11-18-2019

Recent and Future Infrastructure Development in Thailand

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Recent and Future Infrastructure Development in Thailand

- Underground Works -

Mr.Preedee Ngamsantikul

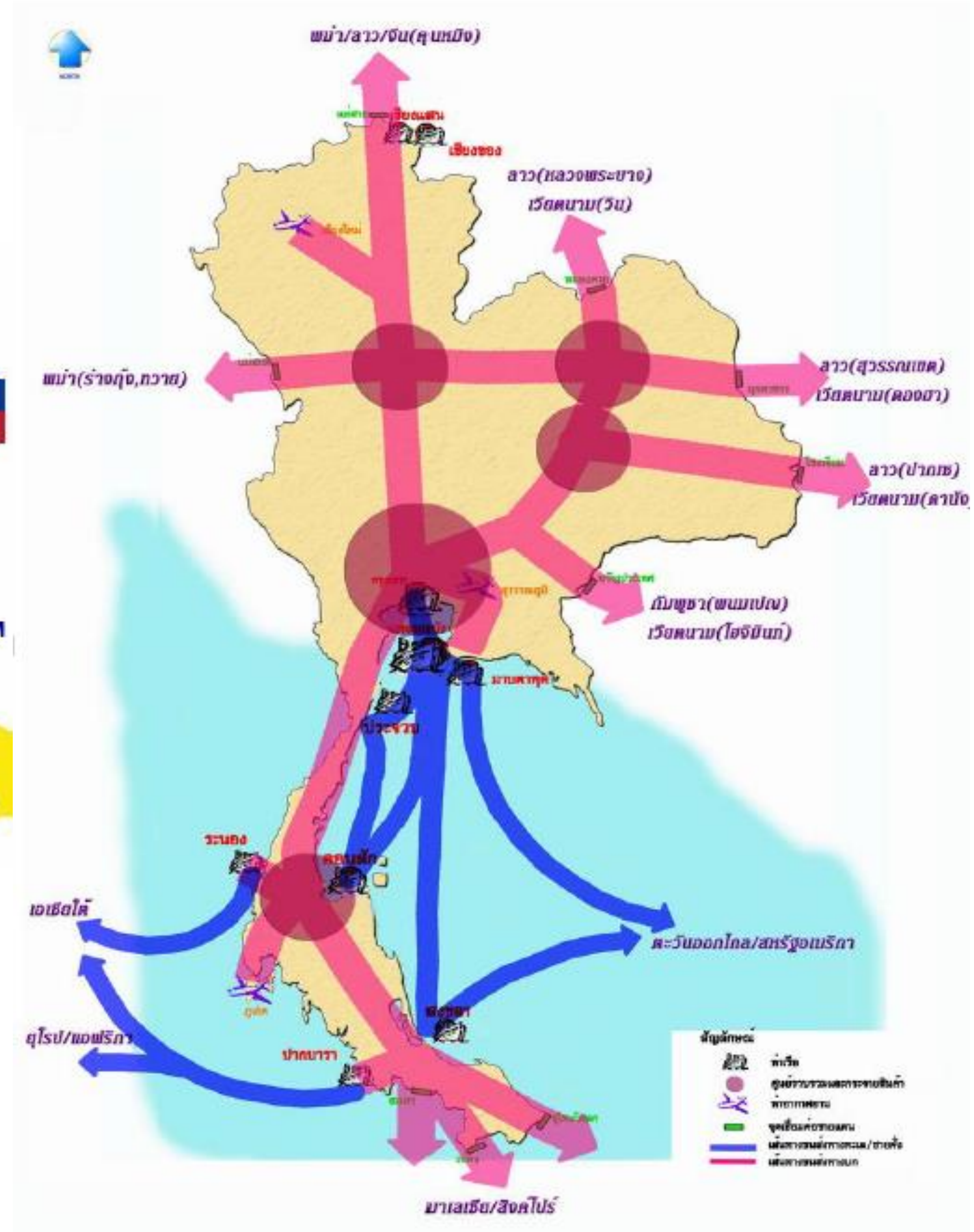
Dr.Aphichat Sramoon

Thailand Underground and Tunnelling Group (TUTG)

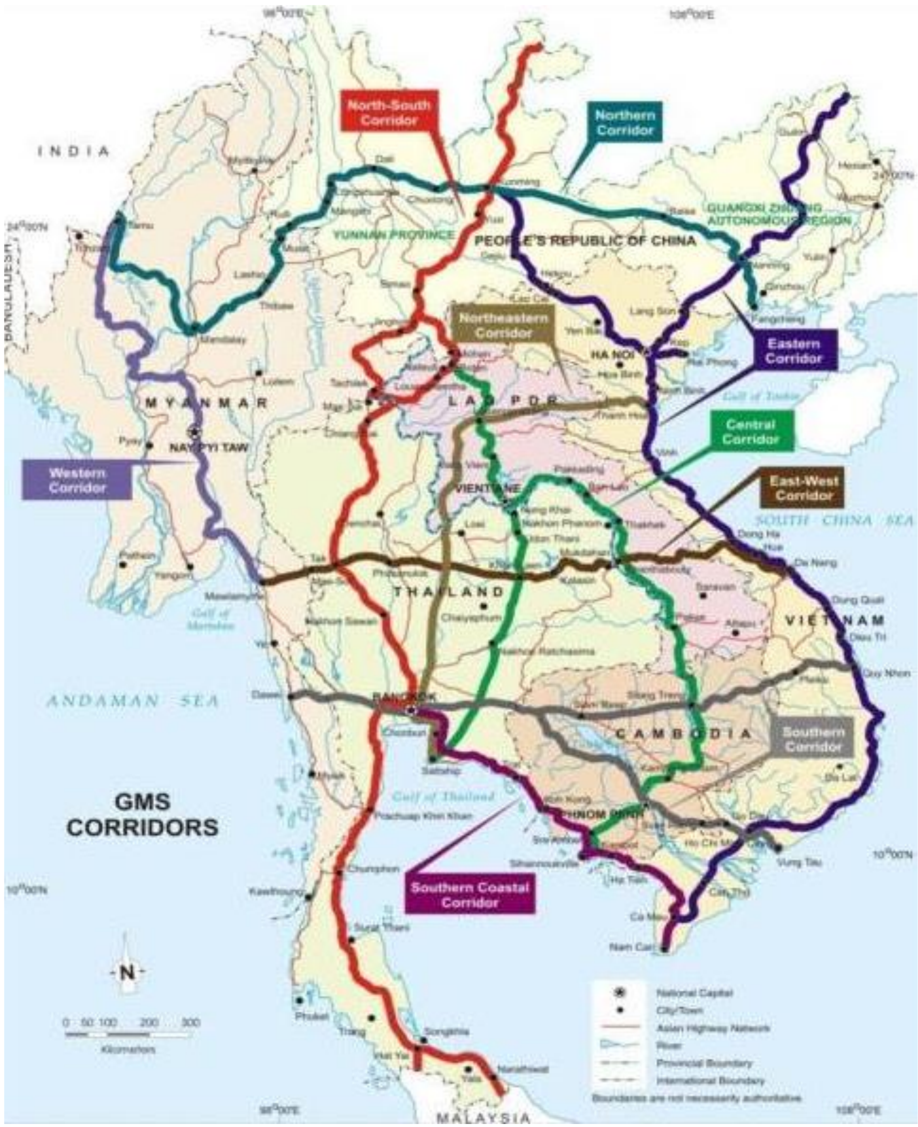
CONTENTS

1. High Speed Railways and Railways
2. Mass Rapid Transit
3. Water Conveyance Tunnels
4. Utility Tunnels
5. Future Transportation

ASEAN Connectivity



Roads and Highways



R1: Southern Economic Corridor (SEC)

Bangkok-Aranyaprathet-Poi Pet-Pratabong-Phnom Penh-Ho Chi Minh-Vung Tau

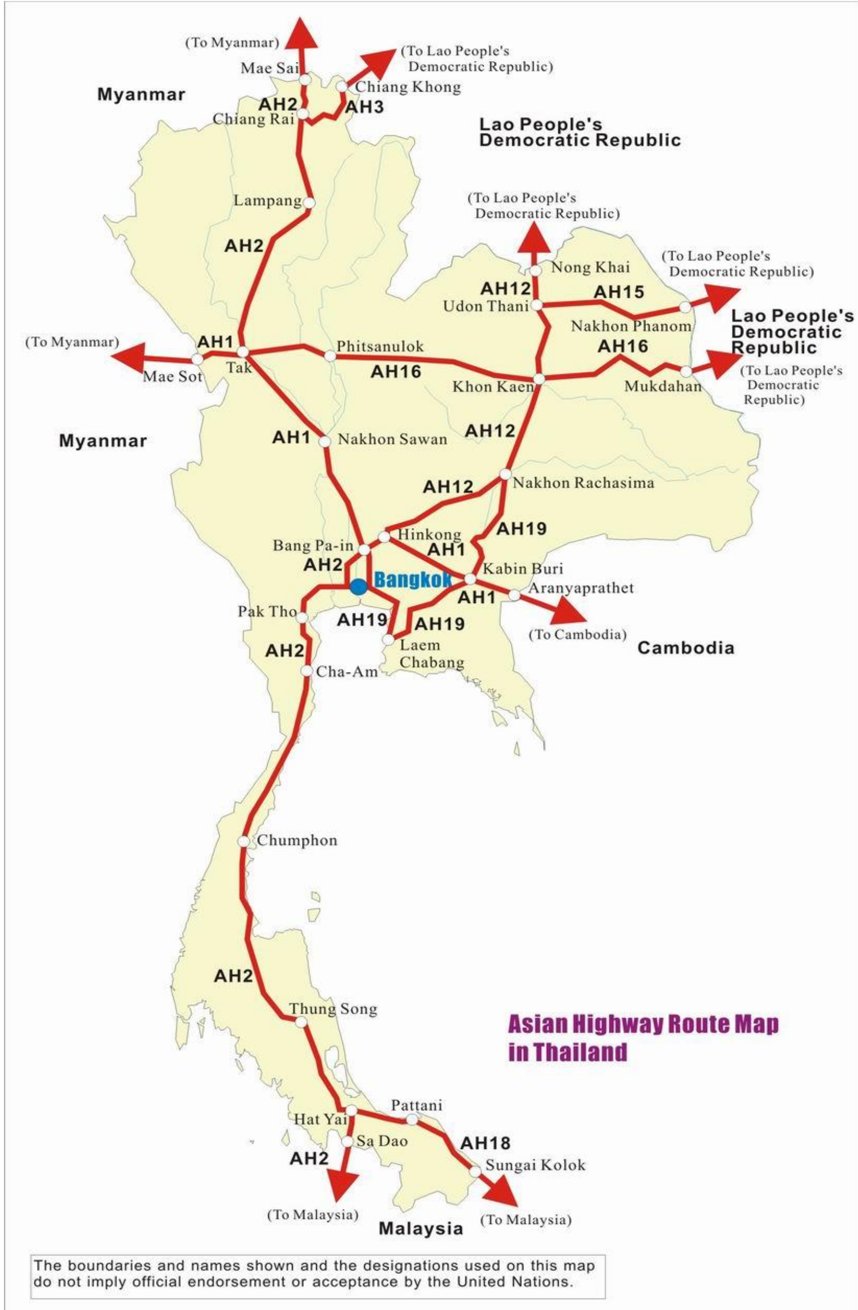
R2: East-West Economic Corridor (EWEC)

Malamang-Mae Sot-Tak-Sukhothai-Phitsanulok-Khon Kaen-Mukdahan-Savannakhet-Lao Bao-Dong Ha- Danung

R3 North-South Economic Corridor (NSEC)

R3A: Via Lao: Chiang Rai-Chiang Kong-Huay xai-Luang Namtha- Bohan – Chiang Rung – Kunming (1,090 km)

R3B: Via Myanmar: Chiang Rai- Mae Sai – Takelek – Chiang Tung- Chiang Rung - Kunming



AH Routes in Thailand

- **AH1: Aranyaprathet-Hin Kong-Bang pa –in (-Bangkok)-Mae Sot: 701 Km**
- **AH2: Sa Dao-Hat Yai-Bangkok-Chiang Rai-Tachilek: 1,913 Km**
- **AH3: Chiang Kong -Chaing Rai: 117 Km**
- **AH12: Nong Lhai-Udon Thani-Nakhon Ratchasima-Hin Kong: 511 Km**
- **AH13: Nakhon Sawan-Phitsanulok-Huai Kon : 557 Km**
- **AH15: Nakho Phanom-Udon Thani : 243 Km**
- **AH16: Tak- Khon Kaen-Mukhdahan: 689 Km**
- **AH18: Hat Yai-Sungai Kolok: 268 Km**
- **AH19: Bangkok-Laem Chabang-Kabin Buri – Nakhon Ratchasima: 458 Km**
- **AH112: Klong Loy-Bang Saphan: 29 Km**
- **AH121: Mukdaharn-Yasothon-Buriram – Sakaeo: 421 Km**
- **AH123: BongTi-Kanchanaburi-Nakhon Pathom-Bangkok-Chonburi-Laem Chabang-Maptaput-Rayong-Trat-Hat Lek: 574 Km**
- **Total: 6,693 km**

