The carrying out of Sub-structure works for usual large-size building project without a basement

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Sub-structure for usual large-size building without a basement still contains a lot of works within ground, such as:

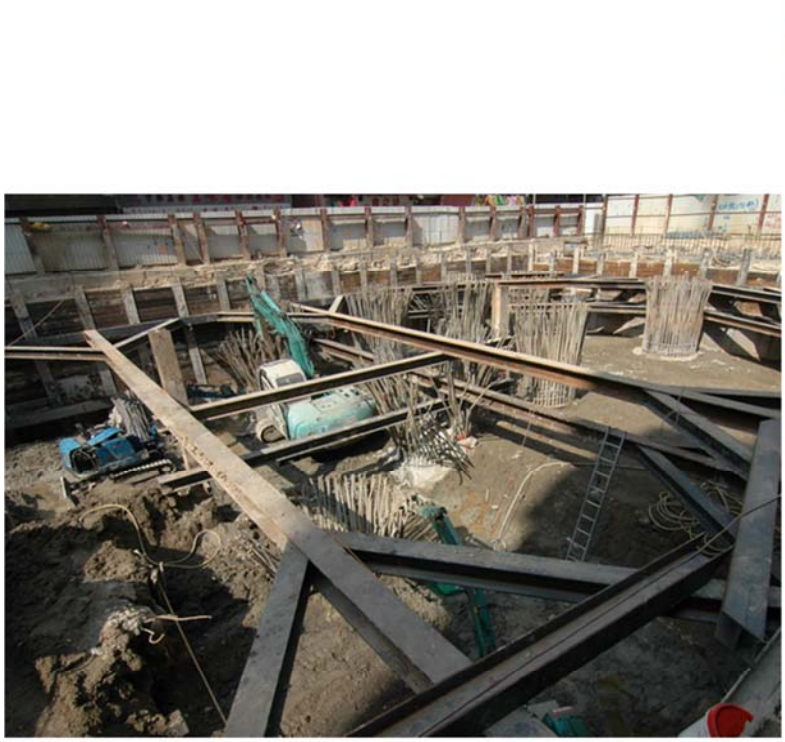
1. Construction of the pile cap which is at least 4 to 5 m below ground level for large-size buildings.
2. Construction of raft foundation for major core structures.
3. Construction of ground columns
4. Construction of ground beams tying up between caps or ground columns.
5. Other underground associated works such as manholes/drainage.
6. Since majority of these works are located quite deep down into ground, excavation up to 5 to 6m deep is often required even without a basement structure.
7. In some cases especially in sloppy site, quite a significant amount of slope work is required in associated with the sub-structure work.
8. Backfilling the excavated void after completion of work.

Example of very simple building – a primary school in HK

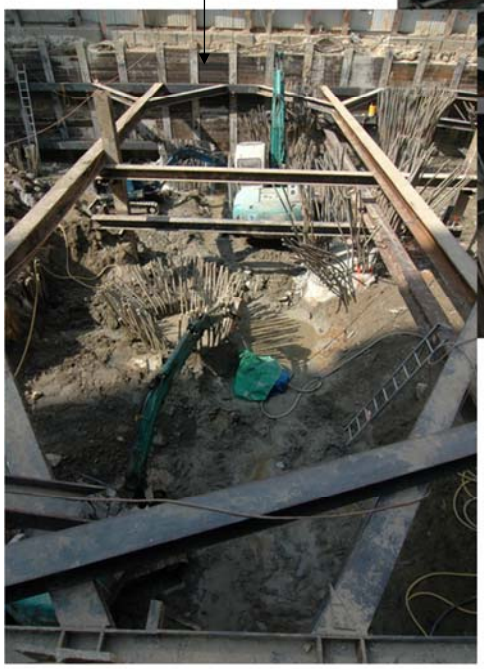
Sub-structure Works, Case 1

URA Redevelopment project at Ship Street, Wanchai, Hong Kong

Excavation down to the formation level. At this level, the pile heads were located and prepared for the receiving of the pile cap or raft foundation for the core wall



