

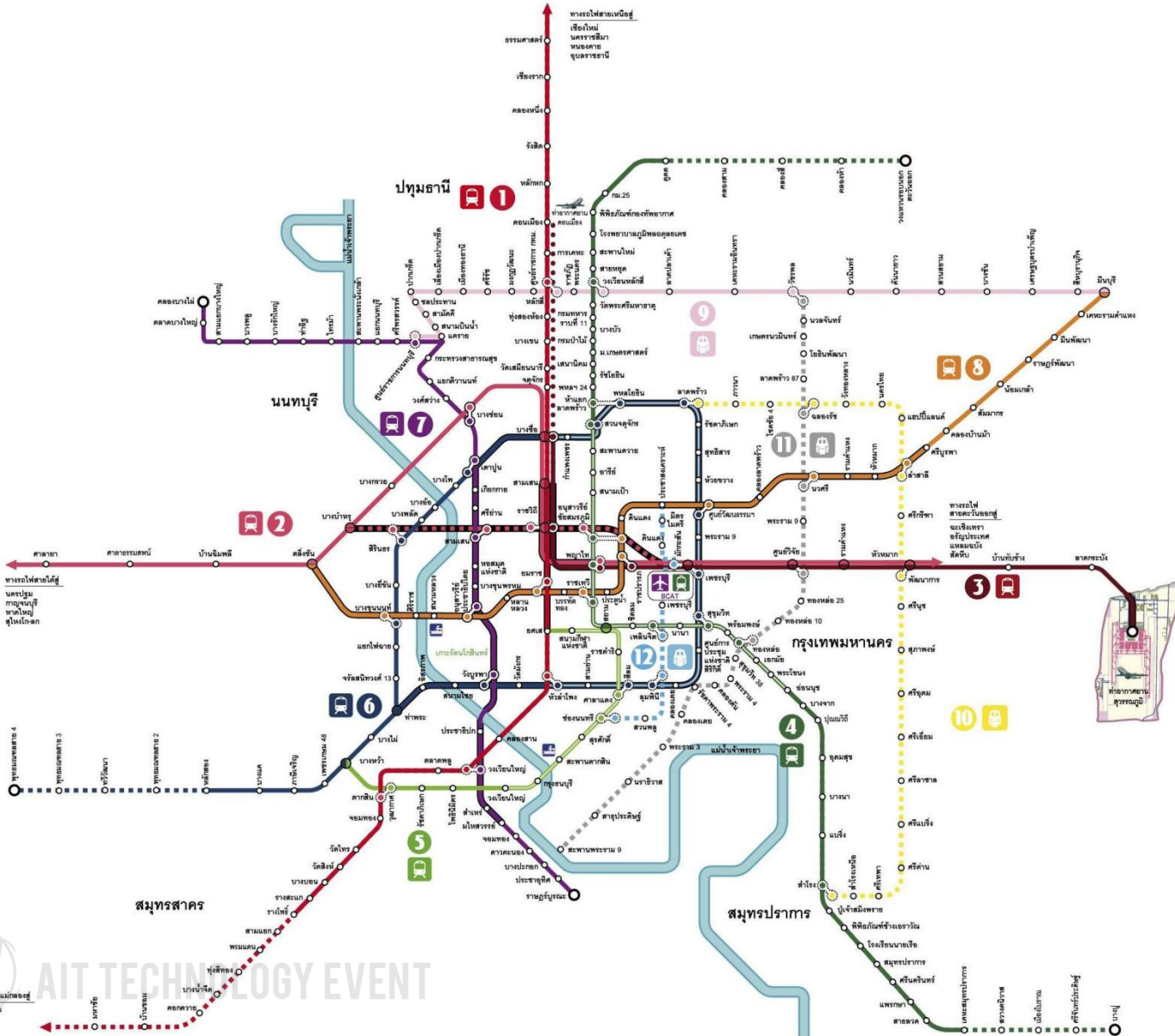
AIT Technology Event

MRT Blue Line Extension Project Bangkok Thailand

9 July 2013



BANGKOK URBAN RAILWAY MASTER PLAN



โครงการสายหลัก

1	สถานีแดง	ถนนสายสีแดง-วงแหวนกาญจนาภิเษก
2	สถานีแสด	ศาลาแดง-สถานีบางเขน-สถานีหัวหมาก
3	สายสีส้ม	ท่าอากาศยานสุวรรณภูมิ-สถานีหัวหมาก
4	สถานีเขียว	ท่าอากาศยานสุวรรณภูมิ-สถานีบางเขน
5	สถานีสีม่วง	สถานีหัวหมาก-สถานีบางเขน
6	สถานีน้ำเงิน	ท่าอากาศยานสุวรรณภูมิ-สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก
7	สถานีสีฟ้า	สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก
8	สถานีสีชมพู	สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก

โครงการสายรอง

9	สถานีสีชมพู	สถานีหัวหมาก-สถานีบางเขน
10	สถานีสีส้ม	สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก
11	สถานีสีฟ้า	สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก
12	สถานีสีฟ้า	สถานีหัวหมาก-สถานีบางเขน-สถานีหัวหมาก

เส้นทางที่เปิดให้บริการในปัจจุบัน

- สีน้ำเงิน: ได้ดิน
- สีส้ม: ยกระดับระดับดิน

เส้นทางที่เปิดดำเนินการในปี 2562
 เส้นทางที่เริ่มดำเนินการในปี 2572
 สถานีที่ปิดให้บริการ (สถานีที่ปิดให้บริการชั่วคราว)

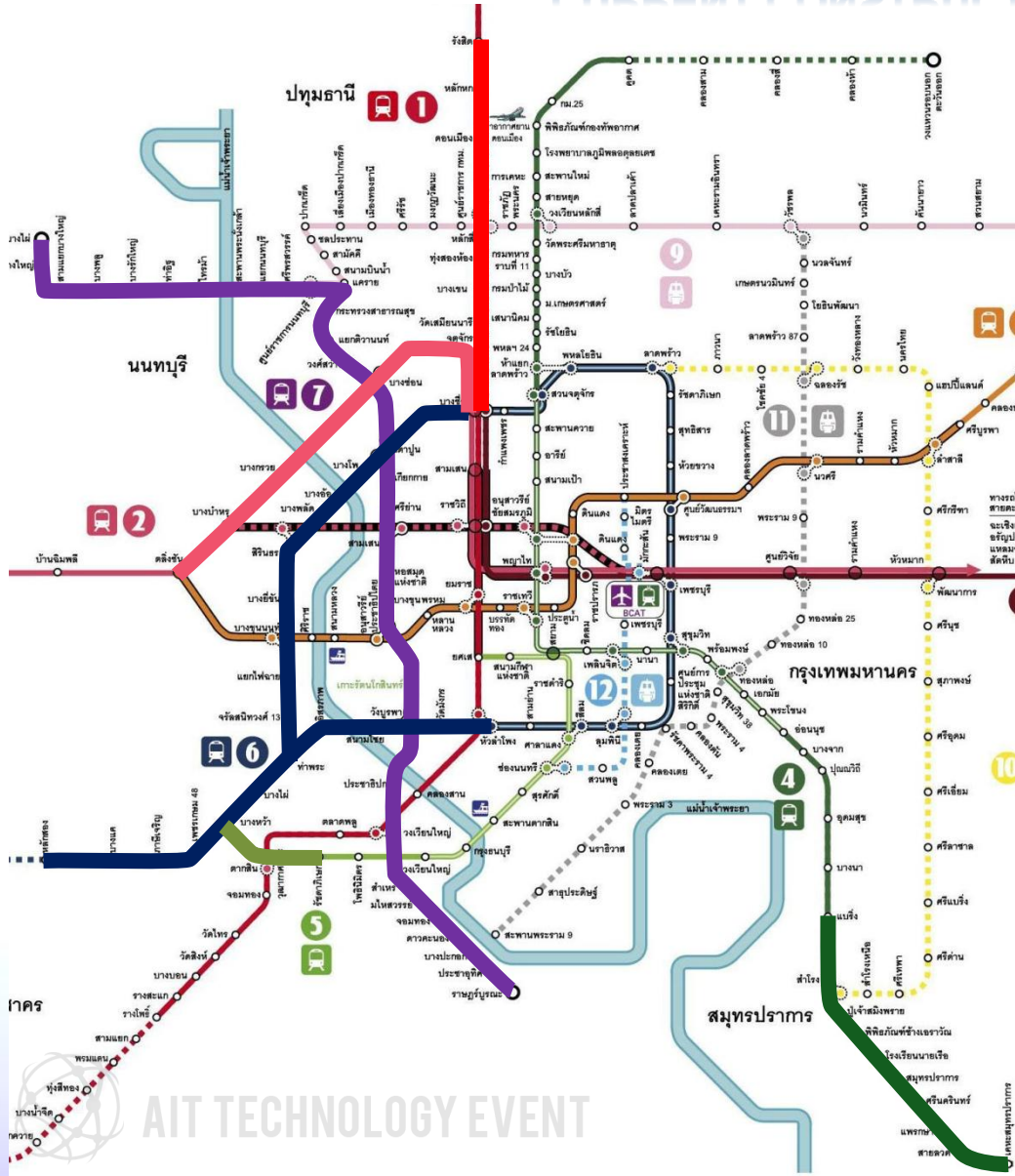
Station Transfer, Paid Area Transfer, Unpaid Area Transfer

