ITA TUNNELLING AWARDS 2019

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

China

Presented by : Yang Li, Deputy General Engineer

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BEIJING, CHINA

ITA AITES

Miami, USA 18th November 2019

Yang Li, Deputy General Engineer

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- Huge economic loss （10 billion dollars per year)
- Air pollution by car exhaust
- Poor quality of life

BEIJING, CHINA

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- Parking difficulty has been a big problem for cities

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- Utilization and developing underground space is the most effective way to solve the problems
- HOW to construct these underground projects?
- Economy, efficiency, enviroment

WUHAN CHINA

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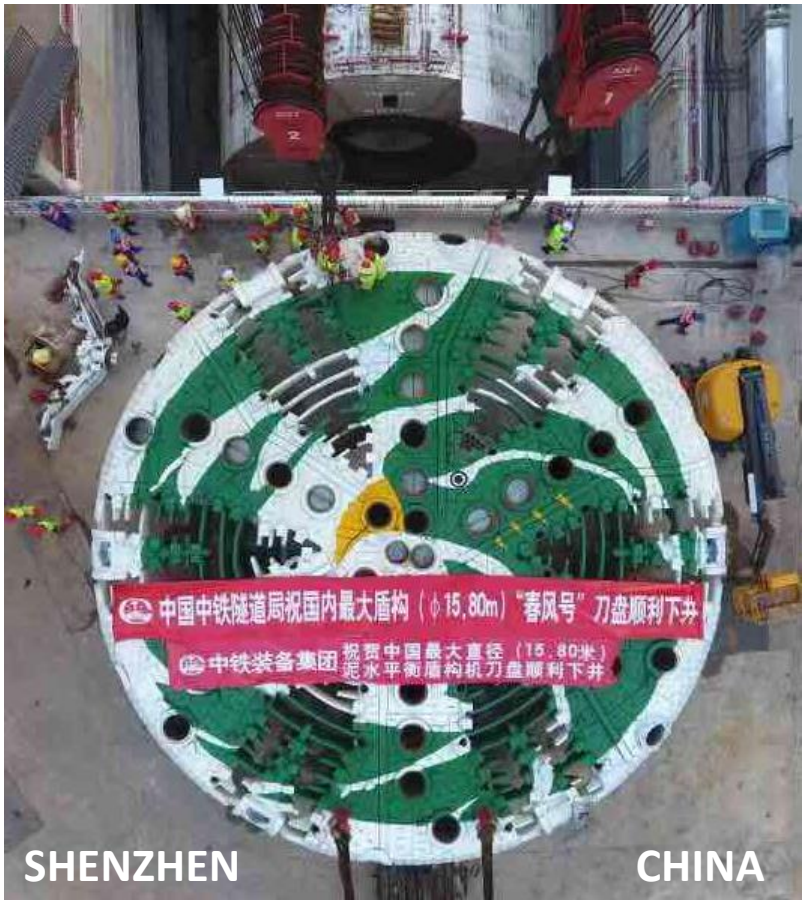
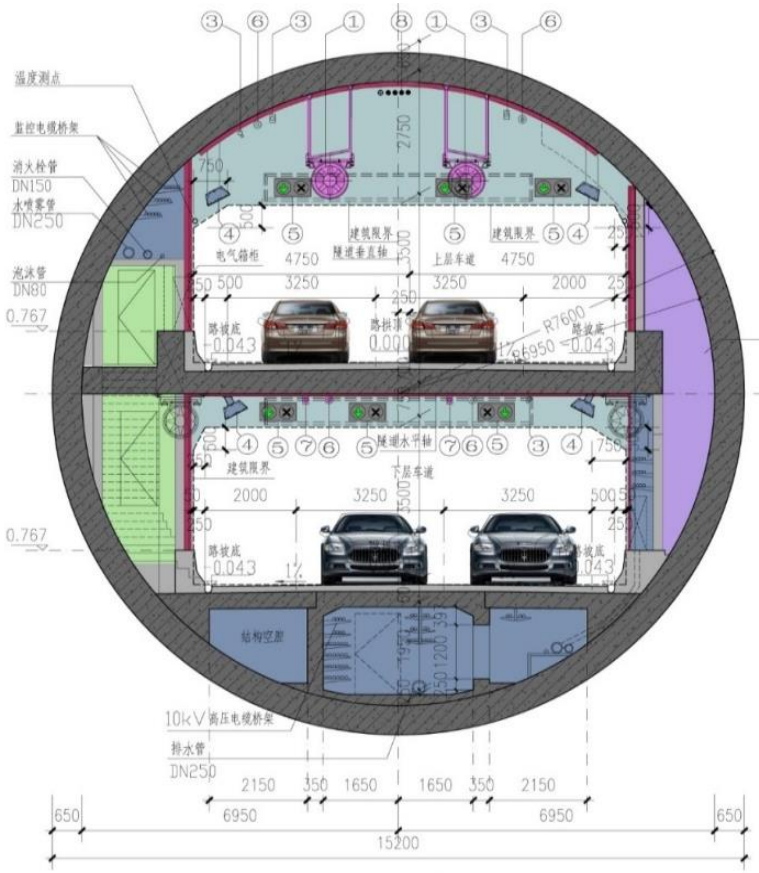
- Tunnels of round section: Chunfeng Road Tunnel, Φ15.8m TBM, biggest in China





