



MAHARASHTRA METRO RAIL CORPORATION LIMITED (Nagpur Metro Rail Project)

Anand Talkies balanced cantilever, the longest in Maharashtra, completed very fast

Nagpur: The balanced cantilever over railway line near Anand Talkies, Sitabuldi, has been completed due to hard work done by team Maha Metro. The cantilever is part of Reach IV (Sitabuldi to Prajapati Nagar) of Nagpur Metro between Sitabuldi and Cotton Market stations.

This is the longest balanced cantilever in Maharashtra and is thus unique in the state. Such cantilevers exist only in three more Metros – Delhi, Lucknow and Kochi.

The crossing of metro viaduct over railway tracks has always been a challenging task for Maha Metro considering the fact that Nagpur Junction is one of the busiest railway stations in the country. However, with due preparedness and commitment towards completing the work within deadline, Maha Metro devised an optimum solution for the crossing.

After detailed discussions with railway authorities, consultants and experts and after carrying out site inspection and feasibility survey, a balanced cantilever bridge was found to be the optimal solution in terms of construction, safety as well as cost.

Balanced cantilever bridge is also popularly known as cantilever construction bridge (CLC Bridge). The basic principle behind this method is to attach the segment in an alternate manner at opposite ends of the cantilever supported by piers. The segments are cast using the form traveller.

The cantilever near Anand Talkies has a length of 231.2 metre. The construction work was carried out during railway block hours as per approved plan of Central Railway when train movement was restricted.

Usually, railway blocks permitted by Indian Railways is of maximum 3 hours duration. The blocks are usually granted during night when frequency of train movement is lesser. Maha Metro has so far completed about 90% civil work without any hindrance to railway traffic.

The construction of the cantilever was started in October 2019. Maha Metro took all precautions in view of the Covid-19 pandemic and will complete the work as per schedule.

- The Balanced Cantilever Bridge near Anand Talkies has a length of 231.2 meter and has 3 spans
- The cantilever Bridge is at a height of 22 meter from ground
- Original proposal for the railway crossing was 87 meter span with Open Web Girder (OWG)
- Central Railway asked Maha Metro to increase the span to 100 meter so that their future expansion plans were not affected
- Due to the increased length, the alignment of OWG came on the curved portion, which requires several temporary staging supports and temporary land
- OWG requires heavy cranes, trained manpower and longer traffic and power blocks of minimum 4 to 5 hour duration
- Maintenance of OWG over railway lines at higher level is more risky
- Maha Metro then came out with a solution of replacing the OWG with Balanced Cantilever Bridge
- Work on the balanced cantilever was started on May 1, 2019. It was completed on September 27, 2021
- Covid-19 pandemic led to exodus of construction workers in 2020 and 2021. However, Maha Metro continued its work under adverse circumstances
- Railway blocks were available for 3 hours at night due to heavy traffic. Maha Metro completed necessary work within this short duration

- Insulation sheets and fire blankets were used at the time of construction work to prevent mishaps due to railway's high tension (HT) lines
- The construction of the cantilever including movement of form traveller during railway blocks was completely mishap free