EXECUTING AGENCY FOR RAILWAY NETWORK

Name of Agency		Administrative Division
MRTA	Mass Rapid Transit Authority of Thailand	Ministry of Transport
BTS	Bangkok Mass Transit System Public Company Limited	Bangkok Metropolitan Administration
SRT	State Railway of Thailand	Ministry of Transport



CURRENT CONSTRUCTION ROUTES



Agency	Name of Route	Length of Route
SRT	Red Line Bang Sue - Rangsit	26 km 6 stations
SRT	Light Red Line Bang Sue - Taling Chan	15 km 4 stations
MRTA	Purple Line	25.6 km 16 stations
MRTA	Blue Line Ext.	26.9 km 19 stations
MRTA	Green Line Ext. Bearing - Kheha Samut Prakan	13 km 9 stations
BTS	Light Green Line Talat Phlu - Bangwa	~2.7km 2 stations



MRT Blue Line

Contract 1 Underground Civil Works

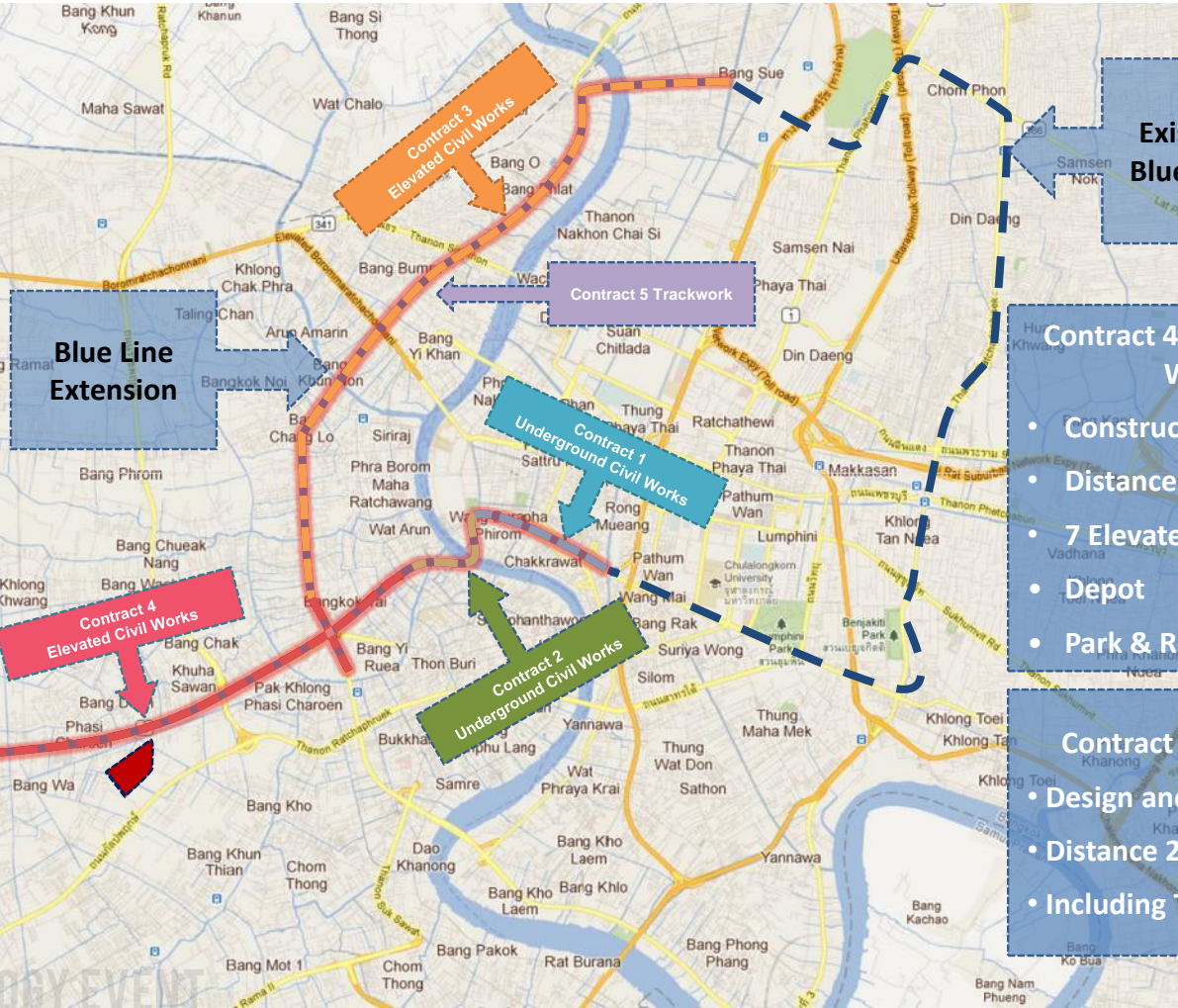
- Design and Construction
- Distance 2.8 km.
- 2 Underground Stations:

Contract 2 Underground Civil Works

- Design and Construction
- Distance 2.6 km.
- 2 Underground Stations:

