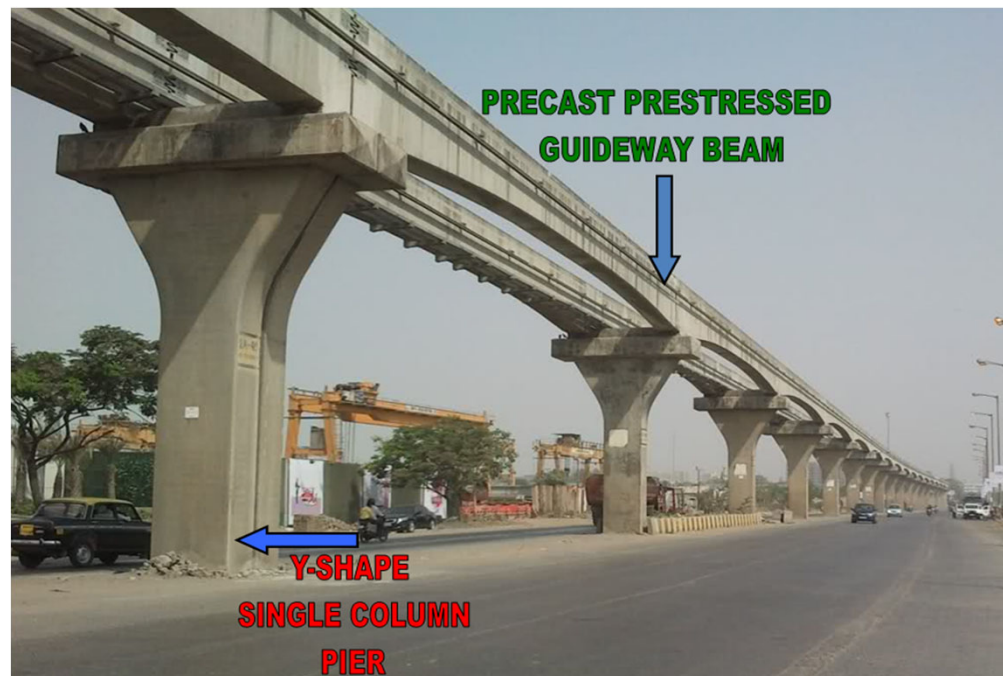


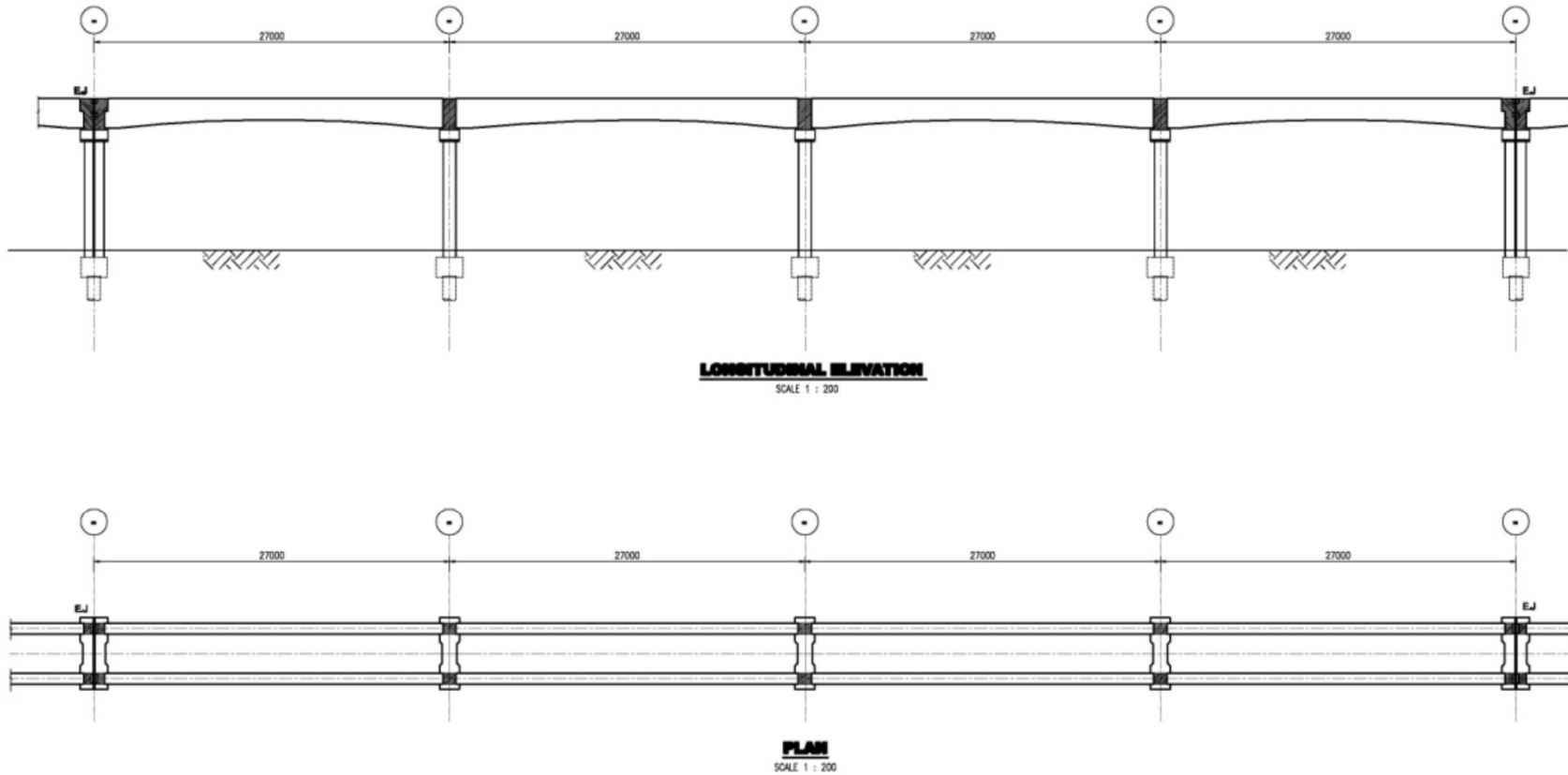
SPECIAL STRUCTURAL SOLUTIONS FOR LONG SPANS IN MONORAIL SYSTEM



Typical Structural system

- Typically monorail beams are slender 0.7×2.0 m and can span not more than 30~32m





TYPICAL FRAME FOR STRAIGHT GUIDEWAY BEAM



Necessity of Long Spans

- Often Monorail need to cross over rivers, road crossings, and railway tracks
- Necessity of long spans more than usual spans of 30~32m.
- For such situations special structural arrangements are required



Types of Long Spans

- Long Spans with Extended Pier-Cap
 - for spans between 30-50m
- Long Spans with Steel Open Web Truss
 - for spans between 50-120m



