CONSTRUCTION OF THE ST PETERS SHAFTS AT WESTCONNEX NEW M5 STAGE 2 PROJECT

LOCATION: ST PETERS, SYDNEY NSW | CLIENT: CPB DRAGADOS SAMSUNG JV

KEYWORDS

Construction, Tunnel, Civil, Shaft, Excavation, Drilling, Ground Support, Rock Bolts, Shotcrete

INTRODUCTION

Ealwin Group were awarded this works package in 2018 by CPB Dragados Samsung JV, on this major NSW infrastructure project. Part of the greater WestConnex New M5 Stage 2project, it forms part of a tunnelling project that spans 33 kilometres.

As part of the construction of the St Peters Interchange for the new M5 section of WestConnex, there was a requirement to construct shaft VS04 as an inlet/outlet shaft for Ventilation Supply Tunnel and Ventilation Extraction Tunnel. Ealwin was mobilised to this project within 2 weeks or project award.

PROJECT OVERVIEW

Construction of vent-shaft (VS04), which dimensions were 32m(L) x 13.5m(W) x 28.5m(D), Installation of 549no rockbolts from between 6-9m, totalling 3970m, installation of strip drains and application of shotcrete (190m3).

Management of tunnel and civil work crews was required throughout the excavation process which involved the excavation and disposal of 12,310BCM of spoil. The excavation included the use of excavators and attachments including Rock Breakers and Xcentric Rippers.

Excavation was joined to the existing tunnel network via portals at the base of the shaft and spoil removal was utilised via the tunnels for the final completion. Rockbolts were installed using our fully integrated Atlas Copco T20 drill rig and excavator mounted drill attachments.

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PLANT AND EQUIPMENT:

Ealwin supplied the below equipment for the scope of works:

35 Tonne Excavator with 3T Rock Breaker and XR30 Xcentric Ripper.
13 Tonne Knuckle Boom Excavator with Excavator Mounted Drill Rig
12T Bergman Dump Truck.
Shotcrete Rig
Atlas Copco T20R Drill Rig

Other Works:

Other works associated with the contract included:

Rockbolting: drilling, rockbolting, tensioning and grouting works were self performed using SUTC labour, Atlas Copco T20 drill rig, grout mixer/pump

Shotcreting: works were undertaken using a specialist subcontractor as required

Scaffold: a local scaffolder was engaged to add stair panels as the benches were progressively excavated.

Photo 1: Xcentric Ripper, trimming walls.

Photo 2: Breaking into existing tunnel

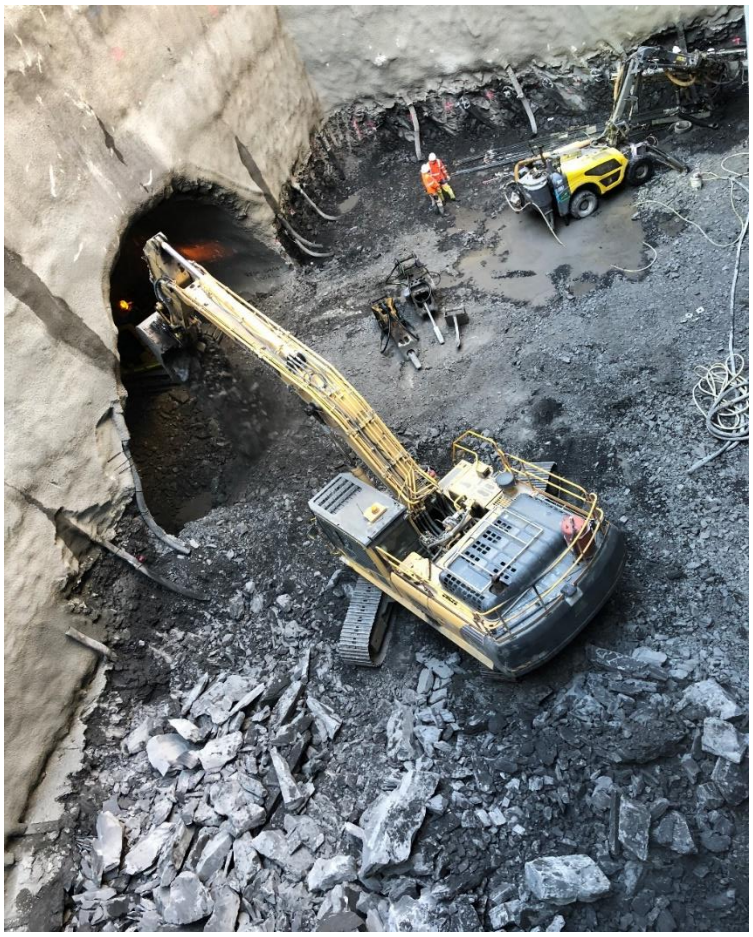

Photo 3: Excavation & Ground Support

Photo 4: Excavation of Nozzle for another tunnel.

Photo 5: Excavator with Xcentric Ripper

Photo 6: Finish shotcrete layer of Shaft

Photo 7: Atlas Copco T20R Drill Rig