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- Tunnels of rectangular section: Underground Pedestrian Passage under Heiniucheng Road, 10.42x7.57m (**INNOVATIVE UNDERGROUND SPACE CONCEPT OF THE YEAR 2018**)

TIANJIN, CHINA

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- 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 paralyzation and environment disruption

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- 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

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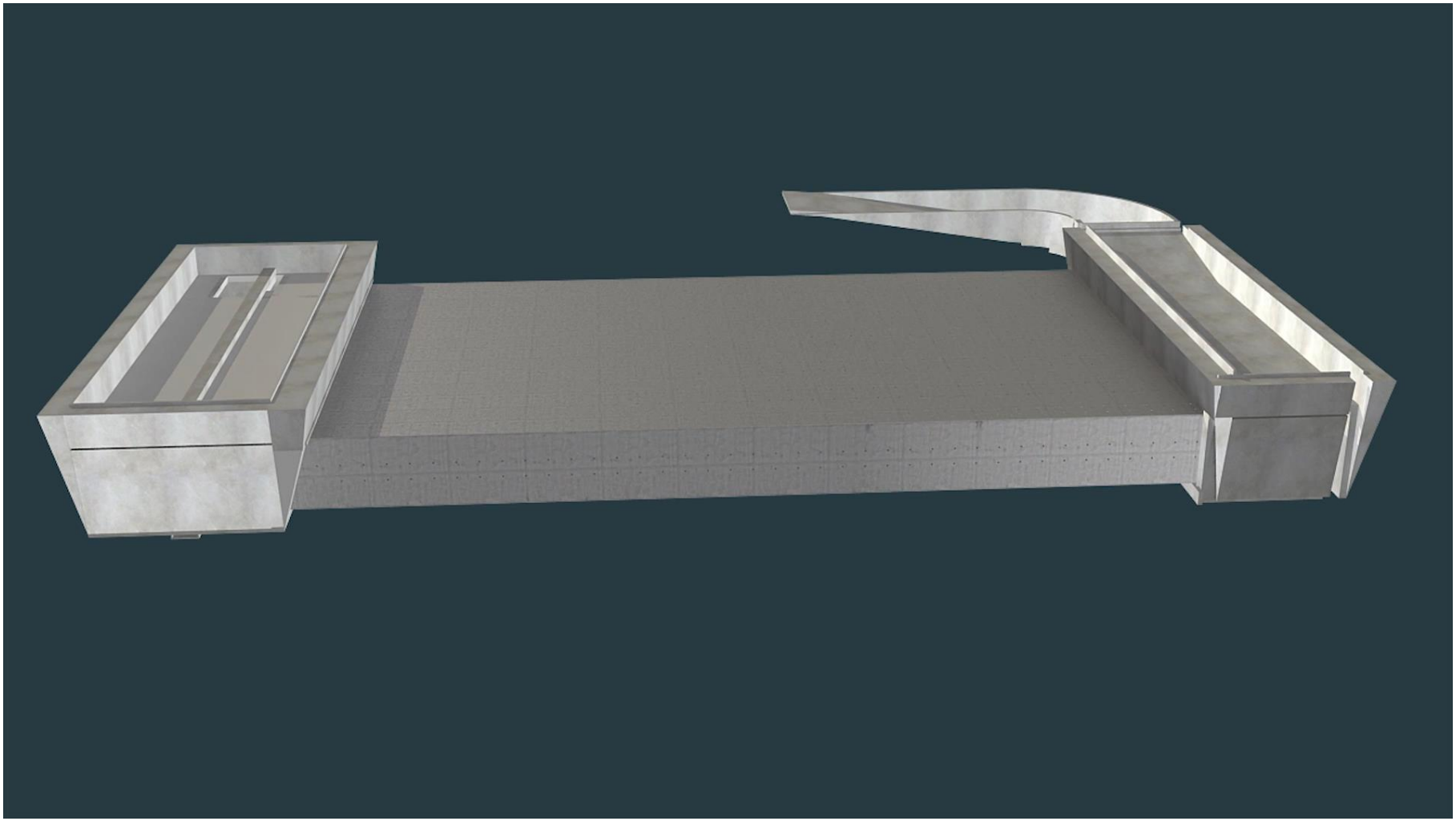
INNOVATIVE UNDERGROUND SPACE CONCEPT
- OF THE YEAR -



