

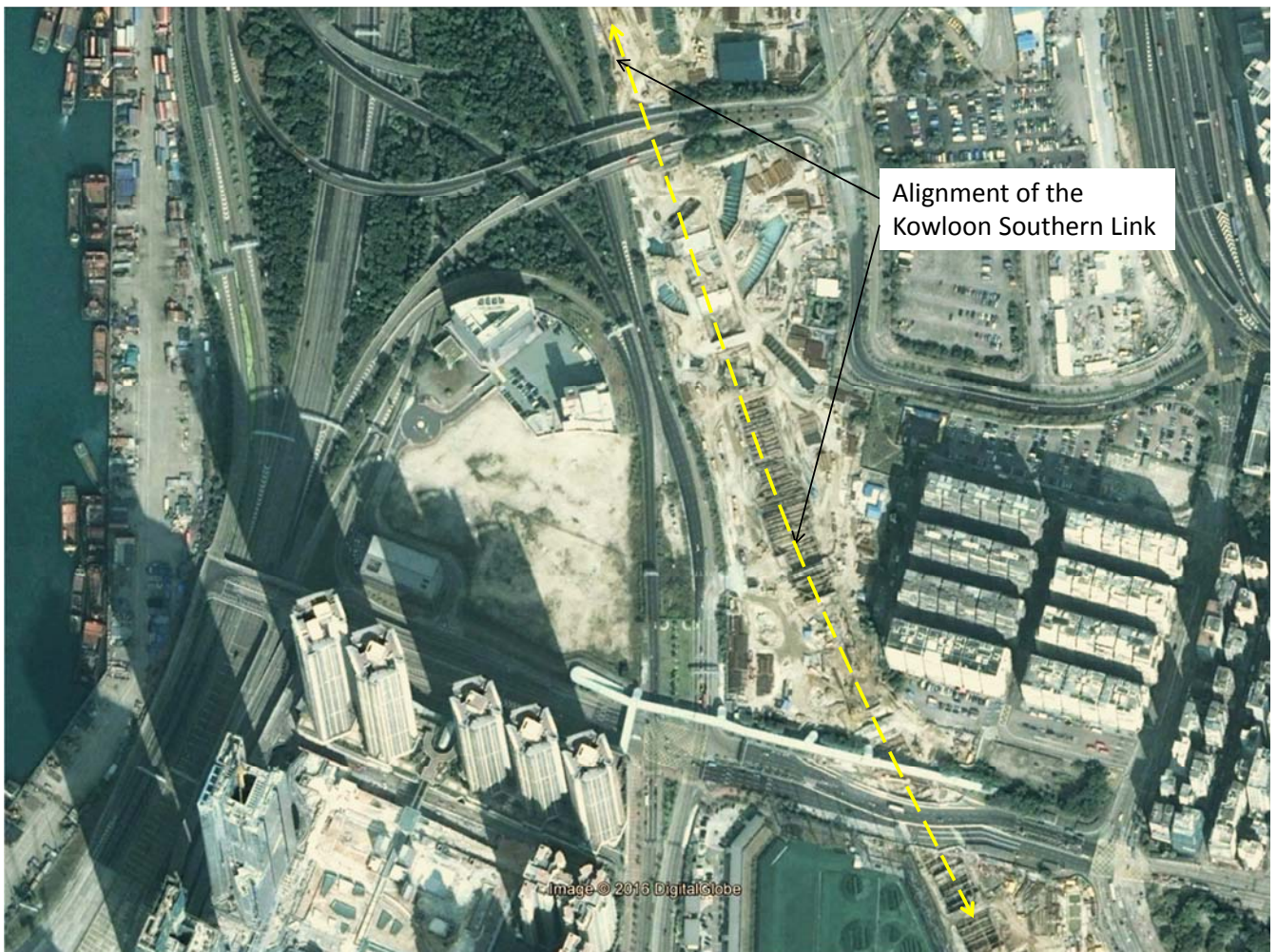
An construction update of the Express Rail West Kowloon Terminus Part 2

A visual record/summary
prepared by Raymond Wong
as part of his study of the
ERL project since 2010

Presentation prepared in March 2016

Project progress highlight,
West Kowloon Terminus Station North

(Mainly for Contract 810B)





The construction of the cut-and-cover tunnel as seen in early 2015



Site for the approach tunnel as seen in late 2010



The approaching tunnel heading north as seen in mid 2012



The approaching tunnel heading north as seen in August 2013





The approaching tunnel heading north as seen in early 2014

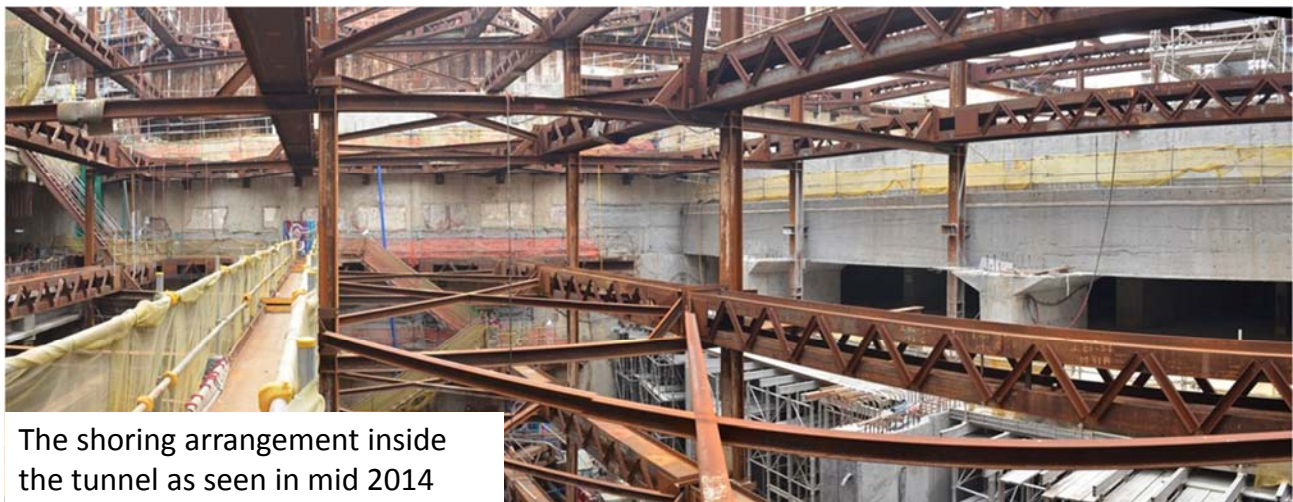


Excavation getting down crossing the Jordan Road diversion

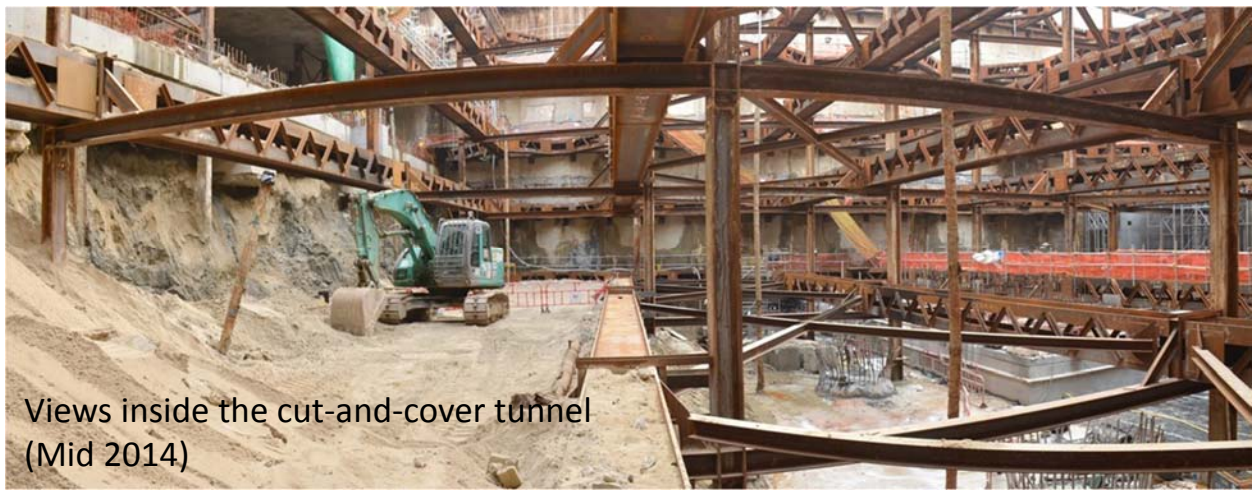




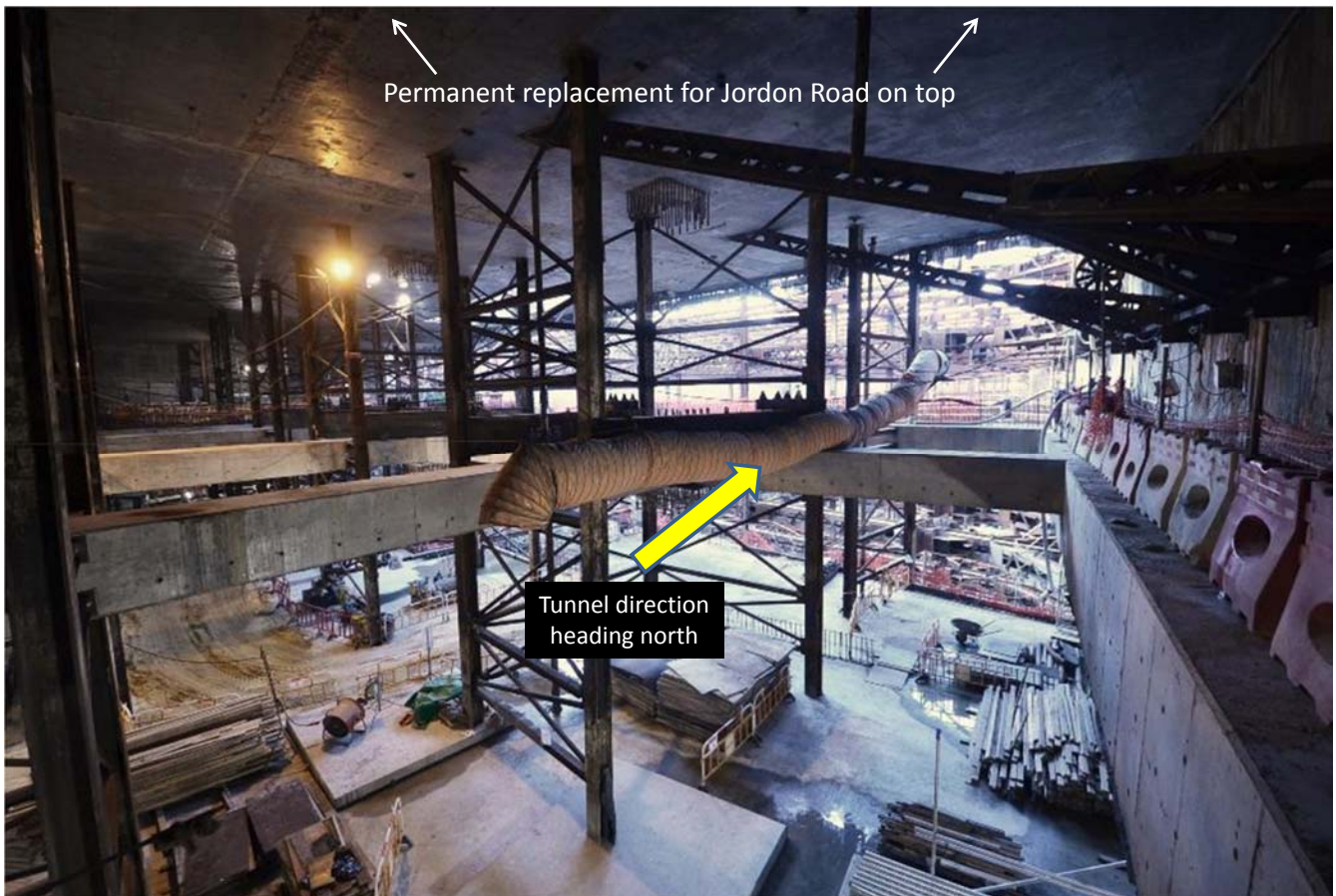
The approaching tunnel constructed using cut-and-cover method as seen in mid 2014



