



An Evening Talk on “Lessons Learned From Detailed Design Services for Jakarta MRT Construction Package CP101/102 and CP106”

by Ir. Frankie Cheah

Ir. Frankie Cheah is currently a committee member in the Tunnelling And Underground Space Engineering Technical Division (TUSTD).

Tunnelling and Underground Space Technical Division (TUSTD) organized an evening talk on “Lessons Learned from Detailed Design Services for Jakarta MRT Construction Package CP101/102 and CP106”, on 17th August 2017, at Wisma IEM. The evening talk, attended by 65 participants among them there were Consultants, Specialist Contractors and Developers.

The evening talk was delivered by Mr. Lee Chu Yuan and Mr. Ma Fu Chiang who is both the project Manager of CECI Engineering Consultants Malaysia Sdn Bhd. The evening talk takes two parts which include both Mr. Lee and Mr. Ma to share their experience for both of the packages.



Talk delivered by Mr. Ma Fu Chiang



Talk delivered by Mr. Lee Chu Yuan



Participants at the evening talk

Introduction

Jakarta MRT Phase 1 was located in Jakarta of Indonesia. The Design Consultant for this project is CECI Engineering Consultant for package CP101, CP102 and CP106 with the length of 1.2km, 4.7km and 2.0km respectively. In the first part of the talk, Mr. Lee starts with the brief introduction on each of packages.

The detailed information of each of the packages is shown in table 1 below.

CP101 Package (1 Depot Structure, 1.2km viaduct and 1 station)



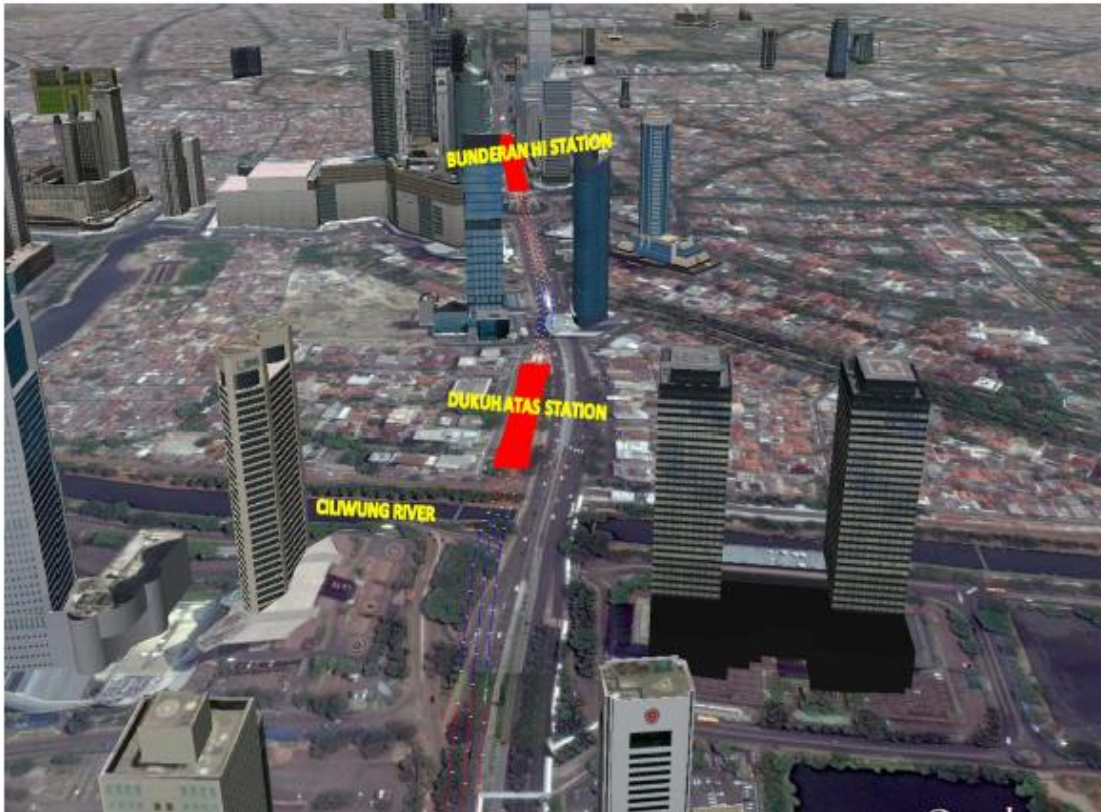
CP101 Package Architectural Perspective

CP102 Package (4.8km viaduct with a 3-span viaduct work and 2 station)



