

REPORT ON

VISIT TO “AHMEDABAD METRO CONSTRUCTION SITE”

Department of Civil Engineering, GCET had organized one day Educational visit to “**Ahmedabad Metro construction site**” on December 21st, 2019. 32 students, 3 faculty members had visited the Ahmedabad Metro Construction storage yard of Ranjit Buildcon Pvt. Limited, at Chandkheda, Ahmedabad.

About Metro Project:

Ahmedabad Metro is a rapid transit system for the cities of Ahmedabad, Gandhinagar in Gujarat, India. It is being built by Gujarat Metro Rail Corporation (GMRC) Limited formerly known as Metro – Link Express for Gandhinagar and Ahmedabad (MEGA). Students were taken to a construction yard of Viaducts from Motera to Ranip about 4.85km under the contract by Ranjit Buildcon Limited. The students were divided into two groups of 16 students each.

The visit commenced with a brief about the safety rules and regulations of the site. They provide helmets and safety jackets.



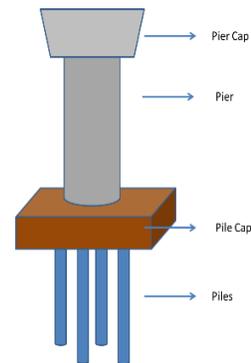
BRIEFING OF VISIT

After brief introduction, the students were taken to the Batching Plant. There was a CP 30 mixing plant with an output of compacted concrete with a batch size of 0.5m^3 . The plant manufactures concrete grade from M15 grade to M50 grade. The concrete with higher grade is used in the substructure. There were 2 OPC plants with lower content of fly ash mainly used in superstructure while 2 PPC plants with higher fly ash content used in the substructure. Both the plants had a capacity of 1000 tones. The materials were mixed through weight batching with a mixing time of 15 seconds. The sand used is for Zone II and aggregates were crushed through VSI thus having proper shape and quality.

Next, students visited the Pile Reinforcement area. The steel used was of Fe500 and Fe500D with a diameter varying from 8mm to 32mm. The reinforcement rods initially are coated with an inhibited solution plus OPC with a proportion of 1 lit solution having 600gm of OPC 53 grade. The coating of steel increases the bonding property with concrete and also avoids corrosion. The type of the pile was Friction Pile having a diameter of 1200mm with a cover of 75mm. The reinforcements were connected through GI binding wires. The reinforcement of 1 pile takes about 36 hours.



PILE REINFORCEMENT



PILE FOUNDATION NETWORK

The sequence of construction will be, Pile Foundation – Pile Cap – Pier – Collar/Pier Cap. The grade of concrete used in the Pile foundation was M35 while that used in Pier. A pedestal was constructed connecting to pier cap whose centre portion was acting as Shear Key. The span of the viaduct rests on the Pedestal. Segments divide the span of the viaduct. There were 4 casting beds for casting of segments out of which 2 were straight bed and the other 2 were curve bed. The curves in the span were designed by giving space between spans and adjusting it while giving a right or left turn. For the curvature having a radius greater than 500m, the diaphragm is used to resist the forces. While the curves having a radius greater than 1000m are more or less treated as straight spans.

There were 4 Gantry Girders. Two of them were used for placing reinforcement of segments while the other two were used for shifting the finished segments to the stocking yard. The reinforcement of the segments along with the regular reinforcement included post-tensioning of tendons too. There were 10 ducts for regular post-tensioning while 2 extra ducts were given for temporary post-tensioning in the future. The pipes used for ducting were HDPE duct pipes (High-Density Polyethylene Duct Pipes). The Anchorage used for the post-tensioning process was 19DP15. The viaducts are constructed for a design life of 125 years.

At the end after competing lunch the return journey was started towards GCET campus back and reached at 4:30 pm.

Overall, the students learned many new things, new concepts and they were able to get a practical idea of what happens at a construction site. The visit was very helpful for the students in all aspects.

Aim of the visit:

The main aim of visit was to make students aware and to teach them about the main components and construction of metro rail bridge like pile, pile cap, pier, pier cap, bridge deck, gantry girders etc. as they are studying the same in final year subjects.

