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Precast concrete provides safe solution for data center

Project: NextDC M2 Tier IV Datacenter
Location: Tullamarine, Victoria
Master Precaster: Hollow Core Concrete
Client: NextDC
Builder: Kapitol Group

Victoria's first Tier IV datacenter in the Melbourne suburb of Tullarmarine boasts high capacity and high redundancy facilities to both national and international customers. To facilitate the rented servers alongside their respective redundancy and backup servers, the NextDC M2 Datacenter required a large 11,000m2 floor area with minimal interruptions from vertical structures or walls.

Project builder Kapitol Group engaged National Precast Master Precaster Hollow Core Concrete to supply load-bearing beams to the $85 million project with an objective of maximising the datacenter's usable floor area.

The precaster's innovative long span super tee beams were implemented to open the datacenter's floorplates whilst maintaining a high load capacity for the server and services infrastructure. Each load-bearing beam was designed to withstand a 15kPa (1.5 tonne/m2) load over a 20-meter clear-span.

This carefully designed system of super tees allowed NextDC to maximize server rack density as vertical members have been relocated to edges of these

20-meter beams. Precast concrete has enabled both an open floorplate for the many servers and a high load bearing capacity for the associated cooling and services systems.

As precast concrete elements are manufactured offsite in a factory-controlled environment, the typical congestion of trades and materials' deliveries is reduced on the construction site.

Despite this reduction of on-site trades, the $85 million NextDC M2 project has been projected to provide 300 new employment opportunities in both the Melbourne region and throughout the broader supply chain.

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The offsite manufacturing process also allows Hollow Core Concrete - like all National Precast Master Precasters - to deliver a consistency in strength and quality throughout many precast elements in a project.

The structural integrity of precast concrete in combination with the innovative super tee beam design have aided NextDC is establishing Victoria's first Tier IV certified data center.

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