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Christmas Avenue DN600 Collector Sewer Main

Client: DJ MacCormick / Water Corporation

Location: Orelia WA

Construction Period: Jan 16 – Apr 16

Project overview

Water Corporation planned an upgrade to extend the operational life of the wastewater system in the suburbs of Bertram, Parmelia and Orelia. This required a section of the DN600 collector sewer to be constructed along Christmas Avenue to connect to the existing DN600 collector sewer. With depths of the collection sewer approaching 9 metres, the works required the lower section of the sewer to be installed using microtunnelling techniques, as open excavation of the pipework was not practicable.

DM Civil worked in conjunction with DJ MacCormick Contractors to undertake the installation of two sections of pipework where limestone with an estimated strength of 60 MPa was required to be drilled.

The task required the installation of a DN800 mild steel casing installed in two sections; a 60 metre length and a separate length of 174 metres. These bored casings allowed for DN600 GRP pipe to be sleeved inside with the annular void grouted. The ground conditions were anticipated to be a variable combination of hard cavernous limestone and sand.

Following DM Civil's recent success in microtunnelling the Yanchep DN450 Collector Sewer, we could confidently commit to our longest drive to date in variable limestone and sand conditions.

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Significant achievements and benefits

The Rockman Slurry Machine was prepared in the company workshop before embarking on the firm's most challenging microtunnelling project to date. The ability to carry out maintenance on microtunnelling plant with in-house expertise and apparatus ensures that the equipment is prepared and tested in a consistent manner prior to every project.

The systematic approach to tunnelling operations through internally developed procedures has allowed DM Civil to grow as a reliable tunnelling contractor. Critical aspects to the success of such a long drive include monitoring thrust forces, slurry flows, spoil volume (a method not widely used by others), drilling fluid properties and the use of additives and lubricants correctly matched to ground conditions. All of these elements ensure that thrust pressures remain within the allowable range.

A small variance in survey set out over distances approaching 200 metres can significantly impact on the accuracy of a drill shot. DM Civil's Trenchless Technology division, in conjunction with DM Civil's survey department, guaranteed that tight controls were able to be kept over the survey set out. The ability of DM Civil to control and manage these survey results internally, resulted in a 174 metre drive being completed within a level tolerance of 20 millimetres.

The sewer alignment was located down an existing roadway in a densely populated area. Utilising the microtunnelling methodology resulted in the working area footprint being kept to a minimum. This allowed traffic to continue using the roadway with access maintained to all residents with only minor disruptions to their daily activities.

Setting a company record length of 174 metres of microtunnelling in hard rock within 20 millimetres of target was a significant achievement. The benefit to Water Corporation was a seamless operation by DM Civil, ahead of schedule, to ensure the success of a project using specialist techniques.

Contact DM Civil to discuss your trenchless technology projects.

GUARANTEED PERFORMANCE

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