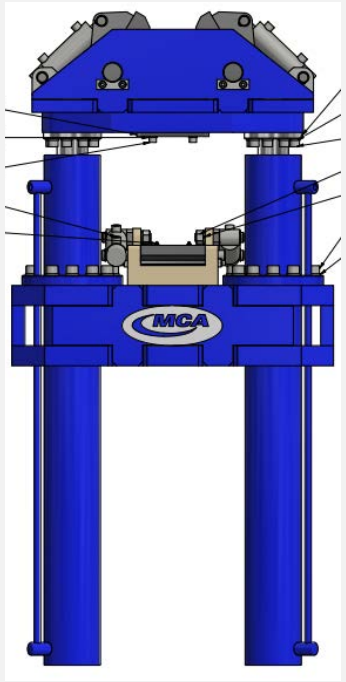
Crushed Ore Bin Installation

MCA ENGINEERING

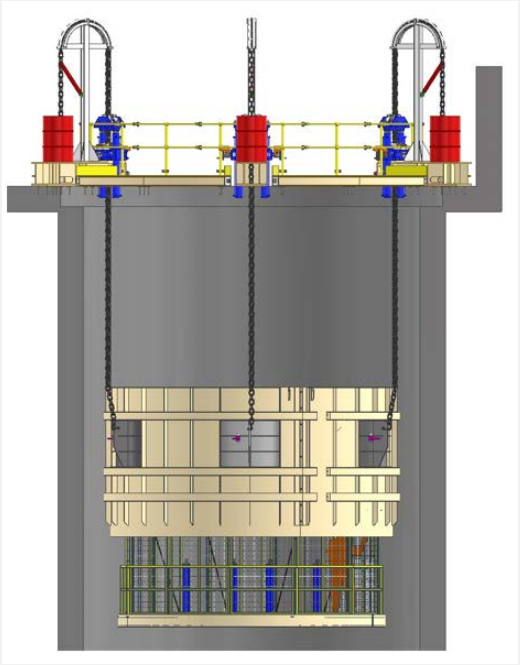
Purpose

This presentation intends to showcase:

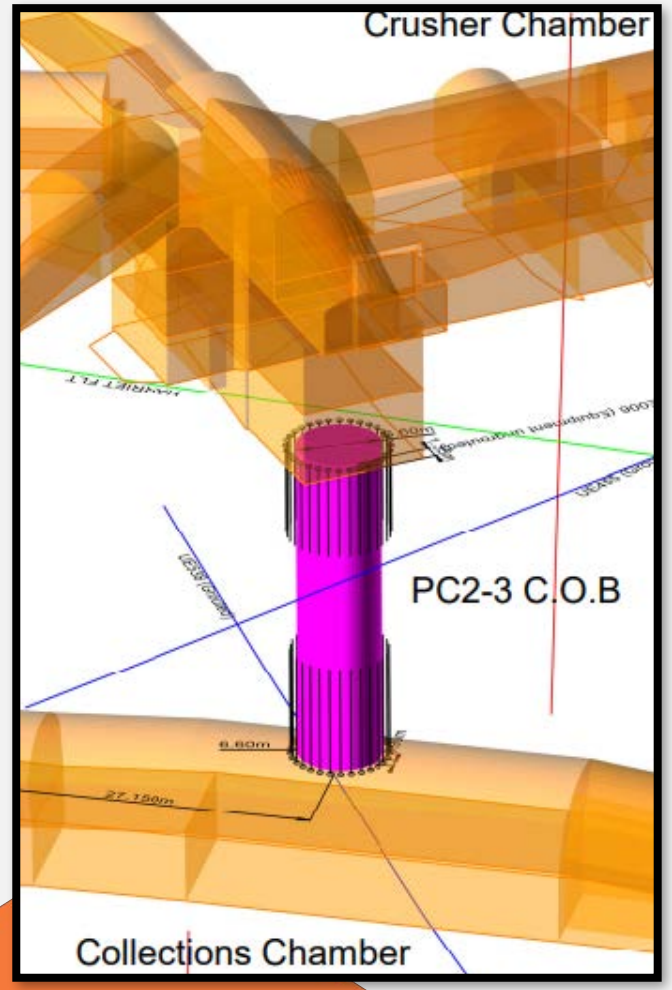
The effectiveness and reliability of MCA's Chain Jack engineering solution to COB installation



The efficiency and reliability of MCA Engineering to install and implement this solution



CADIA EXPANSION PROJECT- COB Can and Rail Mat Installation



MCA was Engaged by Newcrest to install COB Can and Rail Mats into an excavated shaft between an *Ore Crushing Station* and a *Collection Conveyor* as part of the Scope of Facilities in the Cadia Expansion Project.