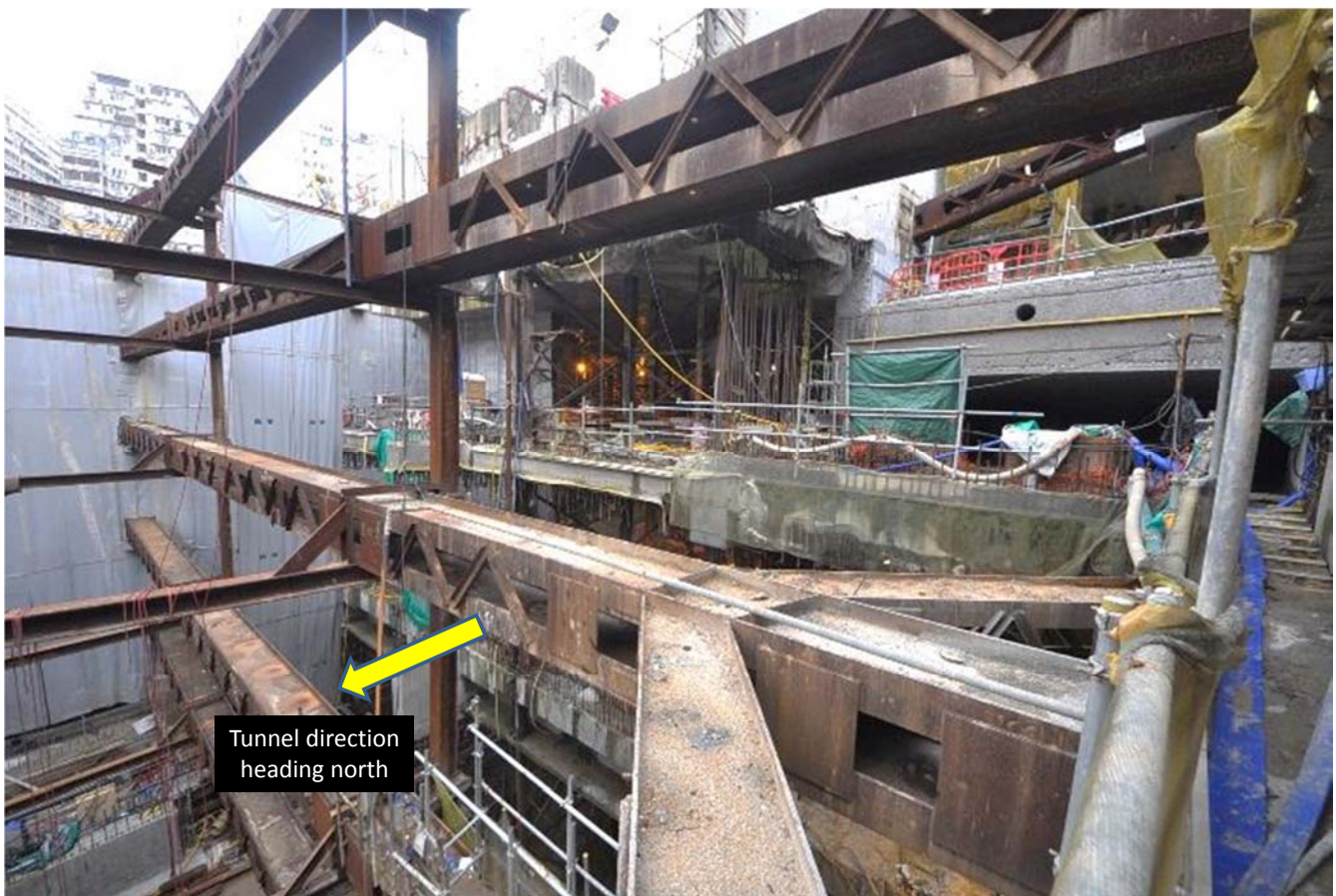
The shoring arrangement inside the tunnel as seen in mid 2014



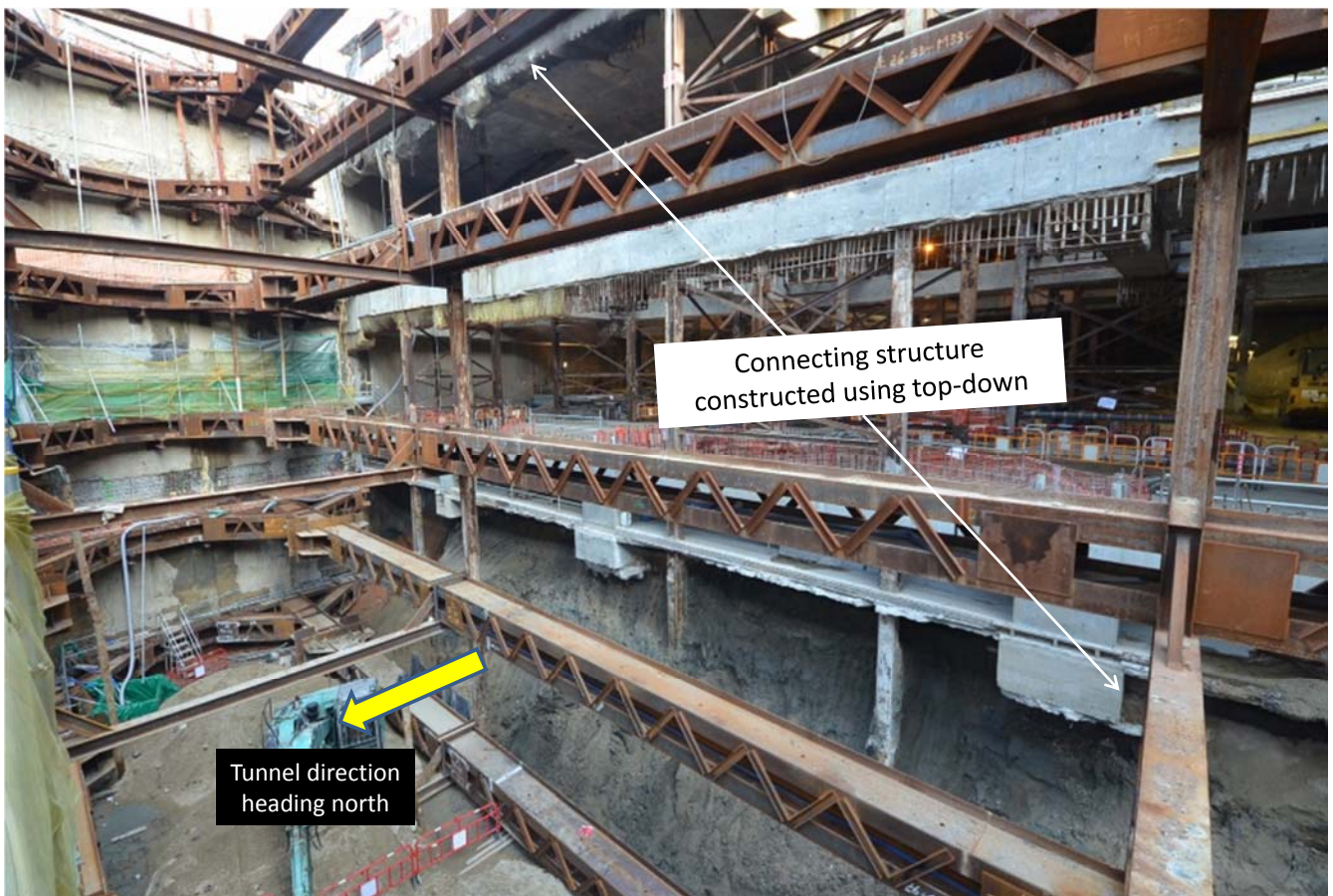
Views inside the cut-and-cover tunnel
(Mid 2014)



Connecting section between the approach tunnel & the terminus structure (Feb 2014)



Connecting section between the approach tunnel & the terminus structure (May 2015)