High Speed Railway's Development Plan

Route	Distance (km)
Bangkok - Nongkai	615
Bangkok - Huahin	225
Bangkok - Rayong	221
Bangkok - Pitsanulok	382
Pitsanulok - Chiangmai	363
Total	**1,806**

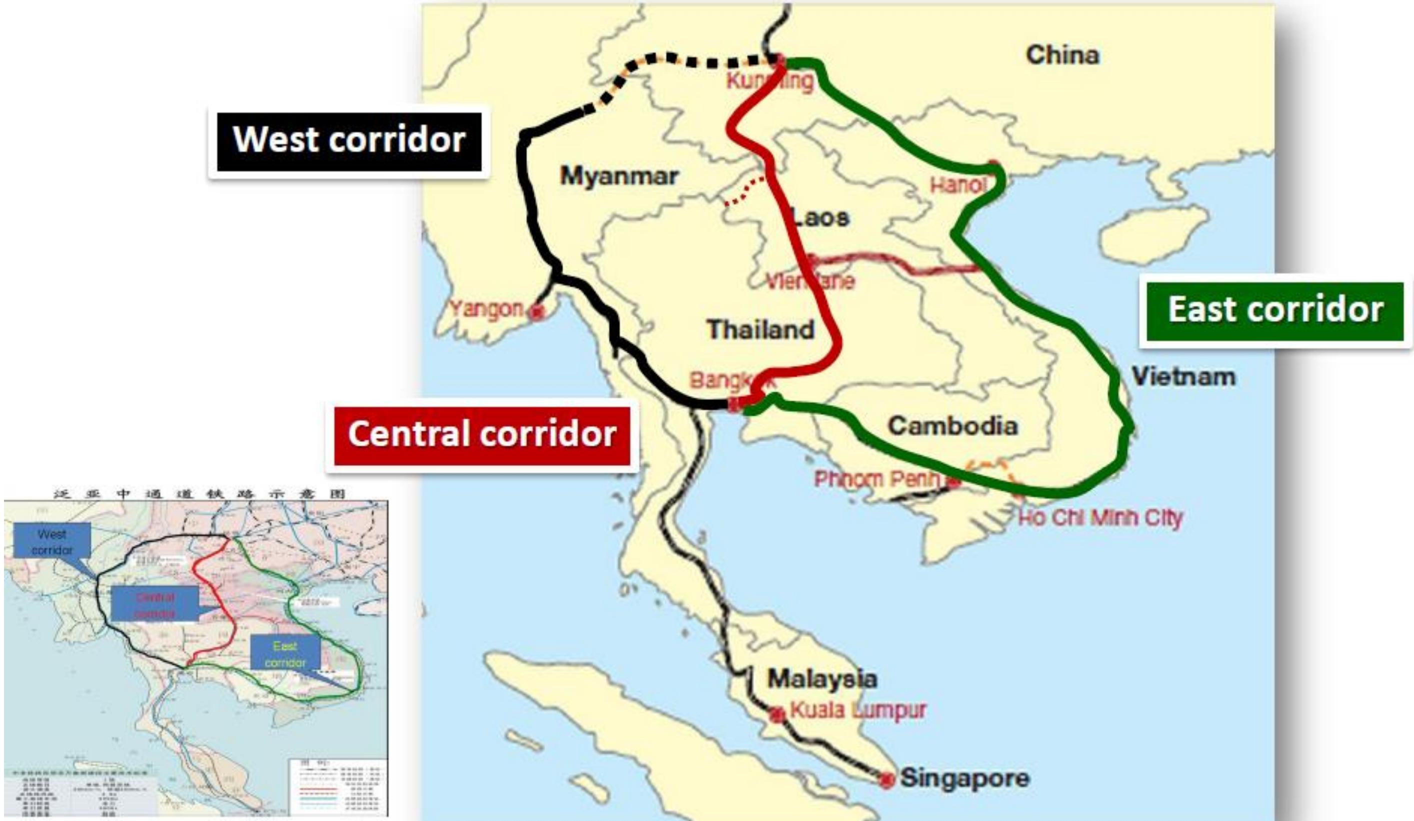
Fences along the HSR route

Bridges over the HSR

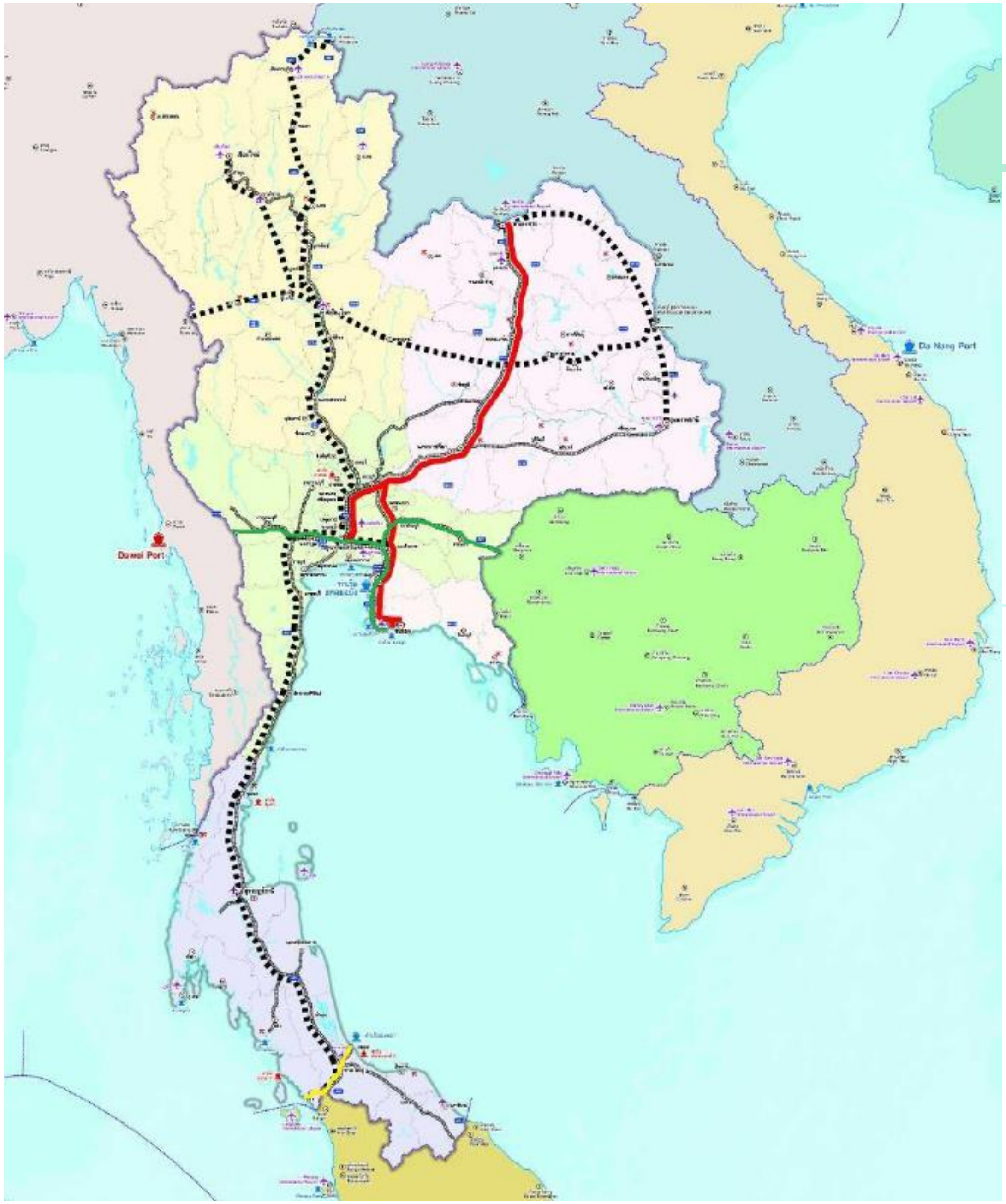
Underpass for local com.

Underpass in the city

Railway Route: Singapore – Kunming (SKRL)



- East Corridor: Singapore – Kuala Lumpur – Bangkok – Phnom Penh – Hanoi – Kunming
- Central Corridor: Singapore – Kuala Lumpur – Bangkok – Vientiane – Sang Yong –Yuxi – Kunming
- West Corridor: Singapore – Kuala Lumpur – Bangkok – Yangon – Kunming



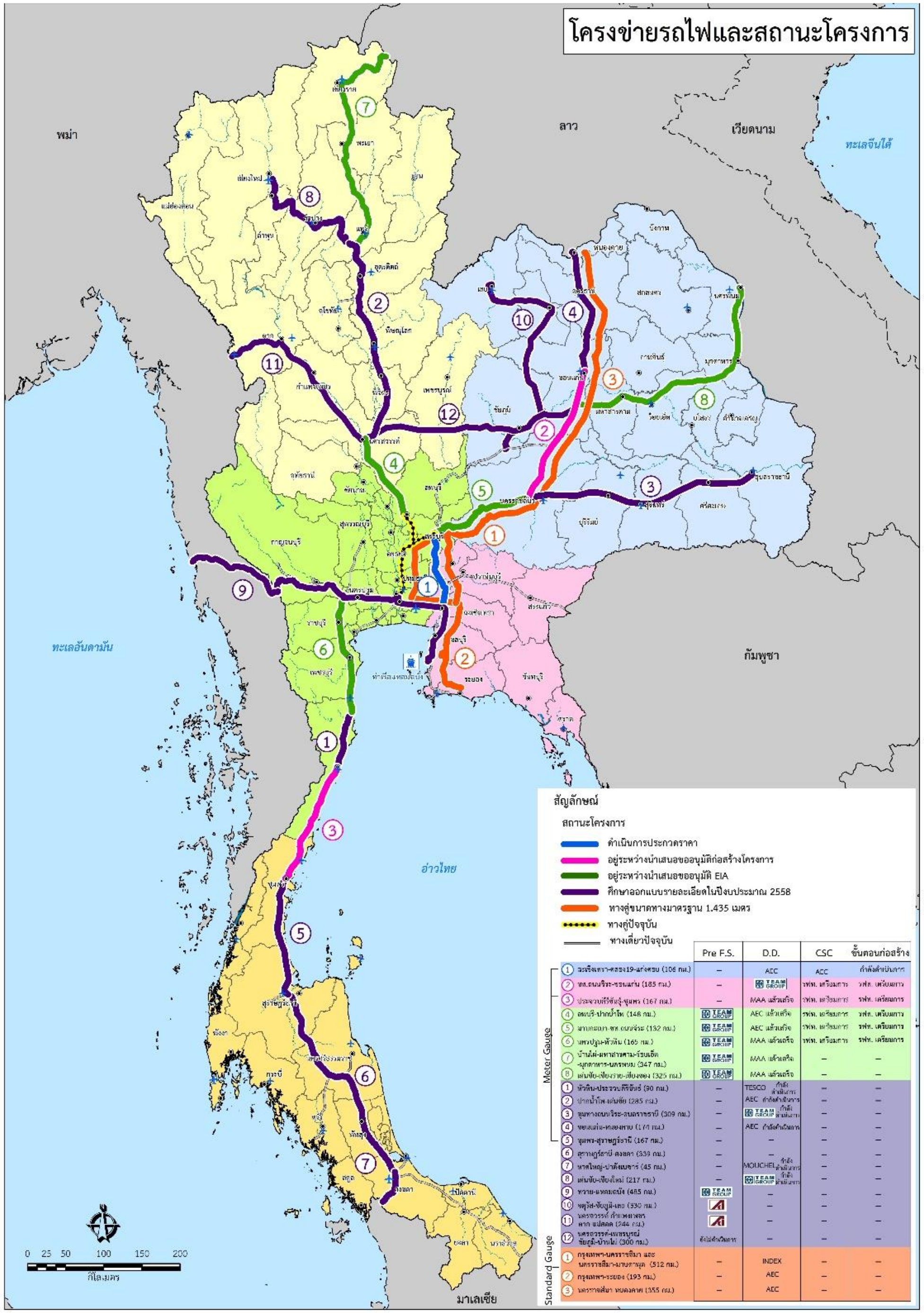
Railway System Development Strategy

North-South Corridor (NSEC)

- Bangkok-Chiangrai-Chiangkong
- Bangkok-Padang Bezar
- Nongkhai-Korat-Kaengkoi-Chacheungsao-Map Ta Phut and Kaengkoi-Bangkok

East-West Corridor (EWEC)