This excavation was approximately **32 m** deep and **6.6 m** in diameter.

Installed into this excavation was approximately **85 tonnes** of COB Cans and **162 tonnes** of Rail Mat Liners

Project Summary

Project Requirements

Specialised and Engineered Installation Equipment:

- Operation and Maintenance Manuals
- Design Calculations, Documents and Drawings
- Factory Acceptance Testing of Lifting/Lowering Mechanism

Underground Works:

- Labor, Supervision and Equipment for all construction and installation
- Install chairing structure, hydraulic power pack, jacking system and chain drums
- Assemble and install Can sections
- Scribe underside of bin brow for Shotcrete plug
- Oversee concrete placement to backfill annulus
- Clean up and demobilisation from site

Project Outcomes

SAFETY

- ZERO Incidents

PERFORMANCE

- 48 Shifts to complete with average of 6 personnel
- ZERO Jacking System Faults

CONFORMANCE

- Complete alignment with As-Constructed Drawings dimensions and specification's
- Complete conformance with client testing and pre-commissioning requirements

Design and Fabrication

MCA

Mechanical design of chain Jacks

Fabrication of Chain Jacks, Concrete Support Structure, Platforms, Rail Mat Lifting Jig and Working Stage

Central West Fluid Power

Supply and install hydraulic hoses, fittings, valves and HPU

MAGRYN

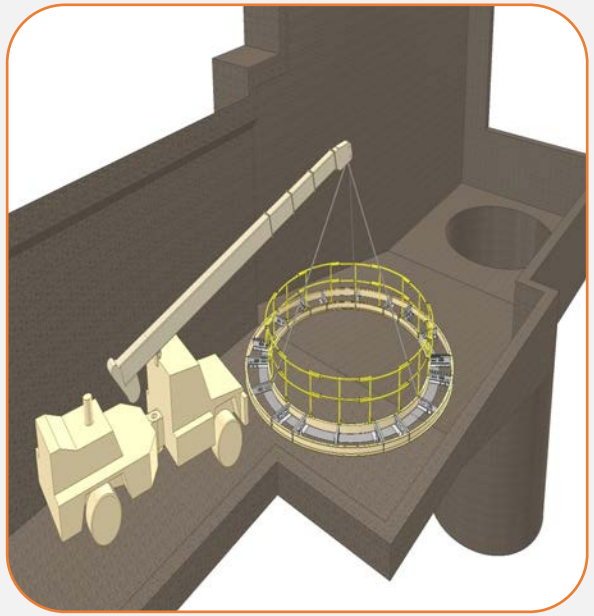
Design of concrete support structure

CMA Engineers

Electro-Hydraulic design, supply and remote set up of electronic control system

Installation Process – 1. Walkway Ring

Transported Blow Surface

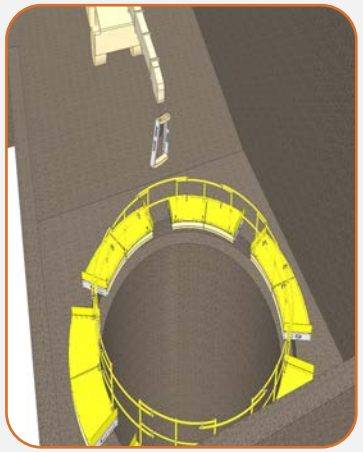


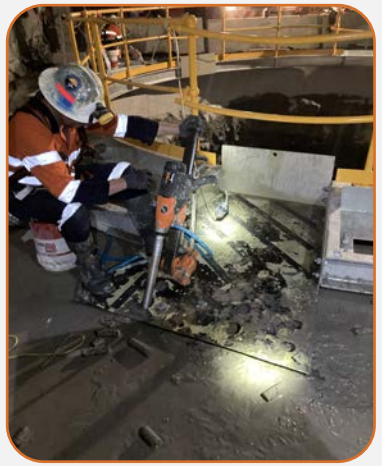
Lifted via Franna Crane onto position over shaft

