CYCLISTS NOT FORGOTTEN IN STUNNING NEW STAIRWAY

HANSON PRECAST PROVIDED AN INNOVATIVE PRECAST SOLUTION FOR THE STAIRWAY AT THE WODEN BUS INTERCHANGE THE IN ACT, THAT HAS BENEFITED MORE THAN JUST PEDESTRIANS.

As cycling becomes more and more popular, a renewal project for the Woden Bus Interchange in the ACT boasts a functional yet aesthetically pleasing new feature - an architecturally designed precast concrete stairway that looks after cyclists as well as pedestrians.

As well as improving accessibility and safety, the stairway provides commuters with a new connection between the Woden bus depot and town square. But besides its functionality, what is different about this stairway, is its beauty and that its clever design caters not only for pedestrians, but cyclists as well. Between two sets of stairs, a bicycle lane has been incorporated down the centre, allowing riders to wheel their bikes alongside them as they ascend or descend.

THE BEAUTY OF FACTORY-MADE PRECAST

All of the elements for the stairway, including the stair landings, curved central stair units and surrounding walls, were manufactured by National Precast member, Hanson Precast. In total, the project comprised 59 stair elements with a light acid-etched finish and 13 wall panels in a polished finish.

According to Hanson Precast's Project Engineer Robert Merjane, the high level of finish would have been very difficult to achieve had the stairway and walls been site poured.

"That was one of the main reasons that precast was chosen for this project," he says.

The project comprised 59 stair elements with a light acid-etched finish.

COMPLEXITY AT ITS FINEST

While first impressions might indicate that the project was straight forward, careful planning and attention to detail was needed to ensure the project's success.

According to Mr. Merjane, there were challenges with various elements of this project. "The central stair units were curved along each side to accommodate the bike wheel. The moulding required to achieve that detail was quite intricate. We drew some of the elements in 3D to determine the shape and final dimensions and then custom-made the moulds accordingly," he explains.

"The stairs were architecturally designed to look as though they are suspended," Mr. Merjane continues. "You can actually see the steps have a floating look on the outer edge, and achieving that result required clever planning. The solution was to fabricate moulds to give the steps a tapered edge."

The other challenge was putting a round element in what was essentially straight and square cut. For the bicycle access, a cylindrical shape was needed in the centre stair units where the railing was installed.

"The polished precast walls that define the garden space are articulated with grooves that match the layout of the step treads," says Mr. Merjane.

ACT GOVERNMENT AFTER LONG LIFE, DURABILITY AND MINIMAL MAINTENANCE

While the main reason for using precast was the accuracy and quality of finish that could be achieved in a factory-controlled environment, durability was also a deciding factor. The ACT Government recognised that the stairway would have a long life and enjoy the benefit of minimal long term maintenance costs. As well, the client knew that high quality precast would perform well in Canberra's sometimes extreme weather conditions.

IMPRESSIVE RESULT AND A HAPPY BUILDER

Hanson's Canberra Sales Representative Drew Lincoln says the final result is worthwhile. "This project demonstrates what we can do. We don't often get an opportunity to show off what we can do with precast and landscaping, particularly at the high end. The builder did a great job installing as well," he says.

Builder Ivan Potrebica from Acclaim Contractors is also happy with the final result.

"We're extremely pleased and so is the ACT Government. It's a bit of a showcase and was a tough ask (for Hanson), with stringent tolerances and complex dimensions and they handled it in their stride. It goes to show what you can do with precast," says Mr. Potrebica. ■

Project: Woden Bus Interchange stairway & landscaping
Project value: Approximately $300,000
Location: Woden, ACT
Precaster: Hanson Precast
Builder: Acclaim Contractors
Architect: CCG Architects
Engineer: SMEC
Client: ACT Government

A GATEWAY TO THE UNDERGROUND

NATIONAL PRECAST MEMBER PERMACAST MANUFACTURED AND SUPPLIED CRITICAL PRECAST CONCRETE MANHOLE COVERS TO ONE OF AUSTRALIA'S LARGEST NATURAL GAS PROJECTS – THE GORGON PROJECT IN WESTERN AUSTRALIA.

The benefits of precast concrete products are being realised by many facets of the construction industry through major infrastructure projects opting to cast off site.

