



Begumpet ROB – An engineering feat

Metro Rail ROB over the Begumpet Railway lines and the Railway station was successfully completed, thus closing a critical gap in Metro Rail corridor III. With this achievement and after completion of Oliphenta Bridge near Secunderabad station, which is expected in the next few weeks, the extension of the 8km stretch of Nagole – Mettuguda upto Begumpet becomes feasible. The construction of this bridge was done in highly challenging conditions. The Railway lines and the Railway station below are busy round the clock with continuous train movement and large number of passengers using the station.

The total length of the Metro Bridge is 450 ft (137 mts). It is in a curve and wedged between Begumpet flyover on one side and several buildings on the other side. In view of the curved nature of the Metro ROB to be built over such a long length and at a height of 60 ft from the below narrow road and Railway lines, a special method called 'Bridge Builder' method was used for the first time in the Hyderabad Metro Rail project, stated MD, HMRL Mr. NVS Reddy. Erection and movement of the 'Bridge Builder' device weighing about 100 metric tons and the heavy duty cranes to lift the precast segments etc., with all safety precautions and without causing disruption to the continuous movement of trains, station operations, passengers and road traffic was an engineering nightmare, he added. To meet these multiple technical challenges, the 'Bridge Builder' was specially built and load tested initially in the Uppal casting yard for all safety parameters and structural stability before bringing it to Begumpet site and mounting it on the already built Metro viaduct from both Varun Motors and Country Club sides. The whole Metro Bridge was built in three parts with the main portion (span) over the Railway lines and Railway station being 213 ft and both ends being 130 ft and 107 ft respectively.

After erecting the Bridge Builder on both sides, it was anchored safely with proper counter weights, special steel bars called MacAlloy steel bars etc., to ensure the stability of the Bridge Builder against overturning. 18 segments weighing 50 tons each were incrementally launched as a cantilever hanging bridge from both sides with utmost care and safety standards. Each precast segment was lifted in tandem by cranes and placed on a trolley on top of the deck slab with temporary tracks for moving the segment forward to the centre of the Bridge Builder. Thereafter, the segment was carefully rotated from inside and lowered to its designated position. Once the segment was properly placed in its position, it was glued and attached to the already completed portion of viaduct with HTS cables (steel wires) and pre-stressed, so that the new segment became an integral part of the viaduct.

Then the so attached segment itself became the support base for moving the Bridge Builder forward and the next segment was again erected and attached in a similar manner. All the 18 precast segments were thus attached to the earlier portion of the bridge incrementally one after one from both Varun Motors and Country Club sides and they became a 100 feet long cantilever hanging bridge till both sides reached the midpoint. Indian Railways could give only '3 hour blocks' for launching each segment after stopping trains beyond midnight once a week, depending upon the feasibility. After so launching all the segments from both sides, in situ concreting was done for casting the middle segment by making use of a special anchoring platform.



Utmost safety precautions were taken in every aspect of the bridge construction and the erection process, as lifting and balancing of heavy segments and other equipments were involved and even a small tool falling from that height on to the station platform and road users below would have had serious repercussions. Admiring the skills and dedication of the specialised bridge team of L&T, led by an eminent Railway bridge engineer Mr.KM. Rao and his able assistant MrMY Kondalu, MrNVS Reddy has stated that the entire bridge construction was flawless and done with military precision.

Salient features

Length of ROB	450 ft
Height of ROB	60 ft
Length of the central span (over the Railway tracks)	213 ft
Length of end spans	130 ft & 107 ft
Weight of each segment	54 tons
Length of Bridge Builder	130 ft
Width of Bridge Builder	213 ft

