

Unusual construction sequences

The Problem/Challenge

Intelligibility of unusual construction sequences and ensuring that all the necessary people know how to build the structure safely.

The Risks

Collapse during construction due to asymmetric loading and unbalanced cantilevers.

The Solution

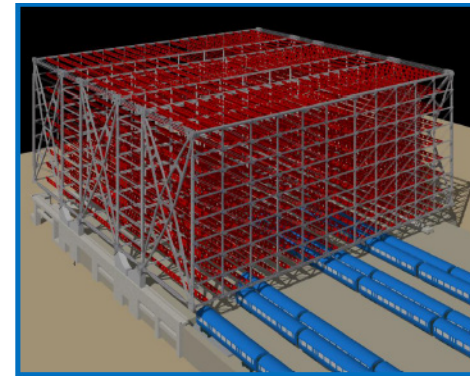
Graphic presentation of the proposed sequence for contractors to understand the structural and constructional design intentions of temporary tension cable restraints.

The Benefits

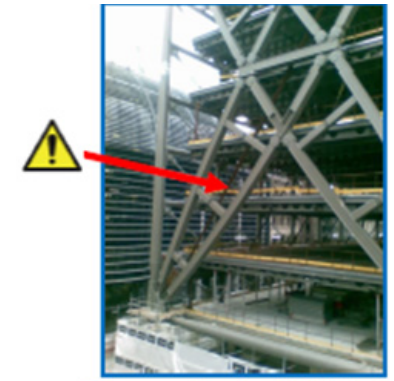
- Information sharing of proposed assembly strategy with the construction team at early stages of the project.
- Reduced chance of things going wrong.
- Opportunity for additional input from stake holders before design progresses too far.

Key Points

- Simple 3-D drawings overlaid in an animated PowerPoint, showing the site constraints and proposed significant sequences.
- Ensure any specialist subcontractors are engaged early in the design process.
- All temporary bracings should be easily identified with any key removal stages known by all parties.



Design Stage 3D View of Structure



Temporary Bracings Highlighted



Cannon Place Bridge Structure

Unusal construction sequences

The Problem/Challenge

A complex steelwork roof design needed a workable construction sequence from the structural engineers for the project. The sequence needed to be communicated to and understood by the contractor, specialist steelwork fabricator and the erector who would put the structure together.

The Risks

A failure to understand the forces acting within the structure during the build could have led to errors in the construction sequence, resulting in dangerous and temporary instability and potential collapse. Confusion over the correct construction sequence would have caused significant programme delay.

The Solution

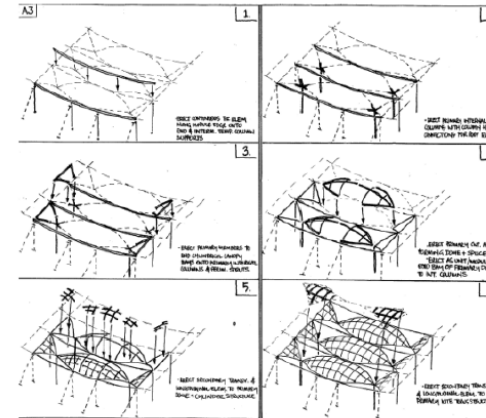
Sketches of a possible construction sequence were developed and included in the tender documentation. This meant that the contractor could manage the phased erection of the structure and understand where additional temporary support and restraint would be required.

The Benefits

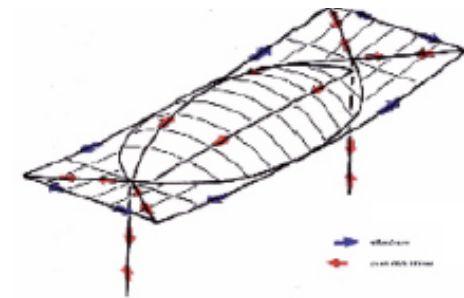
- There was clear communication of the construction sequence avoiding site “fire fighting” and improvisation.
- All of the contractor tenders were equally and fairly based as they understood the challenges that they faced (i.e. a level playing field).
- The proposed sequence provided a sound basis for the steelwork contractor’s own designer to develop the final sequence and detailed method statements.

Key Points

- It was recognised early in the project that there were significant challenges associated with the steelwork design, which allowed sufficient time and resources for planning.
- The proposed sequence was conveyed simply and clearly through step by step drawings.



Extract from the proposed construction sequence



Simple Drawing showing the forces acting within the structure

