower was noted.
 - Documentation for tensioning and concrete mix design was in place.
 - Well-trained staff and professional supervision.
- **Recommendations:**
 - Improve signage and barriers around high-risk zones.
 - Introduce automated curing systems to reduce manual labor and enhance curing consistency.
 - Regular calibration of tensioning equipment should be ensured.

7. Conclusion

The visit to Milan LLP casting yard was an enlightening experience for the M.Tech. Structural Engineering students. The visit provided valuable insights into both pre-tensioned and post-tensioned casting process. The yard operations demonstrated a good standard of quality and safety management. With minor improvements, the yard can further enhance its productivity and compliance with best practices.

8. Acknowledgement

We would like to express our sincere gratitude to all the personnel at the Milan LLP Pre-Stressed Concrete Casting Yard for their warm welcome, detailed explanations, and professional guidance during our visit.

Our special thanks go to:

- Site Engineer Mr. Chetan sir for sharing their valuable technical knowledge and walking us through the entire casting yard. The Quality Control Team for giving us insight into the rigorous testing and monitoring protocols implemented at each stage of production and the Health and Safety Officers for ensuring a safe and well-managed environment throughout the yard.
- And also, the Project Management Team- MD Mr. Ganesh Gholap sir, GM Mr. Sanjay Kamble sir and PM Mr. Krishna Tiwari sir for granting us access to the facility and also to HR Team- Mrs. Rucha Raut ma'am and Mrs. Harshali ma'am along with Mr. Vijay sir and Mr. Mayur sir for co-ordinating a smooth informative site tour and for arrangements.
- And finally, To Sardar Patel college of Engineering for providing us with this valuable opportunity, Incharge Principal Dr. M.M.Murudi Sir for encouraging industrial exposure and supporting such academic initiatives, HOD- Civil Department Dr. Hansa Jeswani ma'am for approving and facilitating the visit arrangements and our Beloved faculty co-ordinator Professor Mr. Ankit Asher for guiding us throughout the process and accompanying us during the visit.

The visit was highly educational and offered a practical perspective on advanced pre-stressing techniques, quality assurance, and the importance of safety in a large-scale industrial setup. The knowledge and exposure gained during this visit will greatly benefit our ongoing learning and professional development.



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