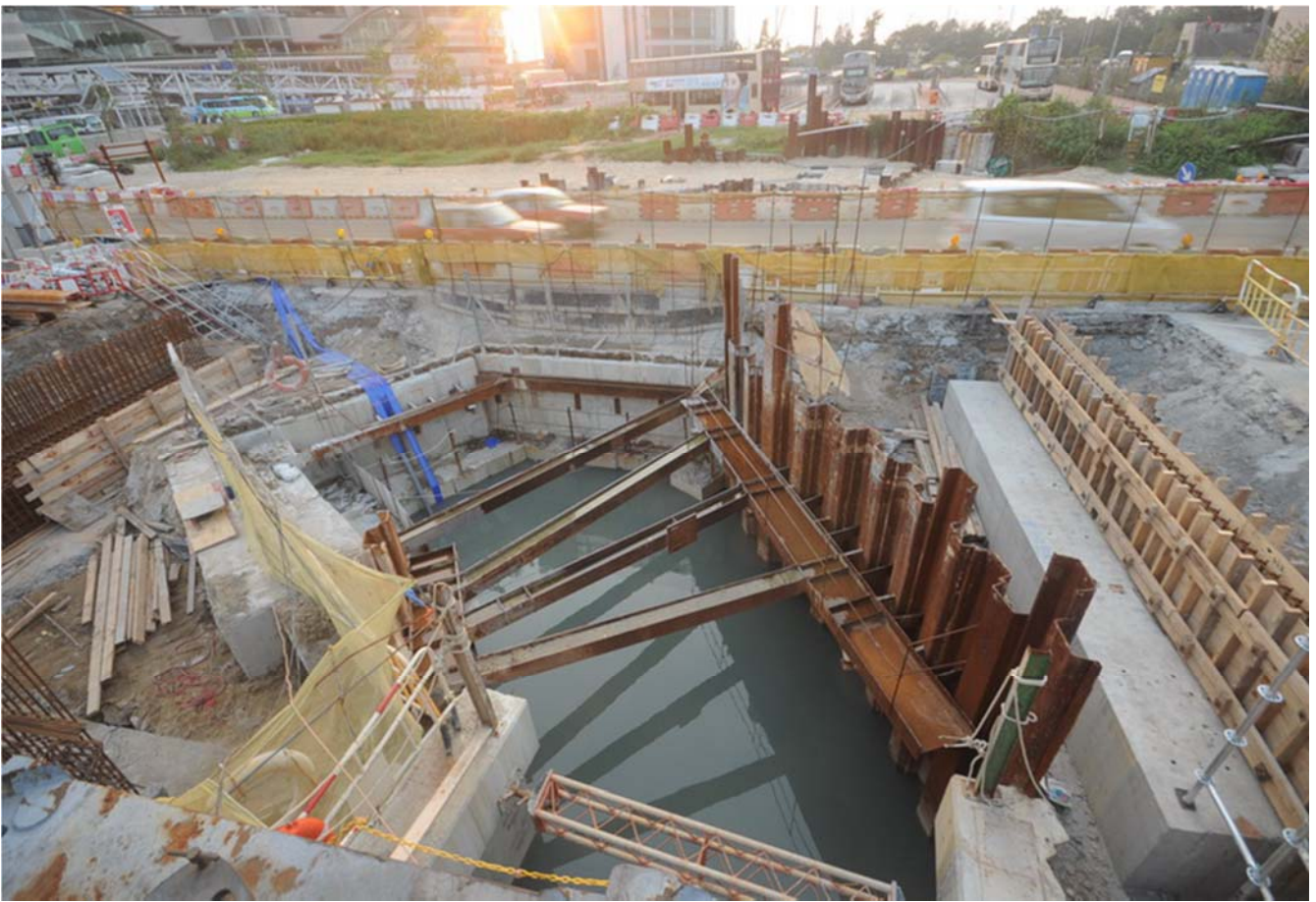


Connecting section between the approach tunnel & the terminus structure (Feb 2014)



Diversion of existing
storm water nullah





Diversion of existing storm water culvert





View in late 2015
(majority of the
tunnel excavation
being back filled)