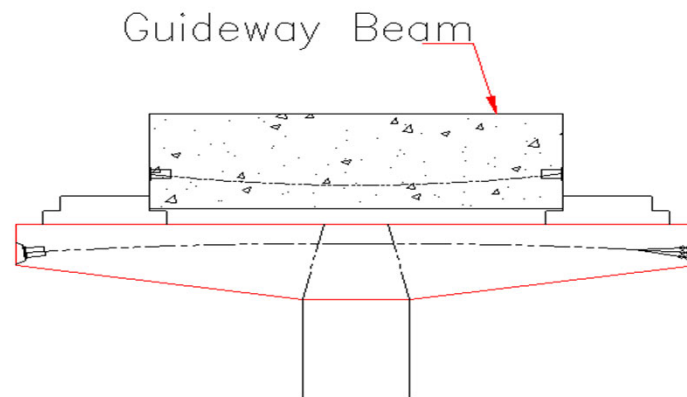
Long Spans with Extended Pier-Cap

- Herein the pier-cap is extended longitudinally



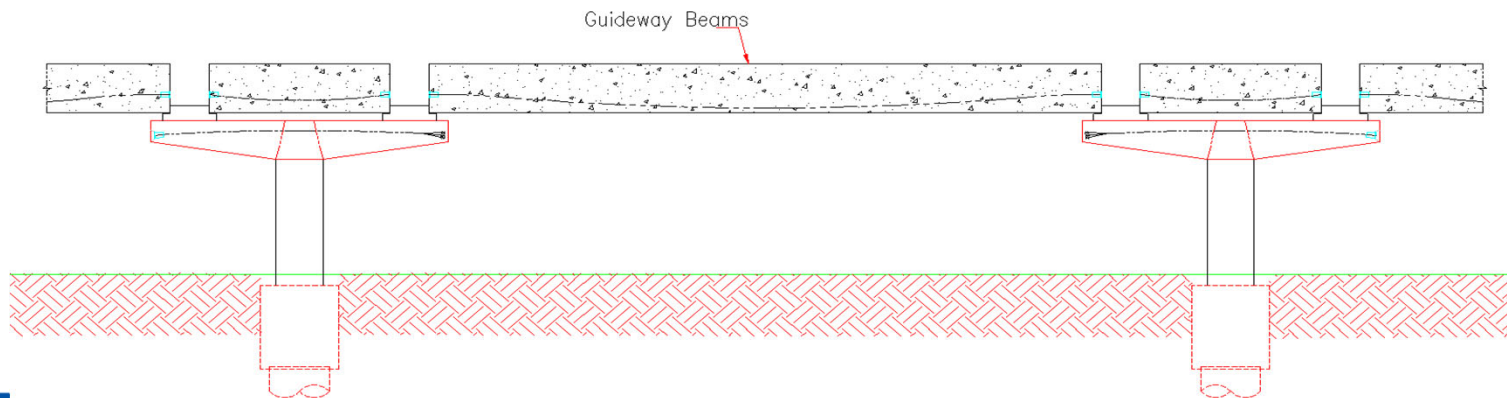
Long Spans with Extended Pier-Cap

- Part of longer guideway beam rests over extended pier cap



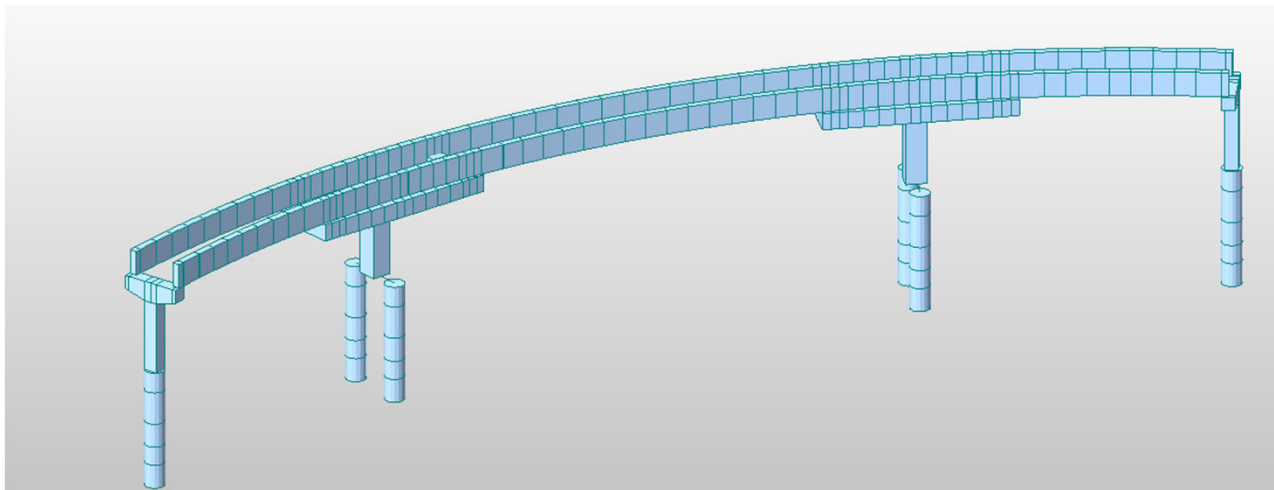
Long Spans with Extended Pier-Cap

- Analysis is performed using 3d finite element Structural Software.
- Time dependent analysis for creep & shrinkage at each construction stage
- Prestress loading for dead and live load



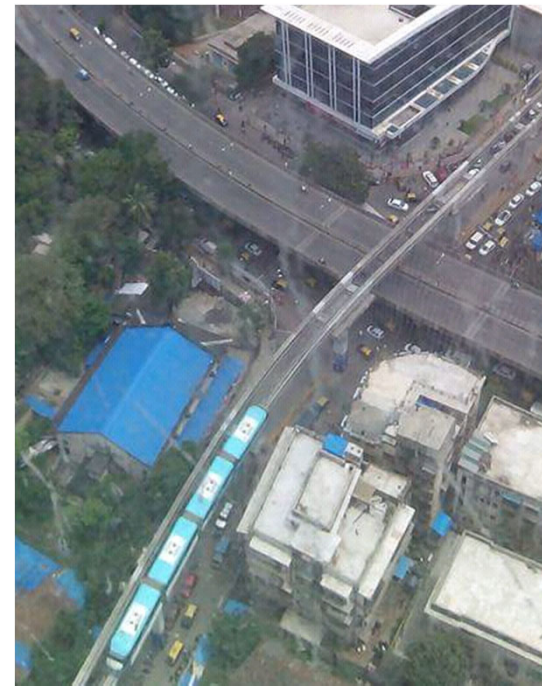
Long Spans with Extended Pier-Cap

- Due to long span temperature effects are enhanced
- Free bearings may be used over extended pier-cap