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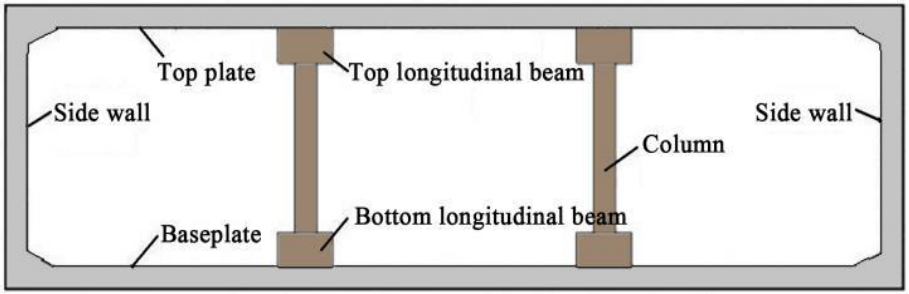
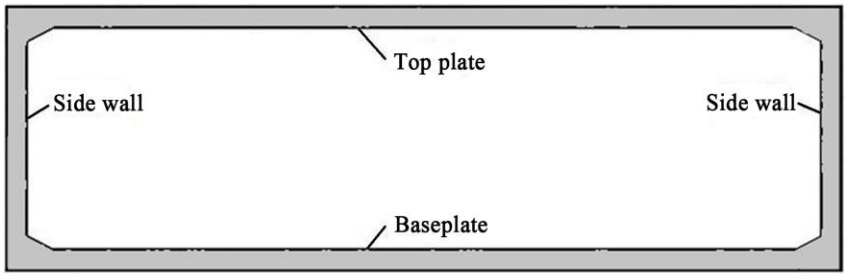
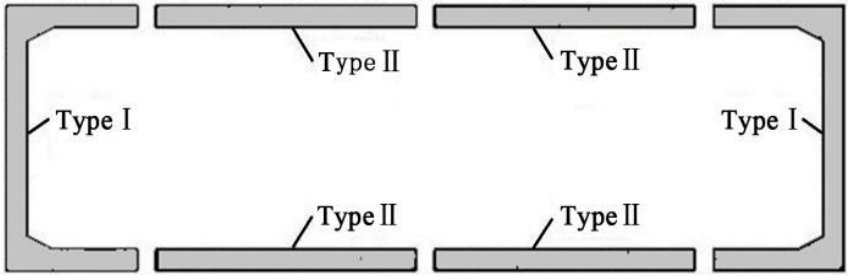
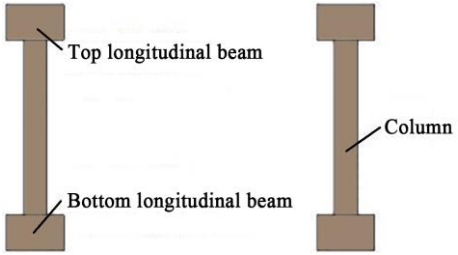
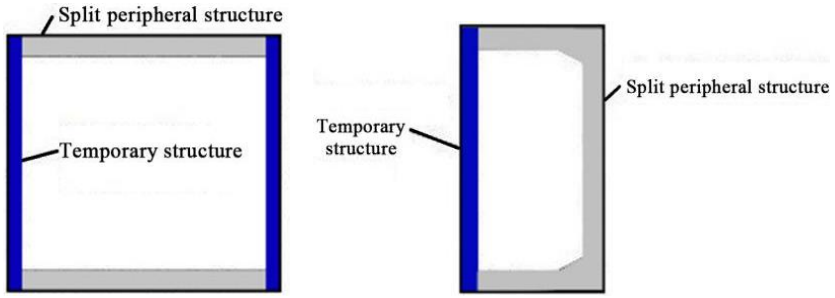


- **CC Method (Cut and Convert Method)**









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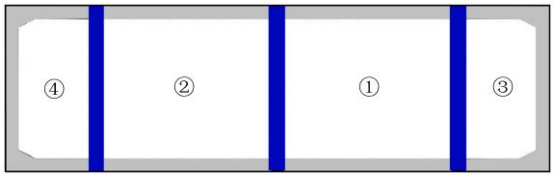