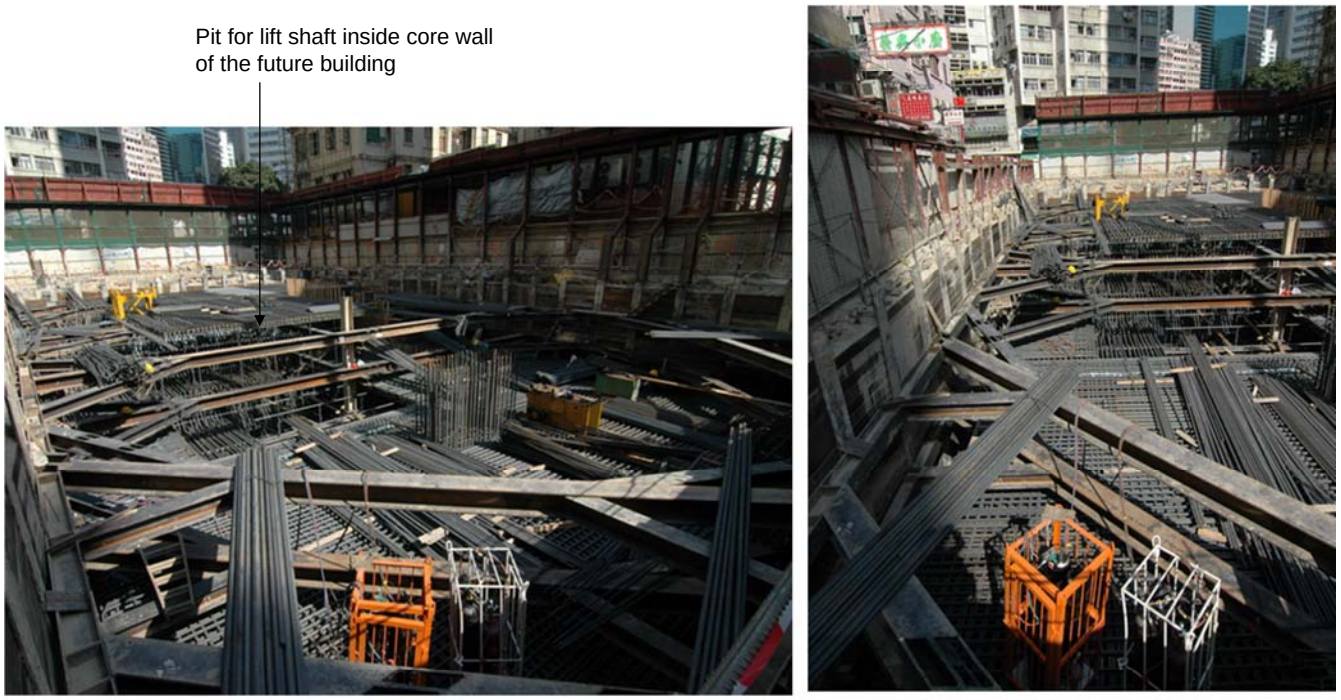
Soldier pile was used as the cut-off wall during excavation



Locate and prepare the pile head before the construction of pile cap

A completed pile cap with starter bar for the future ground beams and columns

Fixing of the reinforcing bars for a gigantic raft completed before placing of concrete



Fixing of the reinforcing bars for a gigantic raft completed before placing of concrete

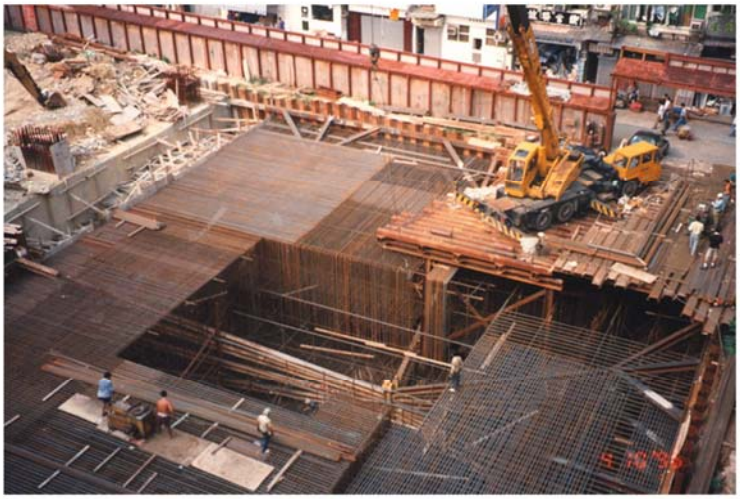
Sub-structure Works, Case 2

Redevelopment project at Junction of Tai Yuen Street and Queen's Road East, Wanchai, Hong Kong

