

**CHHOTUBHAI GOPALBHAI PATEL INSTITUTE OF TECHNOLOGY,**  
**CIVIL ENGINEERING DEPARTMENT,**  
**TECHNICAL SITE VISIT OF (BULLET TRAIN PROJECT)**  
**NATIONAL HIGH SPEED RAIL CORPORATION LTD, SURAT.**



*Chhotubhai Gopalbhai Patel Institute of Technology,*



*Department of Civil Engineering,*

*Uka Tarsadia University*



**TECHNICAL SITE VISIT OF BULLET TRAIN PROJECT), SURAT**

19/01/2024

B. TechFinal Year Students



# Technical site Visit Report

## BULLET TRAIN PROJECT, SURAT.

The technical site visit was arranged with National High Speed Rail Corporation Ltd.

The faculty co-ordinator: Dr. Vaibhav Pawar

**Date of Visit:** 19/01/2024

**Total No. of Student:** 03+08 (Sem VI + Sem VIII)- Total Boys: 07 Girls:04

**Total No. of Faculties:** 03

**Faculty Coordinators:** Dr. Vaibhav Pawar, Asst. Prof. Mehul Patel and Asst. Prof. Guvant Solanki

### **Topics covered during technical visit (High Speed Rail):**

Bullet Train Route, Soil Testing, Pile Foundation, Garder, reinforcement casing, Fabrication of casting, RMC Plant, segmental casting yard, segmental spans erection site, Full span casting yard etc.

The Department of Civil Engineering arranged a technical site visit to High-Speed Rail Project for B. Tech. final year students of Department of Civil Engineering. The visit was organized with the prior permission and guidance of Dr. Manoj Gundalia and Head of Civil Engineering Department.

### Details of Site

**Location:**(Segmental casting yard near Bhatiya Toll, Palsana and Segmental spans erection site near Mohni and Vaktana Village, Surat)

The purpose of this site visit to get aware about construction material used in bullet train construction, different techniques, different equipments, working system of casting yards. Segmental casting yard at Village-Vaktana, Surat (@ Ch. 254) has been developed to produce 294 spans (35-60m length), involving casting of 5292 segments. These spans will make about 9 km length of viaduct for Mumbai-Ahmedabad HSR corridor (MAHSR).

NHSRCL has adopted Full Span Launching Method (40m length) along with Segmental Method. The Full Span girders (40m length) are preferred over Segmental girders as their erection is seven times faster. However, at locations where Full Span Girder launching is not feasible due to site constraints, Segmental Girders are launched. These site constraints can be in the form of Road Crossings, Canal, Pipelines, Major Rivers and Curvature Radii less than 6000m.

Full Span Girder of 40m is casted in one go while Segmental Girders are casted in small pieces (15-24 nos.) of length varying from 1.75-2.5m each. These small pieces are stitched together at site using pre-stressing cables to make spans of length from 35-60m.

Casting yard @ 254 has been developed in an area of 22 acres near Bhatia Toll Plaza, Village-Vaktana, Surat. All required facilities like Concrete Batching Plant (90 Cu.M./Hour), 4 gantry of 150 MT each, 4 gantry of 10 MT each, material storage, Laboratory for testing of material, site office, labour camp to accommodate 500 personnel, medical facility including ambulance etc. have been developed so as to ensure continuous casting of segments.

For casting of Full Span box girders and Segmental girders, Casting Yards at 25 strategic locations have been developed along the alignment. Out of 25 casting yards, 17 are Full Span casting yards and 8 are Segmental casting yards. Each Casting Yard is spread over an area of 16 to 93 acres as per requirement and are located adjacent to the High-Speed Rail Alignment. The cumulative area of 25 Casting Yards is approx. 1000 acres.

The project will entail an investment of 72,000 Crs in the state of Gujarat in both Land & construction. So far an expenditure of 14,200 Crs has been done. The project will generate direct & indirect employment of 60,000 in Gujarat state.

National High-Speed Rail Corporation Limited (NHSRCL) was incorporated on 12th February 2016 under the Companies Act, 2013 with an object to finance, construct, maintain and manage the High-Speed Rail Corridor in India. The Company has been modelled as 'Special Purpose Vehicle' in the joint sector with equity participation by Central Government through Ministry of Railways and two State Governments viz. Government of Gujarat and Government of Maharashtra.

### **Benefits of High-Speed Rail**

There are a number of social and economic benefits that comes with the introduction of High-Speed Rail. Most recent examples are from Japan, Europe and China where high-speed rail has done wonders for the common citizens by providing high speed connectivity between various towns and cities.

**Social Benefits:** There are a number of positive externalities of high-speed rail like economic travel, reduced CO2 emission, comparatively less land required than a 6 lane highway for same passenger capacity and employment generation because of higher economic activity and faster connectivity.

**Economic benefits:** Transportation by HSR would be powered by indigenous electric power unlike diesel/petrol and aviation fuel need by cars and airplanes, which is largely imported. This will benefit the Indian economy and reduce its relevance on imported fuel.





*NATIONAL HIGH SPEED RAIL CORPORATION LTD.*  
**Students at NHSRCL facilitated with apron and Helmet**







**Senior manager Mr. Ajay kumar explaining about segmental casting yard**











**Group photo at Segmental casting yard site and Segmental spans erection site**



We are very much thankful to Director, CGPIT and Associate Professor and Head, Dr. Manoj Gundalia for motivation and Permission. Appreciate the cooperation from Mr. Gunvant Solanki, Mr. Mehul Patel during entire visit.

We are very much thankful to Project Manager Mr. Teja sir and Mr. Ajay Kumar for guiding and helping us throughout the visit.

**CONCLUSION:** - The technical visit of Bullet Train Project, was very informative and helpful in providing information regarding different segmental yard, procurement and storage, working of the yard, loading and unloading procedure, mechanism of conveying systems, components of segments and its characteristics. The technical visit provided a great learning experience for students and faculty members. We look forward to such type of technical visit also being planned in future. Chhotubhai Gopalbhai Patel Institute of Technology, Uka Tarsadia University.