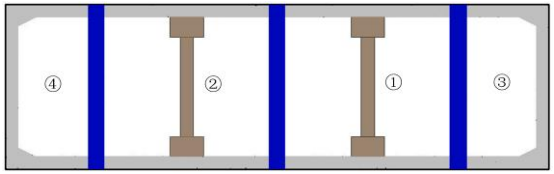

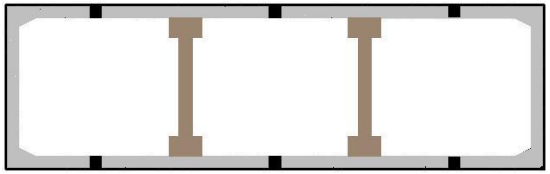

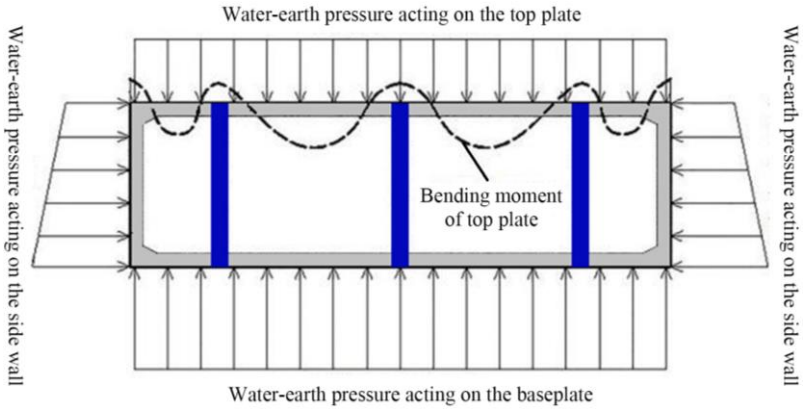

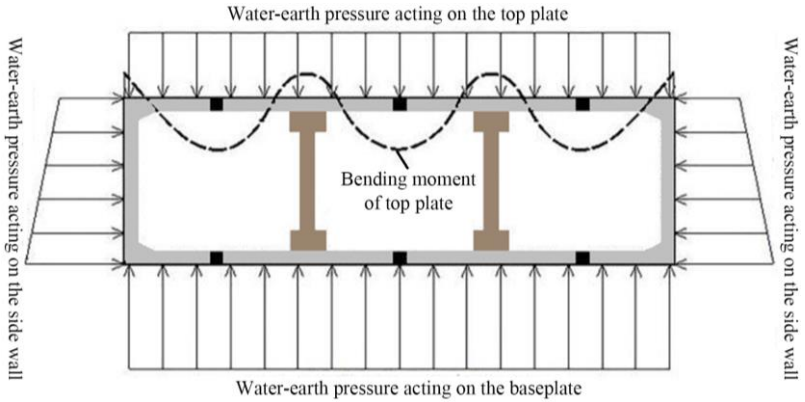

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- The pilot project, a underground parking lot beneath the square
- 90m×35m, 3m buried soil
- Silt stratum, and above the water level

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CREG Underground Solutions

WIRTH

中铁第六勘察设计院集团有限公司
CHINA RAILWAY LIUYUAN GROUP CO., LTD.

中铁隧道集团二处有限公司
ERCHU CO.,LTD.OF CHINA RAILWAY TUNNEL GROUP

- 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.

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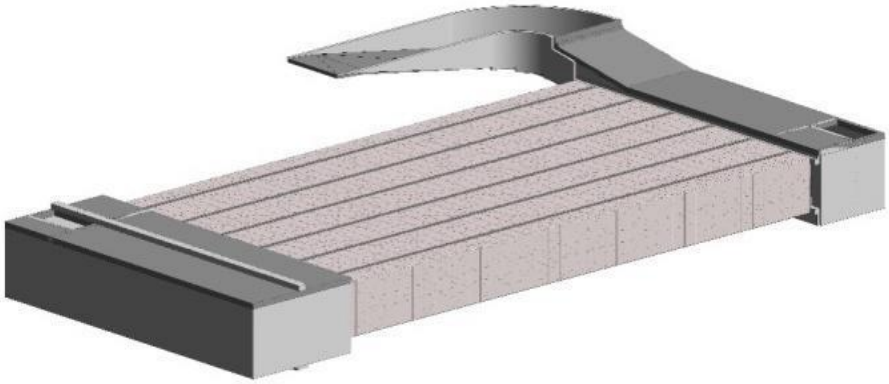

