

Case study

Bell Station - Level Crossing Removal Project

September 2024



Truecore®

TRUECORE® steel supports the making of a transport infrastructure landmark



Project Details:

Project: Bell Station

Location: Preston, VIC

Principal Steel Product: 10 tonnes of LGS framing made from TRUECORE® steel

Architect: Wood Marsh

Builder: John Holland, with North Western Program Alliance partners, Kellogg Brown Root and Metro Trains Melbourne (NWPA)

Steel Fabricator: CMG Frames

Commercial Facade Contractor: Casello

Photography: Peter Bennetts & CMG Frames

The versatility of a prefabricated light gauge steel (LGS) framing solution made from TRUECORE® steel helped this time-critical project, with its complex, multi-dimensional facade, stay on track during construction.

With the clear objective of reducing congestion and improving road and rail safety, the Victorian Government's Level Crossing Removal Project, now in its 8th year, is the most extensive infrastructure program of its kind ever undertaken in the state's history. To date, it has overseen the removal of 84 dangerous level crossings and the building or refurbishment of 48 new commuter stations. It has also provided a platform for reimagining how major infrastructure projects can deliver on their functional intent while significantly enhancing public amenity and the surrounding urban environment.

The Mernda line redevelopment in the Melbourne suburb of Preston perfectly exemplifies this interplay. As part of this upgrade, four level crossings were removed, two new railway stations, Bell and Preston were built, and four km of elevated rail line was constructed by the North Western Program Alliance (NWP) headed by construction company John Holland. As part of the project, a recreational green space the equivalent size of three MCGs was returned to the local community, providing landscaped gathering spaces, shared cycleways and footpaths, and a sense of reconnection.

In keeping with this sense of community and connection, Wood Marsh, the architects commissioned to design Bell Station, drew inspiration from the heritage-listed housing surrounding the site. The suburb's roofscape inspired the three-dimensional pattern which forms both the concrete facade that dominates the building, and the imposing glazed feature walls that provide natural light into the station's interior concourse.

It's these glazed feature walls that would present a significant challenge for the building's facade





contractor, Casello. Their extensive experience working with NWP on many previous rail projects made them acutely aware of the need to minimise network disruption, according to Sam Goldberg, Casello's Business Development Manager. "Major transport infrastructure projects, that include 'occupation shutdowns' are particularly time sensitive, so alternate building solutions like the prefabricated light gauge steel (LGS) framing used on this facade, expedited the construction process without compromising the architects original design intent".

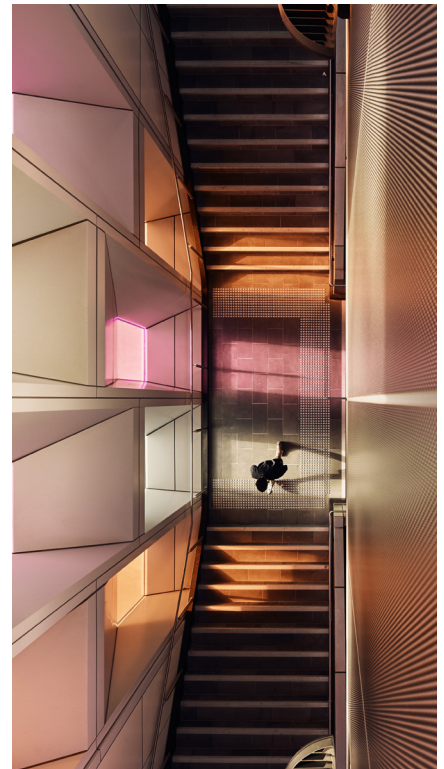
This facade was originally designed and specified to be constructed entirely on-site using a 'stick-build' method incorporating structural steel components. However, according to Dan Thomson from CMG Frames, the company Casello contracted to build the prefabricated modules, "on site construction of the complex multi-faceted, articulated, angular framework added risk to the project timeline". Dan added, "the accuracy of prefabricated and engineered LGS framing meant that the bespoke, imported windows could be ordered in advance, confidently knowing that they would fit perfectly into the frames on arrival".

The prefabricated LGS framing used on this project was designed and engineered by CMG Frames using 3D modelling software to achieve seismic, wind and load requirements. Selected for its high strength-to-weight ratio,

G550 grade TRUECORE® steel with a base metal thickness (BMT) of 1mm was selected for the structural framing within the project.

Despite the extreme complexity of these unique frame structures, 3D modelling facilitated the dimensional accuracy of every component, including all bracing, fixing points, mounting plates, and support brackets to deliver the modules' required structural integrity.

In total, 36 prefabricated light gauge steel modules were manufactured for the Bell Station project, with each elevation incorporating 18 modules varying in size from a massive 5.3m high x 2m wide, with the smaller modules measuring 2m x 2m. When complete, these modules were transported to the site entirely configured and installed in a sequenced process by a small crew using only a mobile site crane. Demonstrating yet another key benefit of utilising an LGS solution rather than the alternative approach that would have necessitated costly perimeter scaffolding and may have caused a lengthy, longer and disruptive installation process.



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Dan Thomson, CMG Frames, Business Development Manager.

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