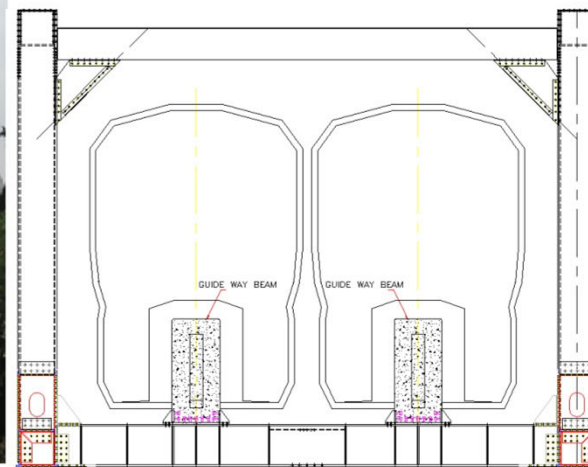
Long Spans with Extended Pier-Cap

- Used at 3 locations in Mumbai Monorail
- Proposed for upcoming Las Vegas Monorail Extension



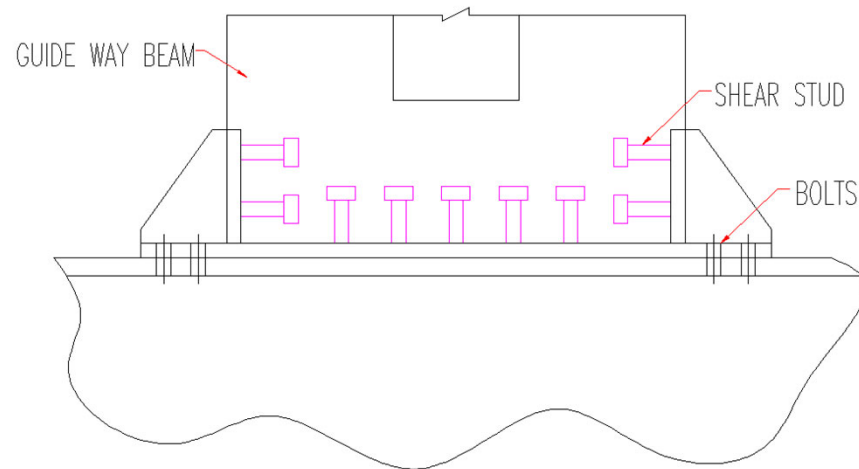
Long Spans with Steel Open Web Truss

- Herein steel truss is used to span between railway tracks or rivers etc.
- Guideway beams are placed inside steel truss and rests over cross girders through special torsional resistant joint



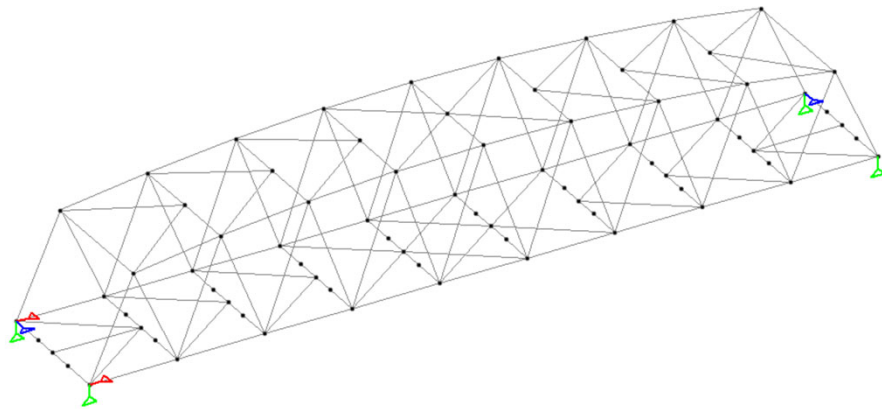
Long Spans with Steel Open Web Truss

- Guideway beam connection with Steel Truss



Long Spans with Steel Open Web Truss

- Steel truss is simply supported structure
- 3-dimensional structural models are simulated with all members properties as specified
- During analysis & design due consideration to deflection & rotation must be given