Close up satellite view of the tunnel section at Waterloo Road Interchange



← Tunnel section constructed using TBM

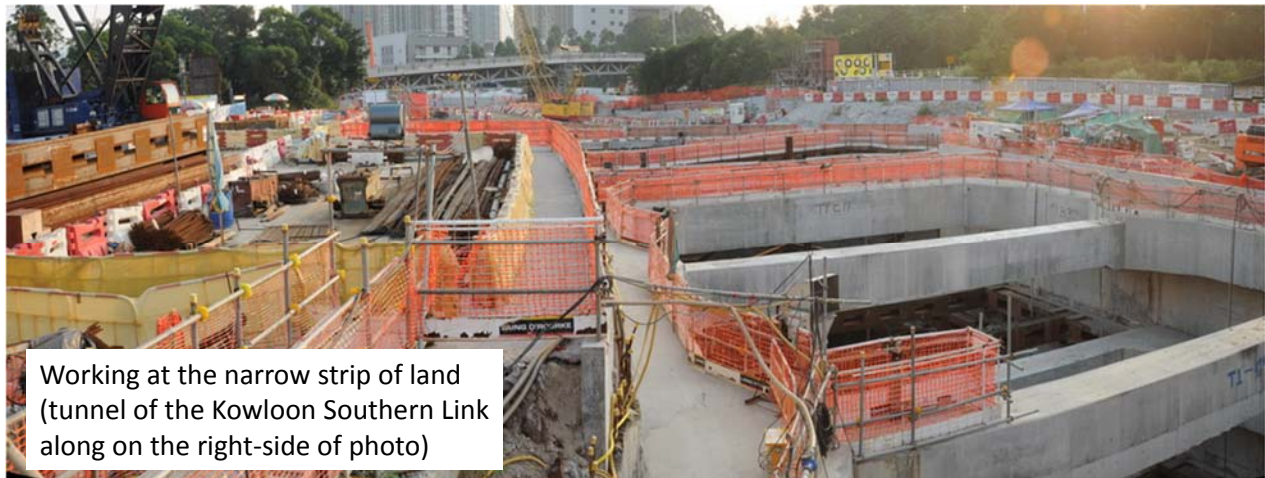


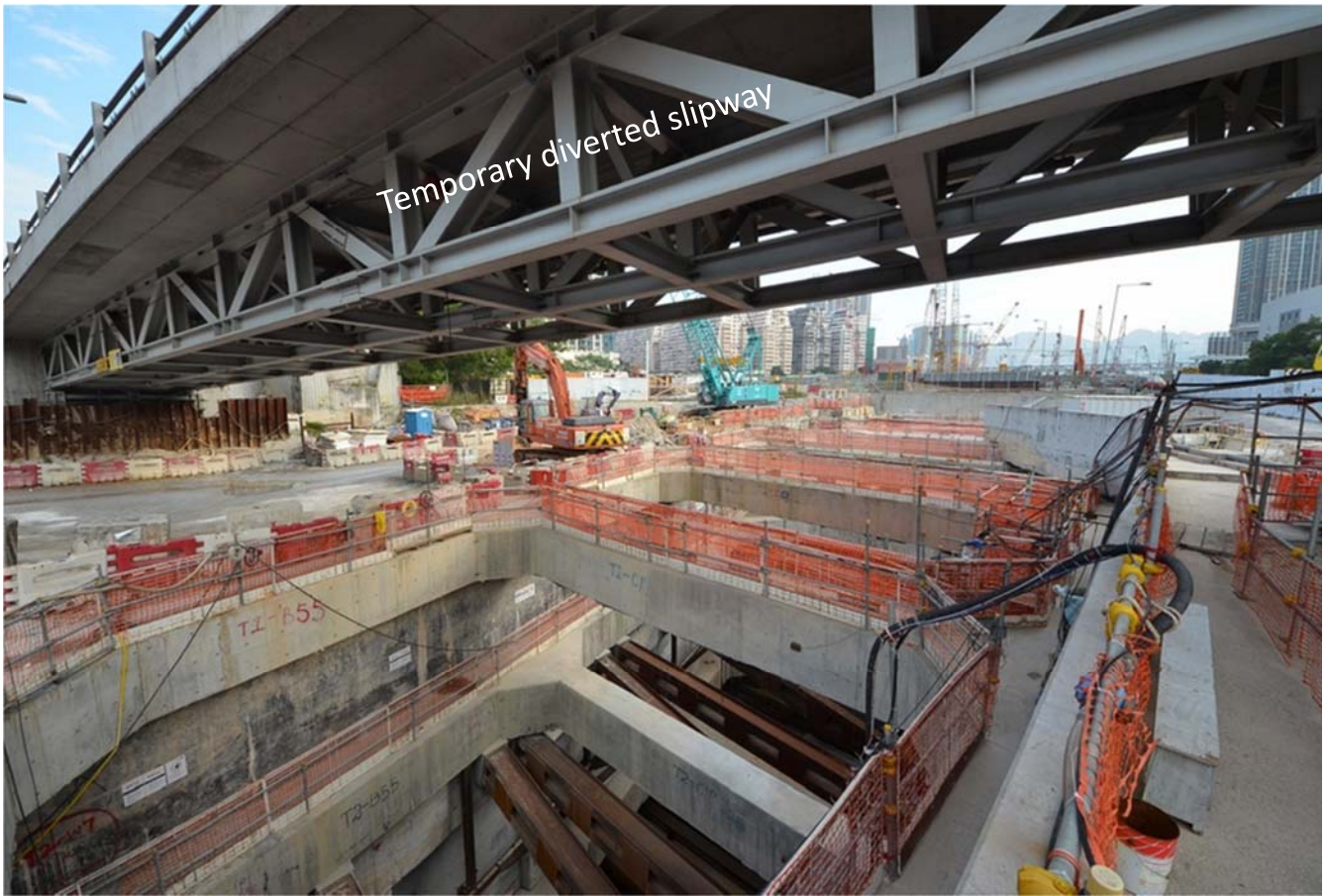


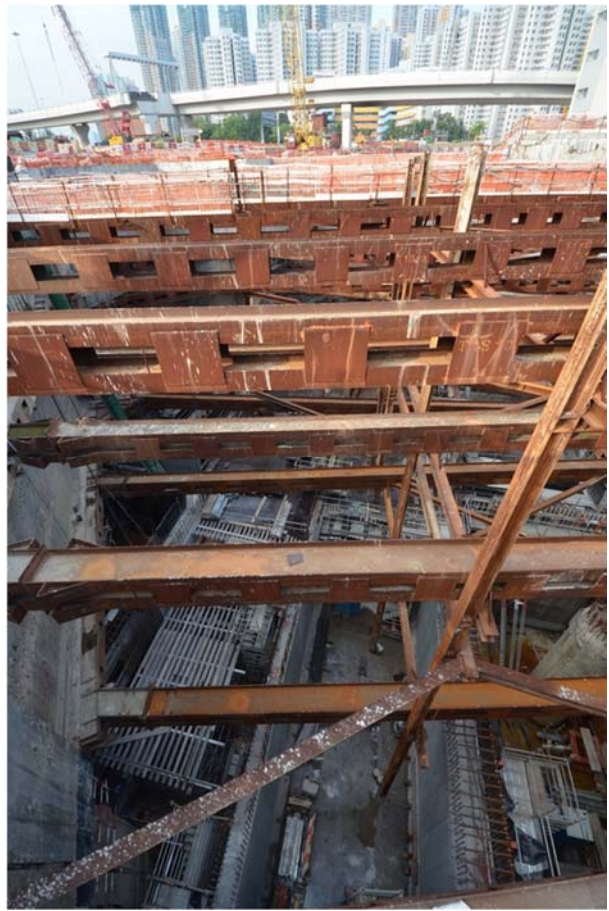


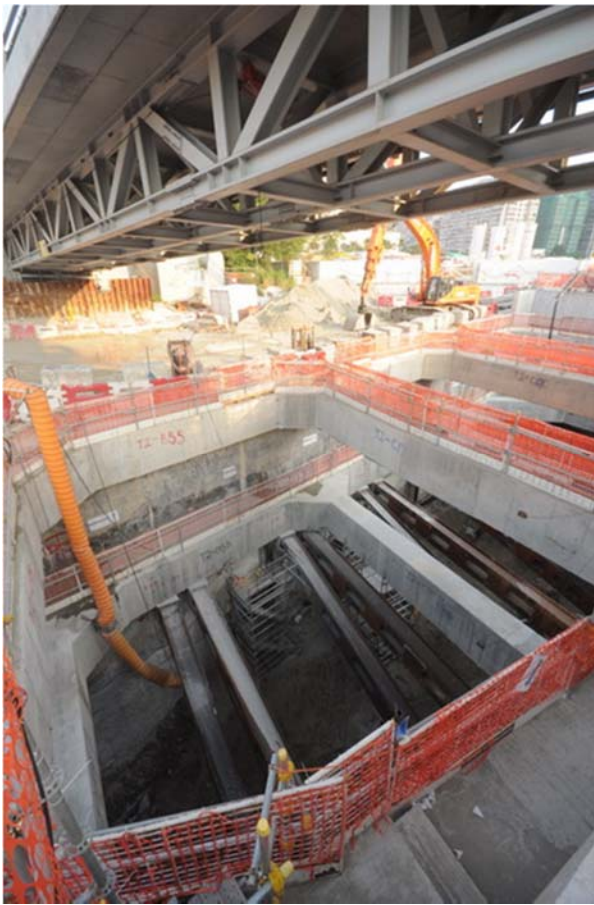
Temporary
diverted slipway

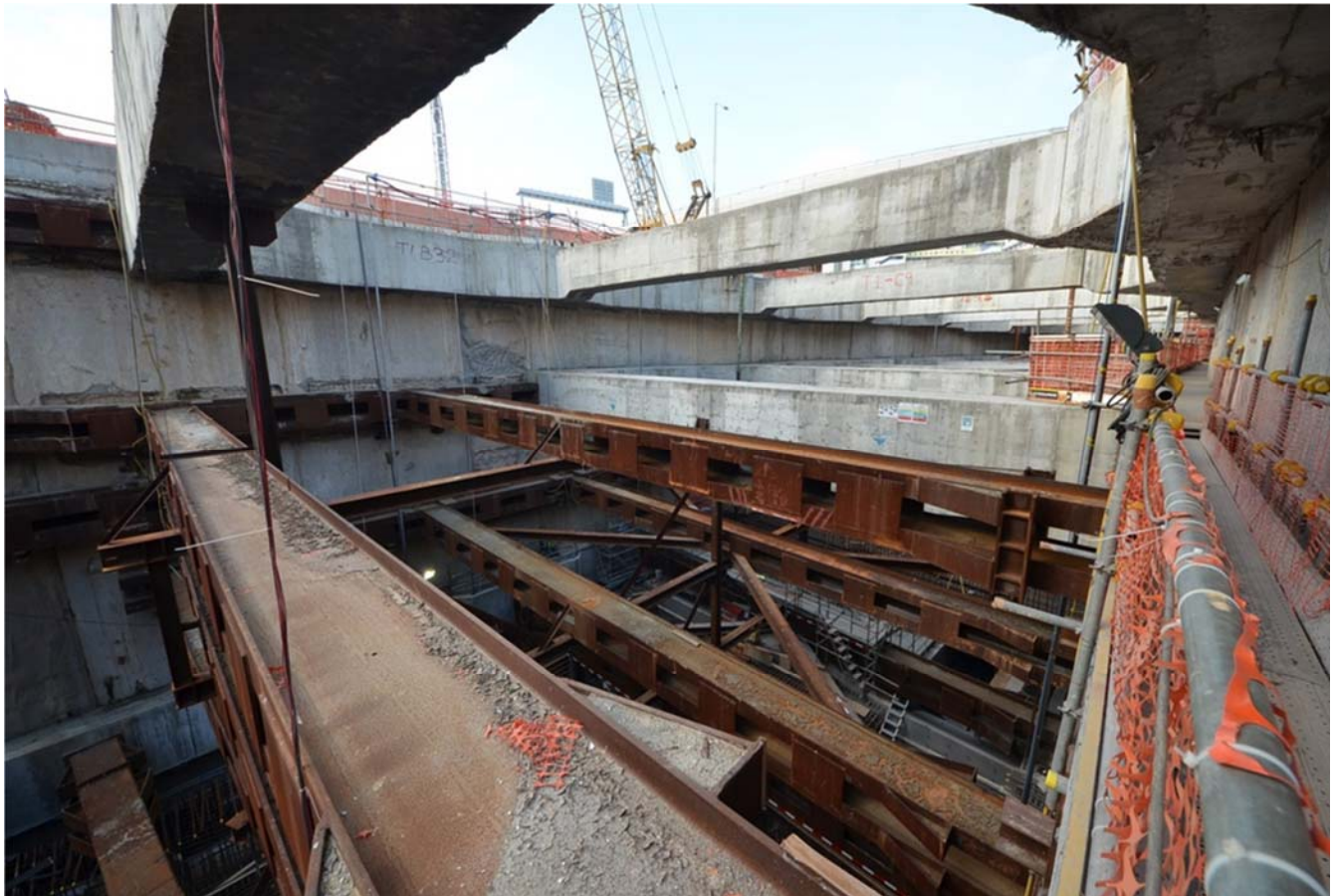


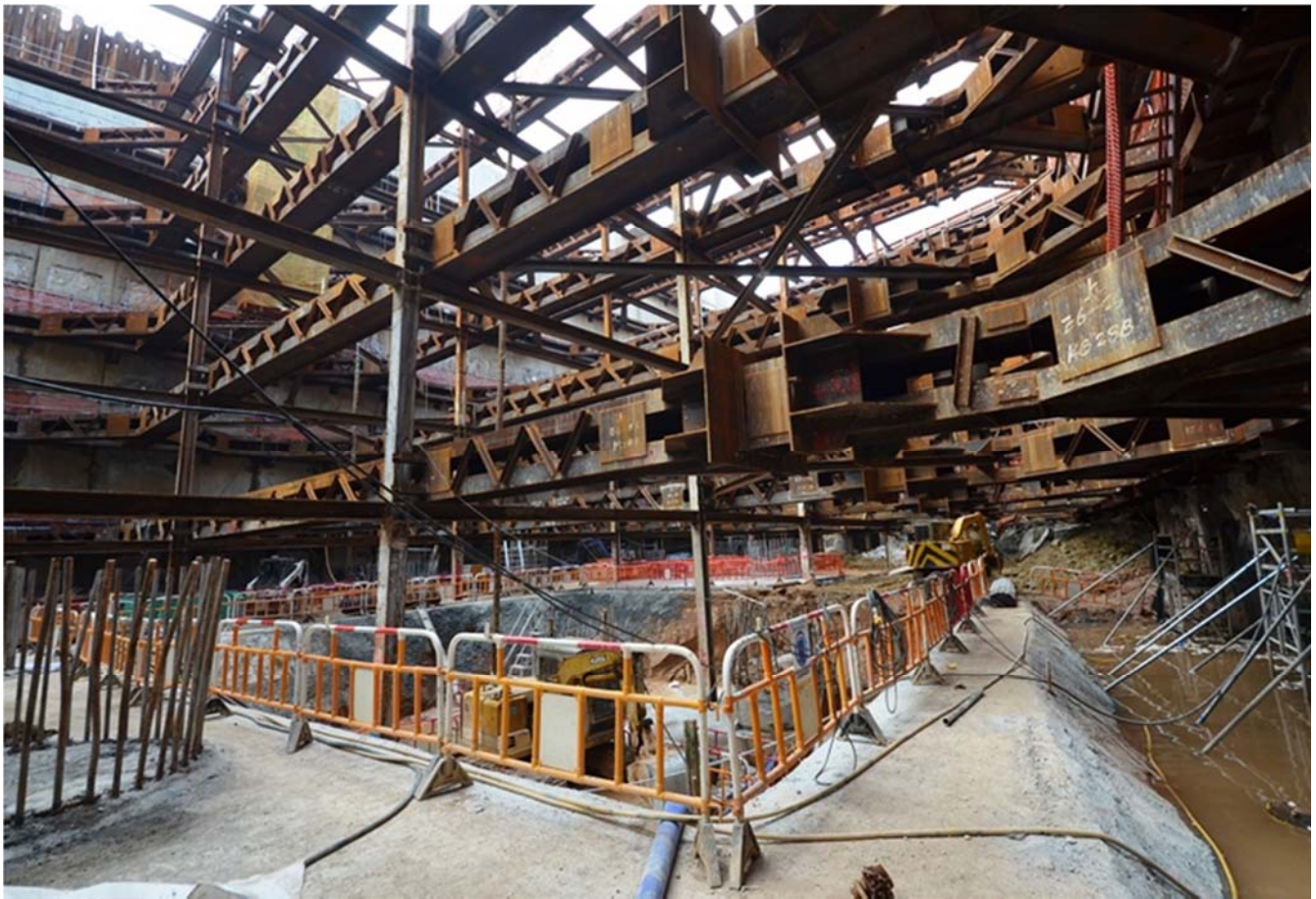












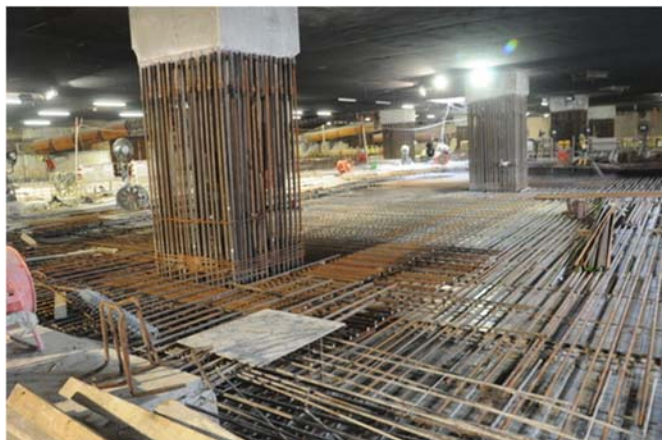
Working inside the cut-and-cover tunnel (on the northern-most tip of Terminus site)



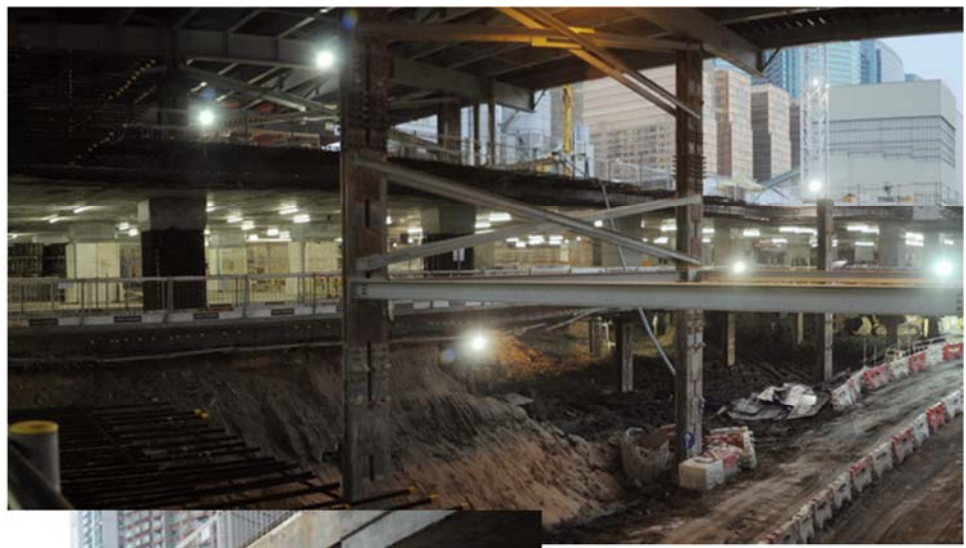
Project progress highlight,
Station portion using top-down construction