Early stage of excavation to form the pit for the raft foundation

Bore-pile used as firm base for the shoring support to cut-off wall

Excavated pit for the forming of the building raft/sub-structure



Construction/forming of the raft, lift pit and the core wall structure

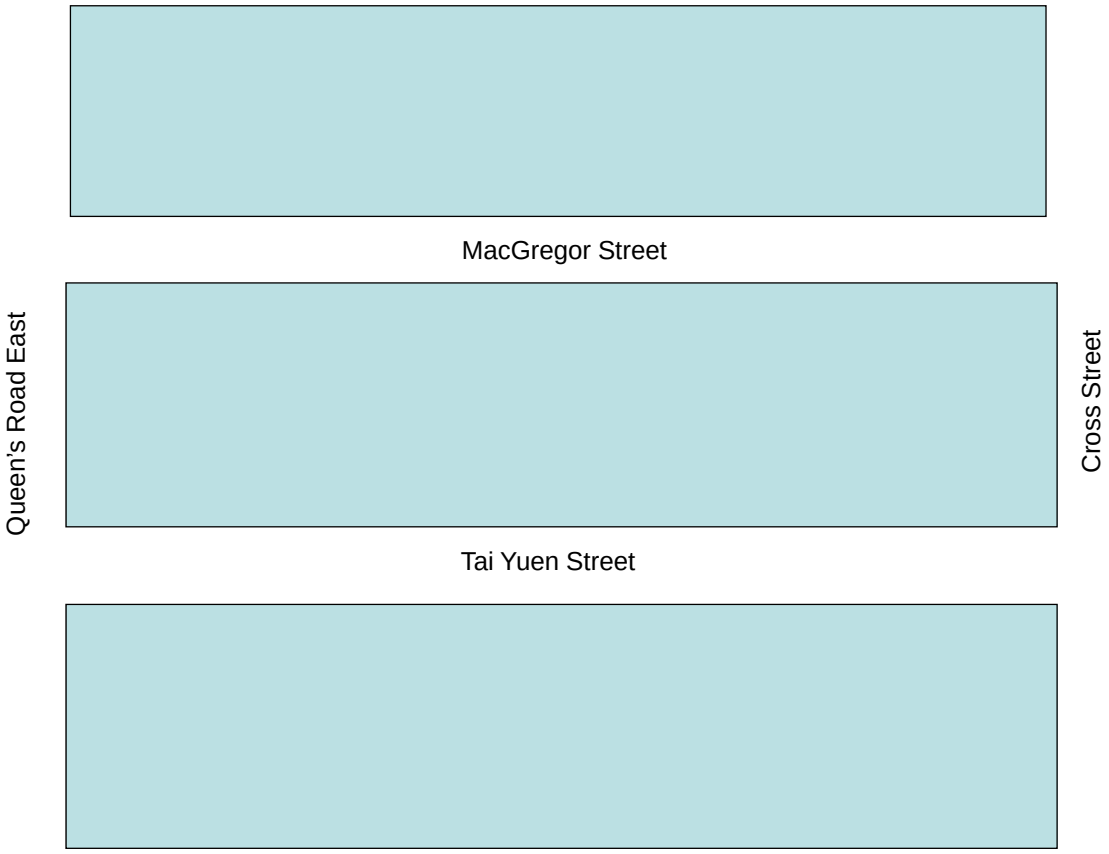
Drainage installation before backfilling the sub-structure