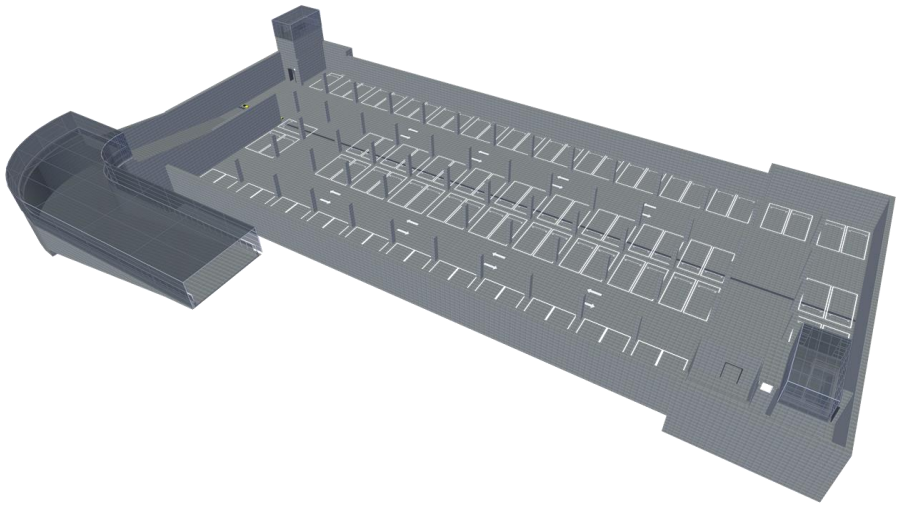

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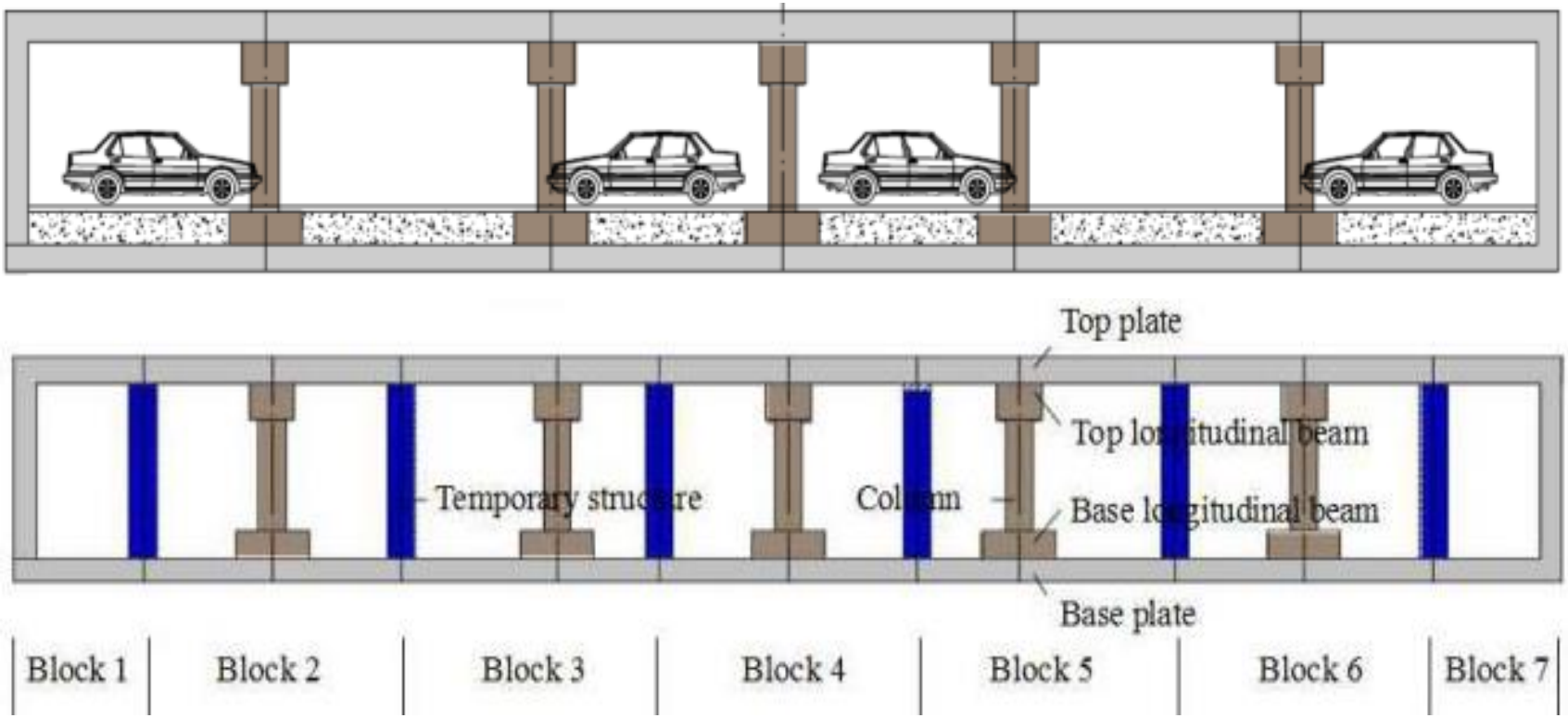