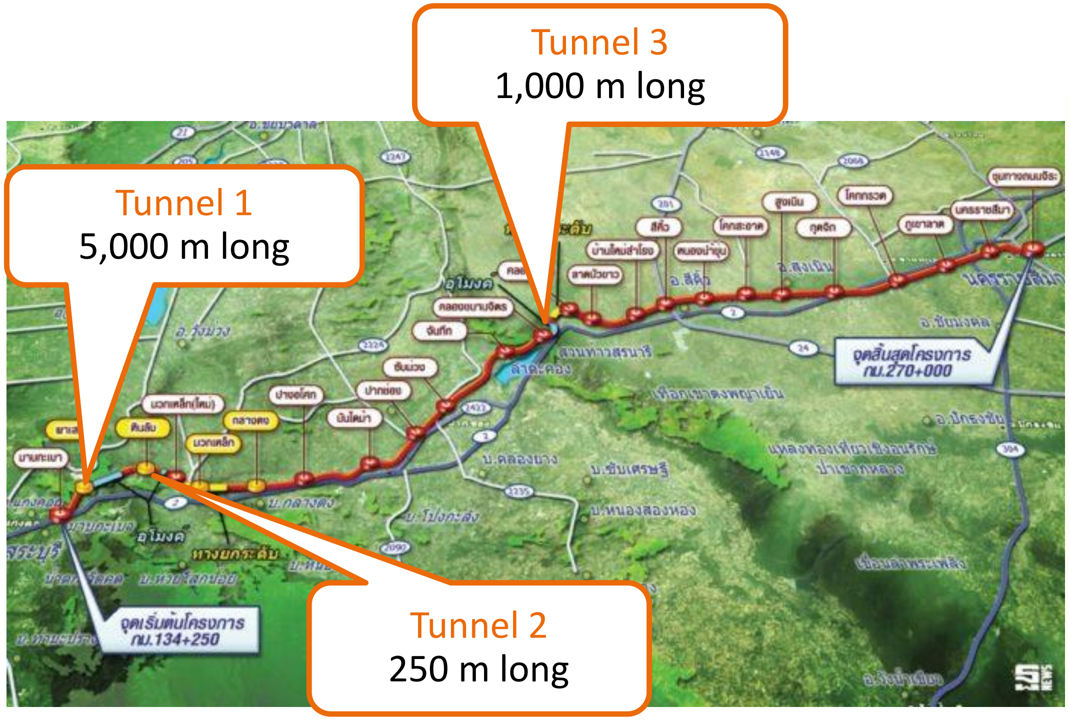
- Upper: Maesod-Khon Kean-Mukdaharn
- Lower: Phu Nam Ron-Karnchanaburi-Bangkok-Chacheungsao-Aranyaprathes/Laeam Chabang
- Landbridge: Pakbara-Satoon-Songkla



Railway System Development

Railways	Distance (km)
Existing – Single Track	3,685
Existing – Double Tracks	251
Existing – Three Tracks	107
Plan – Double Tracks	5,620
Total	**9,663**

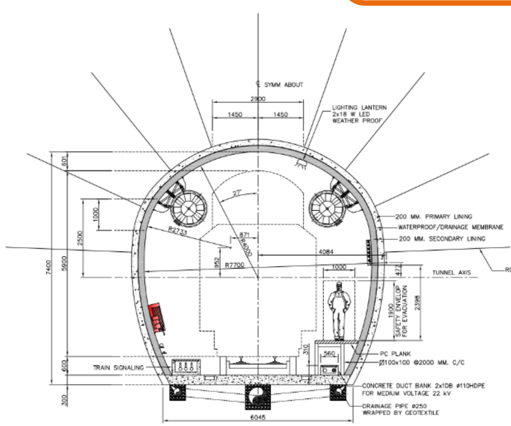
Doubling Track Project Mabkabao – Thanon Chira



Tunnel 1 will be excavated through limestone and shale as well as many geological structures.

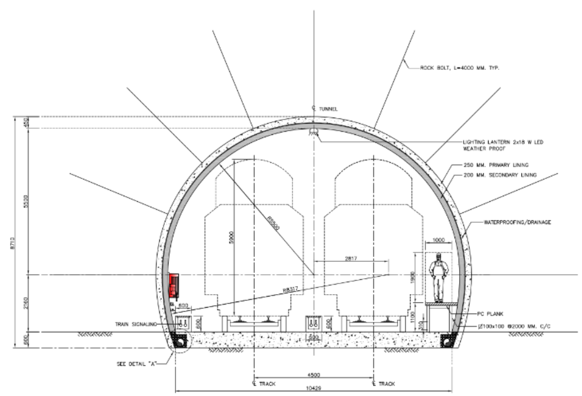
Tunnel 2 will be excavated through shallow overburden which is highly weathered rocks.

Tunnel 3 will be excavated through siltstone and sandstone with 5 deg inclined bedding.



Tunnel 1 and Tunnel 3

To proof the space inside the tunnel, structural gauge with 5,900 mm of height and 3,700 mm of width is provided and then verifying the space



Tunnel 2

Tunnel 2 is larger than others. Two of structural gauges are added inside the tunnel.

MKJR: Tunnel Construction

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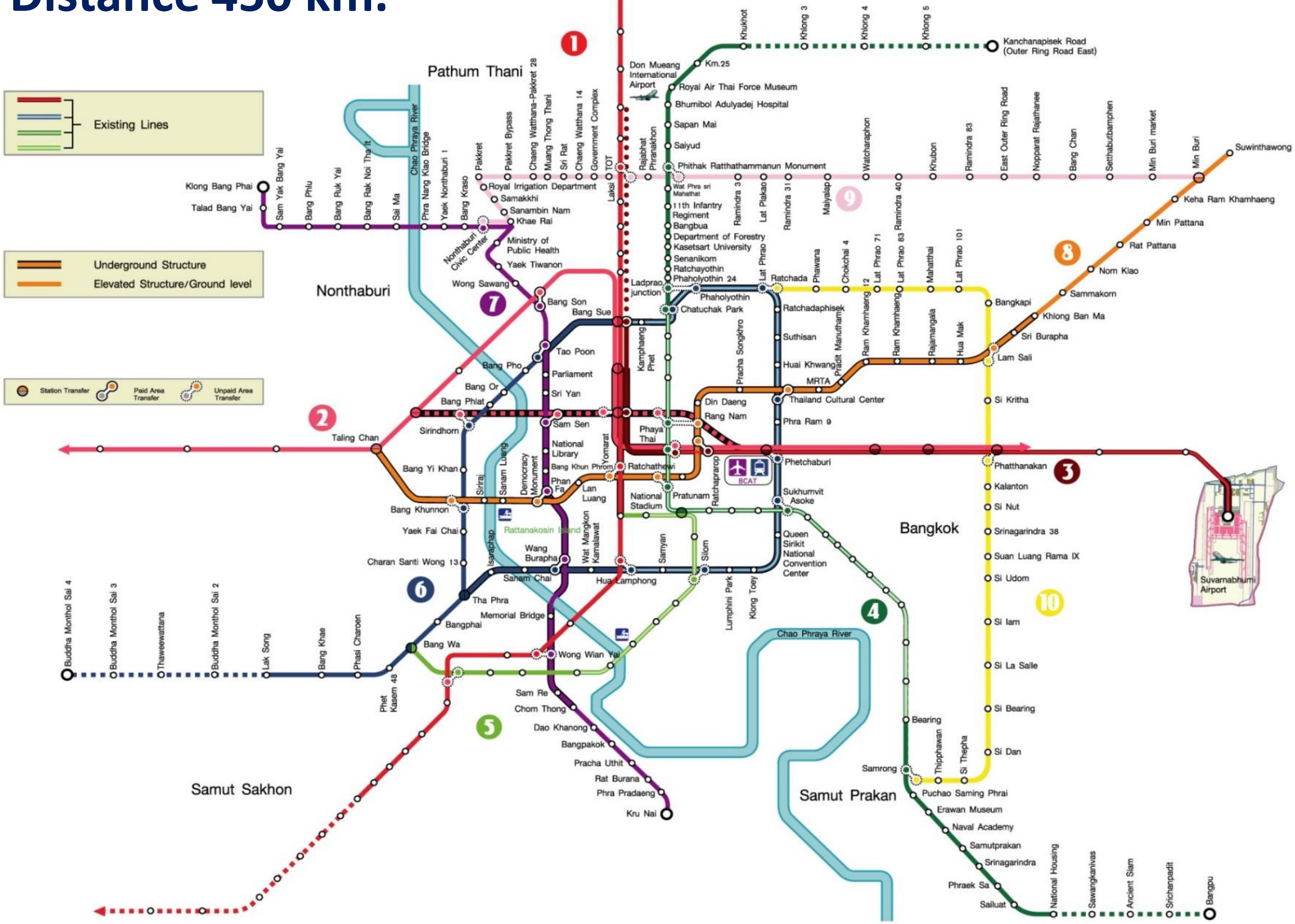
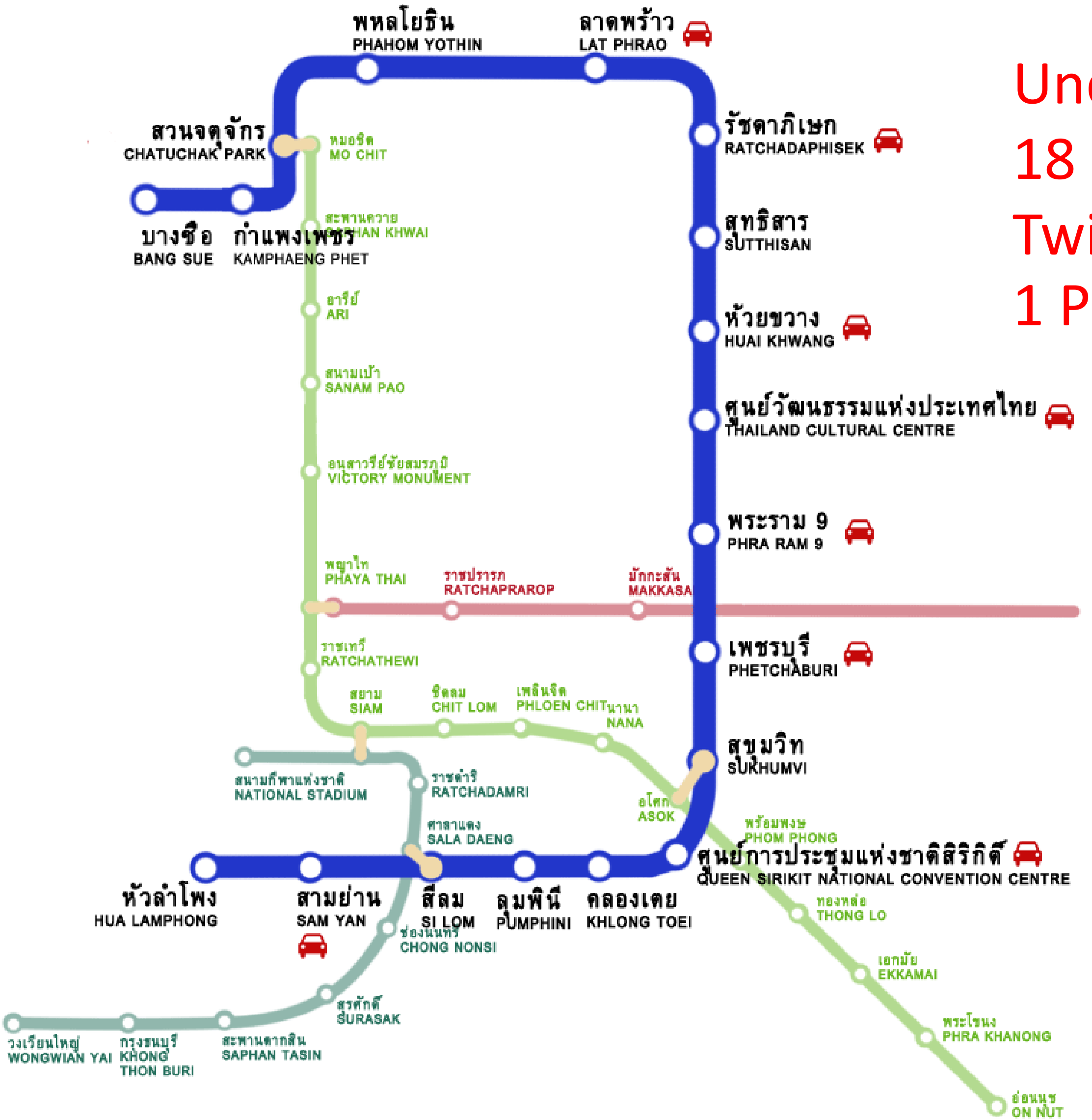
MRT 10 Routes
Distance 450 km.