Backfilling in stage to meet the progress of work

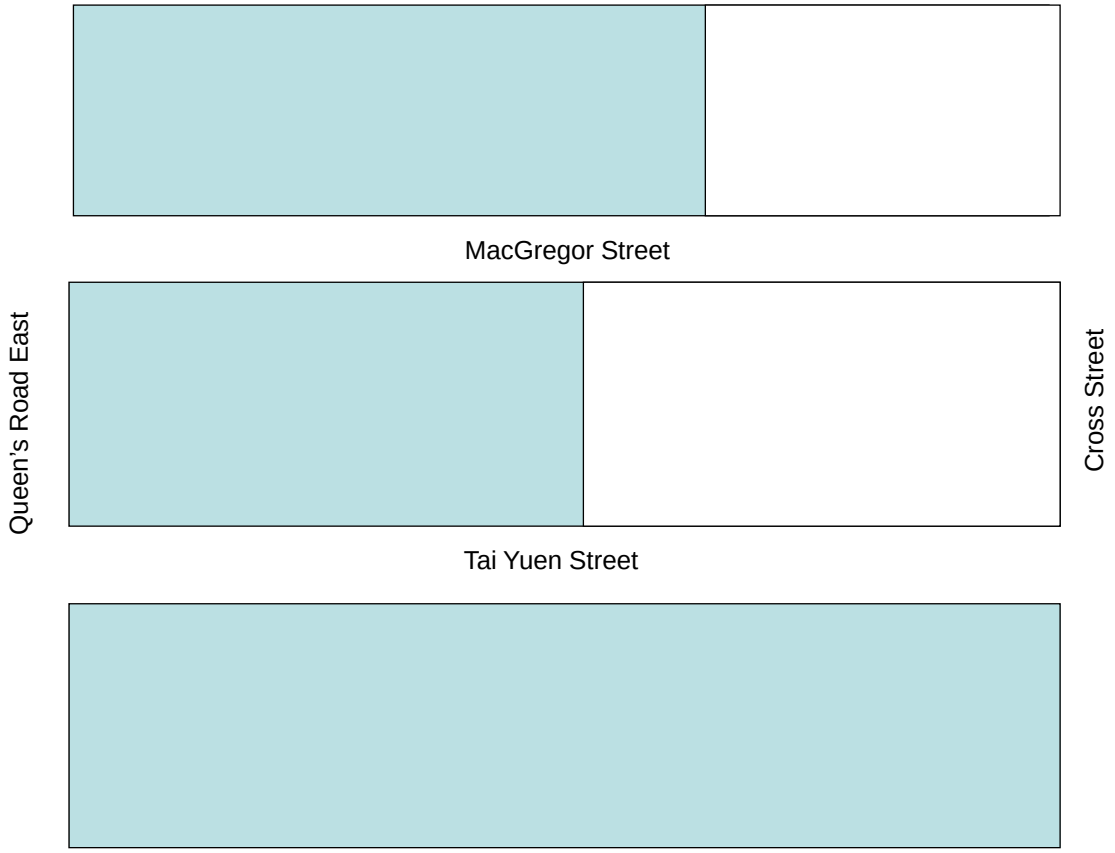
Sub-structure Works, Case 3

Redevelopment project at Junction of Cross Street and MacGregor Street, Wanchai, Hong Kong

