

CASE STUDY HO MAN TIN VENTILATION SHAFT HONG KONG



Project Participants

Client

Dragages Hong Kong Limited

Ventilation Shaft Lining Supervision Contractor

Balanced Engineering & Construction Pte Ltd

HONG KONG PROJECT



Kowloon city planned to construct the Ho Man Tin ventilation and utility shaft using slipform. This method had the advantage of being quicker compared to traditional formworks or jump form.

Ho Man Tin Ventilation Shaft Project, Hong Kong

The Ho Man Tin shaft is the ventilation and utility route for approximately 2.8km long dual 3-lane Central Kowloon Route tunnel. The shaft lining was carried out using a Slip forming system to form the outer shaft lining and inner walls and the rest of the structure was completed using a combination of precast and traditional reinforced concrete methods. The plant and equipment included a slipform rig, concrete pump, concrete distributing beam and all the ancillary concreting equipment. All these were inspected prior to use on site to ensure that they complied with the regulations of the Labour Department.

Detail of work by BEC

BEC was awarded a contract for the "Provision of Supervision Staff" which included the coordinating Project Manager, supervisors, and ancillary slipform workers for the construction of the 20.0m OD x 76.0m high concrete shaft walls using a slip-form system, the construction of internal walls, beams, corbels, slabs, staircase, and backfilling using low strength pumpable concrete. The slipform rig outer shaft wall was 2-sided so the space between the excavated shaft and the concrete slip formed wall could be backfilled.

Challenges

- Working deep below ground level
- Working in a confined space

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 EQA IMS ISO 9001:2015 CERTIFICATE NUMBER: QS-18-1955	 Accredited Certification Body SAC CMC No. 02-200-01	 BRITISH SAFETY COUNCIL Member
 EQA IMS ISO 9001:2015 CERTIFICATE NUMBER: QS-18-0174	 JAS-ANZ ISO 9001:2015 www.jas-anz.com CERTIFICATE NUMBER: 20-18-0230	 EQA IMS ISO 9001:2015 CERTIFICATE NUMBER: 20-18-0230

HO MAN TIN SHAFT, HONG KONG

Shaft Data	
Shaft Wall Height	76m
Shaft Outer Diameter	20m

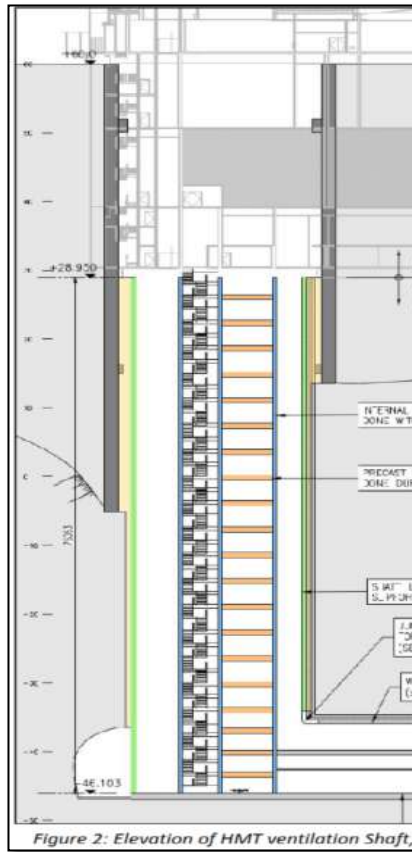


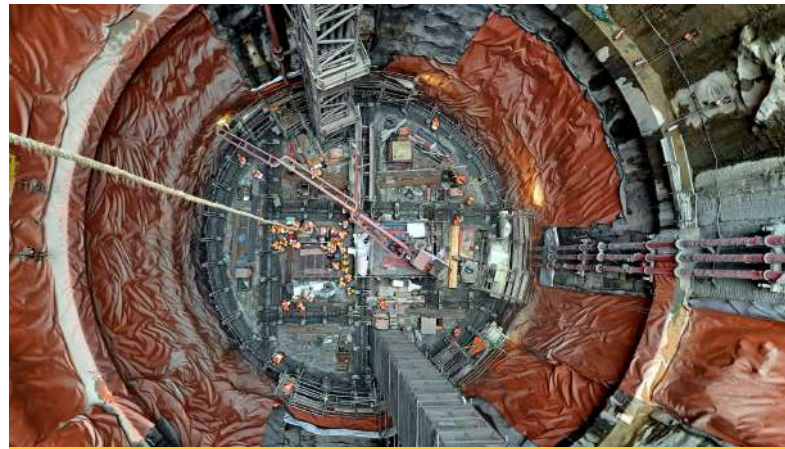
Figure 2: Elevation of HMT ventilation Shaft.



Plan view of the slipform rig



View looking up from the slipform rig



Slip forming the shaft wall

- LEGEND:**
- EXTERNAL LINING - IN SITU SLIPFORM
 - INTERNAL WALLS - IN SITU SLIPFORM
 - TIE BEAMS - PRECAST (DURING SLIPFORM)
 - TIE BEAMS - IN SITU SLIPFORM
 - CORBELS - IN SITU (DURING SLIPFORM)
 - BACKFILL - IN SITU (DURING SLIPFORM)
 - STRUCTURE NOT DONE DURING SLIPFORM

- On the standard floors, the internal structure counts:
- 7 internal walls
 - 10 tie beams
 - 1 slab
 - 1 staircase
 - Corbels on lining
 - Corbels on walls w3, w6 & w7

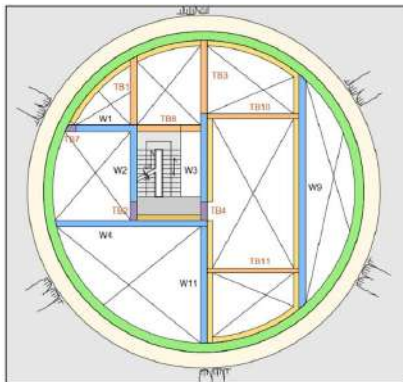


Figure 4: Floor plan - typical levels