To be completed in 2020



1	Crimson Line	Thammasat-Mahachai	80.8 km.
2	Light Red Line	Siriraj-Salaya-Taling Chan-Hua Mak	54.0 km.
3	Airport Link	Don Mueang-Bang Sue-Phaya Thai-Suvarnabhumi	50.3 km.
4	Green Line	Lumlukka-Samutprakan	60.0 km.
5	Green Line	Yotse-Bang Wa	14.5 km.
6	Blue Line	Bang Sue-Hua Lamphong-Tha Phra-Phuttamonthon 4	47.0 km.
7	Purple Line	Bang Yai-Rat Burana	42.8 km.
8	Orange Line	Taling Chan-Min Buri	32.5 km.
9	Pink Line	Khae Rai-Min Buri	36.0 km.
10	Yellow Line	Lat Phrao-Samrong	30.4 km.
		Total	448.3 km.

MRT Initial Project (Blue Line): Chaloem Ratchamongkhon Line



Underground 20 km.

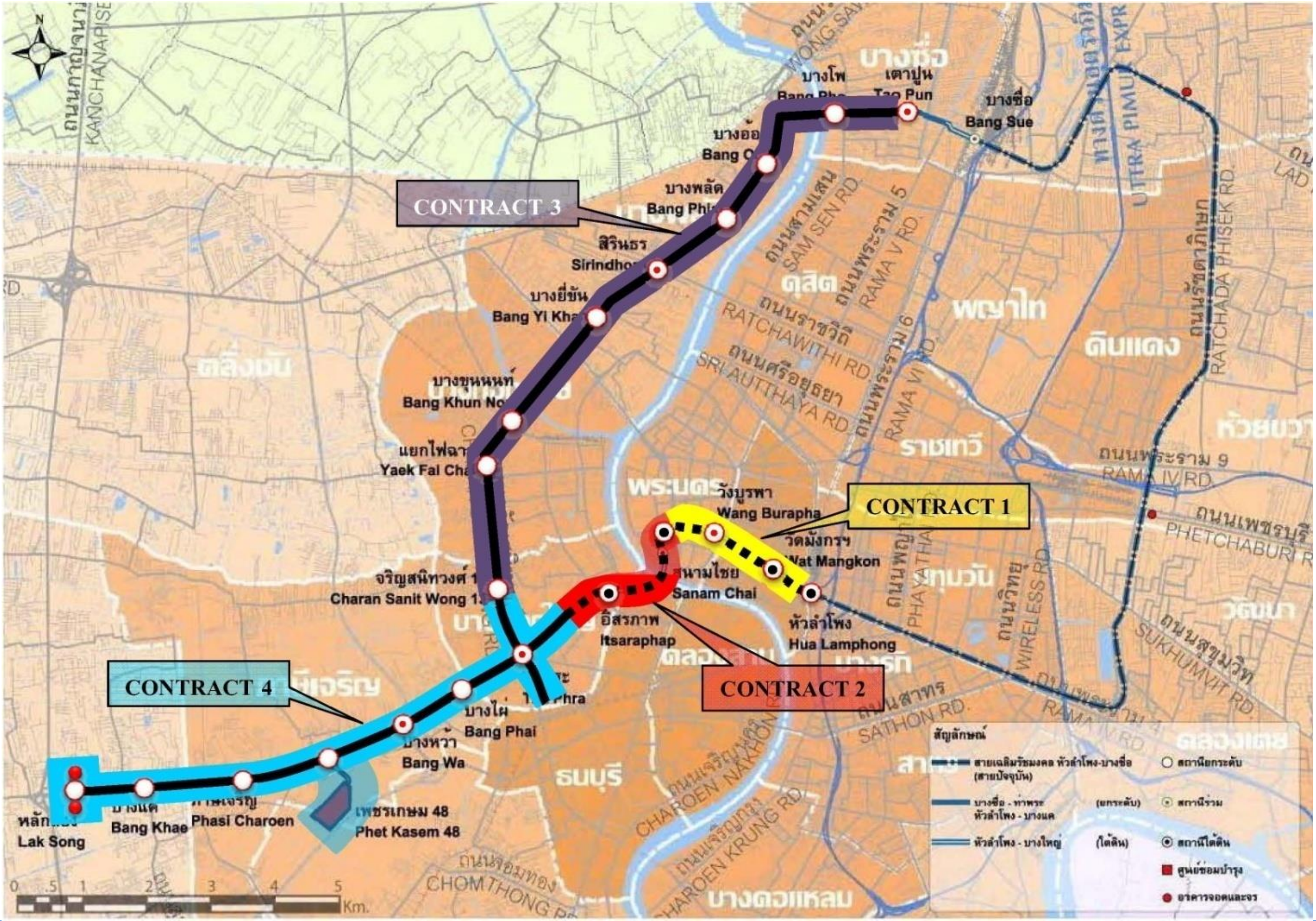
18 Stations

Twin Tunnel ID 5.7 m.

1 Park & Ride

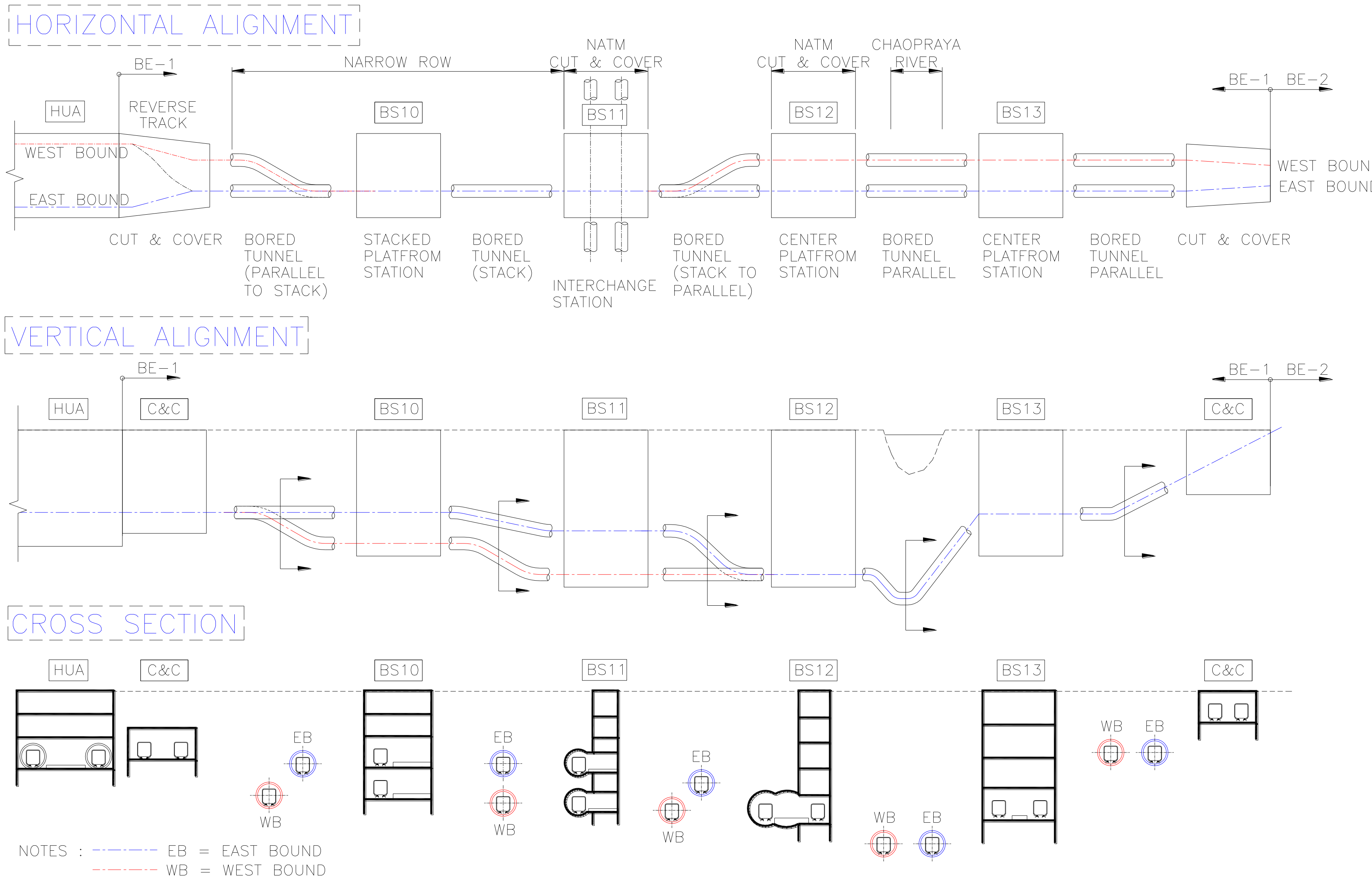
MRT Initial Project (Blue Line): Chaloem Ratchamongkhon Line

MRT Blue Line Extension Project

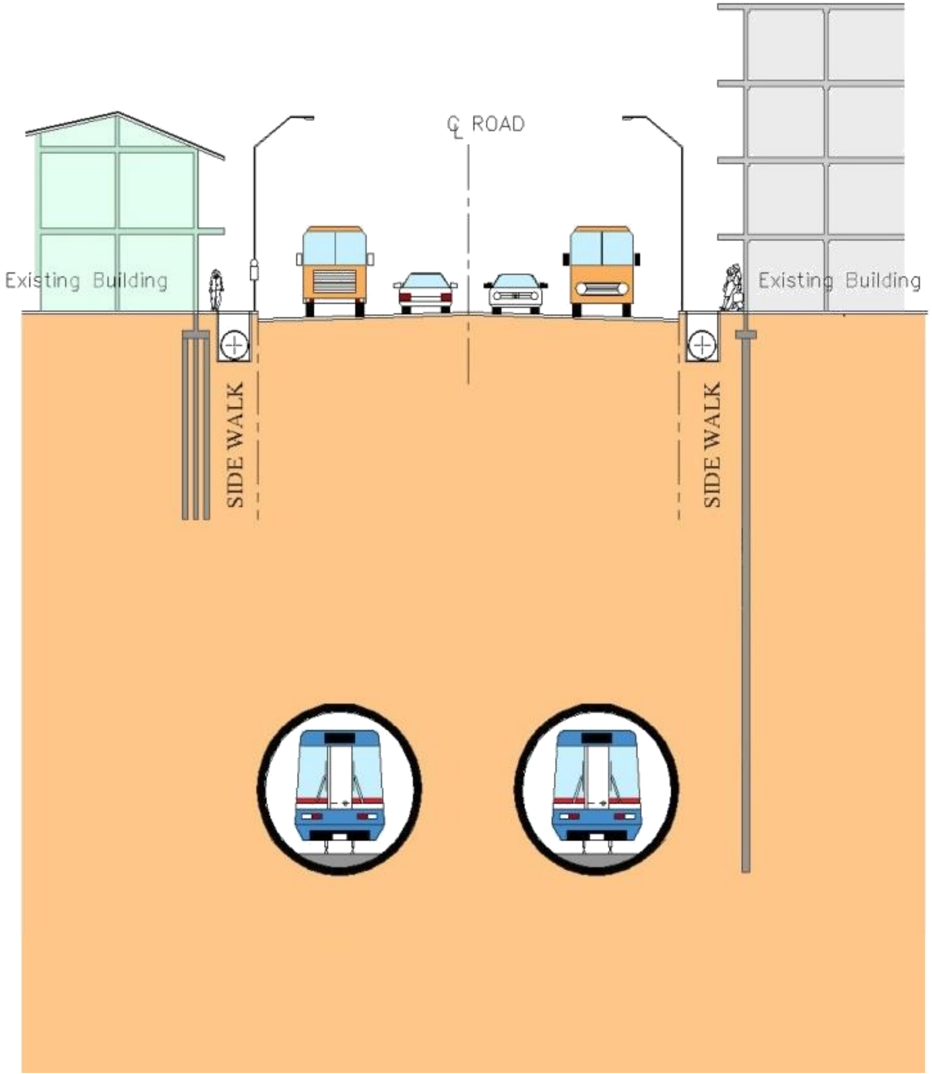


Route of Underground Works

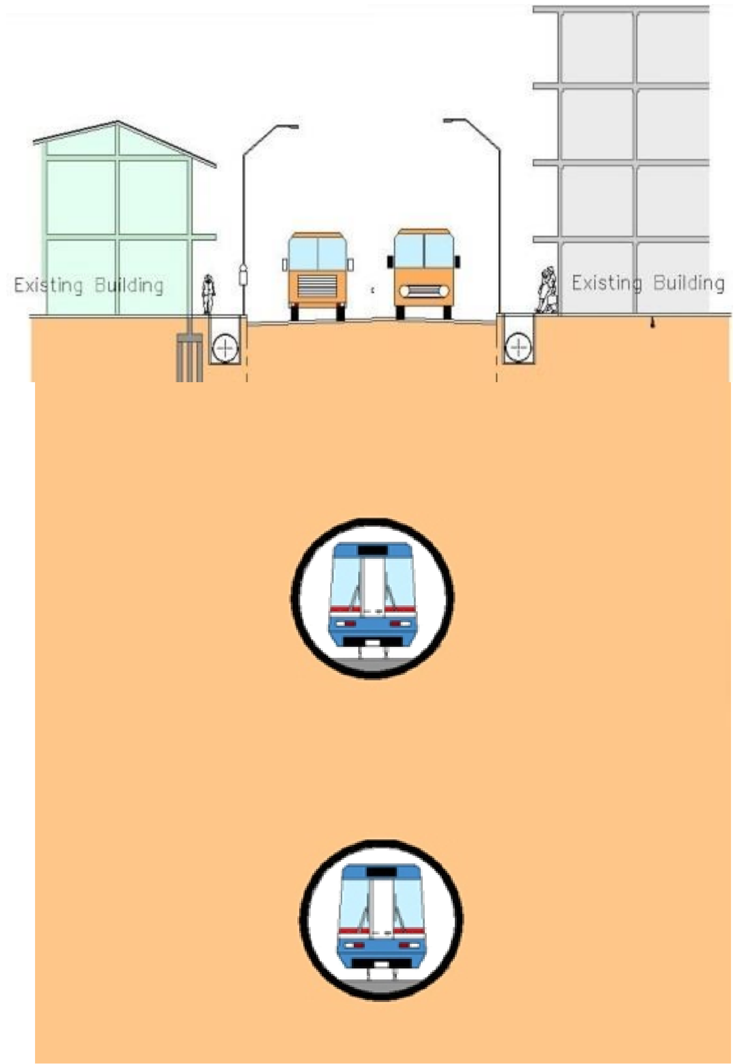
Plan and Profile of Underground Structures