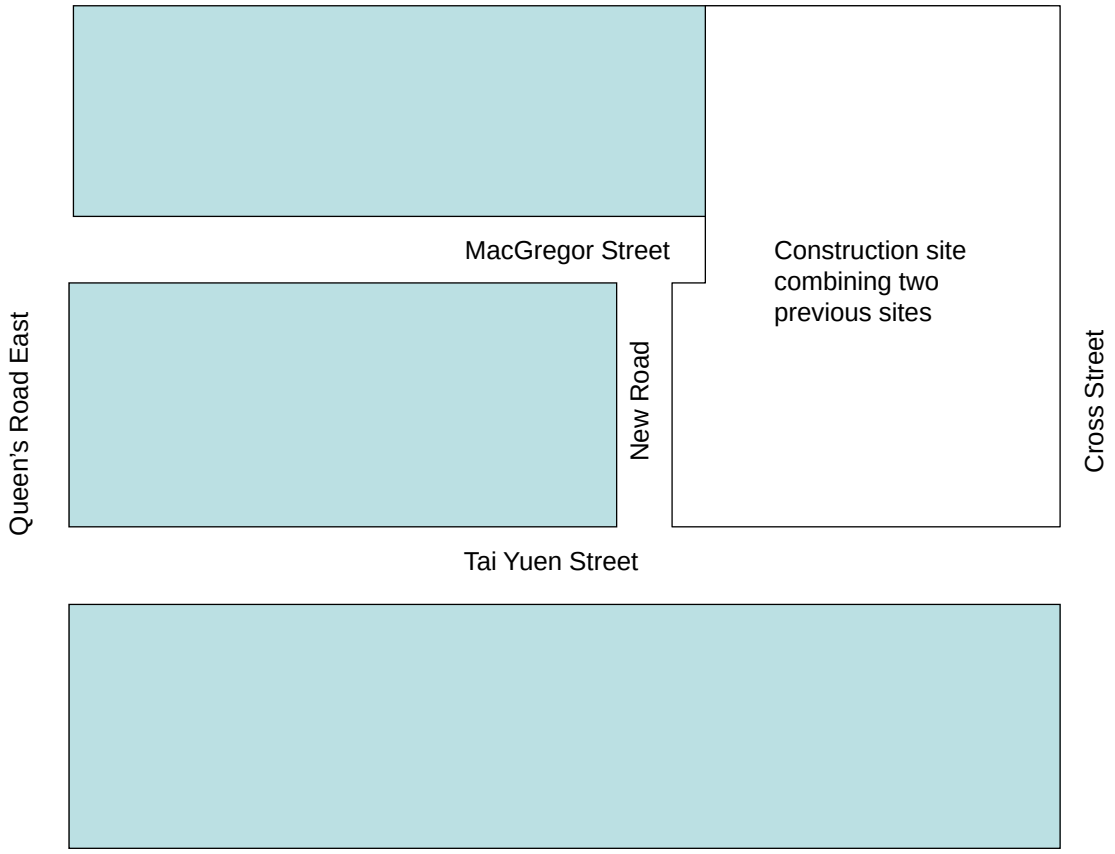
The site before excavation for the pile cap and construction of sub-structure



