

# Metro-2 to have U-shaped viaducts to speed up work

## Structure Will Help Cut Construction Time By 80%

U.Tejonmayam  
@timesgroup.com

File photo



### METRO ON THE MOVE:

U-girders are being used in metro rail phase-1 extension in north Chennai

**Chennai:** Metro rail is set to cut down construction time of phase-2 elevated corridor by more than 80% as it will be installing precast long girders between two pillars. Officials said the use of the girders, which will be 'U' shaped, is being undertaken in the elevated section of the 9km north Chennai line under construction. The 118.9km phase-2 will begin to take shape by June 2020.

In the 45km phase-1 corridors, CMRL used box girders made of multiple precast segments, which officials said took four to five days to assemble between two pillars that were 20m-25m apart. "In case

of a U-girder, it can be assembled in a day between two pillars," an official said.

A U-girder will form an entire span of a viaduct between two pillars in a single piece of around 25m length, which will be precast in a casting yard and assembled on site. Box girders have many small precast segments, each about 2.5m long, which are assembled together between two pillars and

hence take more time for construction. "The change in girders will not cut construction cost. It's the same cost as box girders," the official said. CMRL also uses I-girder in case of cantilever corridors, which will stand on a single row of columns, where the concourse and platform levels will be supported by an I-girder.

In phase-1 extension between Washermenpet and Wimco Nagar, seven of the 9km is elevated corridor. In phase-2, 76.3km of the 118.9km will be elevated, where two U-shaped girders, each for upline and downline, will rest on a pier cap. As much as 52km of the phase-2 stretch is expected to be ready by 2025. Elevated metro corridors in Delhi, Mumbai and Kochi have U-girders.

Besides reducing construction time, changing the girder type for elevated corridors has other advantages. According to the detailed project report for phase-2, the girders have several built-in structur-

al elements, including those that can hold the coaches on the bridge in case of derailment, maintenance and evacuation path on either side of the track, cable support and a sound barrier. But building corridors with large-sized girders meant having a large precast yard, multiple large cranes and wider roads around the construction site to lift and assemble the girders. Using cranes at the construction site in north Chennai line is a challenge, as the metro line is being built on narrow roads.

"Instead of cranes, we are using gantry to assemble the girder in phase-1 extension line. Except for a stretch of 300m, the rest of the 7km elevated corridor in north Chennai is ready. The line will be ready by June 2020," a metro rail official said.

Officials said besides requiring high precision during assembling, U-girders pose a challenge during transportation from the yard due to their size.