Tunnel Arrangement

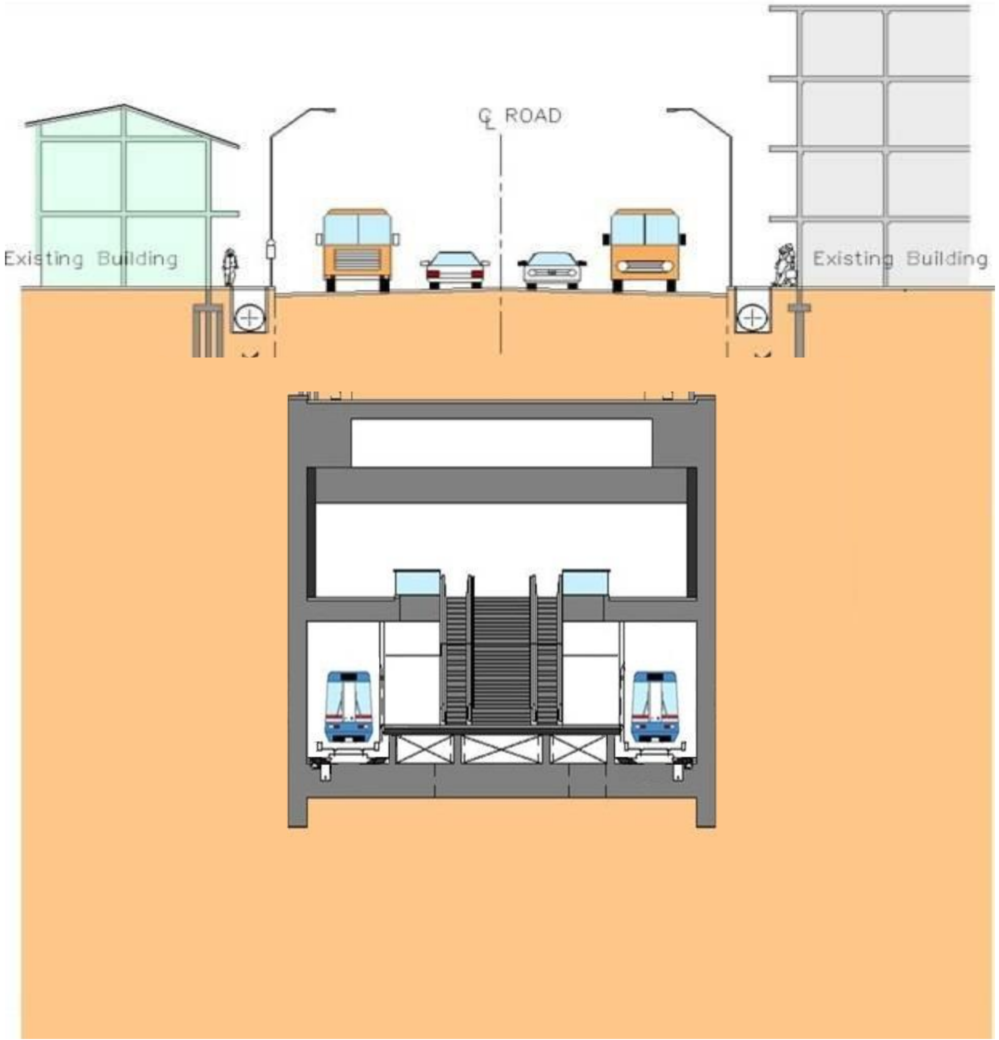


Parallel Tunnel

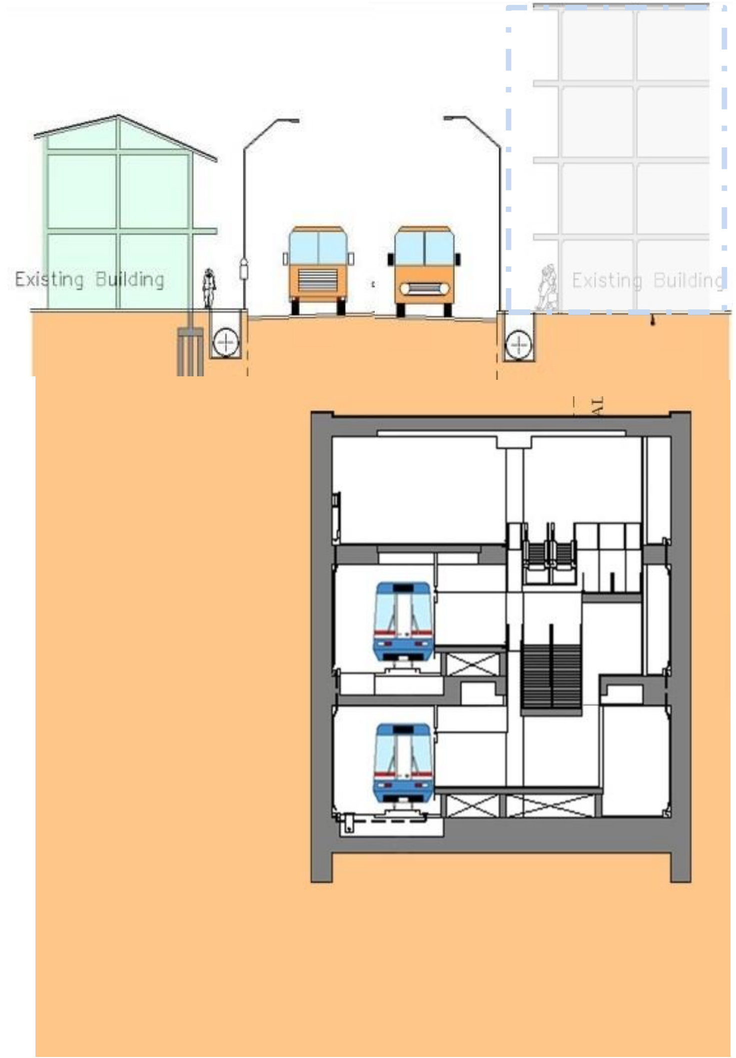


Stacked Tunnel

Underground Stations

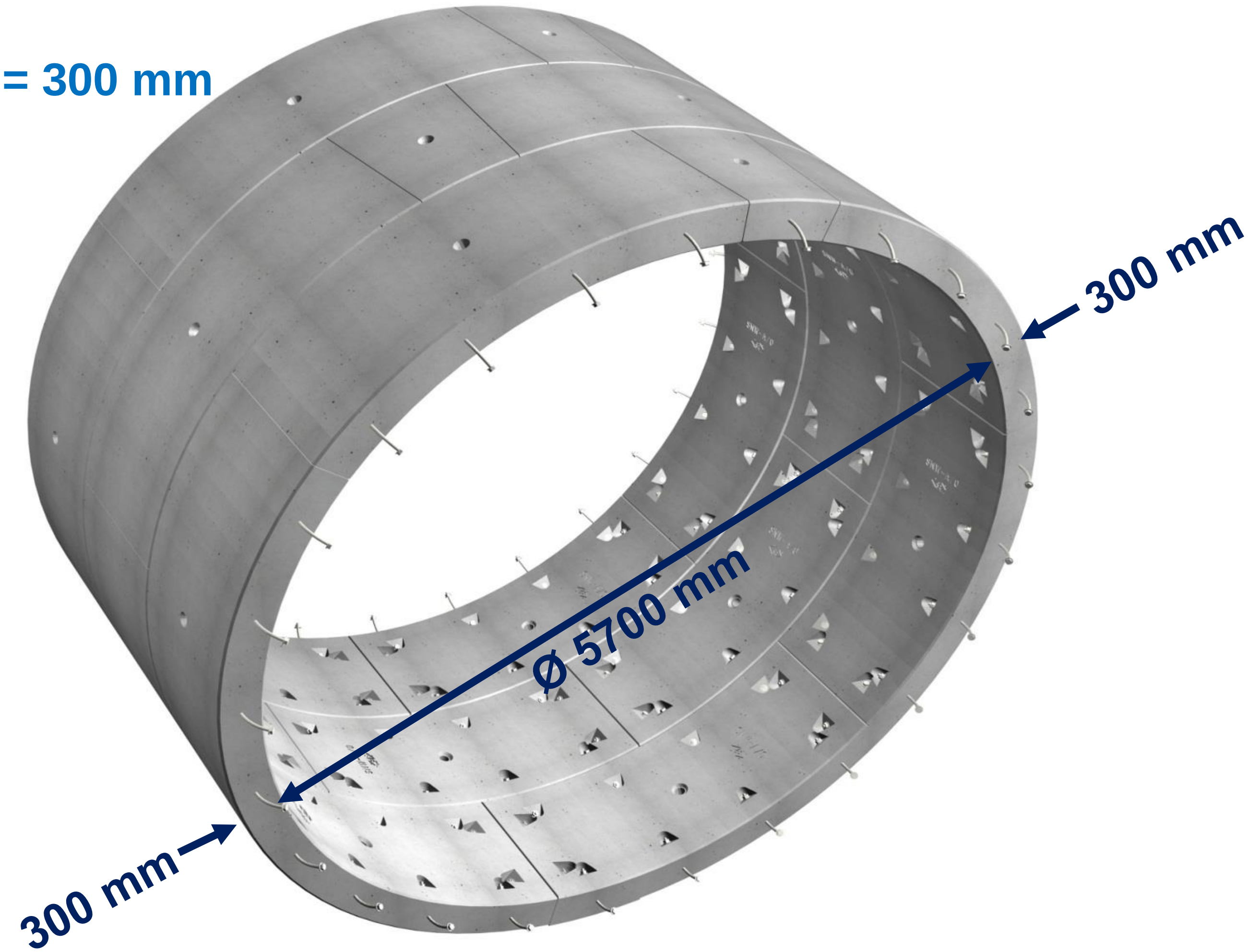


Typical Station

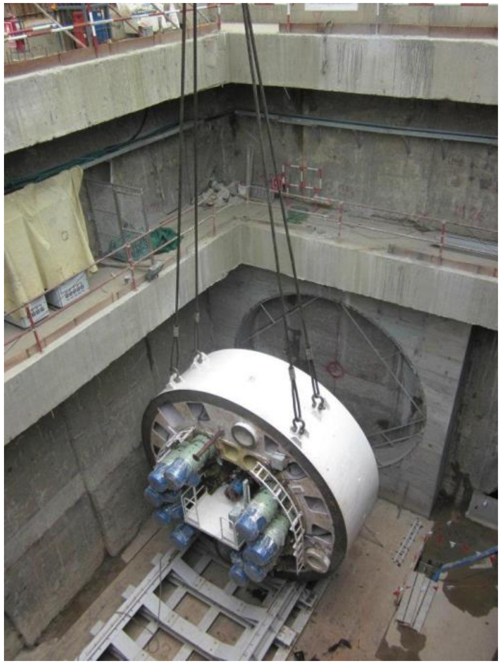


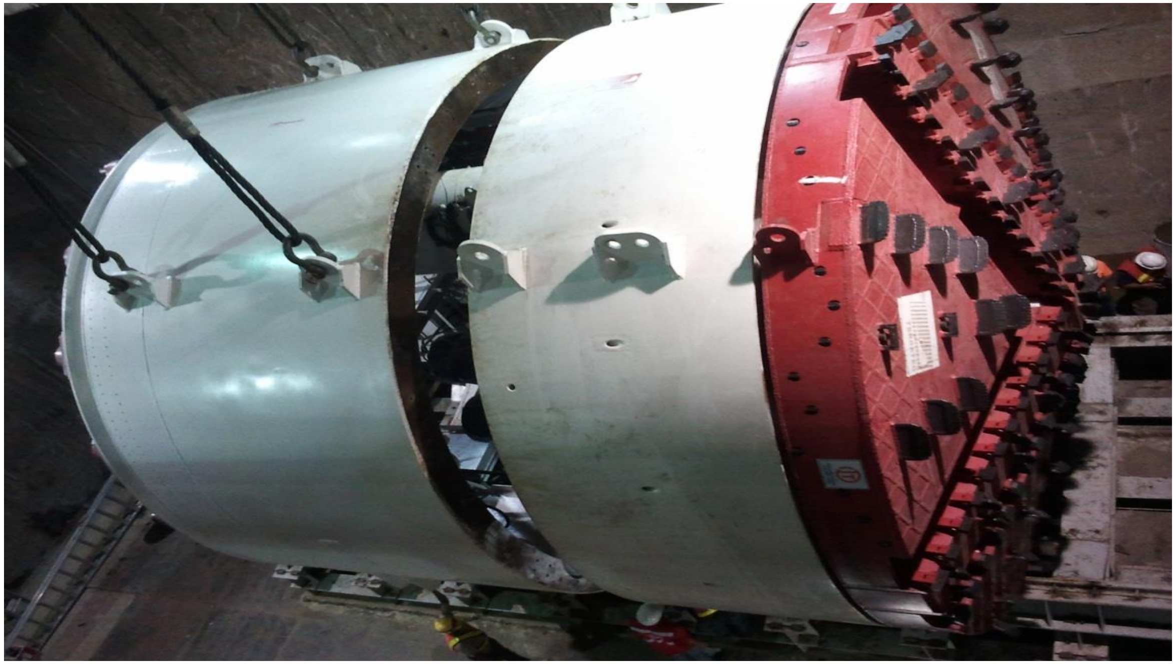
Stacked Station

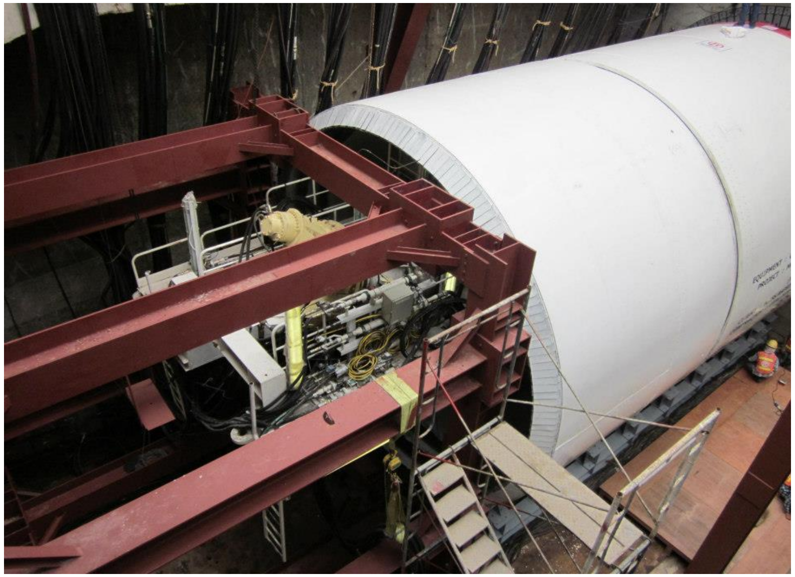
Dimension:
Ø outer = 6300 mm
Ø inner = 5700 mm
Segment Thickness = 300 mm



Tunnel Segment Arrangement





