

PRECAST PARAPETS AND DIGITAL MODELLING

The Western Harbour Tunnel and Warringah Freeway Upgrade is a major transport infrastructure project designed to improve traffic flow and network capacity across key arterial connections between Sydney's CBD, harbour crossings and northern suburbs.

As part of the broader freeway upgrade works in North Sydney and Naremburn, National Precast member Ozcast supplied 303 precast concrete parapets and 2350m² of transfloor slabs for sections of the project.

The parapet works formed part of freeway safety and functionality upgrades delivered within an active infrastructure environment involving staged construction activities, traffic management requirements and coordinated installation planning.

For Ozcast, the scope included the manufacture and delivery of 50 precast parapets within a seven-day production timeframe, followed by a two-day installation programme prior to the Christmas 2023 period.



APPLICATION OF DIGITAL MODELLING

To support manufacturing accuracy and installation planning, Ozcast incorporated 3D modelling technology throughout the delivery workflow prior to casting.

The modelling process assisted the project team in reviewing element geometry, constructability and placement requirements before production commenced, allowing potential alignment issues to be identified earlier in the process. This improved visibility around lifting requirements, transport sequencing and parapet positioning prior to delivery and installation onsite.

Within live infrastructure environments, resolving constructability issues during planning and production stages is significantly more efficient than addressing them during installation activities onsite.

The modelling workflow also supported communication between manufacturing and construction teams by providing greater clarity around placement methodology and installation sequencing before elements arrived onsite.

MANUFACTURING & INSTALLATION

Infrastructure upgrade works undertaken within live transport corridors often require close alignment between manufacturing, logistics and construction activities.

For the Warringah Freeway Upgrade works, production sequencing was planned to align closely with transport and installation requirements, reducing unnecessary onsite handling and supporting more efficient placement activities during installation.

Precast systems are increasingly utilised within infrastructure projects because they allow substantial portions of work to occur within controlled manufacturing environments prior to installation onsite. This can improve quality



consistency, reduce disruption within active construction environments and minimise exposure to extended onsite works. For the Warringah Freeway Upgrade project, the integration of digital modelling into the precast workflow supported a more streamlined manufacturing and installation process while reducing the risk of delays associated with onsite fit-up or placement issues.

OUTCOME & INDUSTRY RELEVANCE

Despite broader construction delays affecting sections of the wider project, the parapet works were successfully completed prior to Christmas 2023.

Beyond the immediate project outcome, the delivery highlights the increasing role digital workflows are playing within modern precast manufacturing and infrastructure construction.

The use of modelling technologies within precast projects is increasingly being integrated into constructability review, manufacturing planning and installation preparation to support more reliable delivery outcomes across complex infrastructure environments. As major infrastructure projects continue to operate within increasingly complex staging and installation conditions, the ability to identify and resolve issues earlier in the manufacturing process is becoming increasingly important.

For precast manufacturers, digital coordination is becoming less about visualisation and more about practical delivery assurance.

Contributed by National Precast Concrete Association Australia

PROJECT SNAPSHOT

PROJECT: WESTERN HARBOUR TUNNEL AND WARRINGAH FREEWAY UPGRADE
CLIENT: CPB/DOWNER JV
LOCATION: NORTH SYDNEY AND NAREMBURN, NSW
PRECASTER: OZCAST
PRODUCTS SUPPLIED: 303 PRECAST PARAPETS AND 2350M² TRANSFLOOR SLABS

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