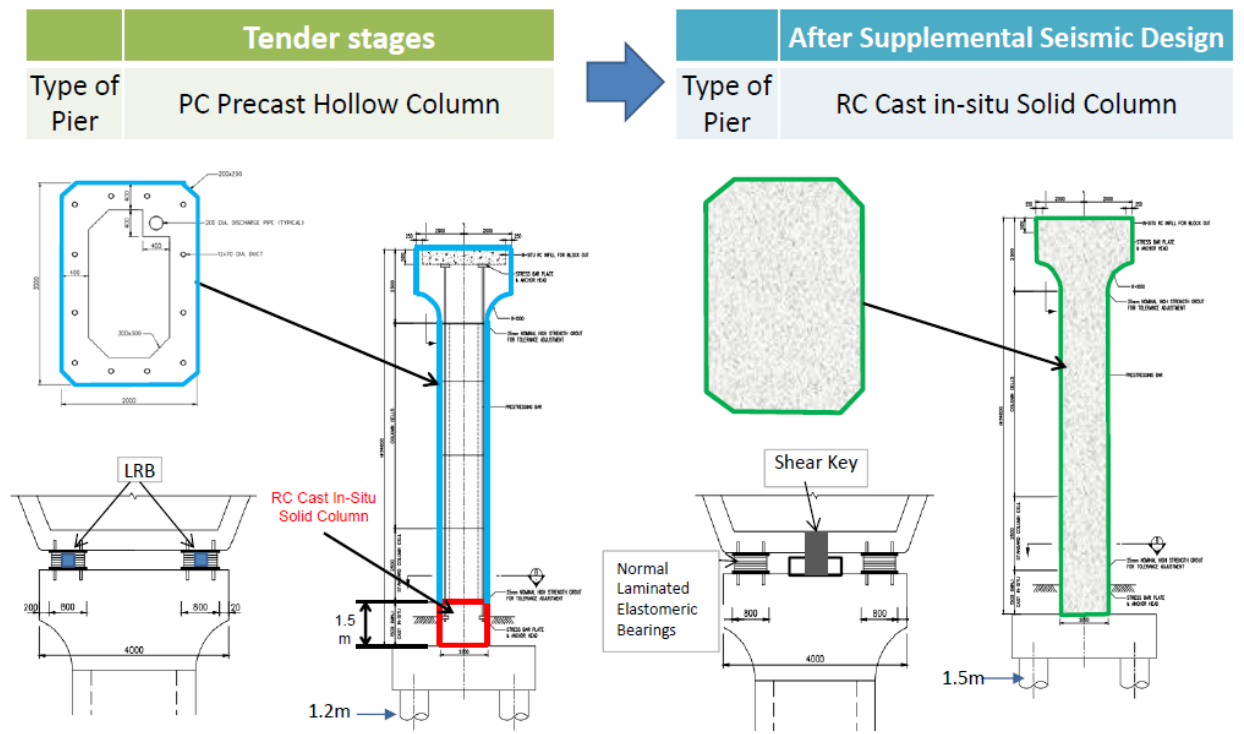
CP102 Package Architectural Perspective

CP106 Package (2km long, including bored and cut & cover tunnel with two underground stations). The station is Dukuh Atas Station and Bunderan Hi Station



CP106 Package: Overall View of the project

Lesson Learned in CP101 and CP102 package-Seismic Design Criteria for Viaduct Structure



For Package CP 101 and CP 102, the tender stage design for the viaduct structure will need to be complied with the performance requirements of Level 1 (ODE) earthquake. Therefore, the viaduct structure construction detail will need to be further adjusting in order to comply with design requirement. The adjustments to cater with the compliance requirement are as followed:-

1. Slight geometry changes on the viaduct reinforced concrete structure
2. Replacement of reinforcement and concrete structure of the viaduct
3. Additional thickening of webs and adjustment on the corner chamfers of the viaduct
4. Additional upsize adjustment on the viaduct's foundation pile to 1500mm in diameter and also with the additional lengthening in depths of the foundation pile.

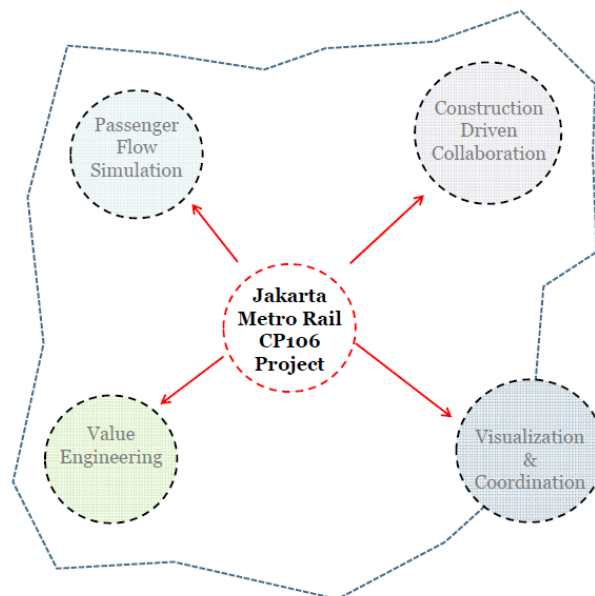
Other Lesson Learned in CP106 package-Project Issues and Challenges

For Package CP 106, the challenges faced and lesson learned are as followed:-

1. Land Acquisition
2. Underpass River and Railway
3. MRT Tunnel very close to existing Building
4. Station located at Curve Alignment Section
5. Evacuation Simulation

Lifecycle Building Information Model (BIM) Application

BIM provides the capability to integrate the amazing works for Architects and Engineers. GIS enriches the BIM models with geospatial data. In this package, BIM will enhanced the safety of the project, expedite the construction driven design collaboration and saving the building cost, construction schedule with consideration of operation expenses and innovative value engineering.



Advantages of Implication of Building Information Model (BIM) in Package CP106



Example of the adopting of BIM in Project: Passenger Flow Simulation

The evening talk was followed by Questions and Answers (Q&A) session from the participant. Finally, as a token of appreciation, Section Chairman, Ir. Frankie Cheah, presented a memento to both speaker, Mr Ma and Mr Lee.