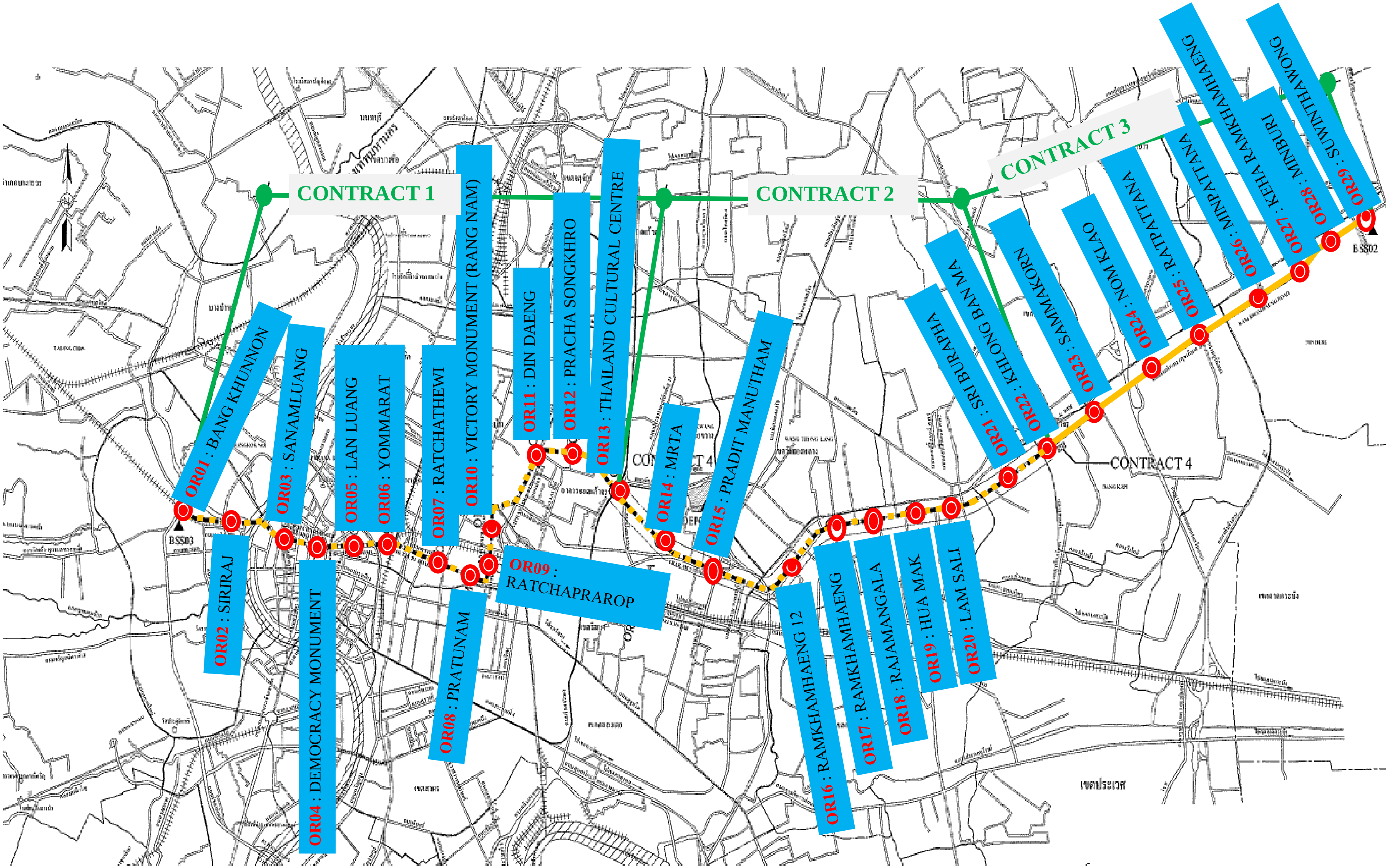


TBM Assembly for Contract 1

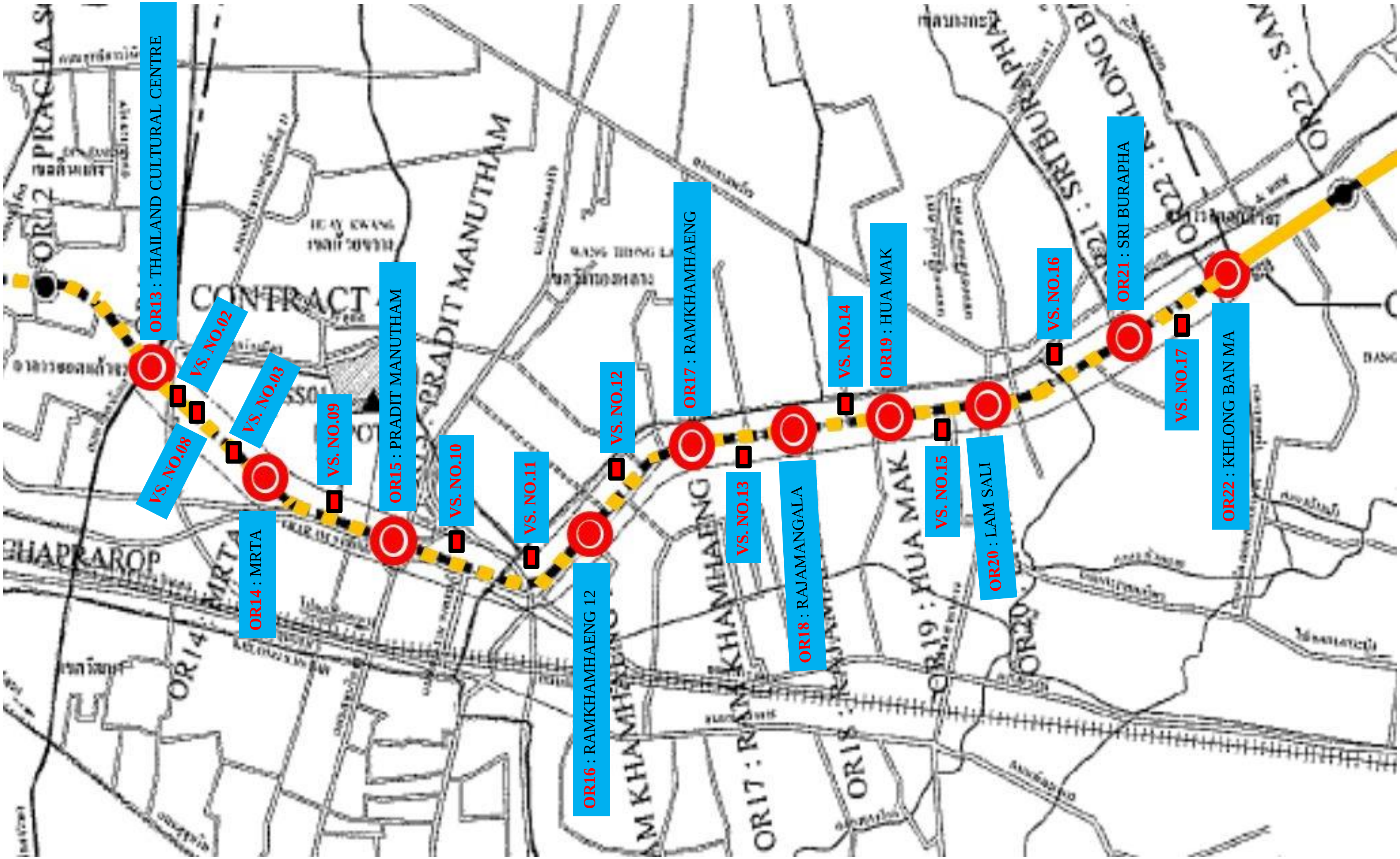
TBM Assembly for Contract 2

Tunnel Construction and Completion

MRT Orange Line Project

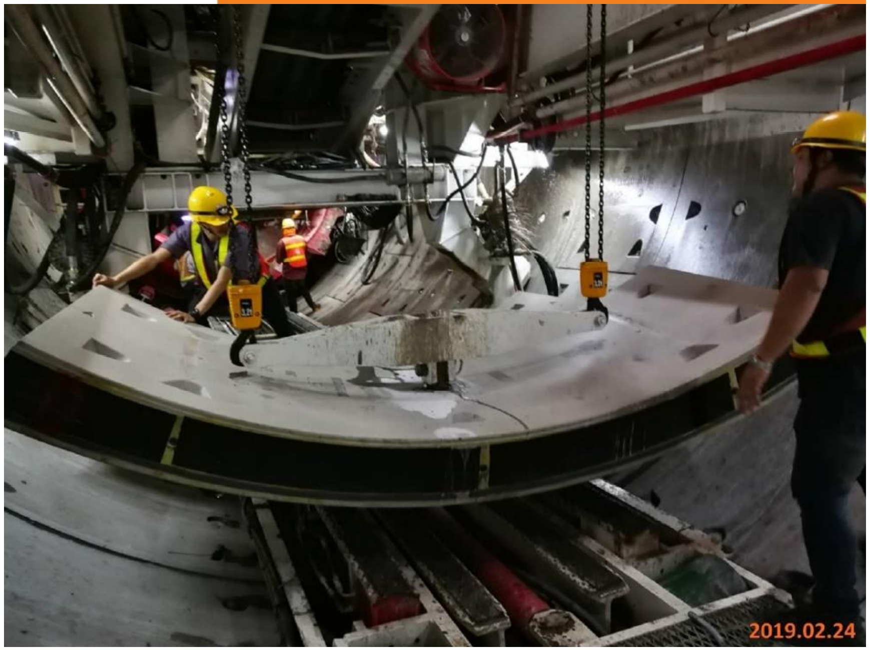


MRT Orange Line Project: Underground Works




ORANGE LINE Project


งานขุดเจาะอุโมงค์ รถไฟฟ้าสายสีส้ม สัญญาที่ 3
โดย บมจ. อิตาเลียนไทย ดีเวล๊อปเมนต์
IPMCSC2
SAFETY FIRST
ป้องกันก่อนเกิดเหตุ
สังเกตก่อนเกิดภัย
ตรวจสอบก่อนจะใช้
มั่นใจยรมือทำ