Anchored into position around shaft

Installation Process – 2. Jacking Beams

Changed out Walkway Spaces for Drill Templates





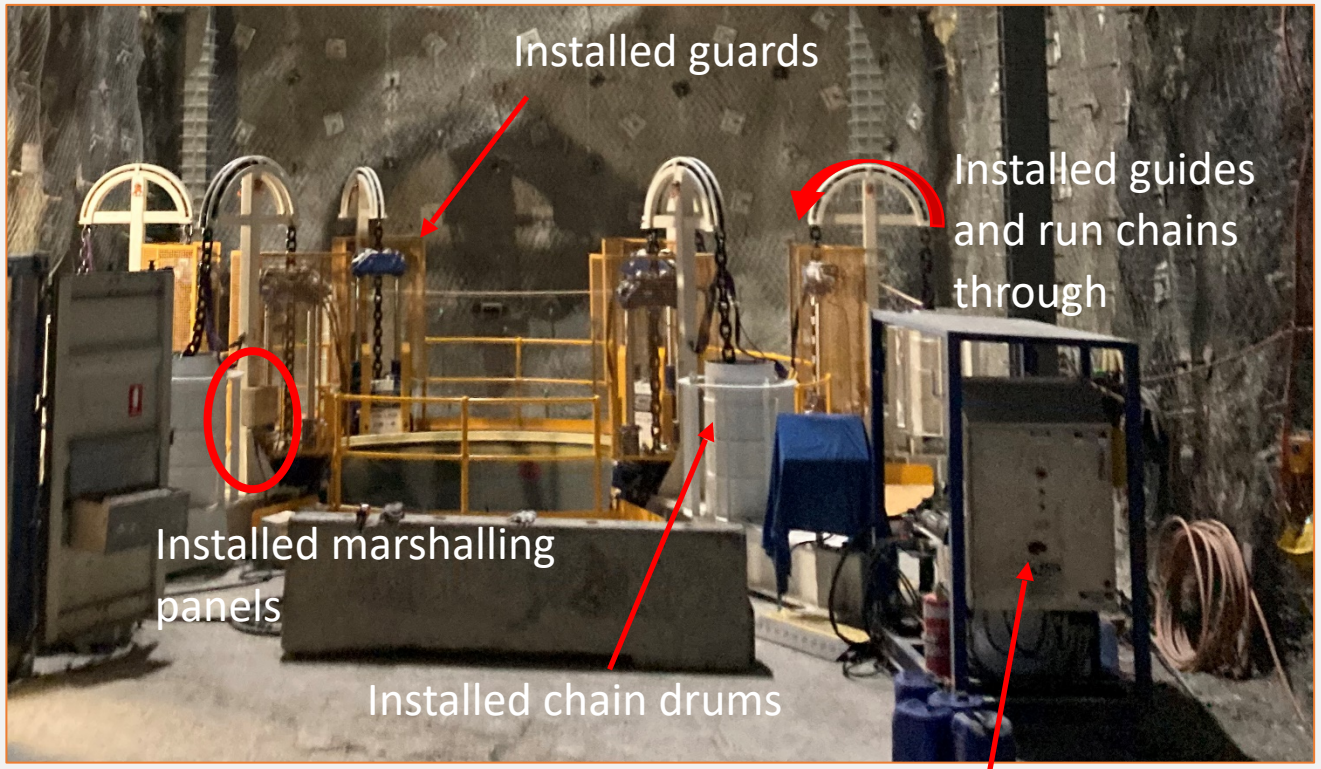
Drilled and Installed Bolts 3.5 m deep

Installed Jacks and Jack beams onto position over shaft

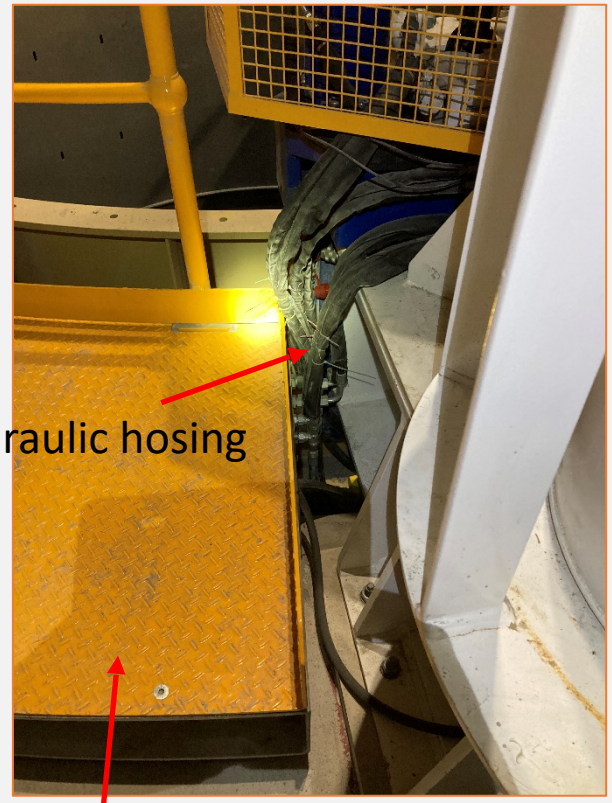
Pull tested anchor bolts to 22 tonnes for 15 minutes