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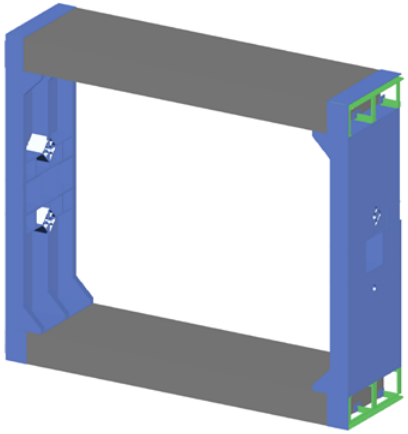

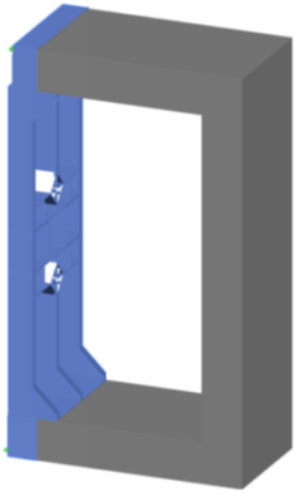

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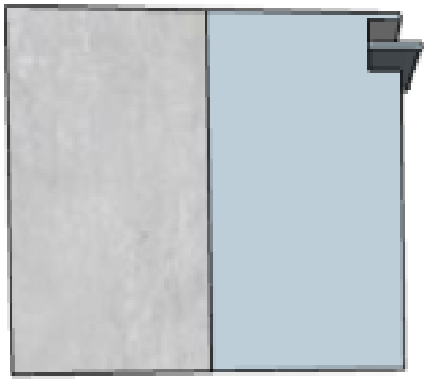

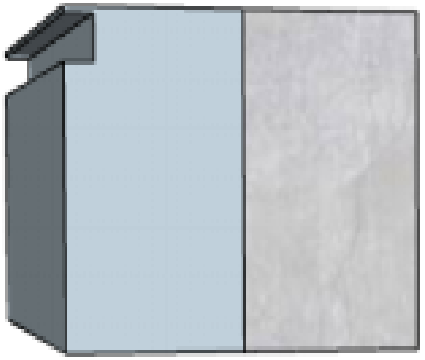

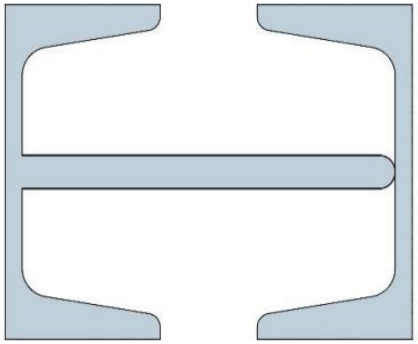

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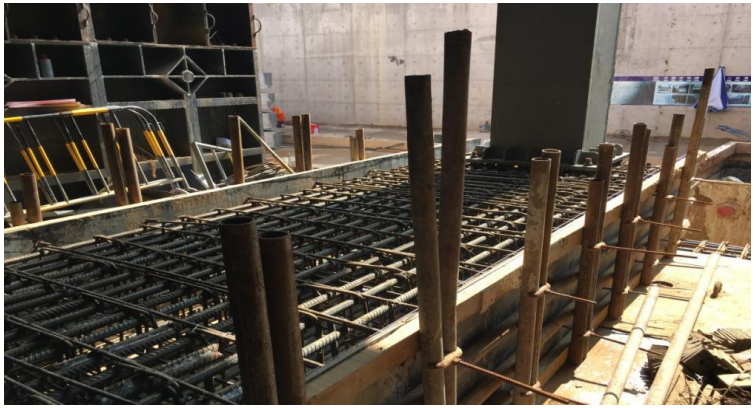