2019.02.24

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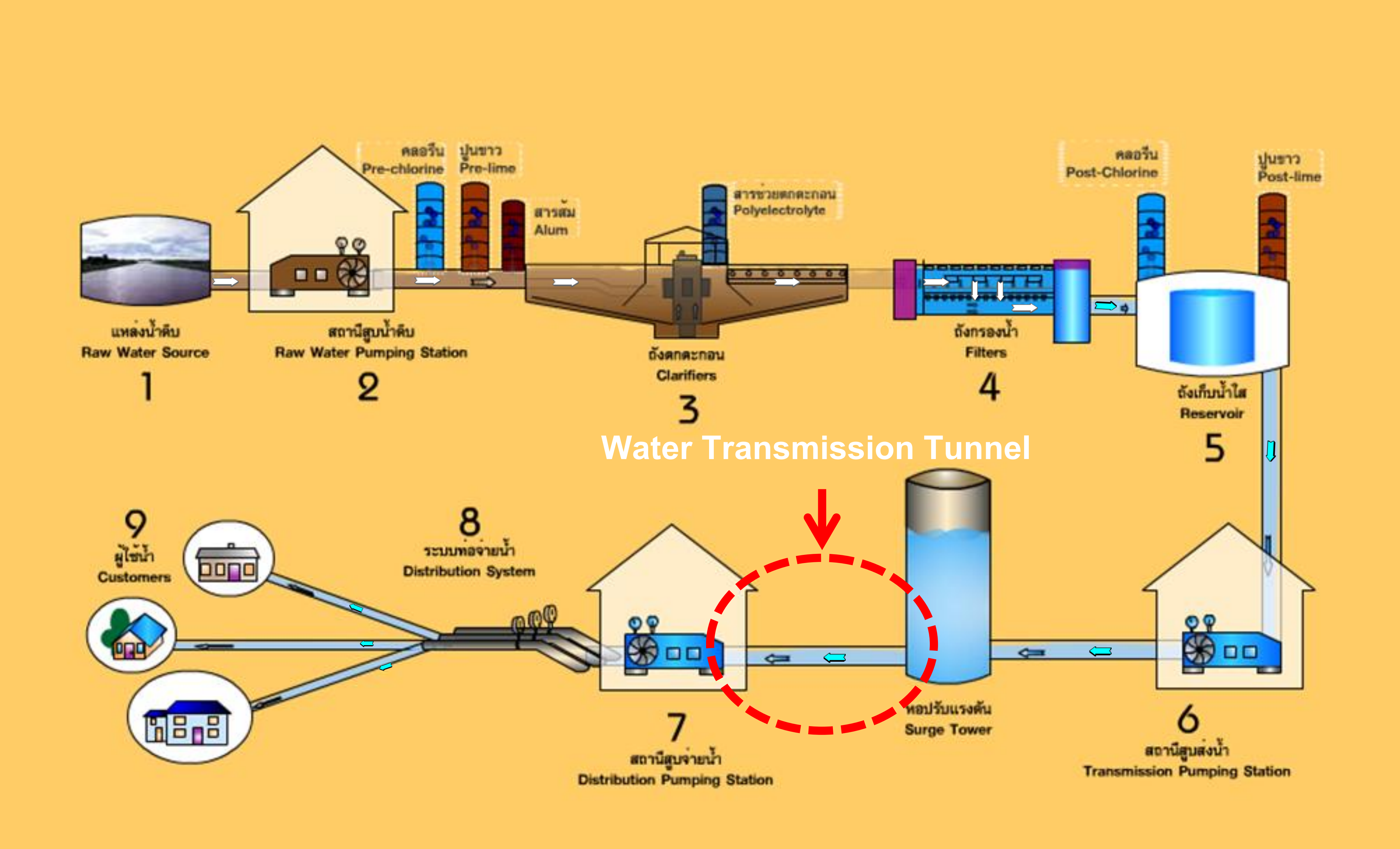
Waterworks System

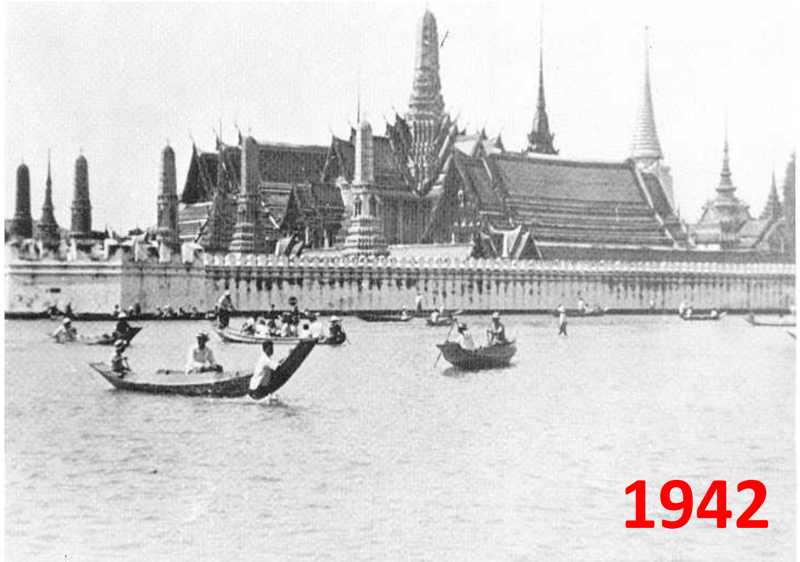


MWA's Water Transmission System Network

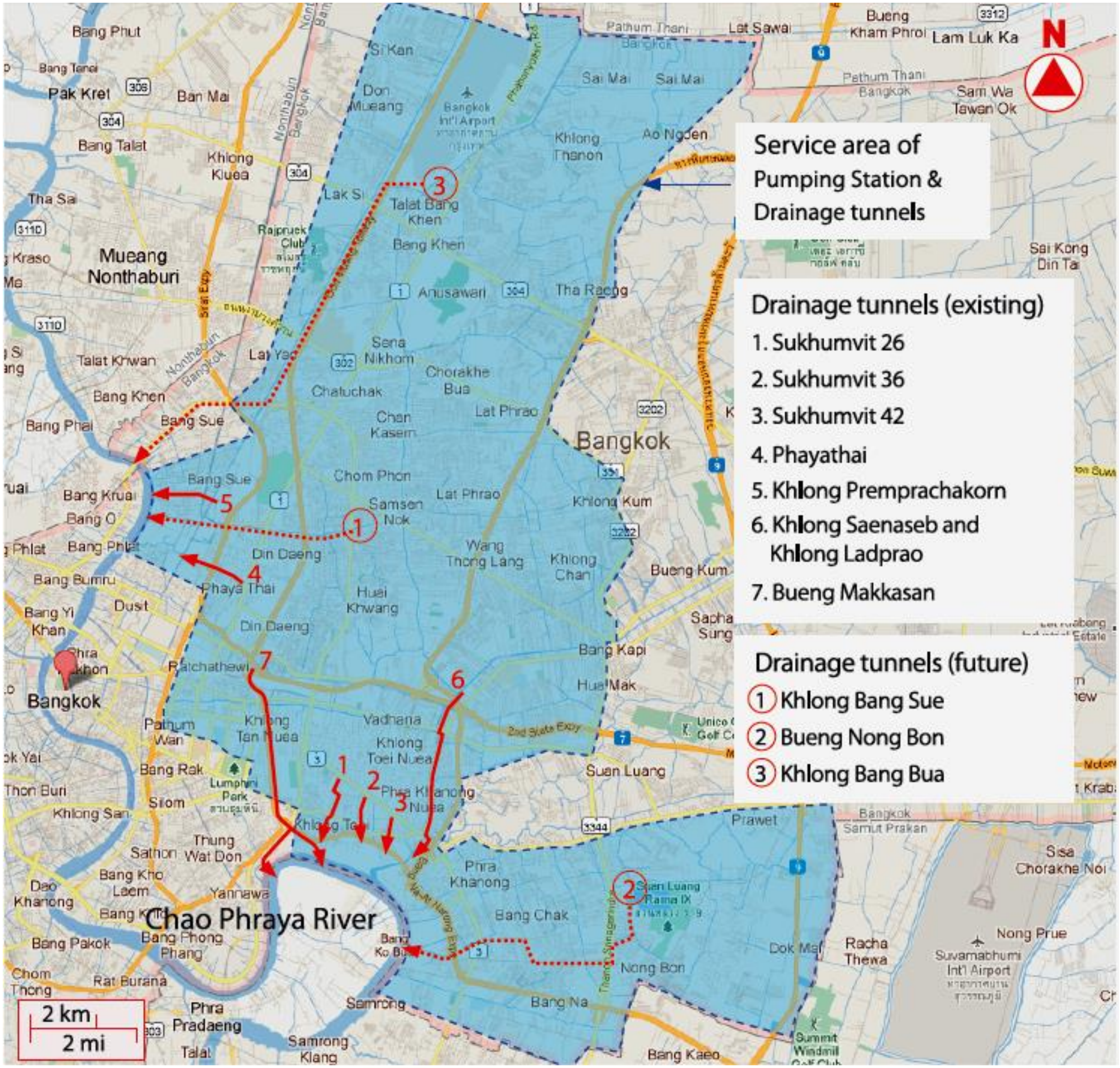

24 4 2007

24 4 2008

Major Floods in Bangkok



Flood Mitigation Program in Bangkok Area

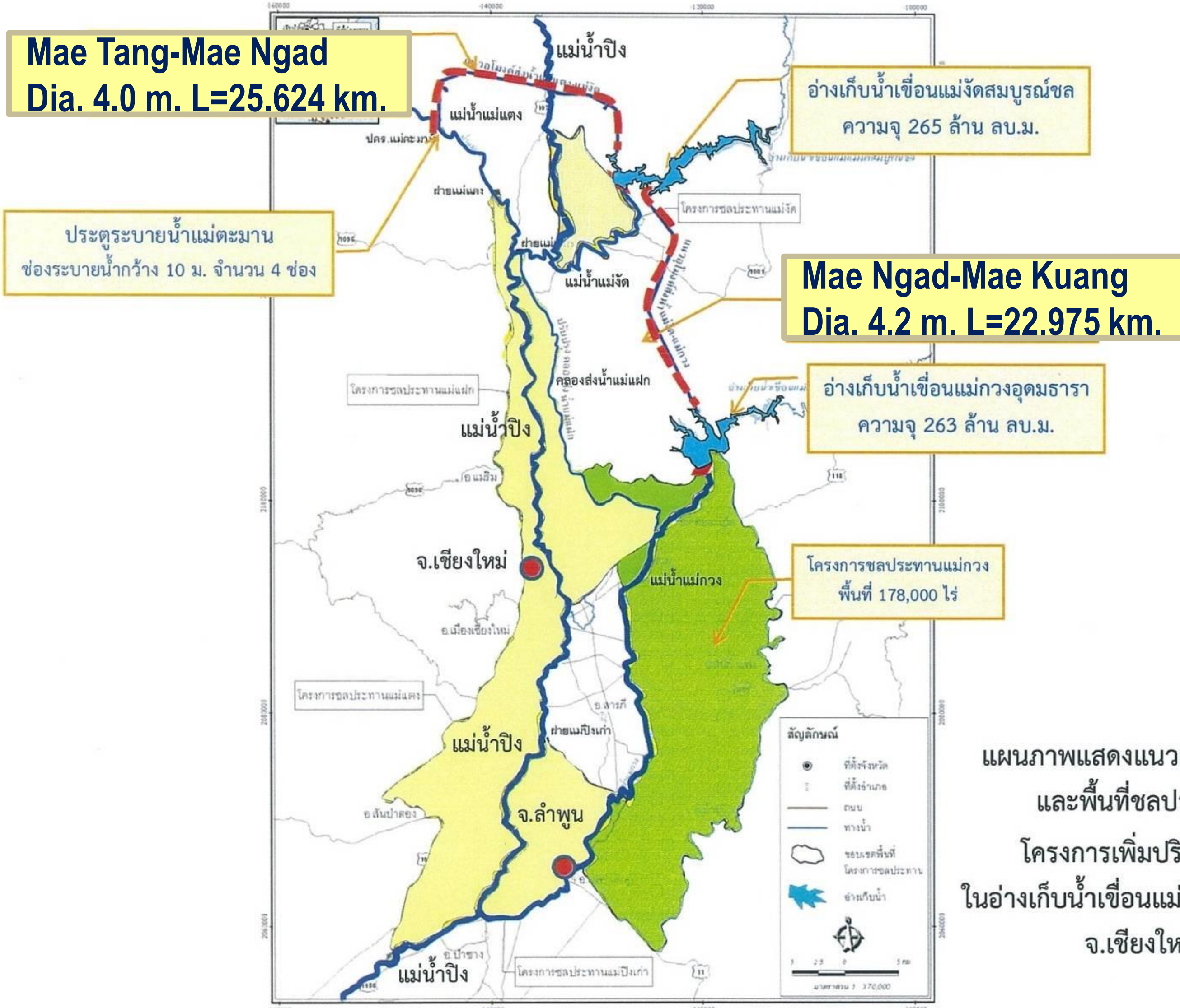


20 km. approx.