Grouted Jack Beam Plates

Installation Process - 3. Finalised Hydraulic System Installation



Installed HPU and set up system cabling



Installation Process - 4. Transported, Assembled & Installed Cans

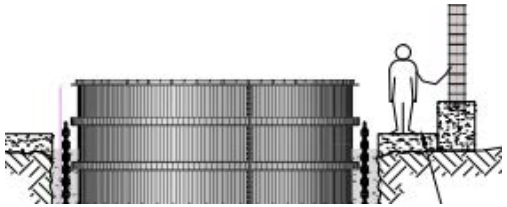
Transported Cans Below Surface

Assembled below ground

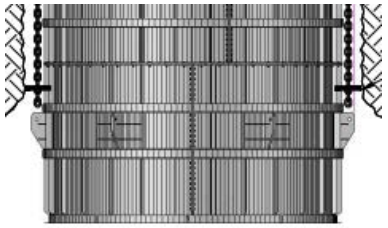
Lifted into position in shaft

Bolted onto top flange of previous Cans

Repeated until all 12 Cans were installed



Top Can
Crusher Level



Bottom Can
Collection Level

Installation Process - 5. Backfill Anulus

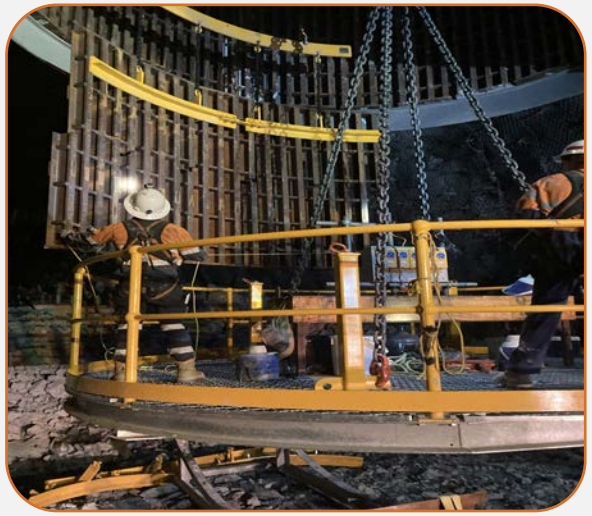
Installed scribing mesh

