

FAST TRACK ERECTION OF THE SKEW STEEL TRUSS BRIDGE

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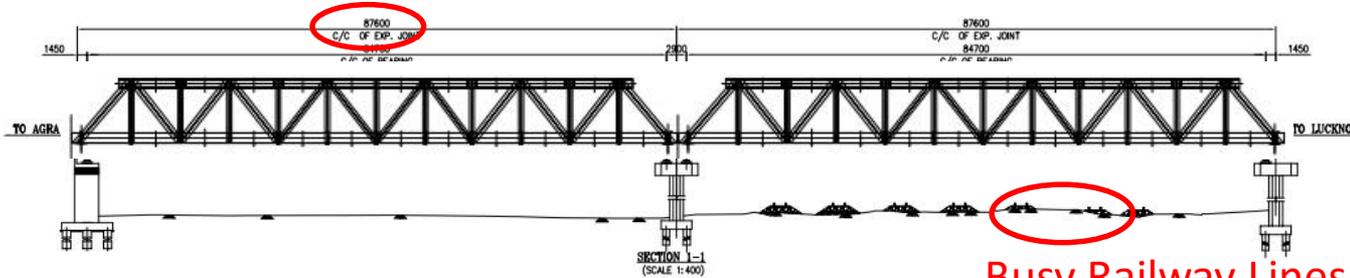
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- **Infrastructure sector** plays a major role in propelling the overall development of any nation.
- The **timely completion** of major infrastructure projects has become crucial for sustaining economic growth.
- The **Agra-Lucknow expressway (ALEP)** connecting two major cities of the country, was one of the most ambitious projects completed recently, in India.
- This project costed **2.1 billion USD** & completed in record time of **24 months** has sent up an example for other infrastructure projects in the country.
- The ALEP has cut down travel time between Agra & Lucknow from **6 hours to 3.5 hours**.

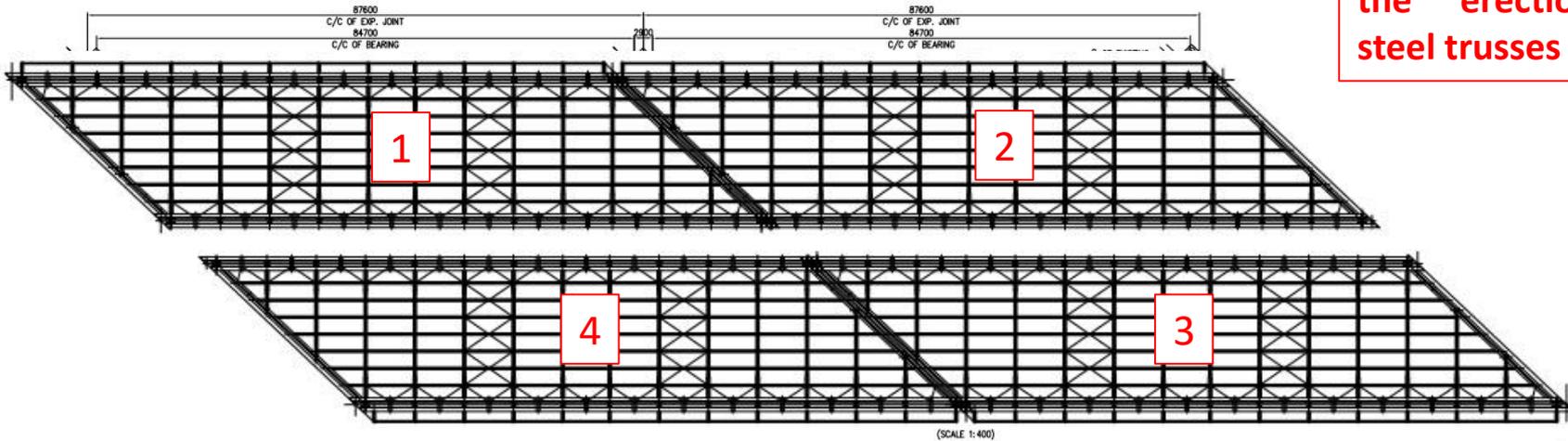
- Like every major infrastructure project, ALEP had many structures, some of which proposed complexity in its **design**, or **erection**, or both.
- The complexity of the structures, involved in a project, have a **major impact on the time** of completion of the overall project.
- The **steel road over-bridges (ROBs)** at Ch. 67+600m, was one such structure in the ALEP project that involved challenges in both, design as well as erection.
- The steel ROBs were to cross two of the **busiest railway tracks** of the country.
- This presentation covers only the erection aspect of the steel ROBs.

c/c distance between piers = 87.6 m



Busy Railway Lines

Railway authority had allowed two rail blocks of 75 minutes, each, for the erection of steel trusses 2 & 3.



Site Layout

[ALEP 67+600 Video link](#)



- Precise survey was required throughout the project. The top surface of all RTS were required to be at same level with **tolerance of $\pm 5\text{mm}$** . Changes in the location and levels of RTS would have considerable effect on the loads of each roller.
- Strict tolerances had to be followed for **fabrication of temporary supports, i.e. RTS**, as they were the major load taking members during launching.
- Assembly of the truss was another challenge due to the geometric complexity of the truss. **A camber of 100mm was required at the center of the truss.**
- For erection of RTS5 support, site had to work in close proximity to the railway lines with **high voltage overhead wires**.

- The launching was successfully completed in the **block time of 75 minutes** given by the railway authority.
- The speed of launching observed was **0.6 to 0.7m/min**.
- The average pulling force required during launching was **1.8 to 2.2 tonnes** (coefficient of friction equal to 1.4% to 1.8%). The maximum pulling force was 6 tonnes, which was observed when the rollers were climbing the top girder of RTS during entry.
- The guide rollers proved very important during the launching operation as the truss was being guided by the guide rollers on lateral shifting. The maximum lateral shift of the truss after reaching final position was observed to be 70mm.

- Afcons team & management
- External consultants & vendors
- Project team at site
- Client: UPEIDA
- Approving Authority: Northern Central Railway



Thank You

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