Cross-Island Cable Tunnel Project

Speaker:
Michael Chin
Managing Director
Infrastructure & Projects, Singapore Power
Stakeholders

Singapore Power
WorleyParsons
AECOM
Mott MacDonald
Obayashi Corporation
SK E&C
Nishimatsu Construction Co. Ltd & KTCCE JV
Samsung C&T Corporation
Hyundai E&C
SINGAPORE POWER CABLE TUNNEL PROJECT

- Project Value of S$2 Billion
- **Deepest, Tightest and Longest** tunnels in Singapore
- 24/7 operations
- Average of 3500 workers per day
- 6 main contracts
- 18 active work sites
- 35 km of tunnel construction
- 14 TBMs underground
Cable Tunnel Route
GEOLOGICAL PROFILE OF NS

Key Challenges

- Crossing Faults & Fault Damaged Zones
- Crossing Hot Spring
- Blocky Rock Condition
- High Rock Strength & Abrasiveness
- Crossing Nee Soon Fault & Springleaf MRT Station (U/C)
- Mining underneath PIE expressway & Whampoa Canal
- Transition zone of Bukit Timah GRANITE, Jurong Formation and Old Alluvium
- Clayey Old Alluvium
Singapore – 11 November 2016

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GEOLOGICAL PROFILE OF EW

Key Challenges

- Shear Zone
- Meta Tuff
- Clayey Old Alluvium

- High abrasiveness in Sandy OA
- Crossing NSL & C920 MRT lines with thick Kallang members on top

- Crossing KPE, CCL, PIE & DTSS, DTL3 C932A, DTL3 C933, NEL and Sungei Whampoa Canal
TBM Design
- probe drill to probe ground ahead
- double man-lock to allow CHI at high water pressure

Tunnelling Strategy
- Unique risk mitigation for long tunnel drives
  - contingency for TBM overdrive

Integrated Data Management System (IDMS)
- Real-time monitoring to capture data on cause and effect of excavation and tunnelling works

Tight Tunnel Radii of 75m Curvature
- Mini Packer & Clay Shock
- Specially designed composite segment
- Copy Cutter
- Articulation screw conveyor
Project Safety Review (PSR)

Design
- Analyze activity risk
- Mitigate through design

Construction
- Analyze construction risk
- Mitigate by best construction methods with no compromise to quality

Improvements made

Workshop
- Detailed Safety Checks
- Detailed Quality Checks

Operation
- Activity Based Improvement System (ABSIS) video

Project Management

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Daily / Weekly Progress Meetings

- Progress tracking through daily and weekly meeting

Monthly 3C Knowledge Sharing

- Presentation of various topics
- Sharing of knowledge gained and lessons learnt
Stakeholders Management

- Briefing to Grassroots Leaders, Advisers and immediate stakeholders
- Regular updates via face-to-face meetings, circulars and emails
- Organised site visits for stakeholders
- Pro-active measures to enhance road safety: created site access via CTE and PIE for May Rd and Kallang Shaft sites

Temporary roads pave way to safety

SingPower acts to prevent accidents during network upgrading project

By MINOTHA

Two temporary roads built for the Cross-Island Cable Tunnel Project to allow heavy vehicles to travel along the construction site have now opened for use - Tanglin Road and May Road. The new roads were built to accommodate the heavy vehicles involved in the project and will be in place for the next two months.

Minister Chan Chun Sing toured East West 1 tunnel on 28 Jan 16

The Land Transport Authority said it has built two temporary roads to connect the new East West MRT line to the existing ones.

Temporary roads built for the Cross-Island Cable Tunnel Project to allow heavy vehicles to travel along the construction site have now opened for use - Tanglin Road and May Road. The new roads were built to accommodate the heavy vehicles involved in the project and will be in place for the next two months.
Safety Initiatives

- Safety Pledge
- Buddy System
- MSI Audit
- Unannounced Safety Audit (USA)
- Safety Training for Workers
- Safety @ SPPG
- Enhanced Safety Performance Indicators
- Best Contractor Award Scheme
- Reward for Best Safety Performance
- Project Safety Review (PSR)
- Activity Based Safety Improvement System (ABSIS)

EVERYBODY PLAYS A PART IN SAFETY

Won the ROSPA (The Royal Society for the Prevention of Accidents) award and Singapore’s Top 50 Engineering Feat in 2016
**Safety Pledge**

We commit to safety as our highest priority in all aspects of the project.

We value every life and their families and we take safety to our heart. Every accident is avoidable. We will strive to eliminate unsafe practices and in the process work towards zero accident.

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*Signatures*

- Sung Pi Kyung
- Uichi Mizuguchi
- Dai Le Song
- Hitoshi Hasagawa
- Paul Shin Yong Seub
- Lee Hee Suh
SINGAPORE POWER
Cross-Island Cable Tunnel Project

THANK YOU