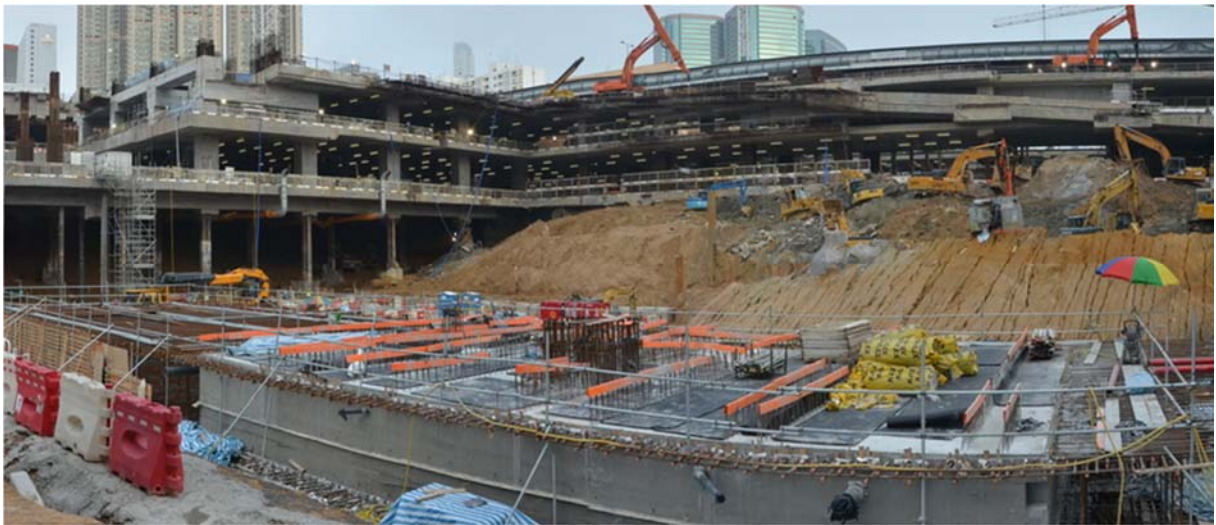


Construction using partial top-down approach





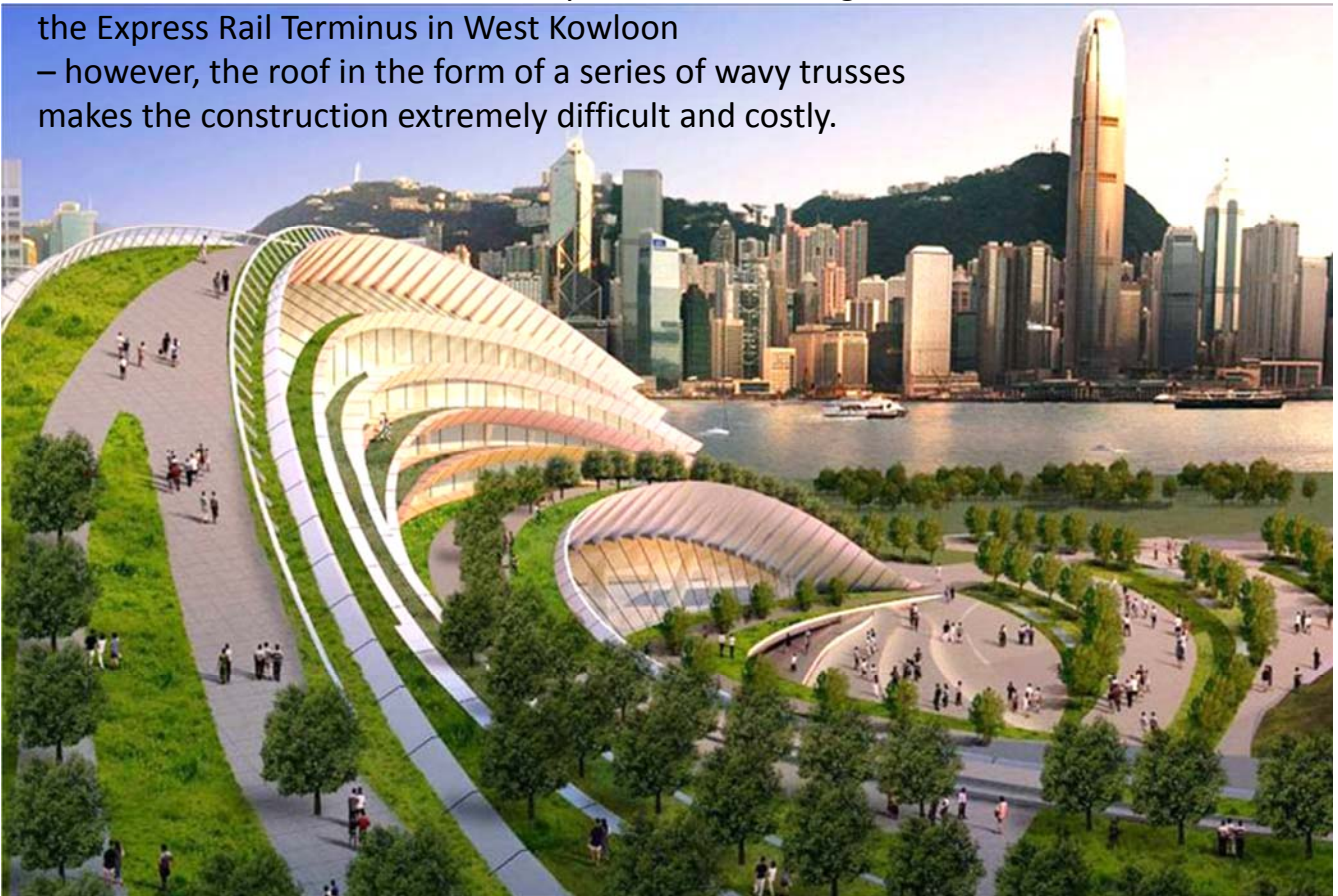






Project progress highlight,
Construction of the canopy truss

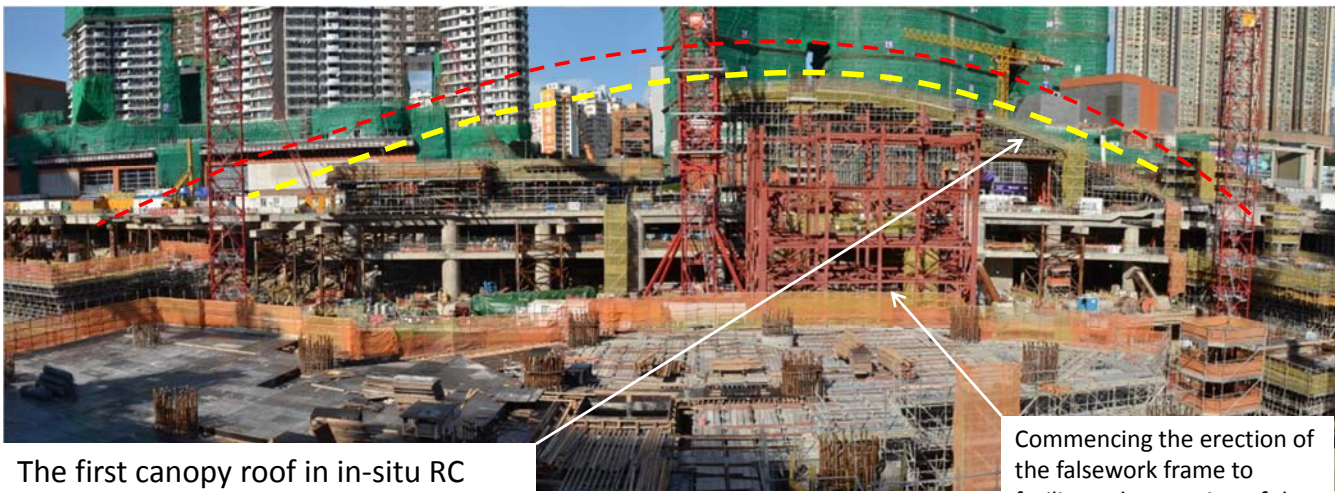
The roof of the terminus main lobby iconized the design of the Express Rail Terminus in West Kowloon – however, the roof in the form of a series of wavy trusses makes the construction extremely difficult and costly.



The main entrance to the Express Rail Terminus in front of the wavy canopy

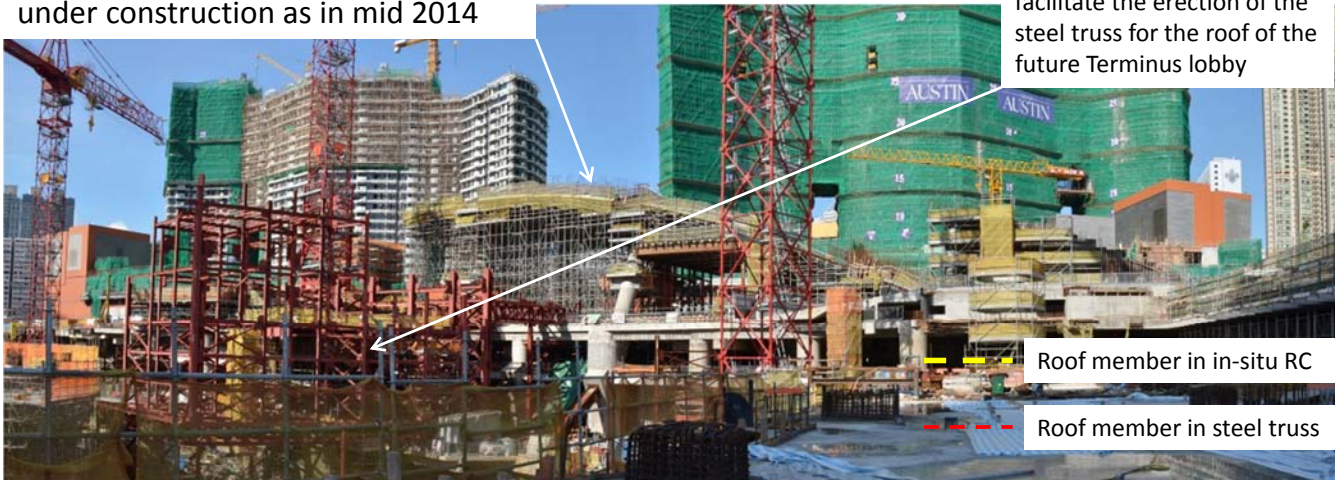






The first canopy roof in in-situ RC under construction as in mid 2014

Commencing the erection of the falsework frame to facilitate the erection of the steel truss for the roof of the future Terminus lobby



