



EXCEL ENGINEERING CO., LTD

Contract No. 3/WSD/12

Replacement and Rehabilitation of Water Mains Stage 4 Phase 1

Remaining Mains on Hong Kong Island

EXPERIENCE SHARING OF TEMPORARY WORKS SAFETY DESIGN
OF WATERWORKS AT SHU KUK ST

Outlines of Presentation



- Scope of works and challenges faced
- Solutions to the challenges
 - a) Works at traffic-congested junction
 - b) Works above MTR access tunnel
 - c) Works underneath tram tracks
- Care on workers
- Being considerate to the neighbourhood
- Conclusion



1. Scope of Works and Challenges Faced



WSD Contract No.: 3/WSD/12

Replacement of a Fresh Water Main (FWM) along King's Road

Challenges faced at Shu Kuk St Junction:

- a) Traffic issue of bus turning**
- b) MTR pedestrian tunnel underneath**
- c) Tram track crossed**

2. Solutions to the Challenges



a) Solution to Traffic Issues

- Use trenchless method instead of open trench method
- Relocate pit to lay-by to minimize traffic impact to buses and safety risk to workers from traffic accident at road junction

2. Solutions to the Challenges



b) Solution to MTR Tunnel Issues

- Close liaison with MTRC during design stage
- Select construction method to avoid excavation by heavy plants
- Use laser to ensure accuracy of tunnel alignment
- Daily report & condition survey to MTRC during construction

2. Solutions to the Challenges



c) Solution to Tram Track Issues

- Liaison with Tramway during design stage
- Select construction method to reduce vibration and settlement
- Daily settlement monitoring during construction stage

3. Care on Workers



Measures taken in Design	Purpose
a) Use segmental pipe jacking method	- Enhance safety of workers in tunnel against risk of collapse
b) Setup rails and winch for delivery of materials	- Minimize manual handling procedures
c) Select to use flange-joint pipes instead of welded pipes	- Eliminate fire risk from welding work in confined space
d) Install air chutes to bring fresh air deep into the tunnel end	- Enhance the ventilation and working environment of workers

3. Care on Workers



Other Measures taken on Site	Purpose
e) Gas checking and briefing to workers before every work section	- Ensure no harmful gas and fulfil confined space requirements
f) Permit system and Safety Bulletin Board at pit entrance	- For display of confined space working permit and safety promotion posters at prominent location for workers
g) Container and covered gantry as shelter for workers	- Provide rest place and protect workers from sunlight and adverse weather

4. Being Considerate to Neighbourhood



Measures taken in Design	Purpose
a) Use nylon mesh to delineate adjacent footpath	- Alert pedestrians without sacrificing the ventilation of the narrow footpath
b) Noise blanket and extension of exhaust vent pipe for generator	- Minimize the effect of noise and exhaust to nearby shops and pedestrians
c) Cover the pit by rope mesh after work	- Prevent trespassers from falling into the pit
d) Provide support of exposed utilities	- Care on other utilities to prevent damage

5. Conclusion



Methods to enhance safety in temporary works

1. Start planning early
2. Identify safety risks from different stakeholders
3. Engineers and Safety Officers work together to determine solutions to eliminate risks
4. If risk cannot be eliminated, try to modify the design in order to minimize the risk
5. Company to support safety enhancement measures

- The End -