Long Spans with Steel Open Web Truss

Construction of Steel Truss for monorail

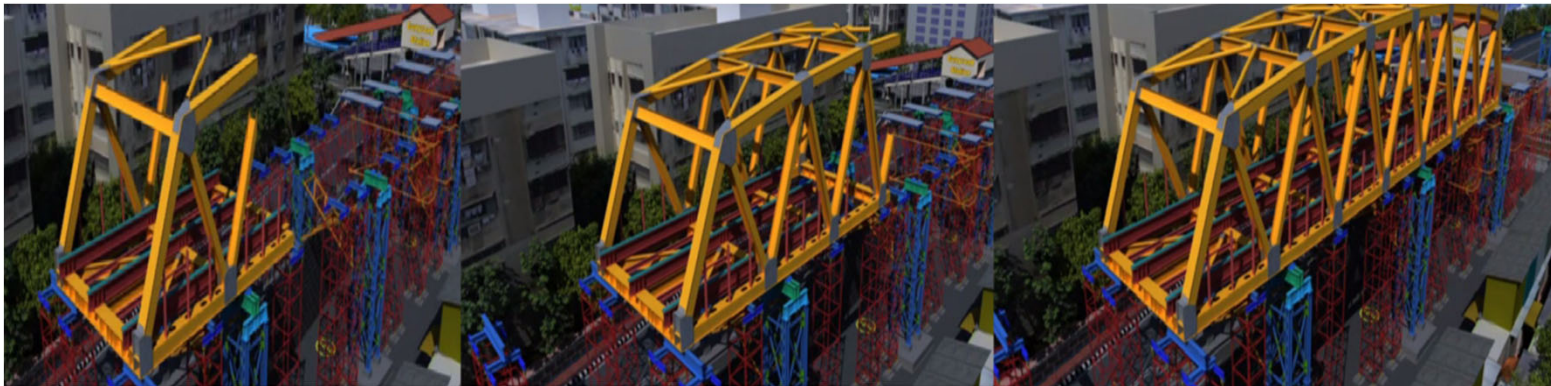
- Fabrication of members of Steel Truss
- Precasting of guideway beams



Long Spans with Steel Open Web Truss

Construction of Steel Truss for monorail

- Erection of Steel truss



Long Spans with Steel Open Web Truss

Construction of Steel Truss for monorail

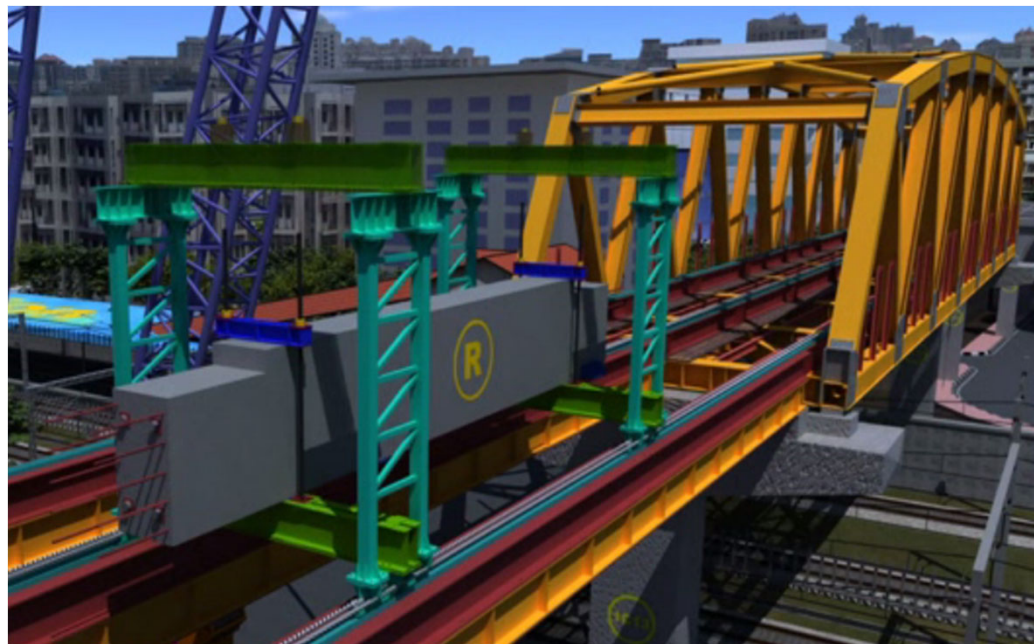
- Launching of Steel truss



Long Spans with Steel Open Web Truss

Construction of Steel Truss for monorail

- Erection of Guideway beams inside Steel truss



[Movie](#)

THANK YOU

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