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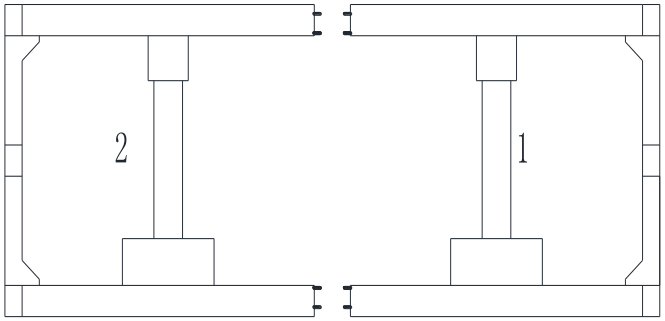

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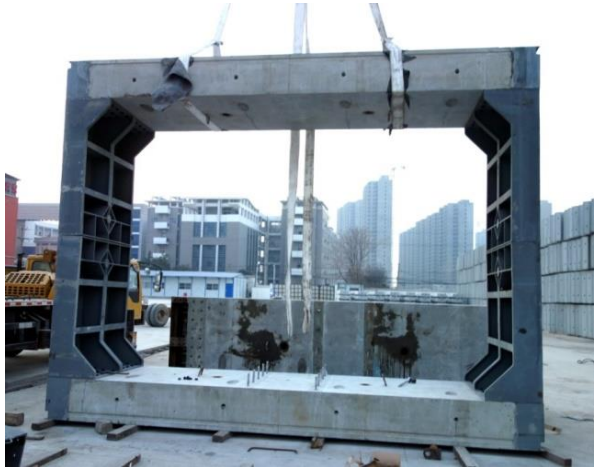

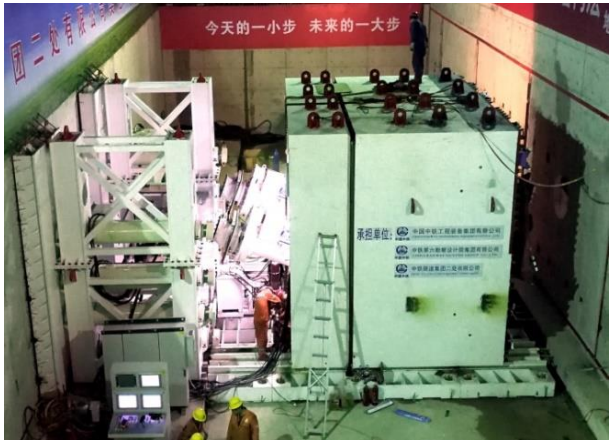

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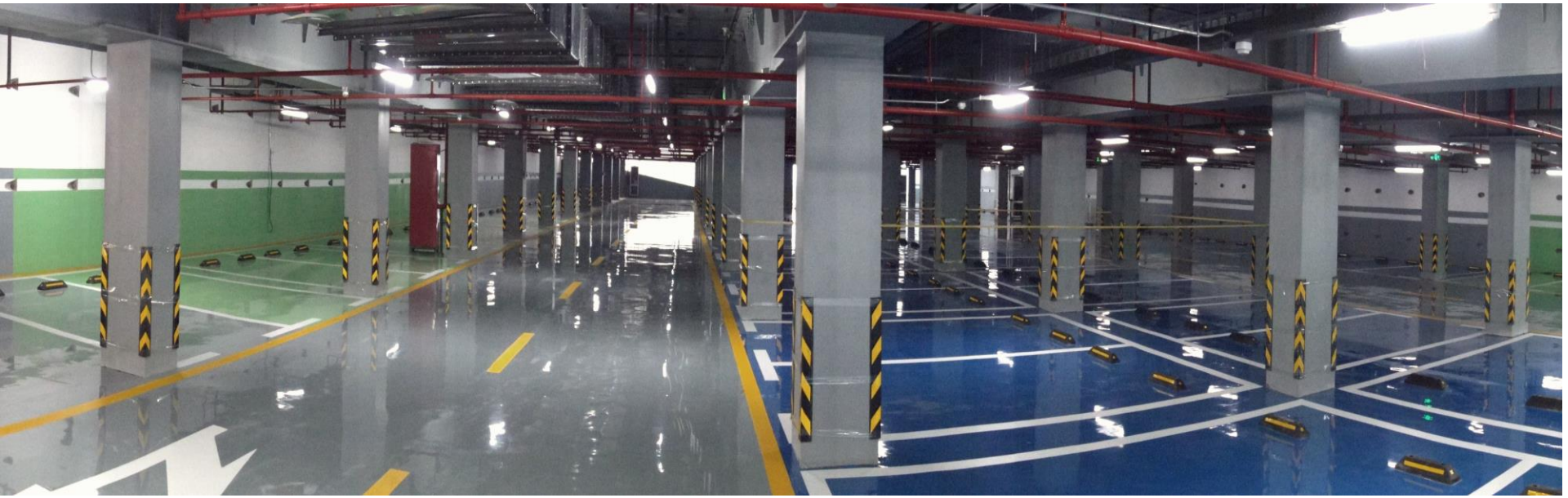