Roof member in in-situ RC

Roof member in steel truss



Closer up seeing the construction of the in-situ RC canopy roof





Early stage seeing the falsework to support the erection of the canopy truss

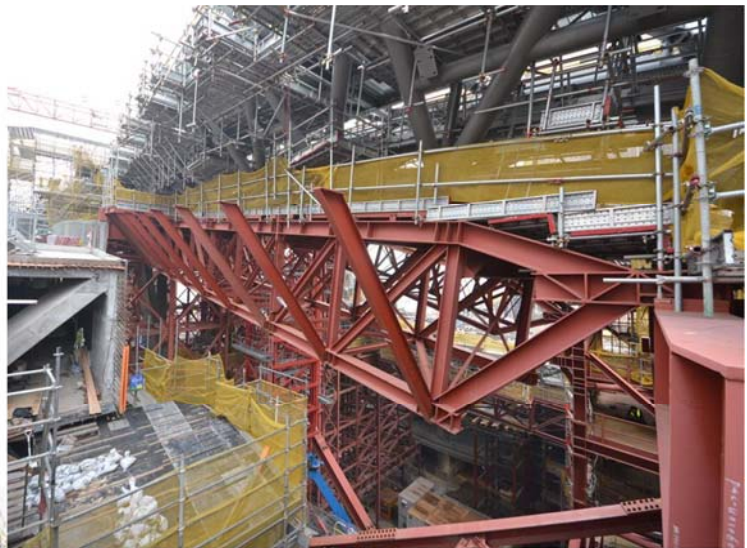


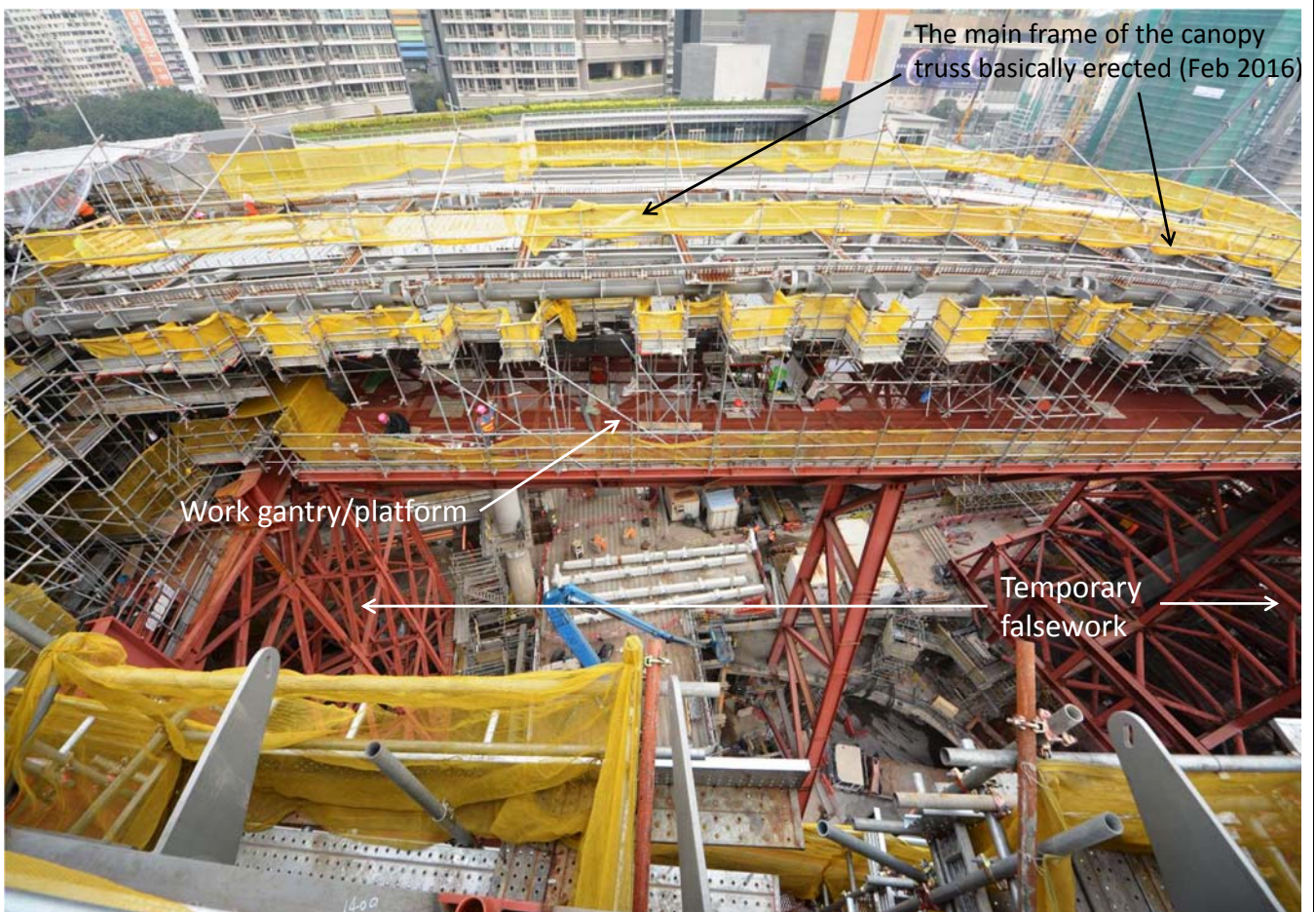
The supporting falsework as seen from the lower platform

Side views of the canopy trusses as seen in February 2016 (Westward side)

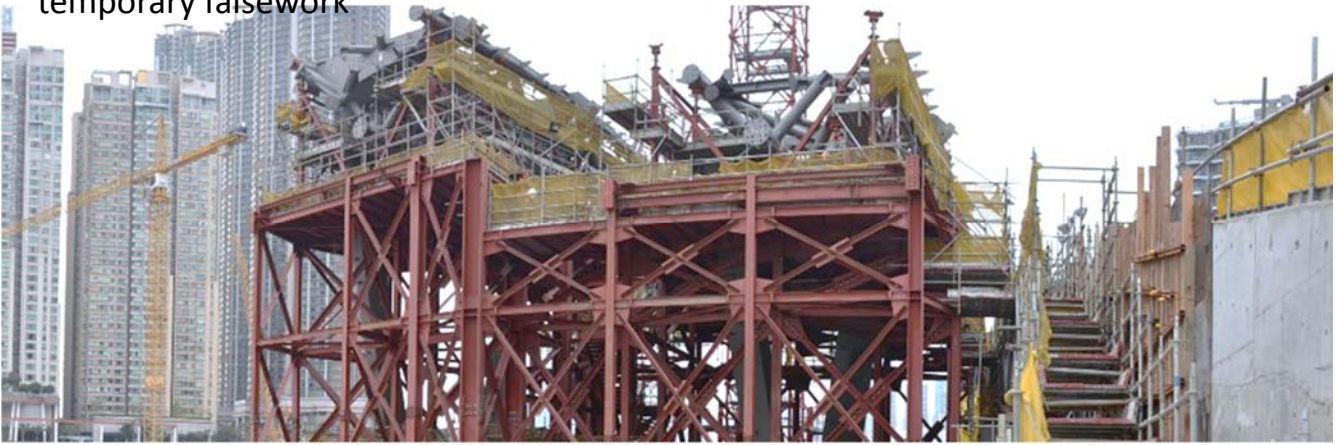


Gigantic gantry supported on the falsework frame facilitates the erection of the intermediate trusses of the curved canopy





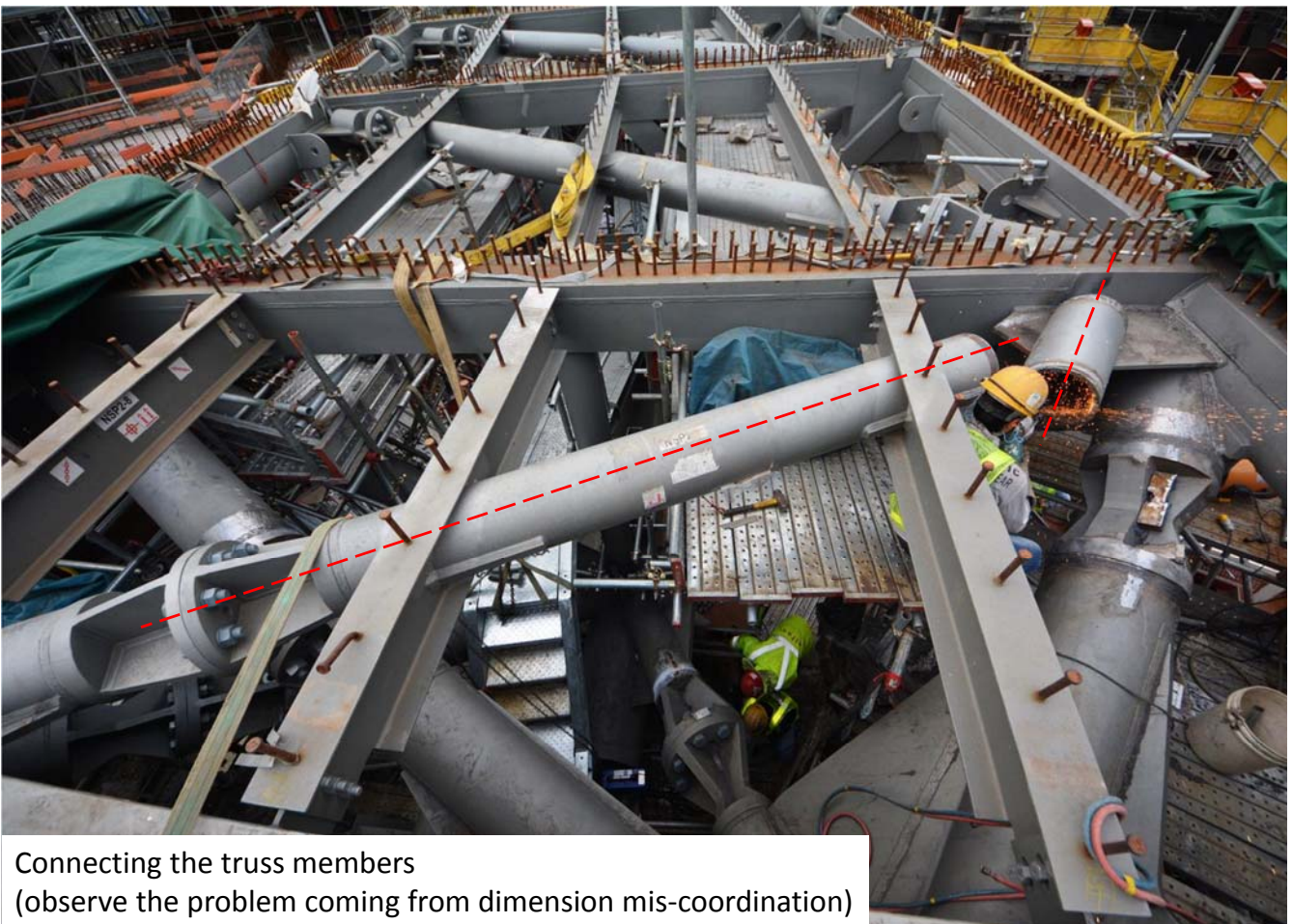
Key modulated components weight more than 10 tons supported on temporary falsework