30 km. approx.

Khlong Sanseab and Khlong Ladprao Flood Drainage Tunnel

Mae Tang-Mae Ngad-Mae Kuang Water Diversion



แผนภาพแสดงแนวอุโมงค์ส่งน้ำ
และพื้นที่ชลประทาน
โครงการเพิ่มปริมาณน้ำ
ในอ่างเก็บน้ำเขื่อนแม่กวงอุดมธารา
จ.เชียงใหม่


NOV 4 2016

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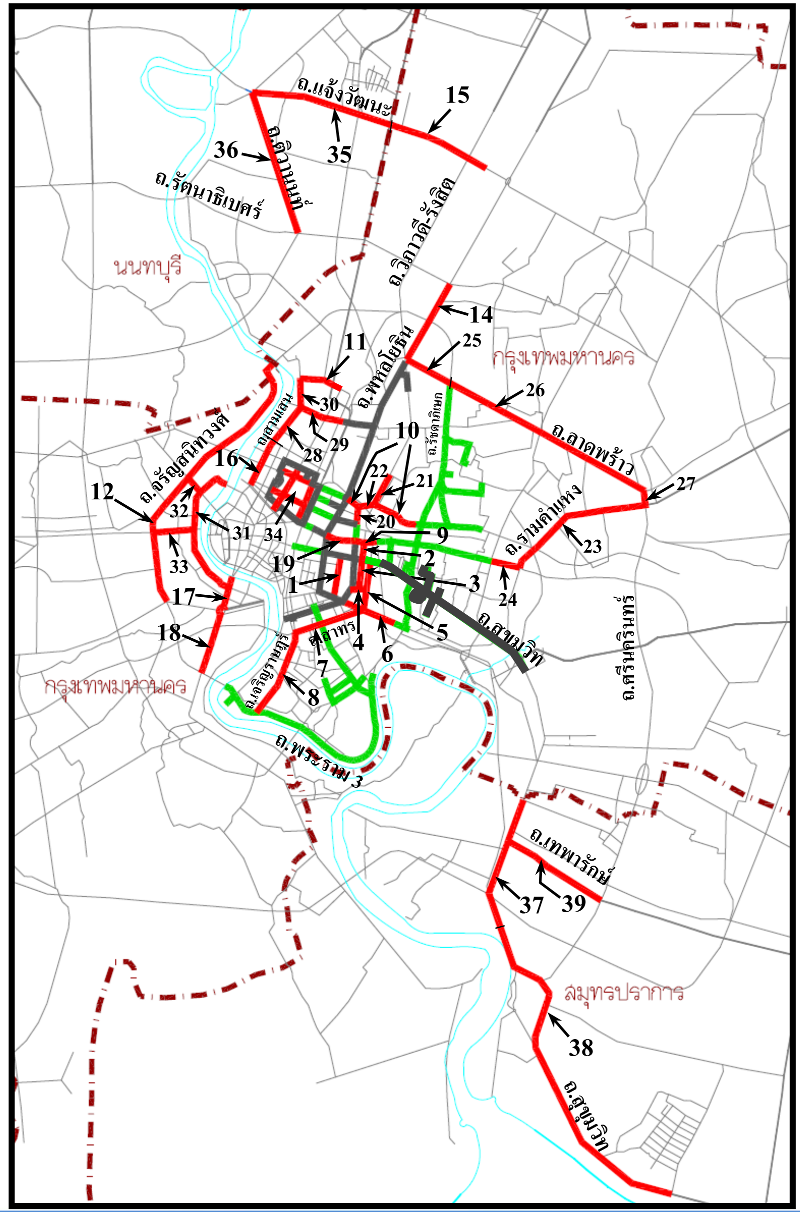
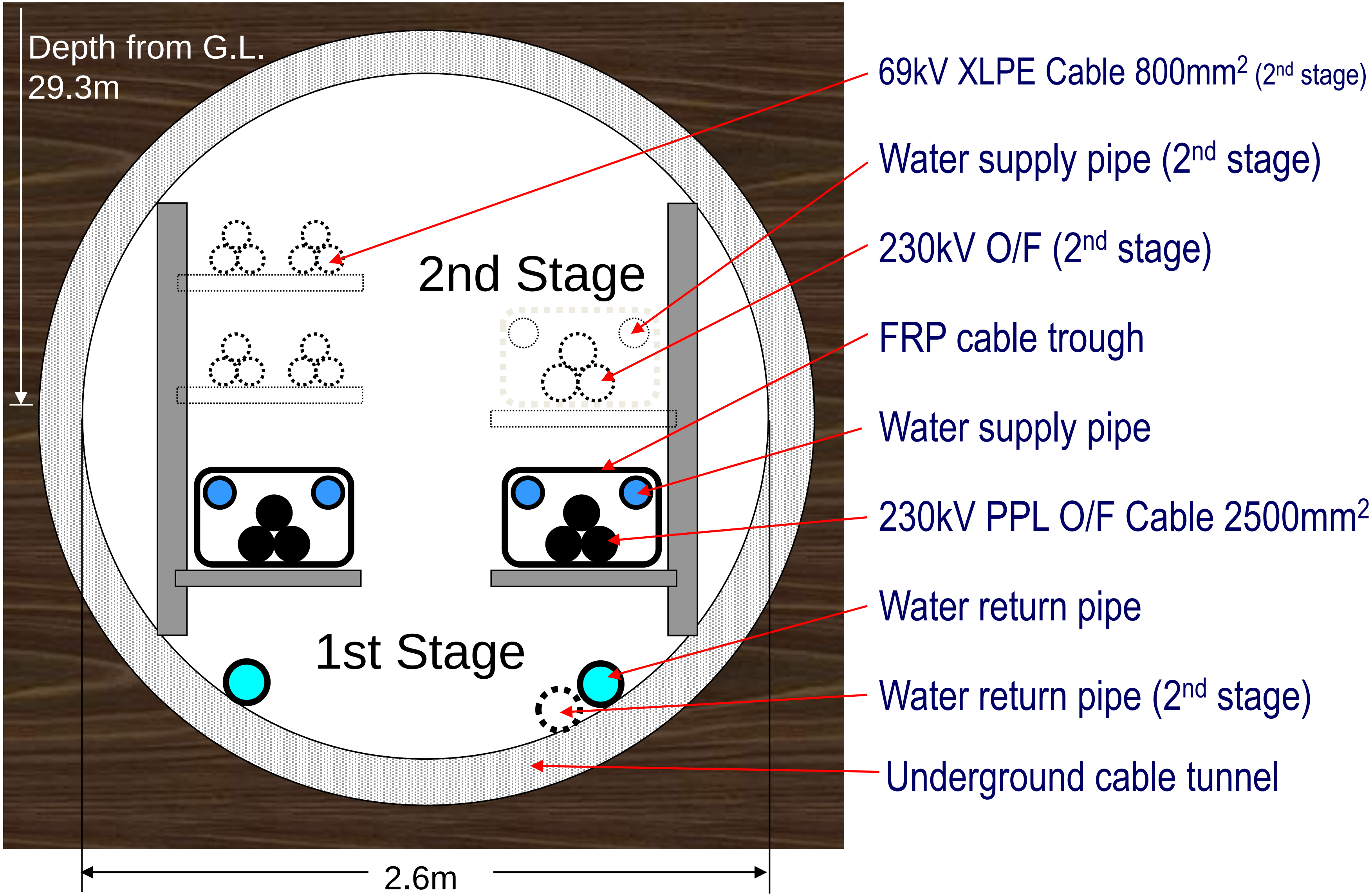
การไฟฟ้านครหลวง
Metropolitan Electricity Authority

Underground Cable for MEA

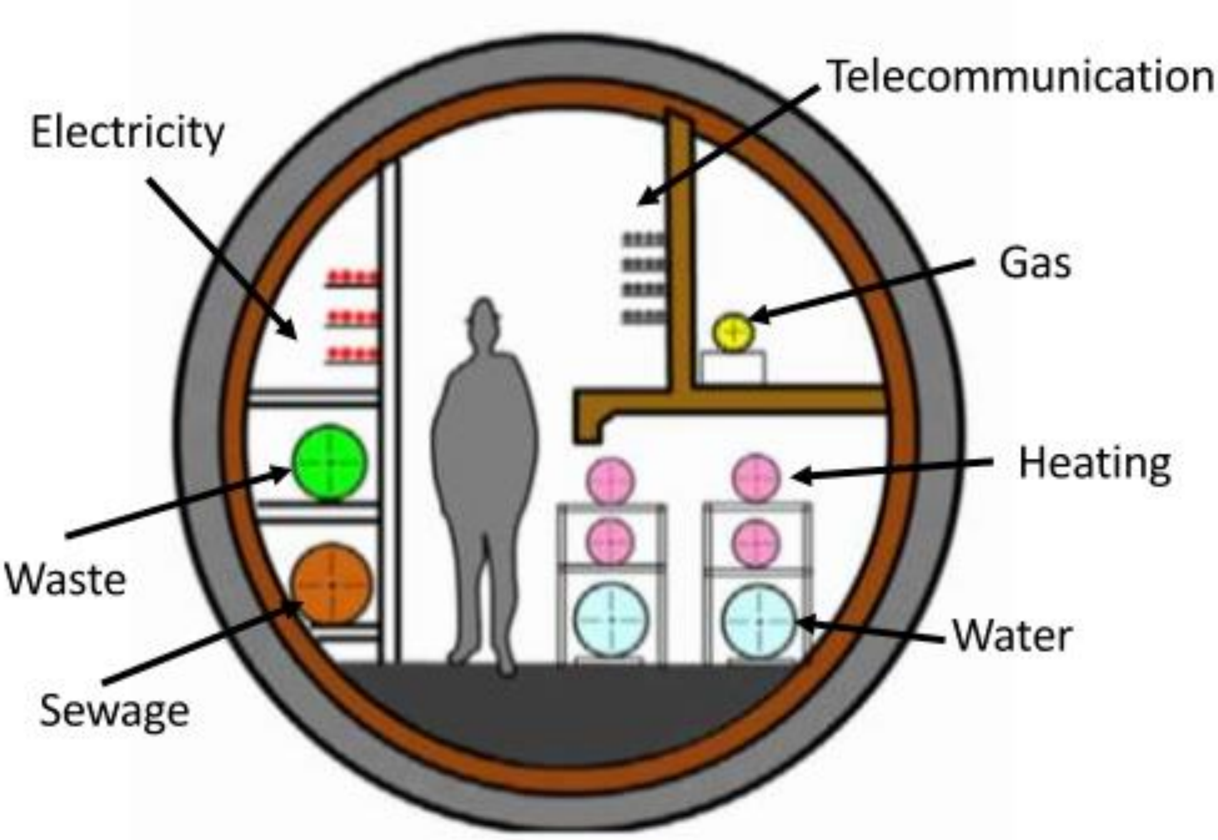
โครงการ	ระยะทาง (กม.)	ปีดำเนินการ (พ.ศ.)	วงเงินลงทุน (ล้านบาท)	ระยะทาง สะสม (กม.)
ดำเนินการเสร็จแล้ว				
1. สีลม	2.7	2527-2531	132	
2. ปทุมวัน	6.7	2535-2550	310	
3. จิตรลดา	6.8	2539-2550	345	
4. พหลโยธิน	8.0	2547-2557	623	
5. พญาไท	3.8	2547-2557	315	
6. สุขุมวิท	12.6	2547-2558	802	
Completed	**40.6 km.**			
กำลังดำเนินการ				
1. จิตรลดา ปทุมวัน และพญาไท (เพิ่มเติม)	6.0	2551-2559	554	
2. นนทรี	8.3	2551-2562	2,900	
3. พระราม 3	10.9	2551-2563	5,635	
4. รัชดาภิเษก-อโศก	8.2	2556-2564	4,555	
5. รัชดาภิเษก-พระราม 9	14.3	2556-2565	4,344	
6. แผนฯ มหานครอาเซียน	127.3	2559-2568	48,717	
Under Construction 175.0 km.				



Typical Cross Section of Cable Tunnel



Multi-Utility Tunnel (Proposed)



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hyperloop one


HYPERLOOP
01
กรุงเทพฯ-เชียงใหม่ 35 นาที
Bangkok – Chiangmai 35 min (~700 km)


Thank you