Contract 3 Elevated Civil Works

- Construction
- Distance 11 km.
- 8 Elevated Stations



Existing Blue Line

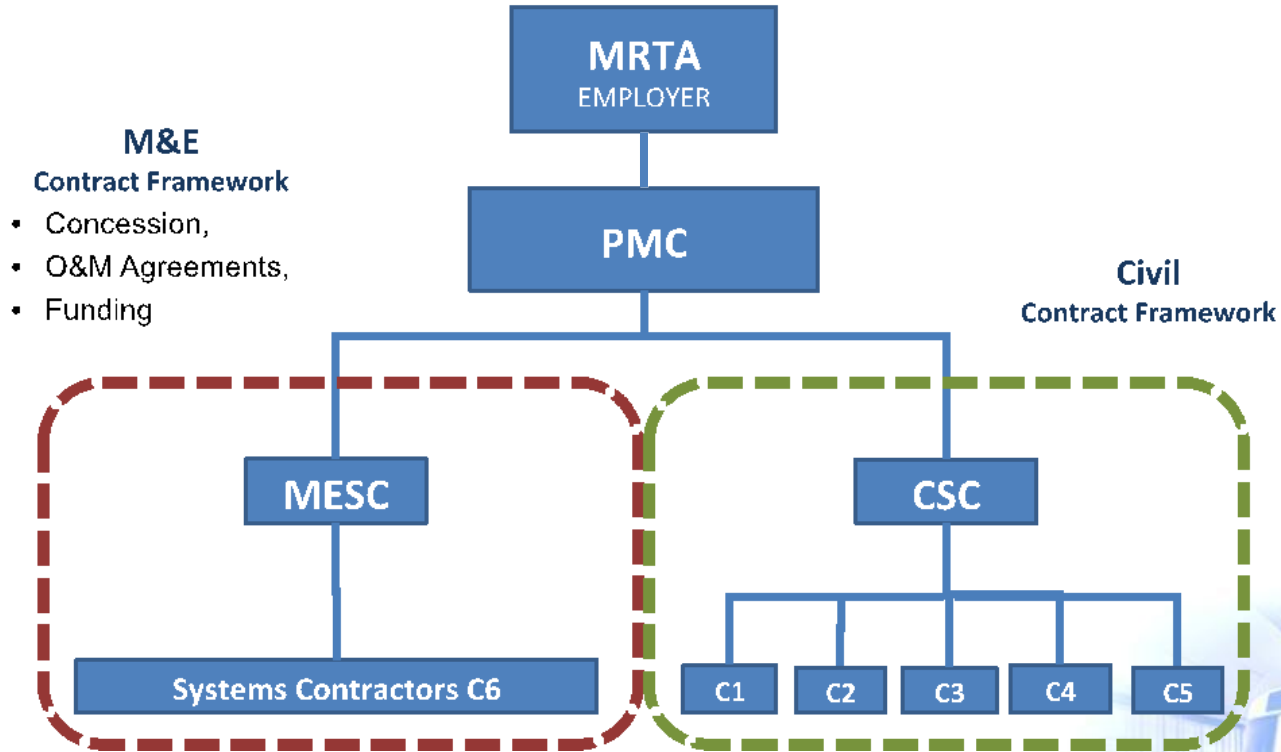
Contract 4 Elevated Civil Works

- Construction
- Distance 10.5 km.
- 7 Elevated Stations
- Depot
- Park & Ride

Contract 5 Trackwork

- Design and Construction
- Distance 27 km.
- Including Track in Depot

Project Organization



Contractors

Contract 1 : Design and Build Underground Civil Works



Italian-Thai Development PCL

Contract Value : 11,400 Million Baht

Contract 2 : Design and Build Underground Civil Works



CH. Karnchang PCL

Contract Value : 10,700 Million Baht

Contract 3 : Build Elevated Civil Works



SH-UN Joint Venture

Contract Value : 11,300 Million Baht

Contract 4 : Build Elevated Civil Works



SINO-THAI

Engineering & Construction PCL

Contract Value : 13,300 Million Baht

Contract 5 : Design and Construction of Trackwork



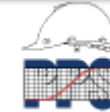
CH. Karnchang PCL

Contract Value : 5,000 Million Baht

Project Management Consultant



Index International Group Co., Ltd



Project Planning Services Co., Ltd



Dorsch Consult Asia Co.,Ltd



Lanna Engineering Consultant Co.,Ltd



PPSN Co., Ltd



Arun Chaiseri Consulting Engineers Co.,Ltd



Merlin's Solutions International Co., Ltd

Contract Value : 726 Million Baht

Construction Supervision Consultant



MAA Consultants Co., Ltd.



Utility Design Consultants Co., Ltd.



Tesco Co., Ltd.



D2 Consult Asia Co., Ltd.



Epsilon Co., Ltd.



Moh and Associates Inc.



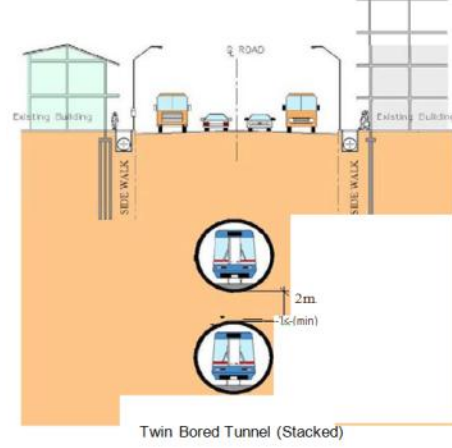
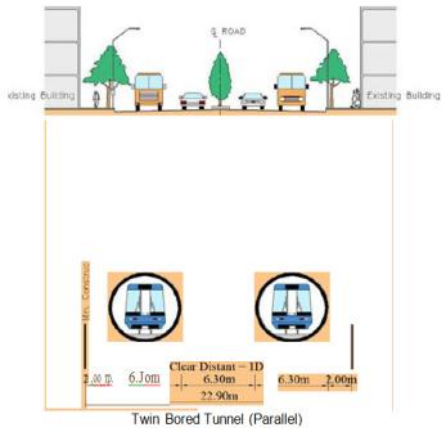
NorCiv Engineering Co., Ltd.



Nippon Koei Co., Ltd.

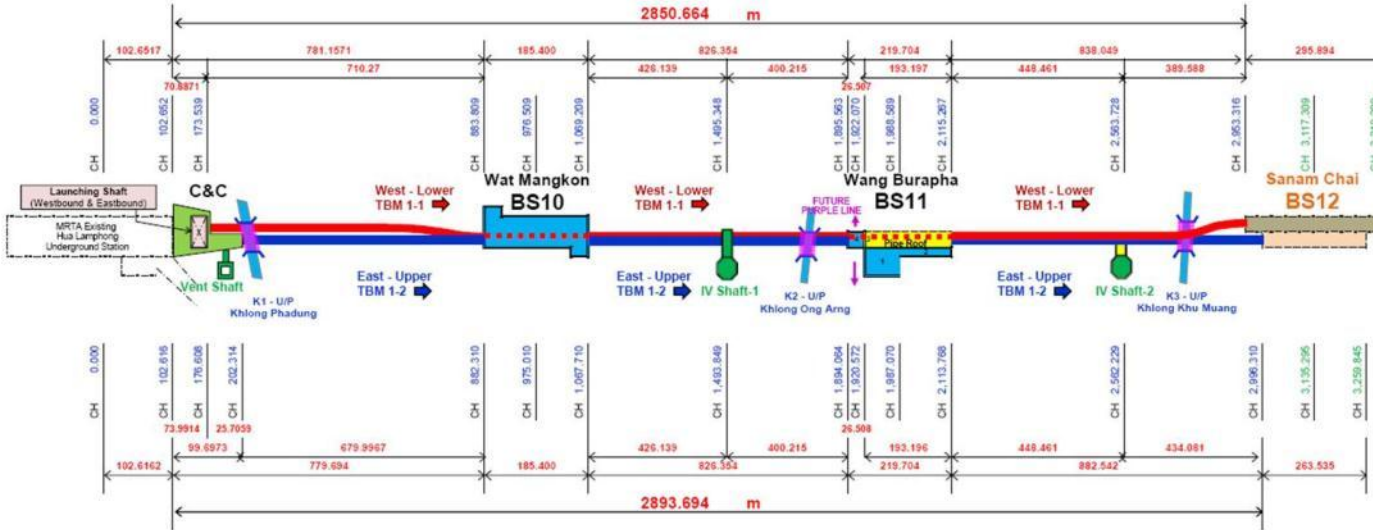
Contract Value : 1,200 Million Baht

Project Details : Underground Structures

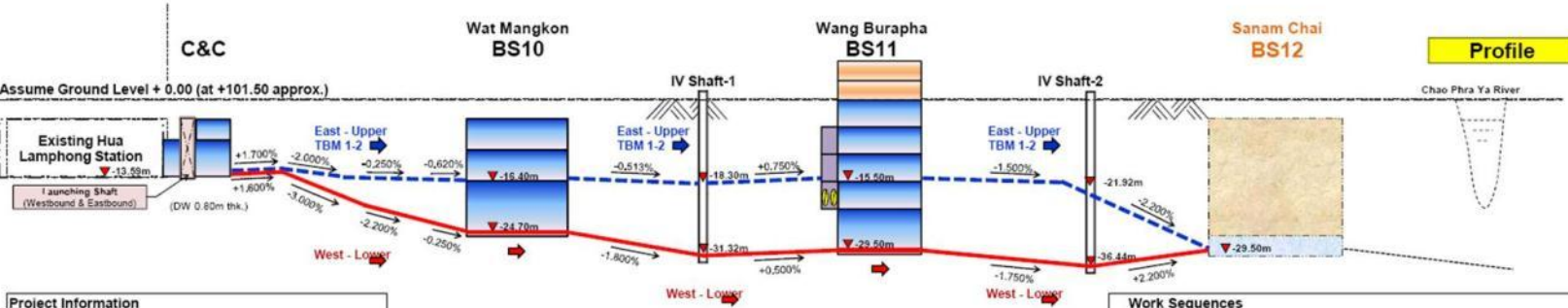


Key Plan and Profile

MRT Blue Line Extension Project (Underground Civil Works)
Contract 1 : Hua Lamphong - Sanam Chai Section



