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Deloraine Sewerage Pump Station

Treloar Transport has recently completed a contract to construct a Sewerage pump station and rising main in Deloraine for Meander Valley Council. The project is worth close to \$1M.

The work commenced early last year with the construction of an 800-metre long 225 mm diameter rising main, which included a river crossing of the Meander River just below the weir at the Train Park in Deloraine. Pipes were supplied by HCP. At the same time detailed design was underway by HCP for an alternative pump station, which was proposed by HCP at the time of tender as an alternative to the tender documents.

The original design consisted of a 3000 DIA pump station and a separate 17-metre long storage chamber. The alternative accepted by council was a 6500 internal diameter shaft of the same depth, eliminating the need for the additional storage chamber.

The pump station had to be excavated to a depth of about eight metres. Ground conditions and proximity to the Meander River required the installation of bores around the edge of the site.

The shaft was precast in semicircular sections by HCP. Each section was 7000mm outside diameter, 1200mm high and transportable. A total of ten precast sections were supplied to form the shaft. Treloar Transport applied further innovation to the project by sinking the shaft as a caisson. This meant structurally jointing the first four sections together in a shallow excavation before excavation inside the caisson commenced.

An excavator initially undertook excavation from above, until the depth was too great. Then a smaller 5 tonne excavator was lowered into the shaft and it fed material into the bucket of the larger excavator on the surface. An extension of the exhaust pipe and other suitable arrangements were made to ensure a safe workplace for the operator.



As the shaft sank further sections were added and all joints were grouted and sealed above the ground. All went well and the caisson progressed in textbook style to a point about 500mm above its final position. Sinking was delayed until a number of arrestor pad footings were poured under the shaft to ensure that it stopped in the final position.

When the sinking was commenced again the shaft would not budge!! The roof panels, which weighed about 15 tonnes and had also been precast at HCP, were brought to site and placed onto the shaft to encourage it to move. It remained stuck.

Additional ballast was added until it suddenly surrendered and sank the final 500mm onto the footings with a thud. We still do not know why it refused to move but suspect that a rock or similar may have jammed against a ridge on the joint of the shaft.

The floor was then poured in the bottom of the shaft and then adjacent valve pit works and other connections could be undertaken.

Treloar Transports Site Supervisor Nigel Medcraft can be proud of this project. John Treloar also kept a close eye on this project, which was a departure from routine works for the company. Treloar Transports project manager was Max Butler who looked after all the technical aspects of the project and coordinated HCP and other suppliers. These included HMB, who supplied and installed all the pumps pipe work and Russell Smith who undertook the electrical installation.

Thankyou to Max Butler for his assistance with this article.



Sorell Council Replacement of Shrub End Road Bridge

Sorell Council recently undertook replacement of an aged timber bridge over Iron Creek near Sorell, with a twin-cell pre-cast box culvert causeway. The existing three span single lane timber bridge, constructed during the 60's, had been the subject of decreasing load limits and subsequent closure due to its failing condition. The bridge had a length of 40 metres, and was single lane with a width of 4.4 metres. It was located on a relatively minor road, with little vehicular traffic. Replacement with a similar structure was considered economically unviable, and alternative solutions were looked at.

Iron Creek at this location contained a reasonably defined main stream bed of around 7 metres by 2 metres depth, spilling out into a flat, wide corridor for larger flows. The Creek did maintain a reasonably constant smaller flow, and due to catchment size had a reasonably high volume but short duration large flow characteristics. Bridging this creek bed to cater for 1 in 50 or 1 in 100 year flows would have necessitated a reasonably sized bridge structure, and due to usage demands this was not justified. As such a low-level piped causeway arrangement was looked at. This option was designed principally around the concept of catering for up to a 1 in 5 year storm event by way of piped flows. This would then be overlaid with a concrete spillway and sealed road approaches to cater for the larger events.

After determining the flow volumes for the upstream catchment, appropriate box culvert sizes were determined to cater for the deemed 1 in 5 year storm event. Various combinations were considered based upon the number of cells and spillway surface height. The objective was to minimise the cell count without generating an excessive structure height. Installation of guardrail was not considered desirable due to flow-path obstructions, so the overall finished surface height had to be kept sufficiently low in order to not pose safety concerns. The single lane deck width was also increased to 4.9 metres to further ensure motorist safety.

Liaison occurred during this process between Sorell Council staff and Hudson Civil Products to best design and cast units and bases to suit the specific site. This involved a site visit to determine crane access, and upper limits placed on the weight of base and crown units dependant on crane size and reach limits. This approach resulted in the manufacture and supply of four base units measuring 4m by 2.44m and weighing 6.1 tonnes, together with 8 crown units, being delivered to site. With the base prepared and level, the placement and positioning of all units was completed effortlessly in less than two and a half hours.

Thank you to Sorell Works Manager Craig Reid for his assistance with this article.



New Products now available from Hudson Civil

Driveway Crossover

Hudson Civil Products has commenced manufacturing Driveway Crossovers due to consistent requests from Councils and contractors. In an attempt to provide the best quality product we are manufacturing this product upside down and with one 'Swift Lift' for installation. Whilst this increases the cost of manufacture, we were not happy with similar products on the market that are poured on end and without a proprietary lifting point.



Pit Penetrations

Hudson Civil Products has invested in a large diameter coring machine. This is mainly used on DIER projects as there current requirements make it very difficult to supply Precast pits unless the holes are cored.

The coring of holes is easily extended to Manhole components and may also enable them to be pre-benched prior to delivery and installation. Please contact us to discuss any projects that coring may be of use.



Above, a 900mm x 900mm DIER pit being cored.

The amount of Skewed pipe penetrations inhibits holes be formed readily by "blockouts". This machine enables holes up to 600mm to be drilled at almost any angle.