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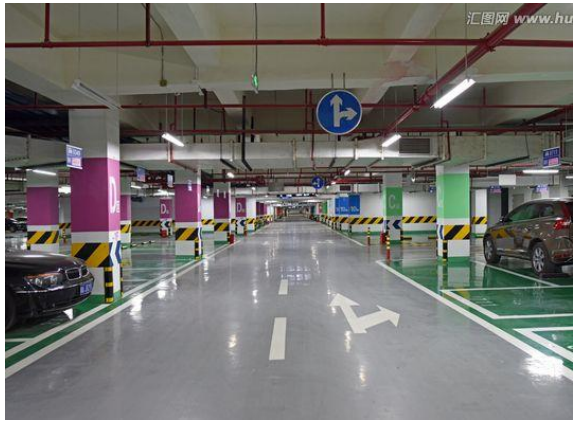
- Shallow buried large scale underground spaces
- Subway stations, underground expressways, underground warehouse logistics and so on.



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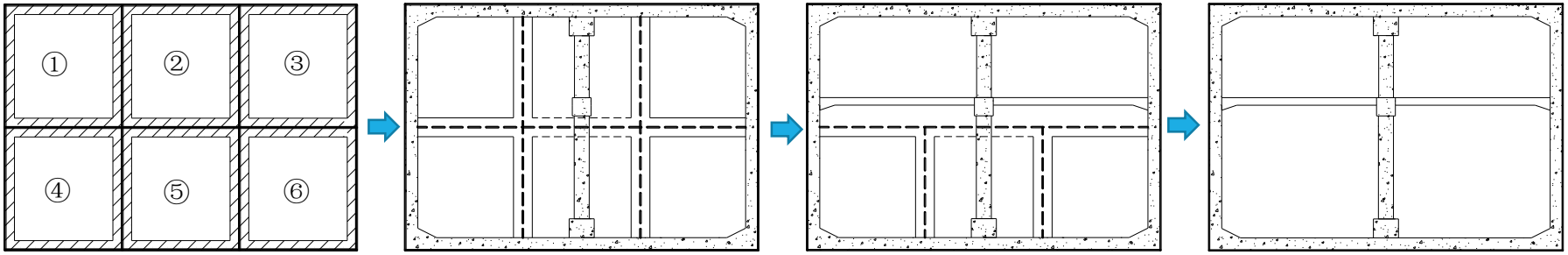

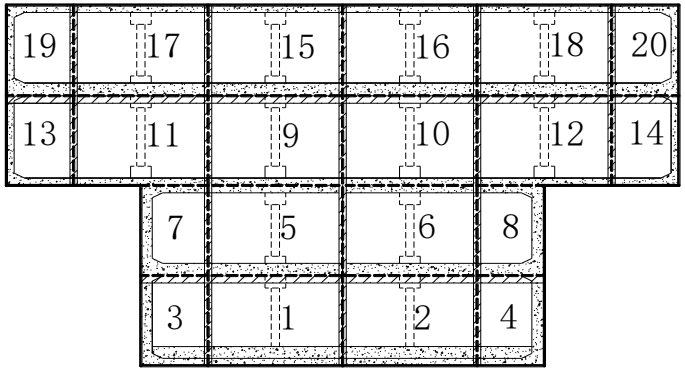

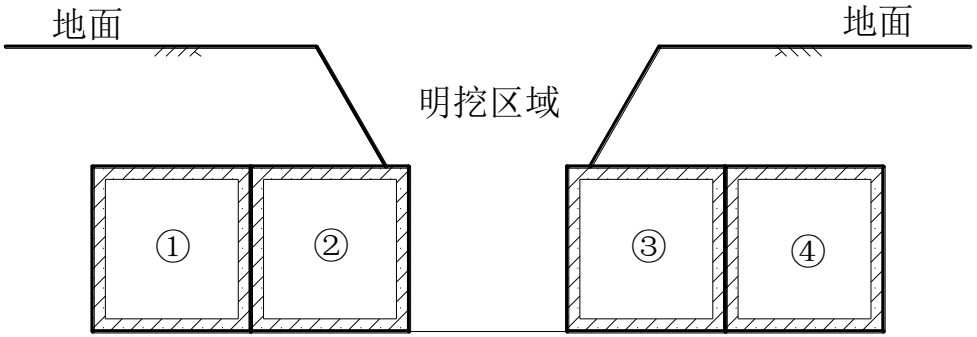

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Thank you for your attention.