Created plug with 90 cubic meters of shotcrete

Backfilled anulus

Installation Process - 6. Rail Mats

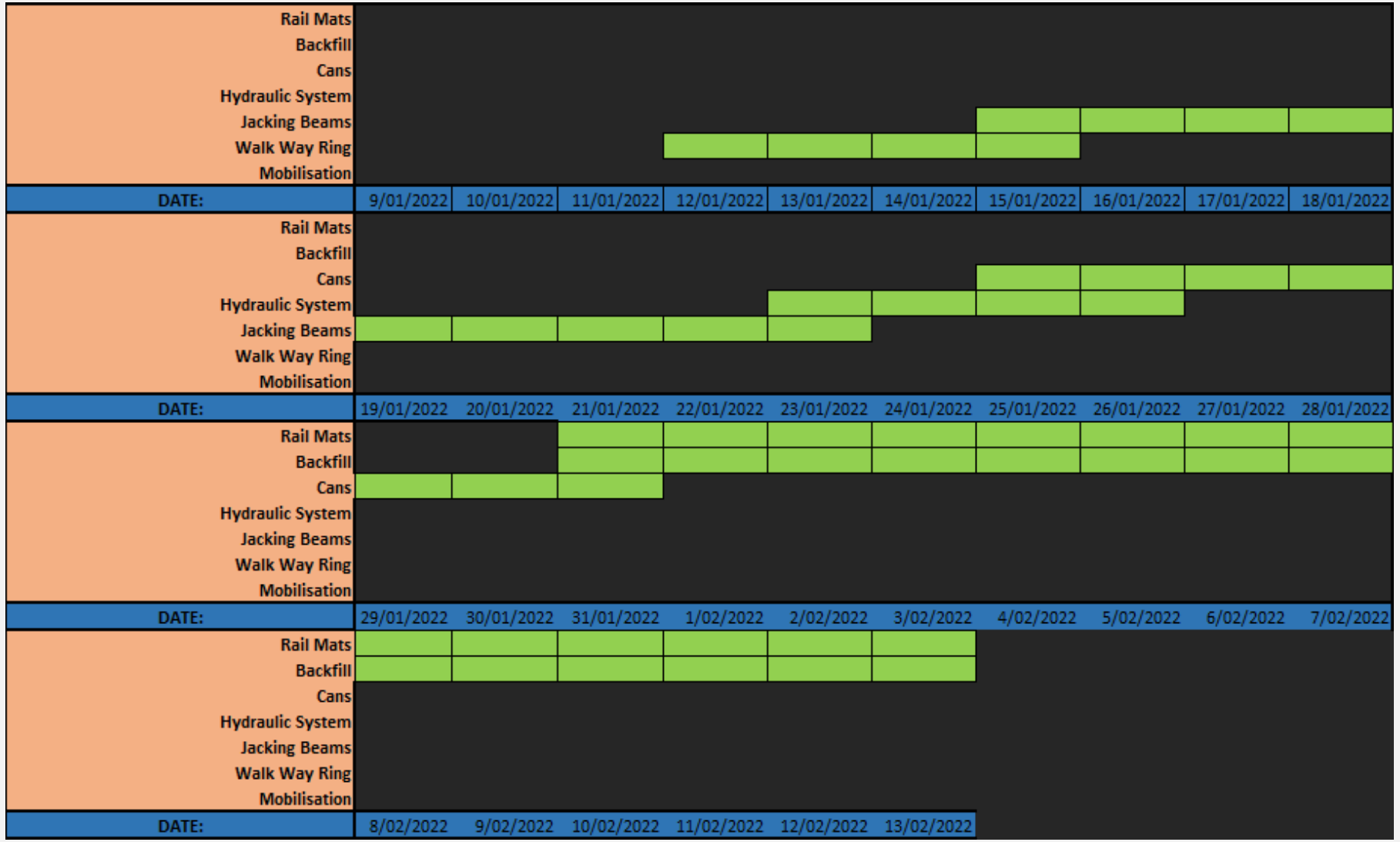
- Transported Rail Mats to Collection Level
- Set them up onto cradles



- Attached 5 Rail Mats onto lifting gig
- Hoisted up gig with Crane at the top of the shaft
- Attached Mats to inside diameter of Cans by J bolts and welding nuts

Repeated until all 300 Rail Mats were installed

Timeline


Rail Mats
Backfill
Cans
Hydraulic System
Jacking Beams
Walk Way Ring
Mobilisation
DATE:
9/01/2022
10/01/2022
11/01/2022
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