Building Large Prefabricated Urban Underground Space with Small TBMs for Subsection Undercutting

China

Presented by: Yang Li, Deputy General Engineer
• Huge economic loss (10 billion dollars per year)
• Air pollution by car exhaust
• Poor quality of life
Parking difficulty has been a big problem for cities.
Utilization and developing underground space is the most effective way to solve the problems

HOW to construct these underground projects?

Economy, efficiency, environment
• Tunnels of round section: Chunfeng Road Tunnel, Φ15.8m TBM, biggest in China
• Tunnels of rectangular section: Underground Pedestrian Passage under Heiniucheng Road, 10.42x7.57m (INNOVATIVE UNDERGROUND SPACE CONCEPT OF THE YEAR 2018)
• HOW to build large section underground spaces?
• Open-cut Method is still the main construction method used in building large underground spaces
• Pipeline migration, building demolition, traffic paralysis and environment disruption
• PBA Method used in building metro stations in Beijing, China
• Low efficiency, high cost, high risk

• Harmonica Method, Japan
• High cost caused by great waste of steel jacking box for temporary support
CC Method (Cut and Convert Method)
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• The pilot project, a underground parking lot beneath the square
• 90m × 35m, 3m buried soil
• Silt stratum, and above the water level
- This R&D program is directed and promoted by CREG (China Railway Engineering Equipment Group Co., Ltd.).
- China Railway Liuyuan Group Co., Ltd. and China Railway Tunnel Group Erchu Co., Ltd. are the participations in this program.
Shallow buried large scale underground spaces

Subway stations, underground expressways, underground warehouse logistics and so on.
Thank you for your attention.