



## The train line to Sydney's future growth

As Sydney continues to grow, there is a greater need for transport. The Sydney Skytrain is the future of transport in the Northwest area of Sydney. This new elevated train line, which spans four kilometres from Bella Vista to Rouse Hill, will provide the surrounding suburbs with a quicker train service. It will run every four minutes, making the hour long commute into the city more flexible for residents than the nearby existing service that runs every half an hour.

A significant component of the build is the large precast barriers, or parapets, which were manufactured by Hanson Precast. As well as the parapets, Hanson Precast produced all other in-situ concrete for the project in their new wet concrete batching plant. The plant was established to keep up with the quality demands of this project. Part of Hanson Precast's manufacturing facility at Mulgrave was leased out to ISJV, to produce the 1200 precast concrete viaduct segments. Doing so ensured consistency of finish across the project, with all forms of concrete coming from the same source.

Mr John Hewitt, Hanson Precast Manager, has worked closely on the project and believes that precast was the only way to time effectively produce a quality project, on such a large scale. 2300 parapet units were made, with the four metre long and 1.8 metre high units weighing in at about six tonne each. The parapets, as well as 56 platform units that Hanson Precast manufactured and transported to site, cost just under nine million dollars.

### **Precast manufacturer**

Hanson Precast

### **Head contractor**

Impregilo-Salini Joint Venture (ISJV)

### **Engineer**

SMEC

### **Client**

Transport for NSW (TfNSW)

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## A thorough sampling process

The parapets are one of the few components of the build that are visible, which meant there was a strong focus on the appearance and finish. The parapets hide the whole construction, like an outer shell to the train line. Hanson Precast went through a rigorous sampling process to ensure that all involved with the build were able to inspect and approve the concrete.

“A lot of work was done with the samples, from small samples, 300 by 300, right up to two metre square samples. We had three different site visits with upwards of 20 people representing TfNSW, the architects and the contractor, to make sure that it replicated the colour they wanted,” Mr Hewitt said.

There was also a lot of sampling involved in the mould process, with many prototypes made. The steel moulds, which were chosen because of the finish, had to be flexible in length, as each parapet was unique to a viaduct unit, which could have minor variations in dimensions. The moulds are adjustable to one millimetre increments to allow for such variation. Each parapet, created with a unique number and cast to the exact measurements of the viaduct segment, is then fixed to its matched precast viaduct segment. “The sampling and prototype process was quite onerous,” Mr Hewitt said.

## Meeting all the requirements

As well as all the various aspects of the precast’s appearance that had to be right, Hanson Precast also worked with ISJV to meet the requirements of the Infrastructure Sustainability Council of Australia (ISCA). “The majority of the concrete was 40 and 50 MPa, it had to satisfy ISCA requirements so there was 30 per cent cement replacement. We used fly ash as the supplementary cementitious material and we also used recycled water and manufactured sand,” Mr Hewitt said.

The parapets for the Sydney Skytrain were carefully thought through and planned down to the final millimetres. Precast concrete was an excellent choice of material for the parapets as it sped up what could have been a lengthy in-situ process, saving costs as well as allowing for the finish and the colour to be delivered. Ticking off the appearance requirements, as well as the environmental ones, Hanson Precast was able to produce such an important element for the Sydney Skytrain project.

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