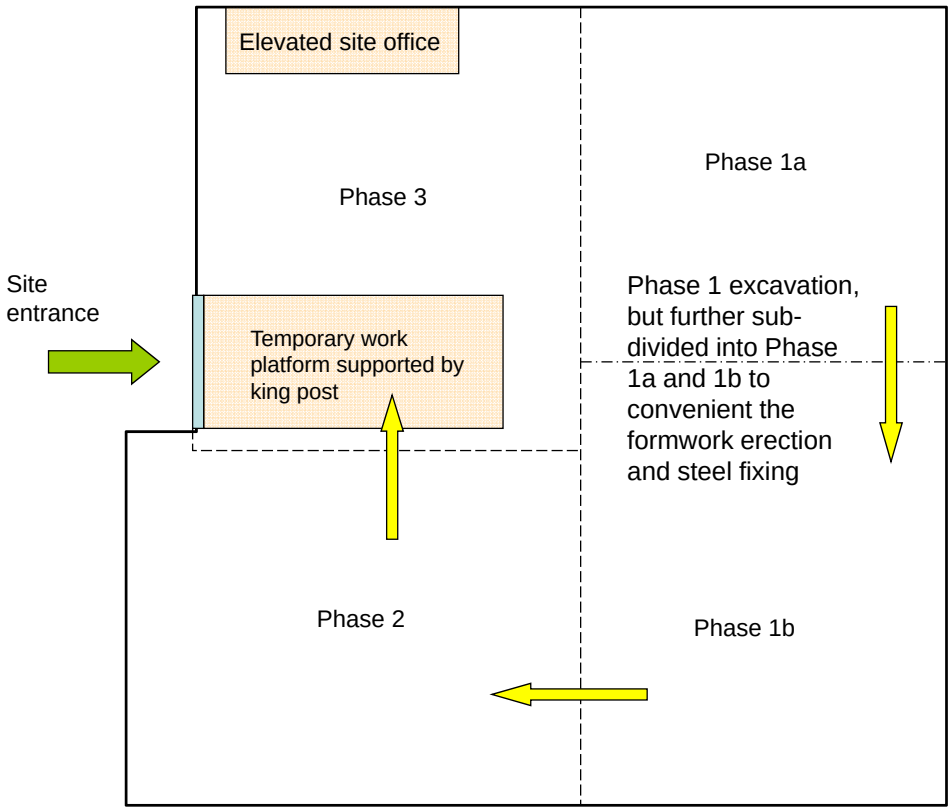
Site before demolition in 2008



Site after demolition in 2009

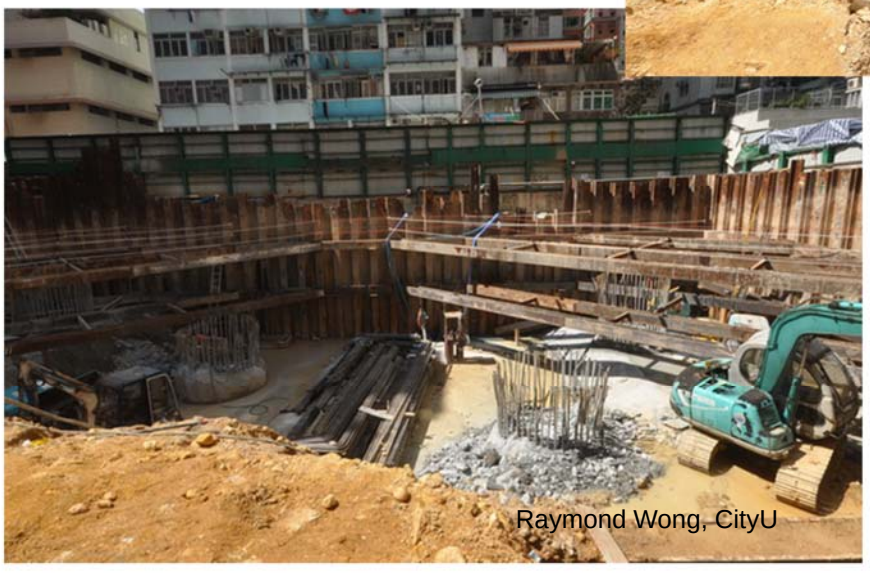


Site after demolition in 2009



Phasing arrangement for the sub-structure excavation

Excavation to form the Phase 1 of the pile cap



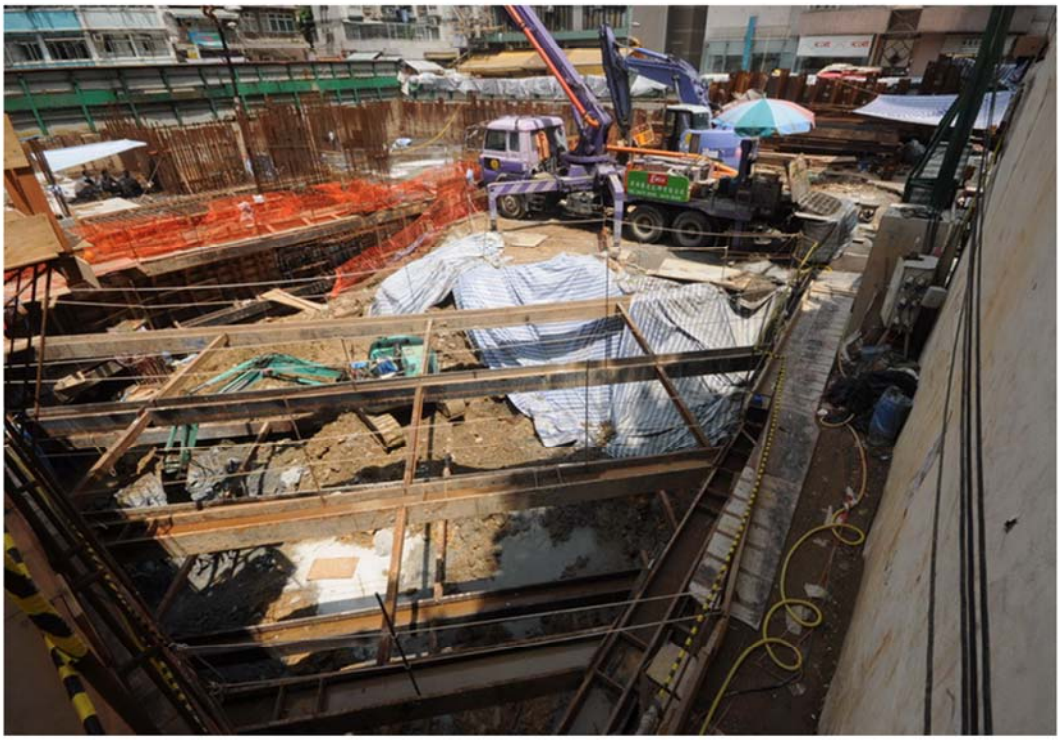
Phase 1 pile cap with reinforcing bar erected ready for concreting