That's certainly been the case for one of WA's major resource and infrastructure projects – the Gorgon Project, which has utilised the benefits of precast concrete manholes over their in-situ product counterparts.

Developed by Chevron, Gorgon is one of the world's largest natural gas projects and sits among the largest single resource developments in Australia's history. The project is located on Barrow Island, a Class A nature reserve 60 kilometres off the coast in north-western WA. It includes a liquefied natural gas facility and a domestic gas plant capable of supplying 300 terajoules of gas per day to the WA population.

But, it is under the ground where precast has played a vital role. Approximately 610 precast concrete manholes have been installed to provide access to underground pipes.

PERMAcast manufactured and supplied manhole covers, conversion slabs and access shafts for the project.

CAPABILITIES ESSENTIAL IN AWARDING CONTRACT

Given the number and size of the manholes, Leighton Contractors needed to award project's precast package to a precast manufacturer that had the required expertise and an extensive manufacturing capability. The requirement was for a precaster with a strong track record supplying major infrastructure, oil and gas projects – one with a highly skilled and technically competent engineering team as well as a large-scale precast facility that not only had manufacturing capacity but a large storage facility too.

Perth-based precast concrete specialist and National Precast member PERMAcast was awarded the contract to manufacture and supply the manholes, together with conversion slabs and access shafts for the project.

With its highly skilled and experienced team of in house engineers and a stringent quality management system, the company was able to ensure that all products were designed and manufactured to specification.

"Even though no two manholes were the same, we were able to meet supply requirements," explains PERMAcast Managing Director Alberto Ferraro

"The sheer volume of products might have been difficult in terms of storage for other precasters, but we have 250,000 square metres of storage area, so for us it was no problem", he says.

PRECISION TO MEET QUARANTINE REQUIREMENTS

The 610 manholes each weighed between 15 and 20 tonne, manufactured to a +/- 5-millimetre tolerance and measuring on average 1500 by 1500 millimetres internally.

Being a Class A nature reserve, the quality and finish of the manholes was critical for the project. To prevent the introduction of non-indigenous animals and plants into the area, a best practice quarantine management system set an unprecedented level of quarantine benchmarks. A high quality finish was necessary to minimise the risk of introducing non-indigenous insects. Each manhole was manufactured with a single pour, to ensure no joints and therefore no potential for leaks.

"Neither the quantity nor the quality was an issue for us at all," says Mr Ferraro. "Our team is always up for a challenge."

ADDING VALUE

"We also managed logistics between our company, Leighton and their sub-contractor. Those skills added value to the project in terms of construction efficiency," says Mr Ferraro.

The company also supplied and installed the ladders for the manholes. "We always value add where we can," he adds. ■

Project: Gorgon Project
Location: North-western WA
Precaster: PERMAcast
Builder: Leighton Contracting
Client: Chevron

The bridge deck is designed to resist flood uplift forces as well as lateral flood and debris impact loads.

VITAL LINK CONNECTING REMOTE COMMUNITIES

HUMES HAS DEVELOPED A TECHNICAL SOLUTION TO FACILITATE QUICK AND SAFE INSTALLATION OF TWO NEW PRECAST CONCRETE BRIDGES IN THE UPPER GASCOYNE REGION OF WESTERN AUSTRALIA BEFORE THE WET SEASON.

Two new precast concrete bridges provide a safe and reliable crossing in all but extreme flood events for pastoralists, residents, tourists and the mining industry in the Upper Gascoyne region of Western Australia. The Gascoyne River Bridges are a vital improvement that will link the Gascoyne with the Pilbara, providing access to Carnarvon and the rest of the state.

PRECASTER ENGAGED EARLY FOR SOLUTION

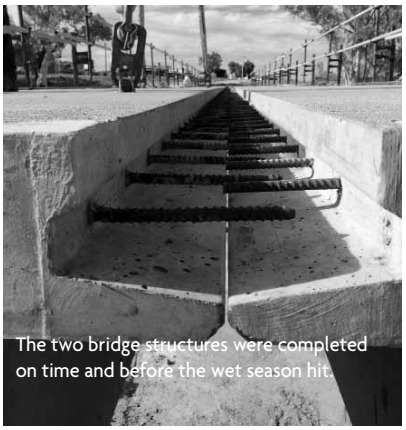
Humes' Technical Services team worked with the principal contractor during the early stages of the project to develop a solution that would facilitate quick and safe installation of the bridge prior to the onset of the flood season. Humes proposed used of its proprietary HumeDeck product, which satisfied all the engineering requirements.

