

Case Study: Tractor Manufacturing Plant, Pune

Project Requirement

- Prepare structural drawings for existing plant buildings (13 yrs old) as original drawings were misplaced
- Carry out detailed structural assessment of the buildings
- Determine if surplus capacity exists for an additional production line

Assessment Procedure

Stage I: Data Collection/Drawing Preparation

- On-site measurements were carried out for all structural elements of the building (beams, columns, roof trusses, selective foundations)
- Measurements were also carried out for production line conveyors, paint booths and other equipment supporting structures
- Loading data was obtained for assembly lines, equipment supporting structures
- As-built structural drawings were prepared based on the obtained data



Geometric Data Collection

Stage II: Testing & Condition Assessment

In addition to Visual Assessment, following tests were carried out to ascertain the condition of the structure

Test	Purpose
Concrete Core Tests	To determine the compressive strength of concrete
Ultrasonic Pulse Velocity	To establish the quality of concrete
Half-Cell Potential & Carbonation	To assess the probability of corrosion in reinforcement
Reinforcement Mapping Tests	To obtain size and numbers of reinforcing bars in the concrete members
Weld Tests (Magnetic Particle + Liquid Penetrant)	To check the condition of welds in structural steel members
Ultrasonic Thickness Measurement	To estimate loss in thickness of steel members due to corrosion

Stage III: Interpretation of Results & Structural Analysis

- Based on the test results, inferences were made for use in structural analysis. These included the concrete grade, reinforcement quantity in members, corrosion in reinforcement and effective sections for steel members.
- Software analysis was carried out based on the prepared drawings & test results.
- Conclusions & recommendations were provided in reference to:
 - Stability of the structures with current loads
 - Possibility of adding a production line
 - Suggestions to improve the structural performance including retrofitting where required



Assembly Shop



Footing Measurement



Member Testing