Key Plan

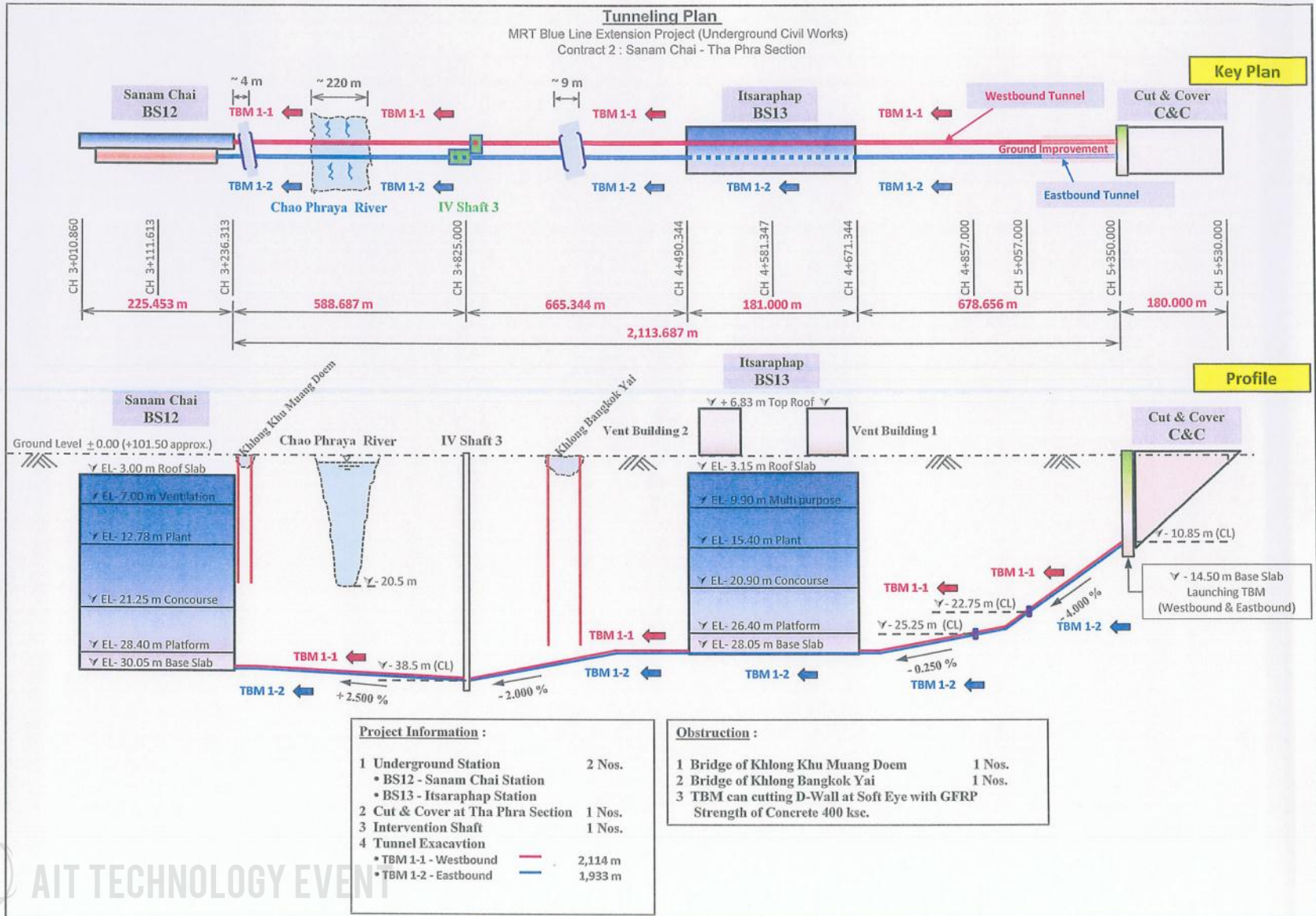


Profile

Project Information		
1	Underground Station	2 Nos.
	- BS10-Wat Mangkon Station	
	- BS11-Wang Burapha Station	
2	Cut and Cover Tunnel at Hua Lamphong	1 Nos.
3	Tunnel excavation	
	- TBM 1-1 excavation length (incl. stations)	2,780 m
	- TBM 1-2 excavation length (excl. stations)	2,369 m
	Total excavation length	5,169 m
4	Ventilation and Intervention Shaft	3 Nos.
5	Bridge Underpinning	3 Nos.

Work Sequences	
-	TBM commence driving the westbound (lower) tunnel from launching shaft at Cut & Cover (C&C) towards Wat Mangkon Station (BS10).
-	TBM drives through the lower slab level of Wat Mangkon Station (BS10), continue driving through Wang Burapha Station (BS11) until ending at the Sanam Chai Station retrieving shaft (BS12)
-	TBM will be dismantled and then be transported back to the launching shaft at Hua Lamphong where it will be re-assembled to re-launch for the eastbound (upper) tunnel.
-	TBM re-launch driving the eastbound (upper) tunnel toward Wat Mangkon Station (BS10) and Wang Burapha Station (BS11) until to finish the work at Sanam Chai Station. Due to the stations excavation and concrete slab are finished prior to TBM coming, the TBM will be slid pass through the station.

Remark: - The above chainage will be confirmed later



Project Details : Elevated Structures



Typical Structure



Portal Frame



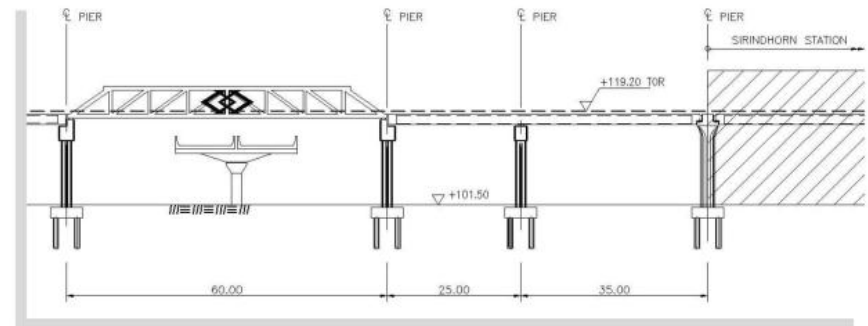
Chao Phraya River Crossing Bridge at Bang Pho



Portal Frame over Underpass

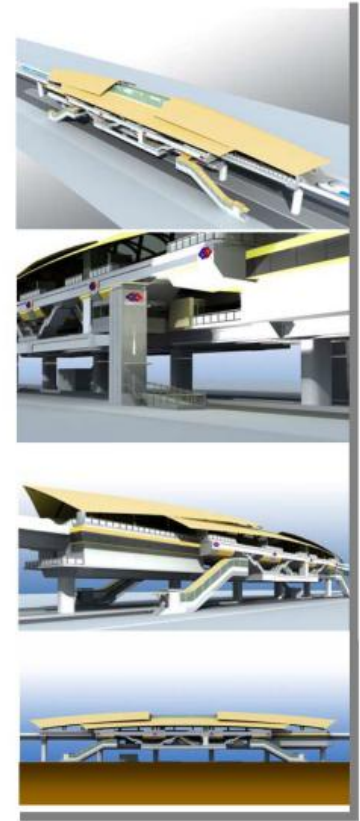
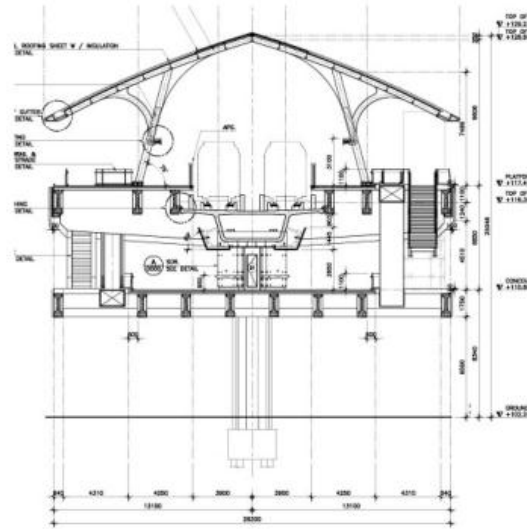
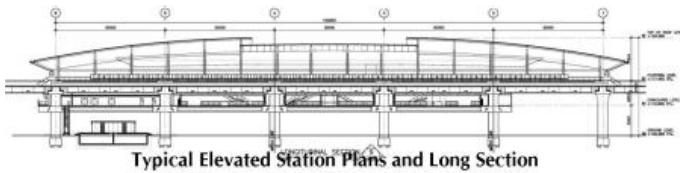
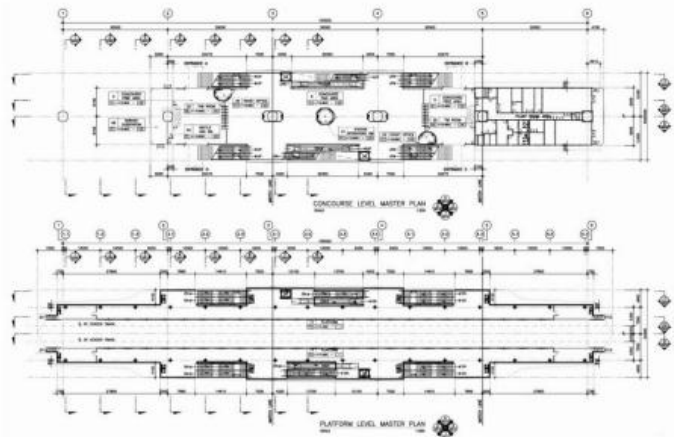


