Transforming Geelong: The Fyans Street Rail Bridge

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ABSTRACT

The Waurn Ponds Duplication (WPD) project is part of the Geelong Line Upgrade which is within the wider Regional Rail Revival project delivered by Rail Projects Victoria (RPV). As part of this project, the heavily congested 5-way roundabout at Fyans Street and associated level rail crossings were removed and replaced with an elevated rail bridge.

The bridge form was required to achieve a 50m clear span over the highly skewed realigned road. A steel through girder design was adopted, which could cater for the long span and have sufficient strength to allow for twin tracks on a single integrated superstructure. Concrete Super-T backspans were adopted on both approaches, allowing for increased open green space and improved urban design for the surrounding residential area. The project exhibited design, fabrication, transportation, and construction complexities, with the twin steel through girders being 4.2m in depth, the track having a 600m radius horizontal curve and the structure having a skew of approximately 35 degrees to the track.

This paper will discuss the technical aspects and design complexities encompassed in the solution including form and geometry, detailing aspects, articulation, girder restraint and structural buckling behaviour. Structural modifications to allow erection of the full spans using SPMT will be discussed, as well as differences in Australian and International standards regarding through girder design.