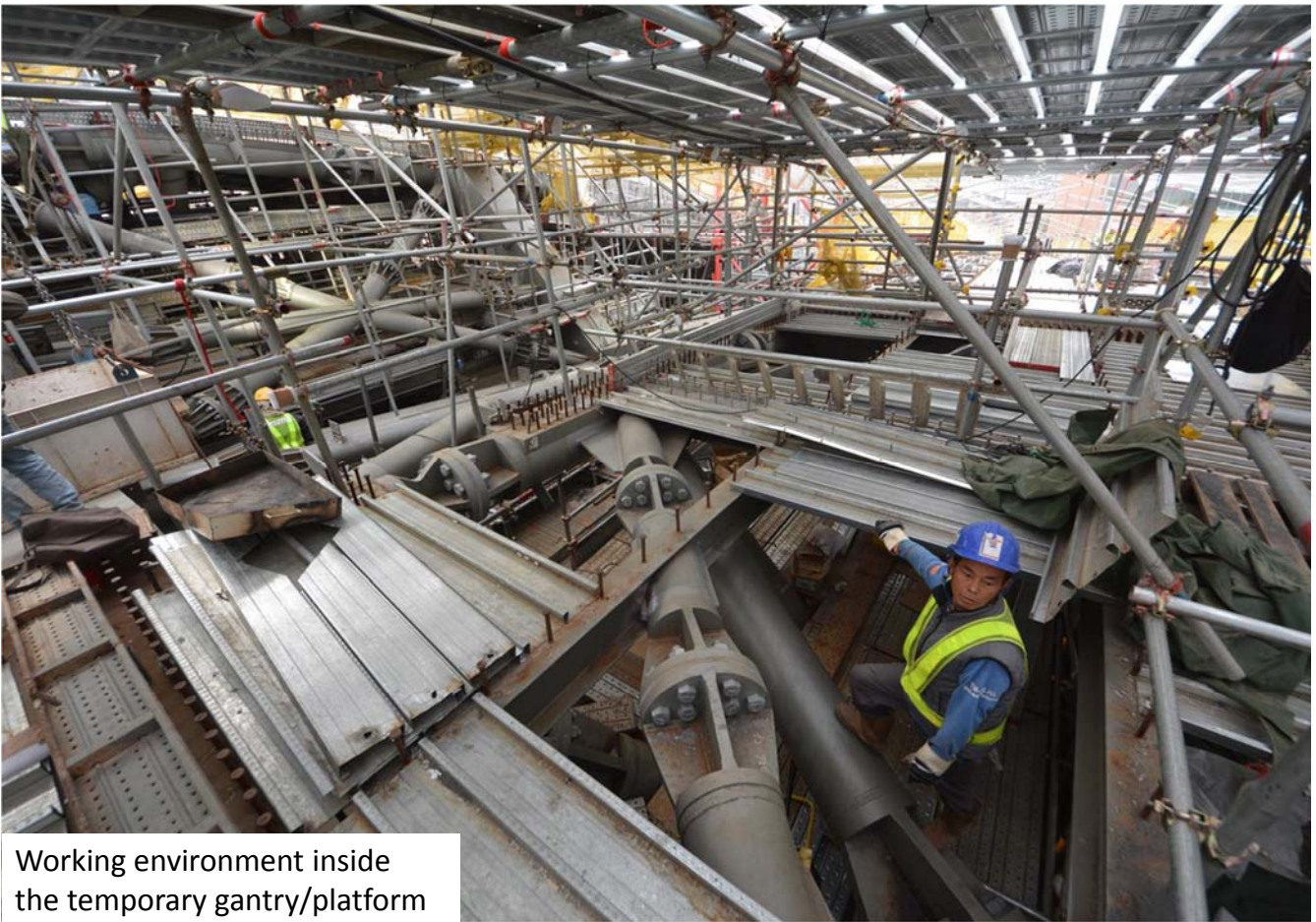
Key components delivered to site awaiting for installation



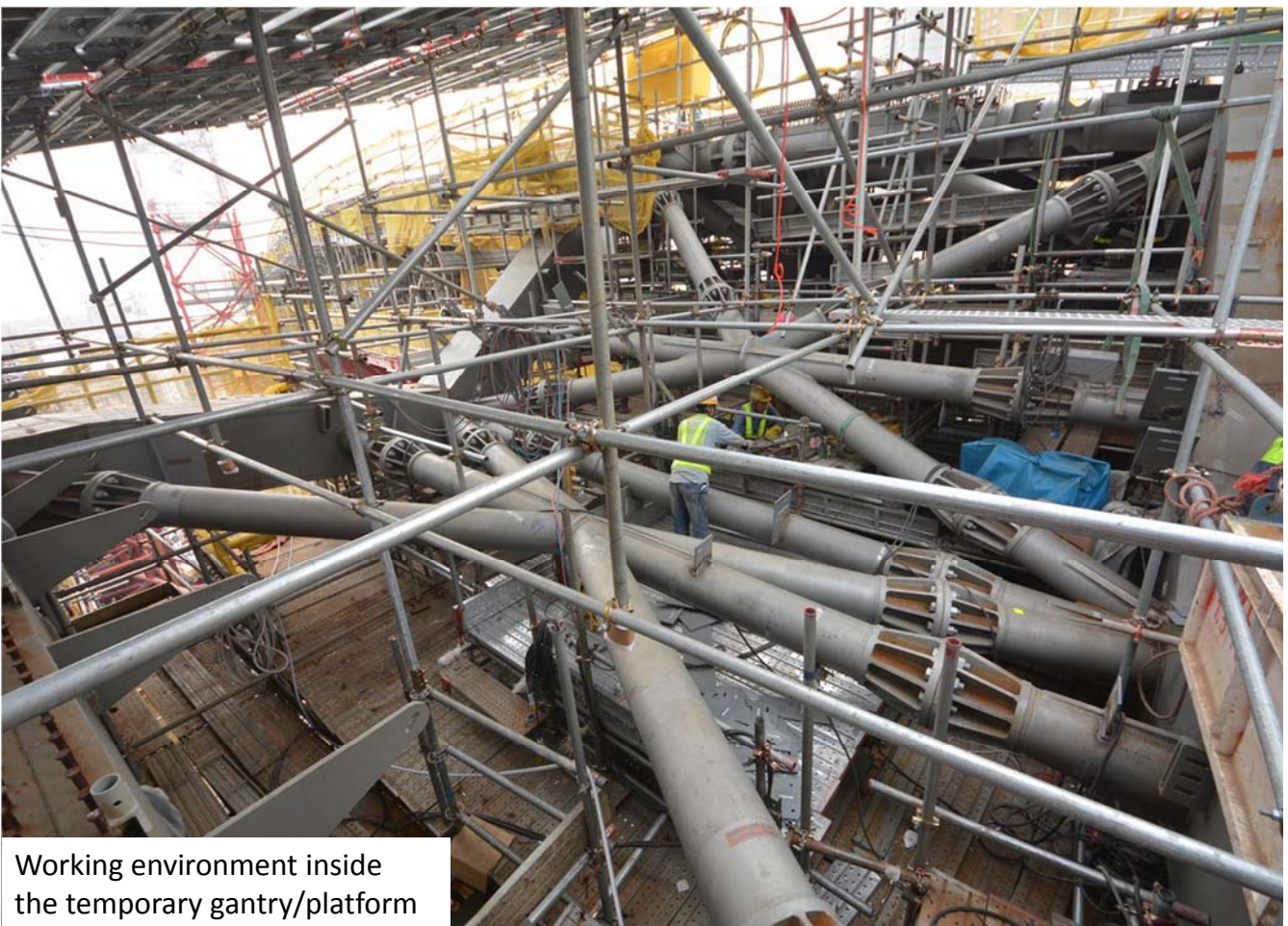
View on the top of the 3rd
intermediate truss



Connecting the truss members
(observe the problem coming from dimension mis-coordination)



Working environment inside
the temporary gantry/platform



Working environment inside
the temporary gantry/platform

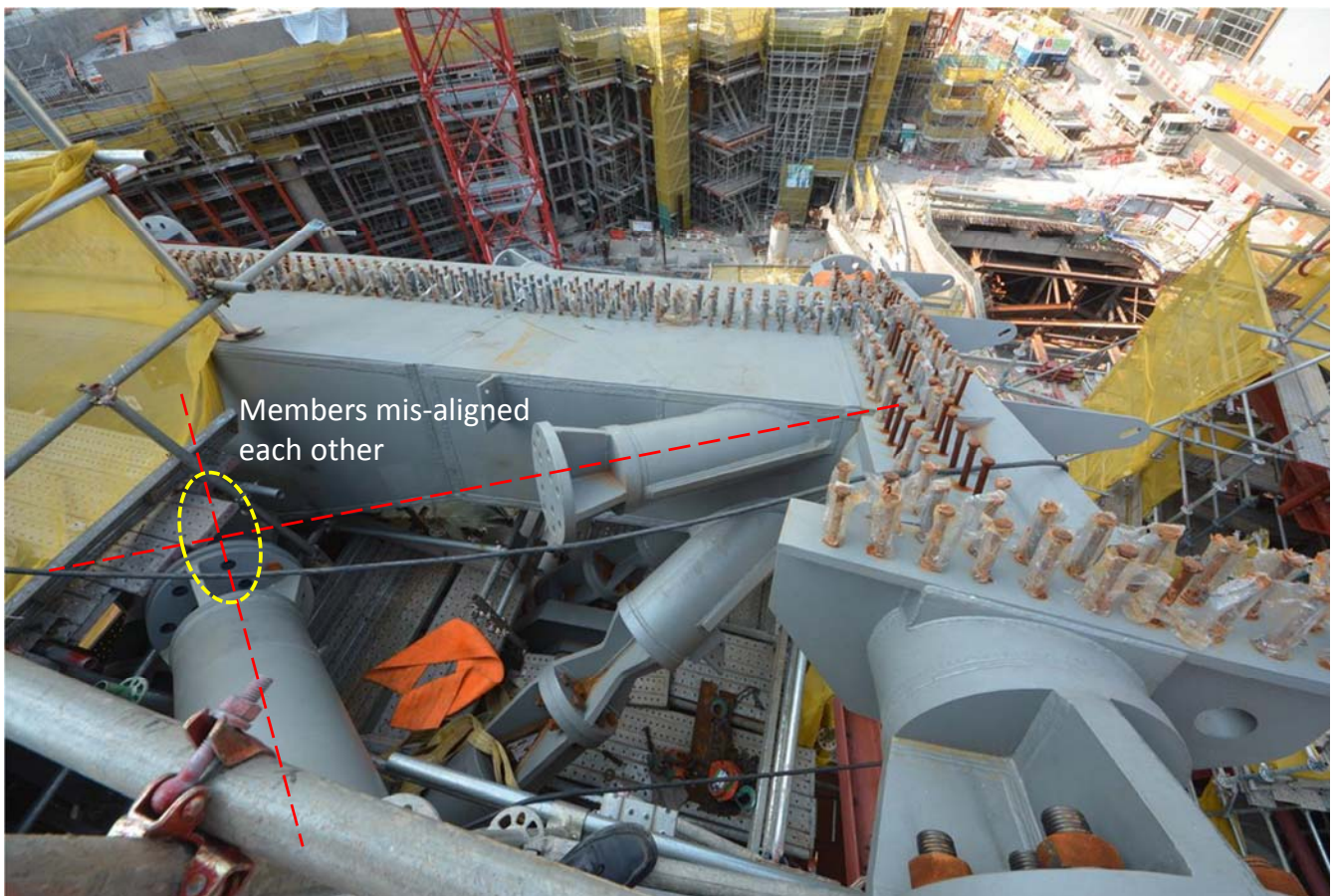
Means to control the dimension due to deflection using hydraulic or screw jack