Structure for Long Span



Space Truss at Bang Plat Intersection

Stations and Buildings



Depot & Park and Ride Buildings



Denot



Park and Ride Buildings

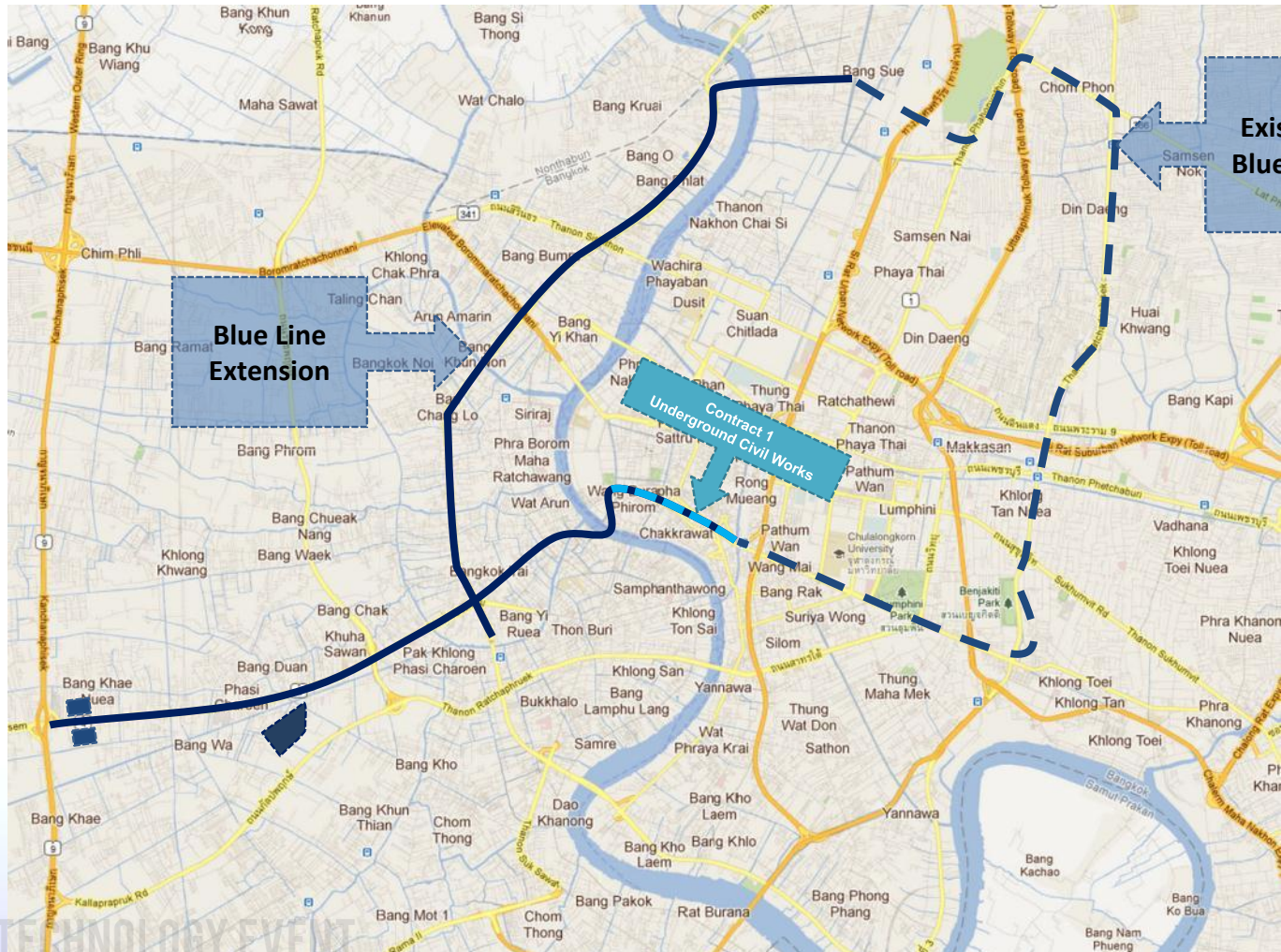


Commencement Date: 4 April 2011 (Civil)

Contract Completion: 5 June 2016 (Civil)



Current Progress : Contract 1





Hua Lamphong, Cut & Cover



Hua Lamphong, Cut & Cover



Klong Pradung Krungkasem Construction

/06/2013



BS10 Wat Mangkon Station

21.6.20



BS10 Wat Mangkon Station

21.6.20



BS10 Wat Mangkon Station

9.5.2013



AIT TECHNOLOGY EVENT

IVS1

21.6.20



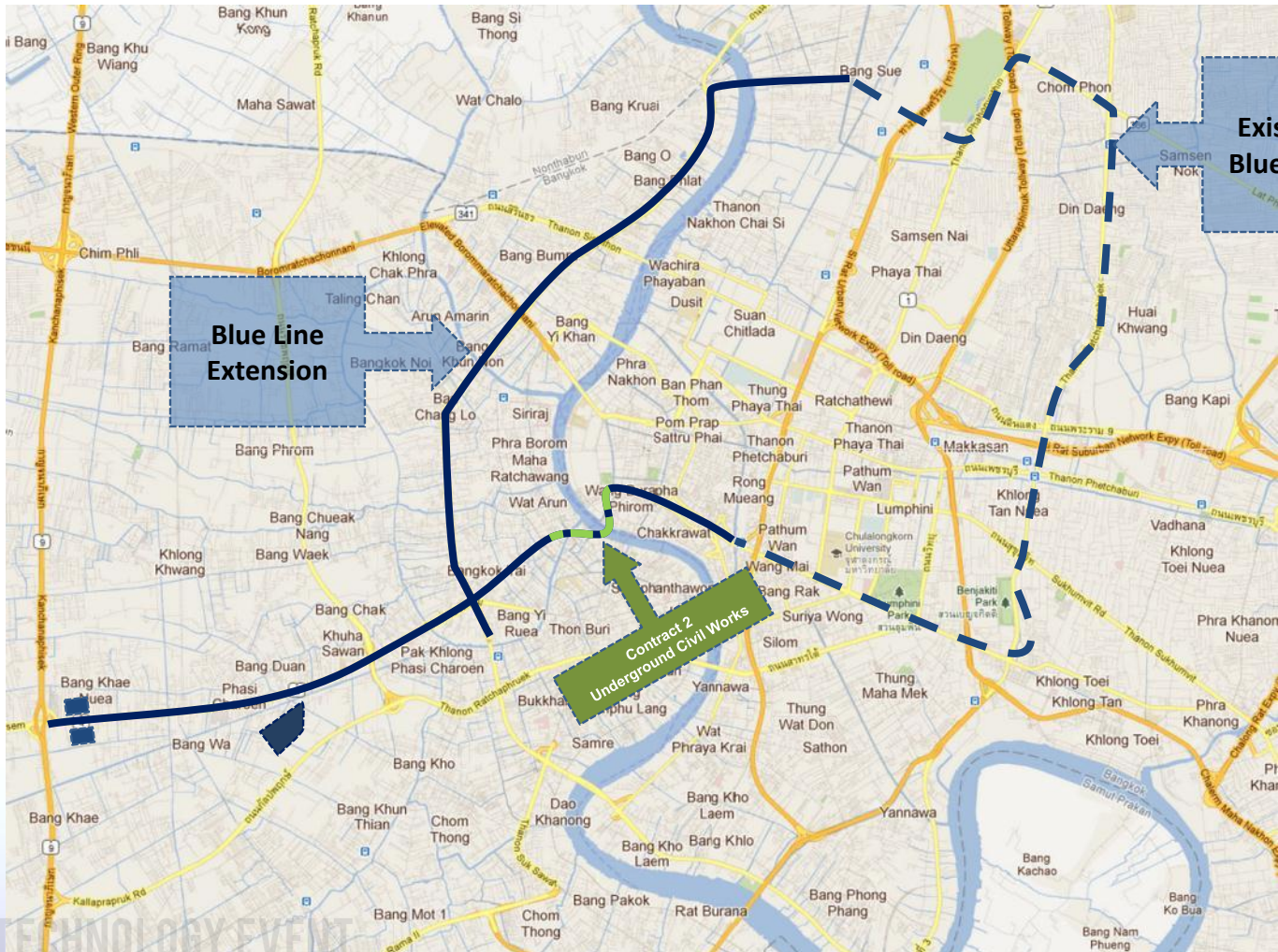
BS11 Wang Burapha Station

21.6.20





Current Progress : Contract 2



Existing
Blue Line

Blue Line
Extension

Contract 2
Underground Civil Works



BS12 Sanam Chai Station



BS12 Sanam Chai Station



BS12 Sanam Chai Station – Pipe Roofing



BS12 Sanam Chai Station



BS13 Itsaraphap Station





AIT TECHNOLOGY EVENT

31.05.2013 13:05

BS13 Itsaraphap Station





09/05/2013 09:57

 AIT TECHNOLOGY EVENT

Cut & Cover, Tunnelling



TECHNOLOGY EVENT

27.05.2013 14:23

IVS3

Current Progress : Contract 3





Construction of Pier-head at P-BN10-05 – Zone 1



Construction of Pier-head at P-BN10-06 – Zone 1



Construction of DSRS Structure at Pier at P-BN10-18 – Zone 1





Bored Piling \varnothing 0.35m (Dry Process) for Land Bridge at BN11/5
Bang Pho Station - Zone 1

