Bridge Built in a Day - Pre-fabricated construction in the rail environment

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Who we are
A professional services firm combining engineering & technical acumen

- In business for 6 decades
- Projects in more than 150 countries
- More than 9,000 professionals worldwide
- Infrastructure capacity in bridges, ports, airports, road, rail, tunnels, water, planning and more
Construction partnership

- We understand project delivery;
- We understand construction;
- We work with contractors and project owners to understand each projects drivers and challenges;
- We focus on innovative solutions that solve problems and add maximum value;
- We focus on economical design solutions, use advanced systems and we employ the best.
Infrastructure
Building to meet the market challenges

Transportation & Logistics
Urban Solutions
Water

Aviation
Highways & Bridges
Tunneling
Water Solutions
Ports & Marine
Rail & Transit
Planning & Advisory
Multidisciplinary Approach

- Multidisciplinary is integration but also teaching each other;
- Pedestrian traffic can be modelled using fluid dynamics;
- Tunnelling can be used to assist in cut and cover pipes
Rail Construction

- Safety is top priority
- Keeping trains running is second priority
- This objective is common to other industries. Sometimes you need to keep the asset operational
- Rail does it best
Superstructure Only Replacements

- Lightweight structures
- As few lifts as possible
- Fabricated off-site is cost efficient and safer
- Less risk associated with site and weather
Superstructure Only Replacements

- Sub-structure construction often the most time consuming
- Useable when substructure is in fair condition and load unchanged
Substructure Replacements

- New substructure needs to be build adjacent to existing substructure
- Change alignment
- Each project is unique and needs to consider all options

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The diagram illustrates the proposed arrangement for a pier study, featuring several key components:

- **Cutting through existing deck to install additional piers.**
- **Edile, deck unit.**
- **2 No. 1000 deep x 750 wide x 12000 long headstock 44x24 tsp 54x24 bottom 34x24 side bars EF N16-150 closed ties**
- **Edile, pier**
- **8 No. 500 Octagonal column piles at 1m Spacing 12x43 vert, N12-150 holes**
- **Steel, pier**
- **2 Nos. headstock**
- **8 Nos. steel pinnas**

The diagram includes a 3D view with detailed annotations for the structural elements to be installed.
NGS×500 transverse bars with 30 mm.
weather plates each end (gusset)
Core hole through existing headstock
and epoxy grout.

2 No. 1200 deep × 1000 wide
× 16000 long headstock
64G12 top
124G12 bottom
4G40I-30 bars ID7
M16×50 through bolts

8 No. 160 Octagonal driven
piles at 1m 5 gaze
15AV2 wet,
N1=50 capacity

2 No. headstocks

8 No. driven piles
All piles are outside
topline of casting deck.
Pre-Fabricated Construction in all industries

- These methods can be applied to a wide range of projects
- The solutions are very site specific and need to be considered carefully
- Usually price competitive with longer construction

- Keeping the asset operational
- Safer
- Less program risk
Thank you.