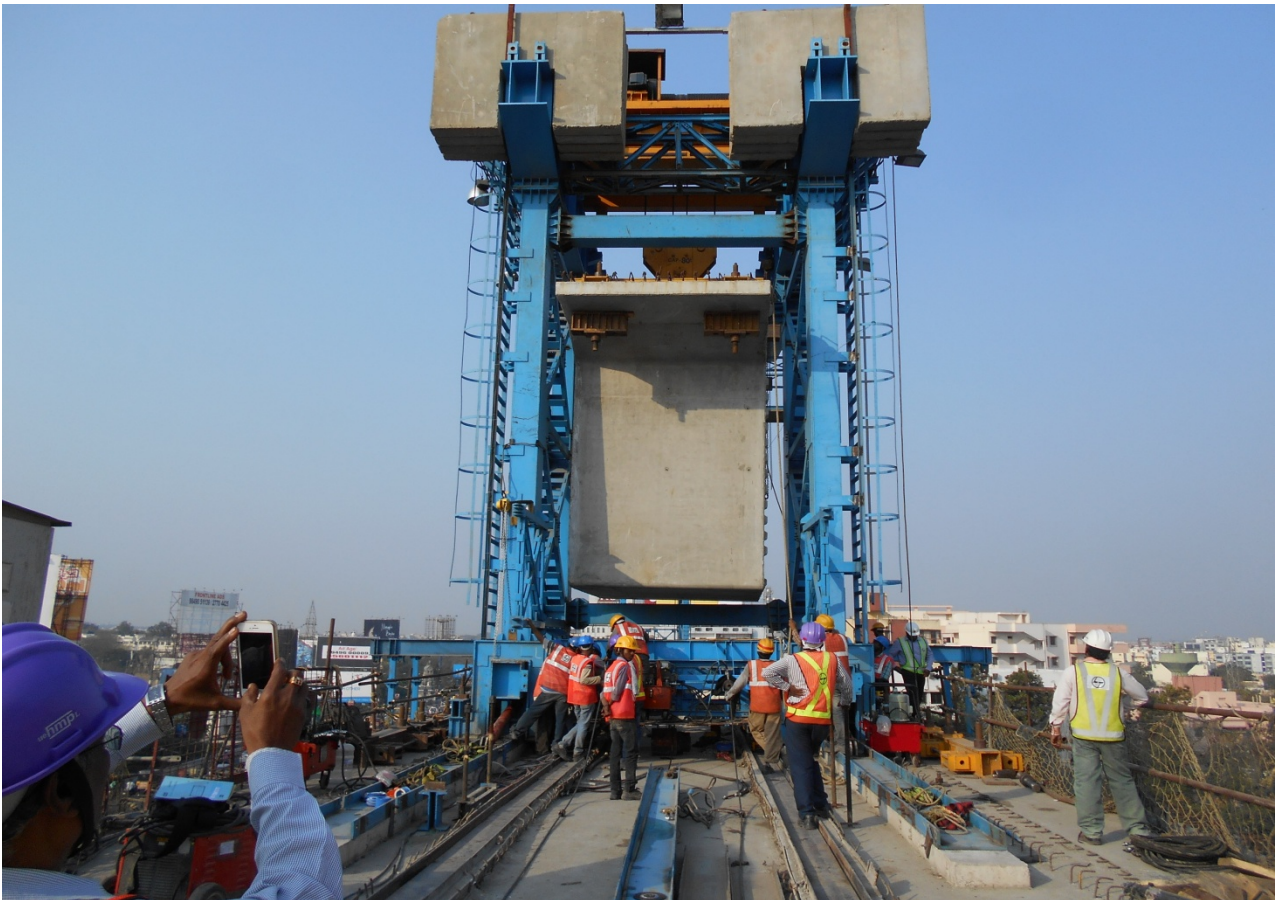
**Public Relations Officer
Hyderabad Metro Rail Limited**



Begumpet Metro ROB construction using specially designed 'Bridge Builder'



Begumpet Metro ROB construction over the Railway station using specially designed 'Bridge Builder'



Lifting and launching of precast segment onto 'Bridge Builder' in Begumpet Metro ROB construction



Anchoring of 'Bridge Builder' in the construction of Begumpet Metro ROB



Launching of precast segment in the construction of Begumpet Metro ROB



HYDERABAD METRO RAIL LIMITED

(A Government of Telangana Enterprise)



Completed view of Begumpet Metro ROBusing Bridge Builder,parallel to the existing flyover



Completed view of Begumpet Metro ROB using Bridge Builder, over the Railway tracks and Railway station