Construction jointing detail with the starter bars provided for connecting to the pile cap in phase 2 and 3

Excavation in
Phase 2 location

Sub-structure in Phase 2 location after concreting

Excavation in Phase 3 location

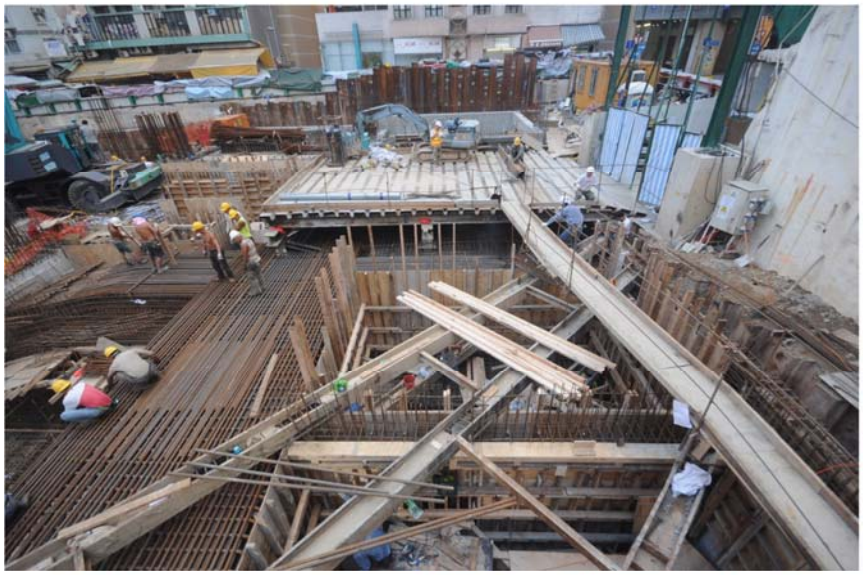


Jointing of the sections from Phase 1 to 3

Work platform will be embedded together with the Phase 3 concrete. The supporting frame will be weld-cut after concreting

Close-up detail in the Phase 3 excavation and the soil support

Close-up detail in the Phase 3 – steel fixing for the pile caps and ground beams

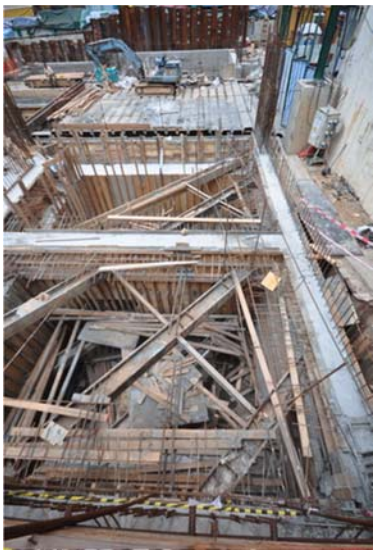






Close-up detail in the Phase 3 – steel fixing for the pile caps and ground beams

Phase 3 after concreting, signifying the basic completion of the entire substructure construction



Phase 3 after concreting, formwork is ready for removal




Connection/construction jointing detail between various phases & the future structure




Temporary work platform will be dismantled after final clearance of site before handing over.

Completion of the sub-structure work ready for the handing over to the Main Contractor for the superstructure works

Sub-structure Works, Case 4

City University Administration Building, Phase 3

Other example for sub-structure works – City University new Administration Building

Forming the pile cap for the building core

Other example for sub-structure works – City University new Administration Building

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Other example for sub-structure works – City University new Administration Building

Ground beam details

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Site formation almost completed ready for the handling over for superstructure construction

Other example for
sub-structure works

Other example for sub-structure works for larger building project – MTR Tseung Kwan O Depot

End of presentation