22/05/2013 10:01



Balance cantilevering construction at
P3 (P-BN11-05) Chao Phraya River Crossing



Balance cantilevering construction at
P4 (P-BN11-06) Chao Phraya River Crossing





Construction of Pile Cap at P-BN11-12 – Zone 2



Construction of Pier-head at P-BN11-13 – Zone 2





29.05.2013 09:43

Installation Segment BN12/4 to BN12/5
Bang Or Station – Zone 2





Installation Cross Beam concourse Level Grid Line 4
Bang Phlat Station – Zone 2



AIT TECHNOLOGY EVENT

Construction of Pier-head at P-BN13-13 – Zone 2

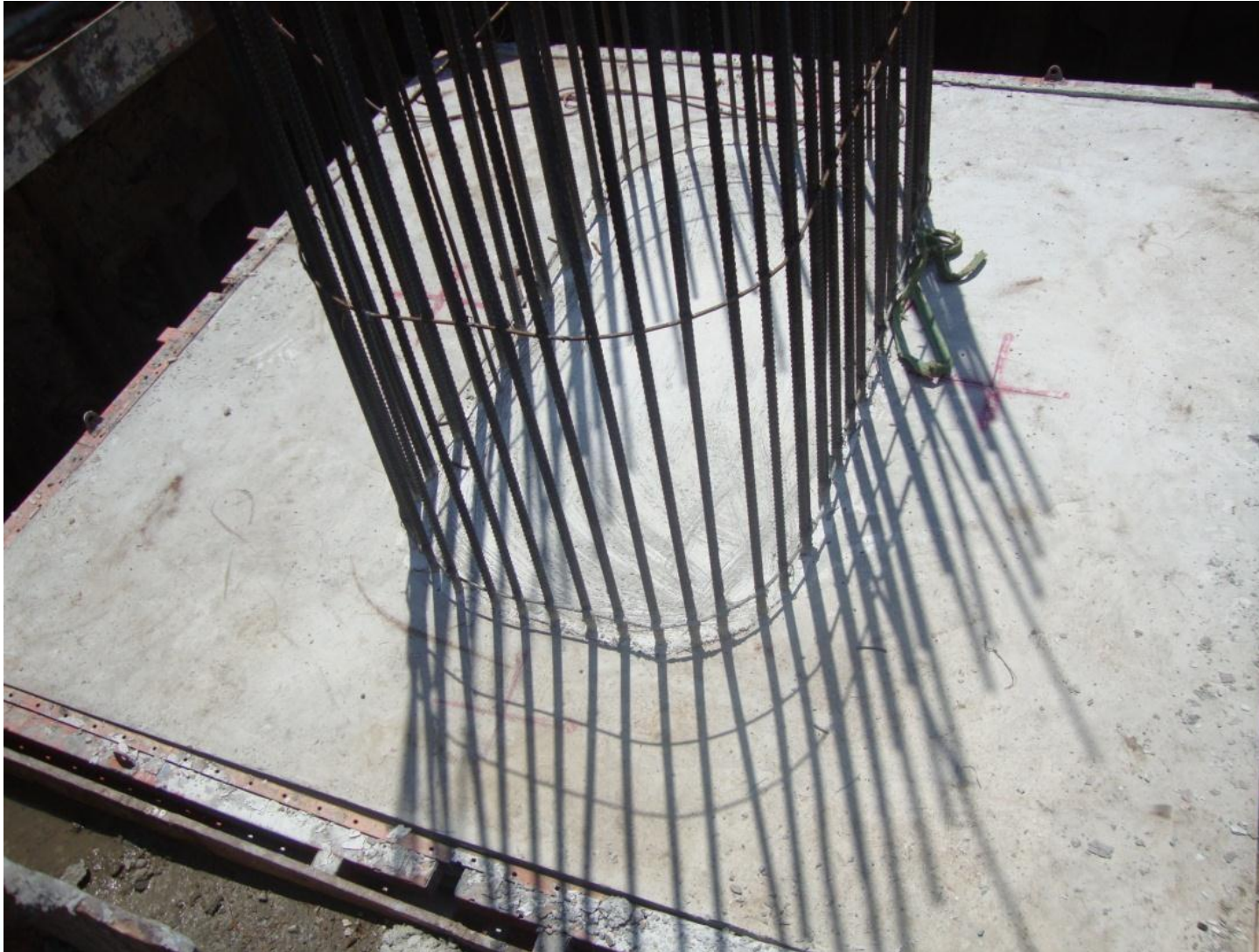


Construction of Barrette Pile (0.80x2.70m) at BN14/2 (L:F)
Sirindhorn Station – Zone 3



Construction of Barrette Pile (0.80x2.70m) at BN14/4 (L:E)
Sirindhorn Station – Zone 3





Construction of Pile Cap at P-BN15-16 BCL at Boromratchonni – Zone 3



Installation of Crossbeam Interface Segment (IF)
at BN16/3 (Concourse Level)
Bang Khun Non Station – Zone 5



Installation of Crossbeam Interface Segment (IF)
at BN16/4 (Concourse Level)
Bang Khun Non Station – Zone 5



LG2: Erection of Main Truss (Right) at
P-BN16-10/P-BN16-09 – Zone 5



LG2: Assembly Main Truss (Left) at
P-BN16-10/P-BN16-09 – Zone 5





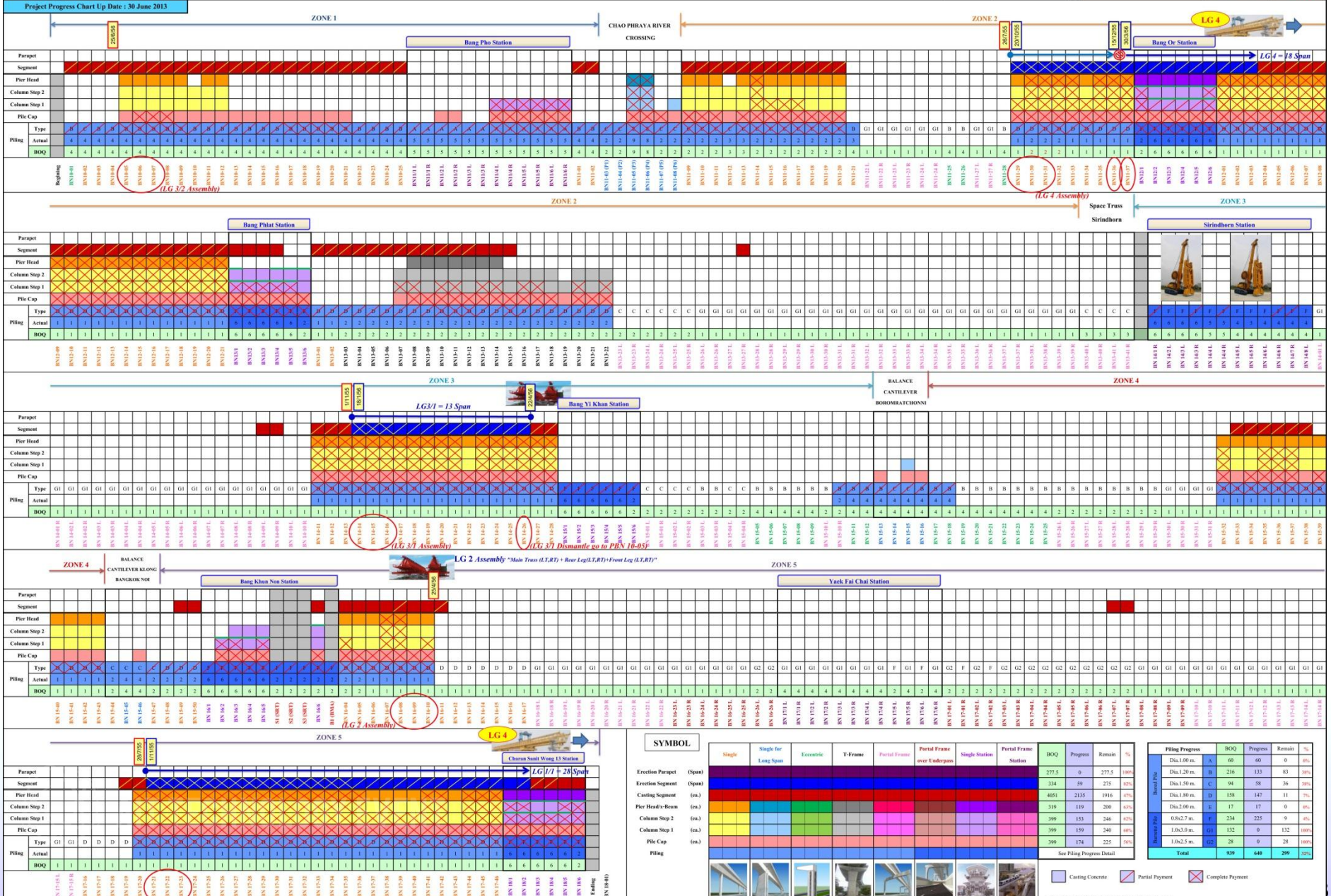
LG1: Segments Erection at Span P-BN17-46 / P-BN18/1 – Zone 5



