



CASE STUDY

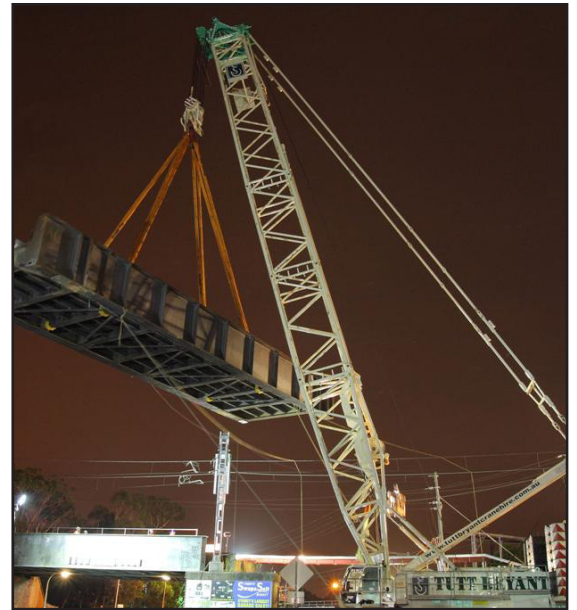
Lidcombe Rail Bridge Refurbishment

Client Objectives

Over the course of 100 years, the Lidcombe Rail Bridge located in Sydney's Inner West has witnessed a number of transitions. Its longevity can be attributed to a pair of 150 tonne rivet constructed rail beams fashioned to withstand years of use. Unfortunately for the old rail bridge, it was due to undertake its final transition. Railcorp NSW decided that for the safety and well-being of their commuters, the overhead bridge bypassing Olympic Drive needed to be replaced.

In order to achieve their objectives, Railcorp required a company who could offer a complete and comprehensive service facilitating in all three key areas of the project - transportation, lifting and relocation. Following a tender process, Railcorp chose the services of Tutt Bryant Heavy Lift & Shift. The company was handed the arduous task of transporting and installing 2 x 180 tonne steel constructed rail beams and 3 x 30 tonne pre cast concrete slabs to form the new Rail Bridge, and then relocate the obsolete beams for demolition. With the project taking place over the weekend, time constraints meant the entire operation from transportation to disassembly had to be completed within 48 hours, as any longer would result in delays creating havoc for Sydney's Monday morning commuters.

The enormity of the project and limited timeframe meant pre planning and efficient execution by Tutt Bryant Heavy Lift & Shift were vital to the success of the operation. The magnitude of the project presented Tutt Bryant Heavy Lift & Shift not only with a challenge, but also an opportunity to showcase its combined services to undertake specialised 'lift and shift' operations.



Above - CC2800-1 removing old rail bridge beam



Above - Installation of the new 180 tonne rail bridge beam



Solution

Pre planning and efficient execution were imperative to the success of the project. All rigging studies were undertaken using AutoCAD, Primavera and SolidWorks which determined crane selection and the most cost effective method for Railcorp. Following consideration, it was decided the 600 tonne capacity Demag CC2800-1 crawler crane would be the crane best suited for the project. In order to transport the crane from Adelaide and Melbourne in time for assembly, Tutt Bryant Heavy Lift & Shift deployed 19 semi trailers, two Drake 3 rows of 8 low loaders and dollies and one 6-line platform trailer and dolly. On arrival construction of the lift pad and the assembly of the CC2800-1 commenced, during which Tutt Bryant Heavy Lift & Shift transported the new 180 tonne beams from the pre-assembly yard to the lift location in anticipation of being unloaded.

The rigging configuration comprised of 4 x 110 tonne slings choked around the 2.2m deep main girders, these were connected to 2 x 85 tonne soft slings perched in a basket hitch over the 300 tonne hook to enable full load sharing. Due to the sheer weight of the beams, Tutt Bryant Heavy Lift & Shift purpose built steel tubular protectors fitted over the I-Beam girders to reinforce and protect the slings. With the crane assembled and the removal of the beams about to begin, a drastic change in weather resulted in winds gusting of up to 115km/h making it near impossible to commence. Despite the setback, Tutt Bryant Heavy Lift & Shift was able to recover the lost time.

The first beam was placed in location using the same rigging as used in the removal of the old beams. Although the new beams weighed an extra 30 tonnes, the 4 x 110 tonne soft slings connected to the cranes lifting lugs were capable of handling the load. The second beam was placed within 2 hours of the first, followed by the 3 x infill precast concrete slabs. At 9:30pm Sunday night, all lifts had been completed with the 2 x 180 tonne rail beams and 3 x 30 tonne pre cast concrete slabs installed and ready for use. This left ample time for Tutt Bryant Heavy Lift & Shift to dismantle the CC2800-1 and transport it to its designated location.

Client Benefit

The project proved to be a resounding success for Railcorp and all parties involved. The dismantling of the CC2800-1 was completed by 4:30am Monday morning with train lines and roads re-opened soon after avoiding any delays. A project of this size would not have been successful if not for the collaboration and co-ordination between the various operations within Tutt Bryant Heavy Lift & Shift. In providing careful planning, accurate analysis and a comprehensive service, Tutt Bryant Heavy Lift & Shift have set the benchmark for future 'lift and shift' projects of this scale and complexity. Tutt Bryant Heavy Lift & Shift would like to thank Gillespies Crane Services for their support in assisting with the installation of the beams.

Key Equipment

The Terex Demag CC2800-1 was chosen based on its 600 tonne maximum lifting capacity and its short erection time. The crane was configured with 180 tonne of upper rear counterweight, 60 tonne of lower counterweight and 36 meters of main boom with the 300 tonne hook block. This gave the crane a maximum lift capacity at the calculated lift radius of 215 tonne, which also offered ample additional load capacity during demolition in case the beams were heavier than originally calculated. Furthermore, this provided Tutt Bryant Heavy Lift & Shift with the flexibility to cover any changes in beam weight or calculated radius at a minutes notice.



Above - Demag CC2800-1 600 tonne crawler crane