CLEVER ENGINEERING DESIGN

Humes' design engineers proposed an in-situ stitch joint between adjacent deck units to ensure a continuous deck profile across the deck width. The bridge deck dowels were designed to resist flood uplift forces as well as lateral flood and debris impact loads. Vent holes in the deck slab ensure entrapped air will be ventilated from beneath the deck.

DURABLE SOLUTION DELIVERED ON TIME

Constructed using HumeDeck, the two Gascoyne River Bridges were completed on time prior to the wet season. They are an important part of everyday life for the local community that will require minimal maintenance and will withstand floods for many years to come. ■



The two bridge structures were completed on time and before the wet season hit.

Header: Gascoyne River Bridges
Project value: $10.5 million
Location: Gascoyne Junction, WA
Precaster: Humes
Builder: Marine & Civil
Engineers: Jacobs
Client: Shire of Upper Gascoyne

Header: Technical specifications
Products supplied: 90 HumeDeck (double reinforced unstressed) bridge units
Typical size: Typically 12m long x 2.4m wide
Application: Two bridge crossings of 72m and 436m
Colour: Grey, off-form
Design requirements: A suitable wearing surface; no need for additional topping
Duration: Design, manufacture and delivery in three months

THE BUDGET AND PRECAST CONCRETE

A CHAT WITH NATIONAL PRECAST'S CEO SARAH BACHMANN.


Sarah Bachmann.

THE FEDERAL BUDGET ALLOCATES A SIGNIFICANT SPEND TO INFRASTRUCTURE. THAT MUST BE POSITIVE FOR THE CONSTRUCTION INDUSTRY?

It's always welcome when a Budget is handed down and it includes substantial spend on infrastructure. In this Budget, there's a commitment to $75 billion dollars in infrastructure funding and financing over the next decade. There are some exciting projects that have been earmarked.

There's an upgrade to Queensland's Bruce Highway, better road access for Perth's Fiona Stanley Hospital Precinct and regional rail projects in Victoria. There are also plans to set up a new Infrastructure and Projects Financing Agency to decide exactly where and how the money is spent.

Such significant infrastructure ambitions are welcome, so long as they are done right. That means good projects that are well managed and delivered.

WHAT ROLE COULD PRECAST CONCRETE PLAY IN THESE PROJECTS?

Precast concrete should play a leading role in this infrastructure spend. This is a great opportunity to build roads and rail networks utilising the benefits of precast. Not only is precast concrete long lasting, strong and durable, it's also versatile and requires minimal maintenance. It's a great long term investment that delivers over many generations and it really isn't surpassed by any other product.

HOW IS IT PLACED FROM A SUSTAINABILITY AND, IN PARTICULAR, AN ENVIRONMENTAL PERSPECTIVE?

While sustainability is about more than just about environment, precast concrete does has important environmental benefits as well. The manufacturing process means that waste and recycled products can be incorporated into the mix, moulds are reused, there is minimal waste and it actually absorbs CO2 over its life. Off-site manufacture also means less disruption during construction and high quality because of the controlled factory environment for manufacture. And it doesn't emit any chemicals, nor require chemical treatment.

WHAT WOULD THESE INFRASTRUCTURE PROJECTS MEAN FOR JOBS?

All levels of government need to support our manufacturing sector by ensuring Australian companies are procured for these important projects, right down the construction supply chain. That not only protects jobs but will likely create jobs as well.

If the Government's goal is to increase economic growth, that's a good start. To ensure the work is done properly, procurement authorities need to minimise risk and to do that, must choose contractors wisely. When it comes to precast concrete, we strongly recommend using members of National Precast.

As the peak body for the precast industry in Australia, our members lead the industry. They are professionals with experience and a proven track record, and are vetted in a number of different areas prior to being admitted as members. Quality, safety, expertise, environmental compliance, manufacturing facilities and financial stability are all checked. And our members are all kept up to date with the latest manufacturing techniques, standards and codes.

That surely has to give the procurement professionals some peace of mind. In fact I'd be asking precasters who are proclaiming to be good at what they do, why they are not members and making the investment in their national industry body. ■

Perth's Fiona Stanley Hospital Precinct.