Installation of Crossbeam Segment at BN18/3
(Platform Level)
Charn Sanit Wong Station – Zone 5



Installation of Crossbeam Segment at BN18/4
(Platform Level)
Charn Sanit Wong Station – Zone 5



SYMBOL

Erection Piercap (Upst)	Single	Single for Long Span	Eccentric	T-Frame	Partial Frame	Partial Frame over Underpass	Single Station	Partial Frame Station	BOQ	Progress	Remain	%
Erection Segment (Upst)									277.5	0	277.5	100%
Casting Segment (Upst)									314	59	275	87%
Pier Head+Beam (ea.)									4051	2135	1916	47%
Column Step 2 (ea.)									319	119	200	63%
Column Step 1 (ea.)									399	153	246	62%
Pile Cap (ea.)									399	159	240	60%
Piling (ea.)									399	174	225	91%

See Piling Progress Detail

Piling Progress

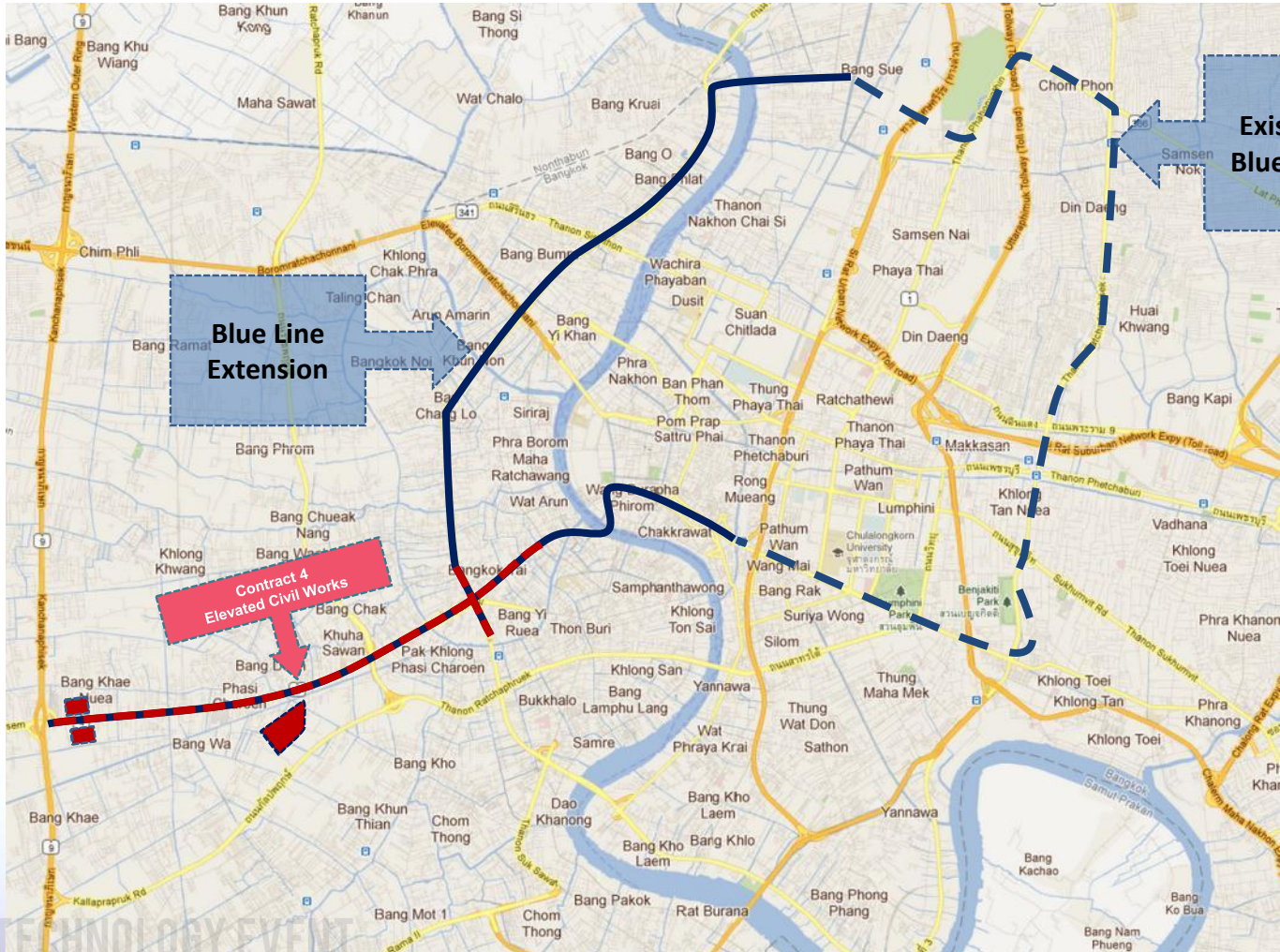
BOQ	Progress	Remain	%	
Dia. 1.00 m. A	60	60	0%	
Dia. 1.20 m. B	216	133	83	
Dia. 1.50 m. C	94	58	36	
Dia. 1.80 m. D	158	147	11	
Dia. 2.00 m. E	17	17	0%	
1.0x2.7 m. G1	234	225	9	
1.0x3.0 m. G2	132	0	132	
1.0x2.5 m. G3	28	0	28	
Total	939	640	299	32%

Legend:

- Blue box: Casting Concrete
- Yellow box: Partial Payment
- Red box: Complete Payment

* Remark: 1. Payment Update to IPA25 May 2013

Current Progress : Contract 4









Column Work at P-BS14-20
Phet Kasem Rd.



Column Work at P-BS14-28
Phet Kasem Rd.





2013.05.20

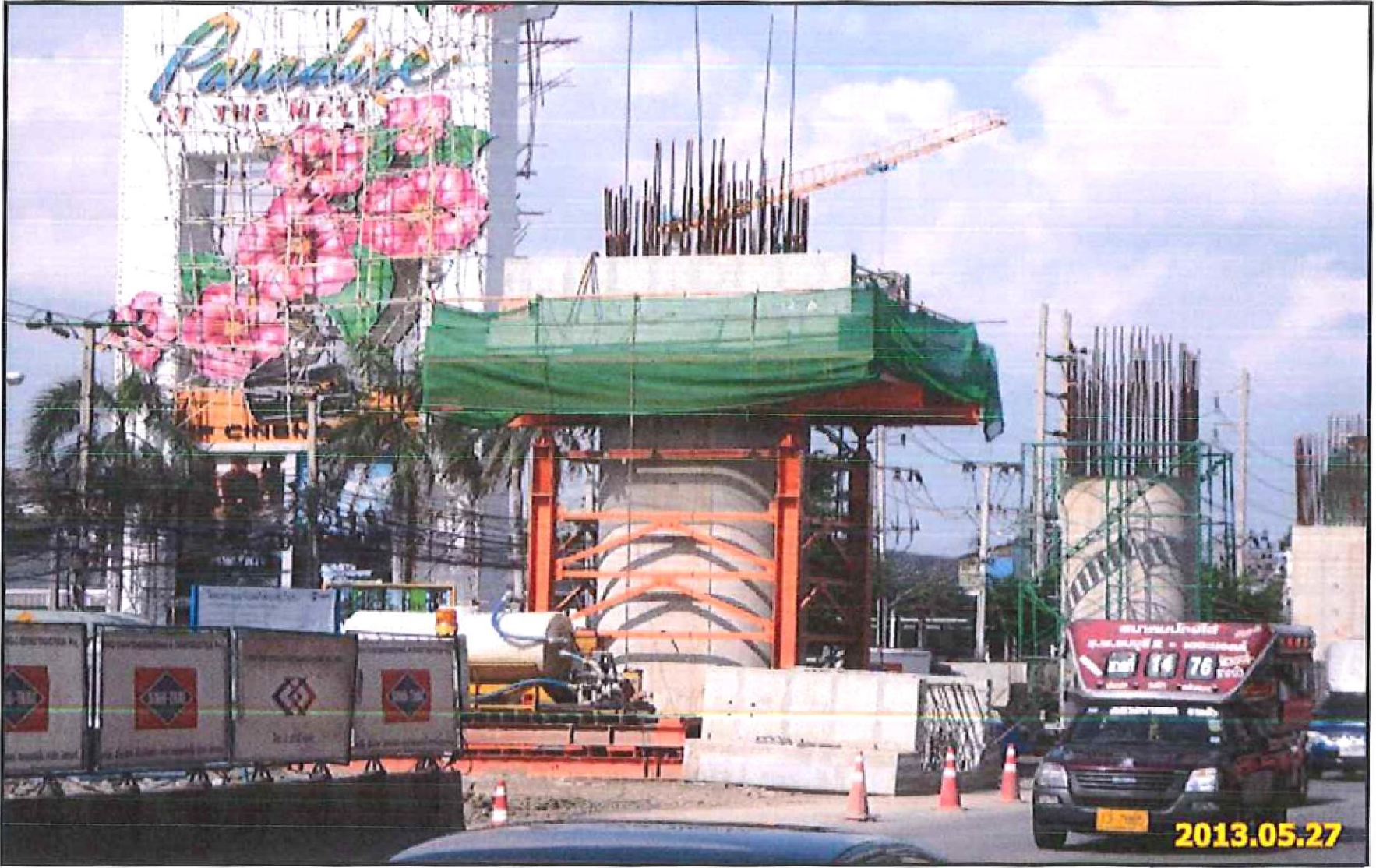


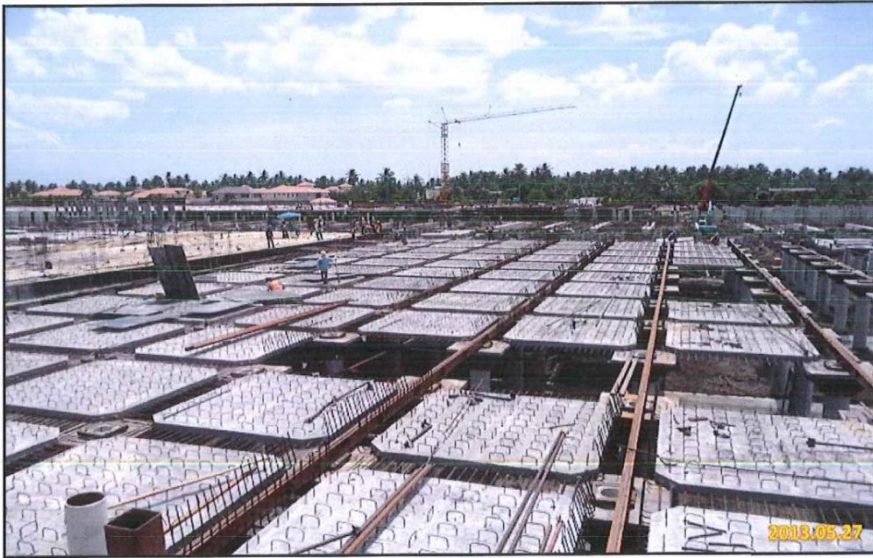










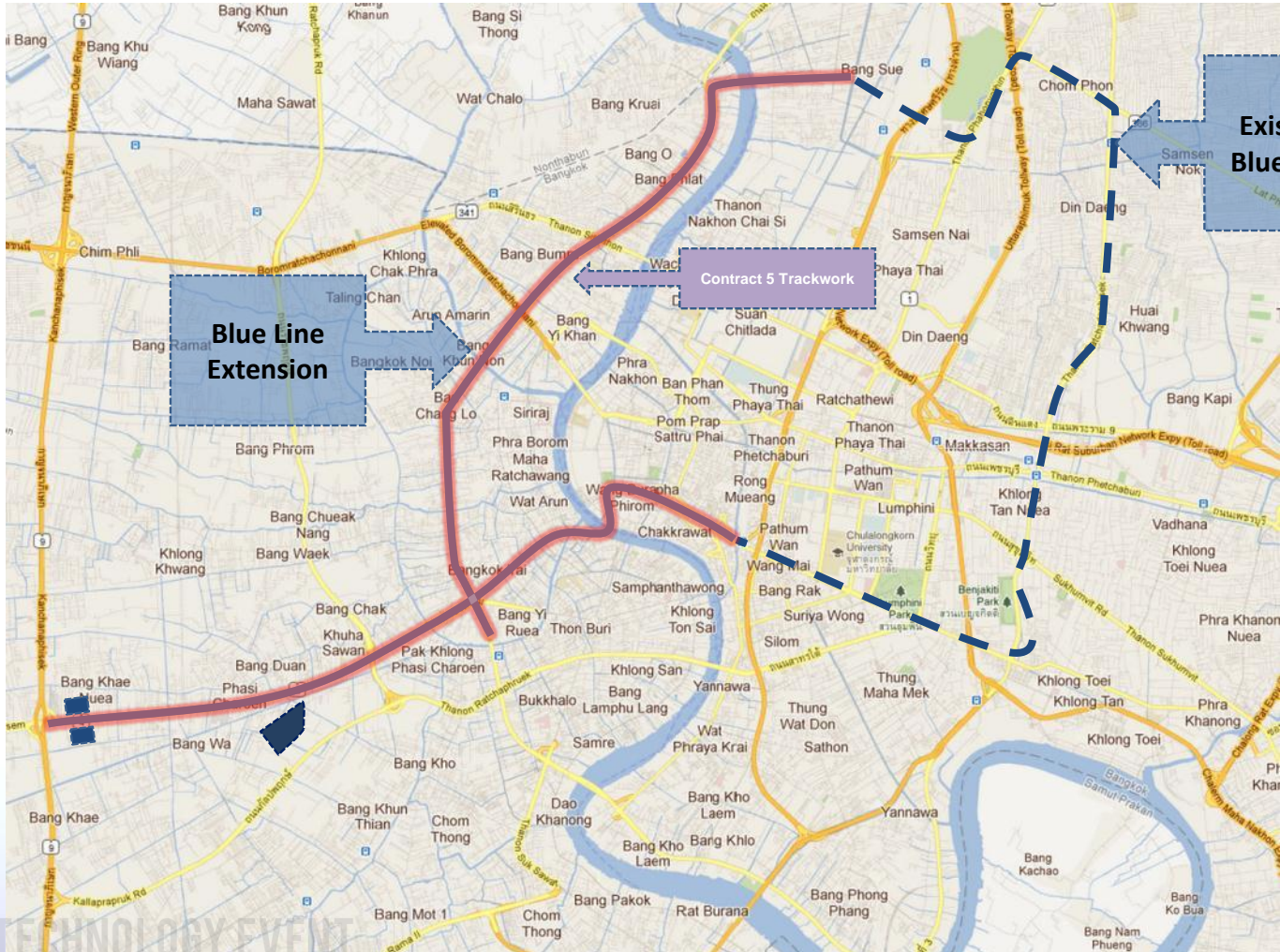




Fixing Reinforcing Bars for Ground Floor Slab at
Park & Ride Building No.1

27.05.2013 13:34

Current Progress : Contract 5



Existing Blue Line

Contract 5 Trackwork

Blue Line Extension





Incoming Material (3rd Rail Component).
Stock Yard No.2. Bang Kean, Ayutthaya



Warehouse No.1



Warehouse No.2



Warehouse No.3



Warehouse No.4





Concrete Sleeper Factory Inspection



AIT TECHNOLOGY EVENT

Site Office/Yard and Site Shop-Fabrication for Trackworks Installation.

Thank you for your attention