Using hydraulic or screw jacks to control dimensions



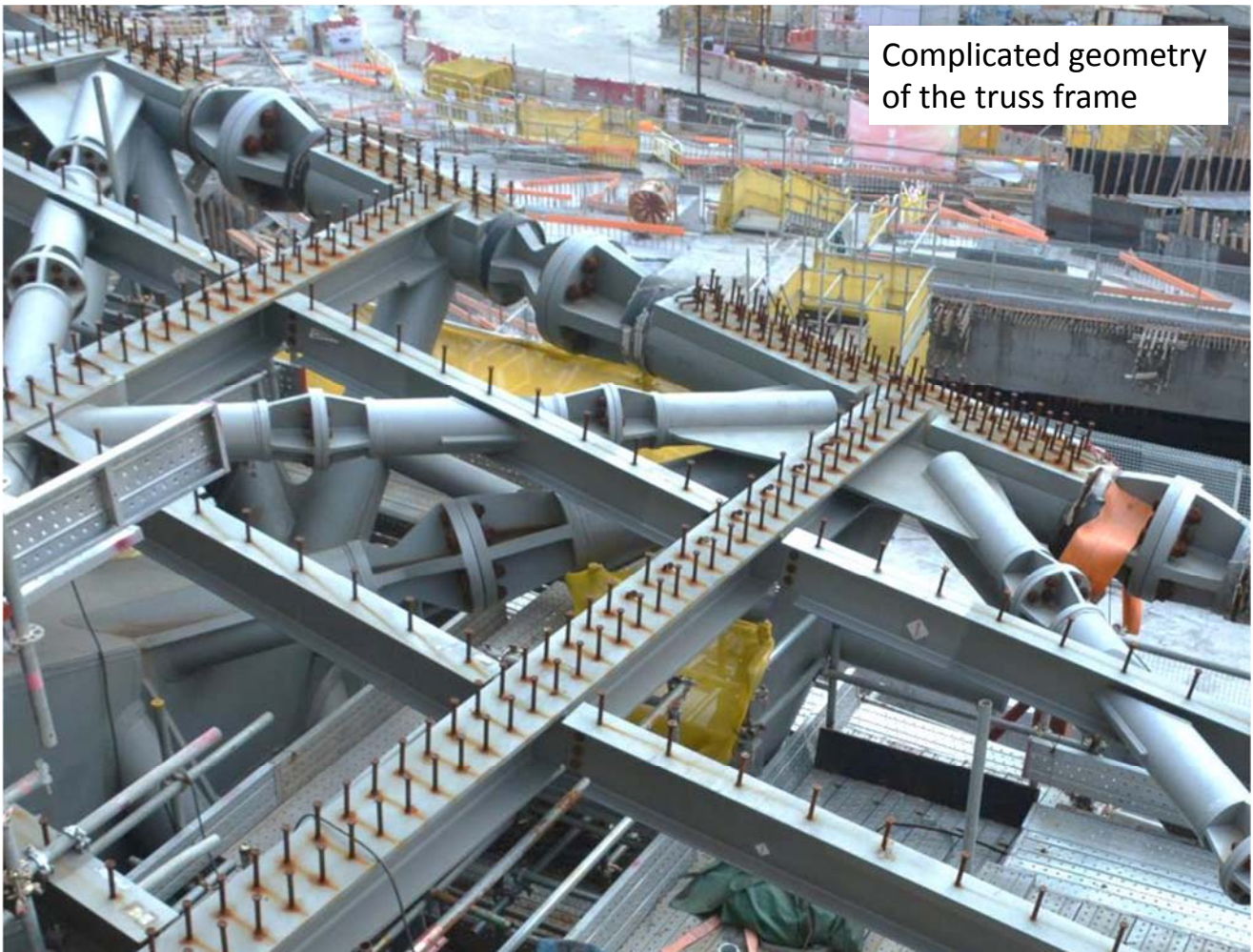
Using hydraulic or screw jacks to control dimensions



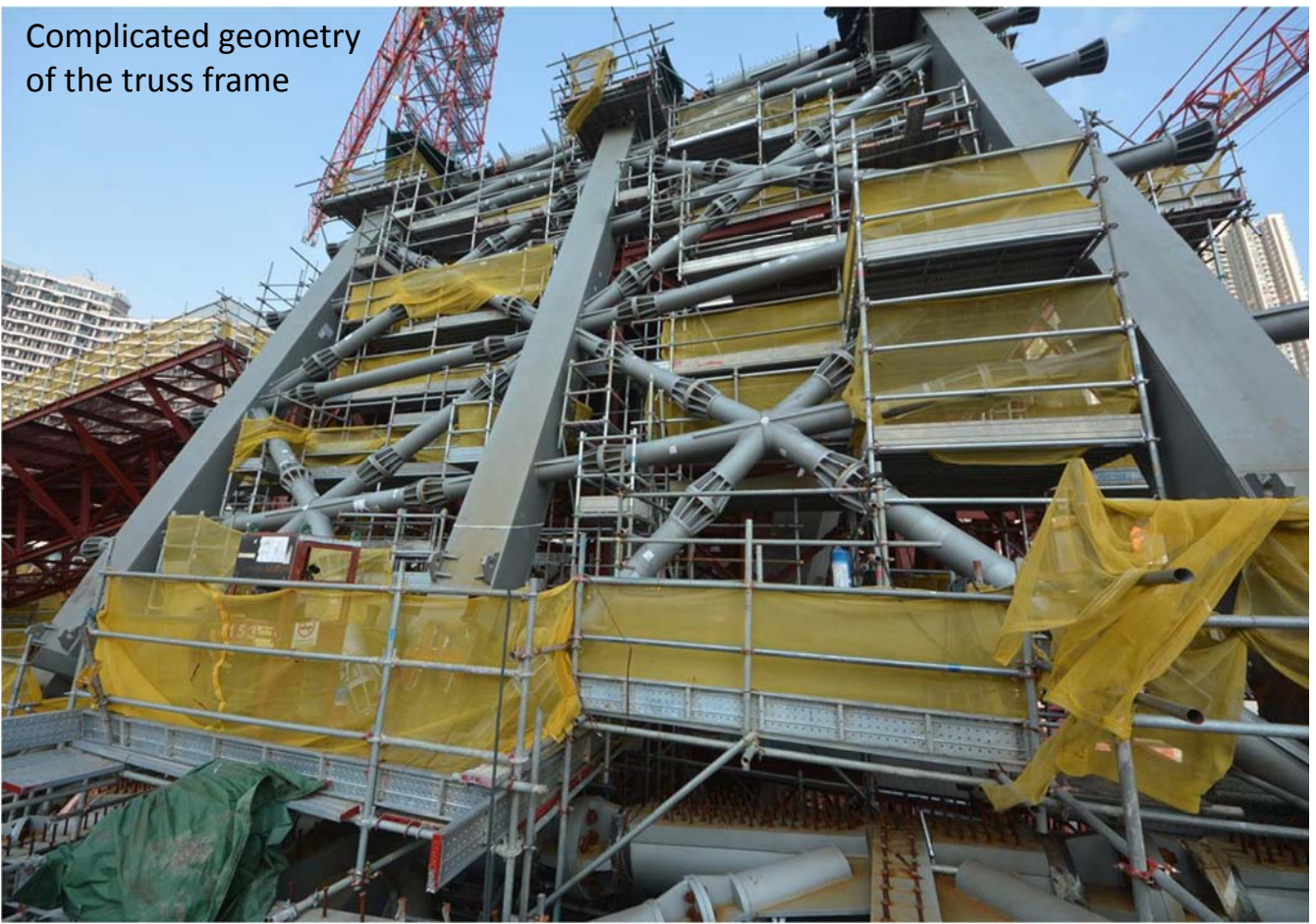


Complicated geometry
of the truss frame





Complicated geometry
of the truss frame





Working at high altitude, gigantic size and heavy weight is also factors causing the work complication

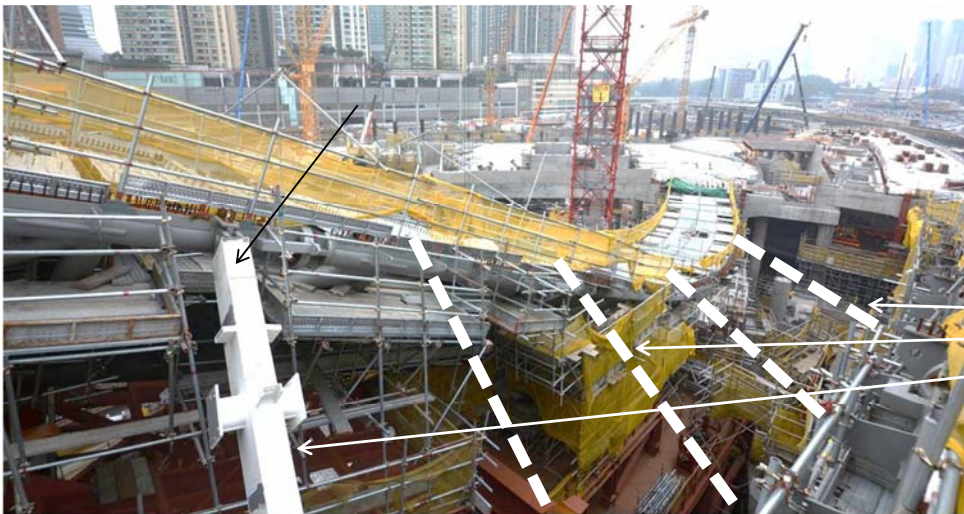
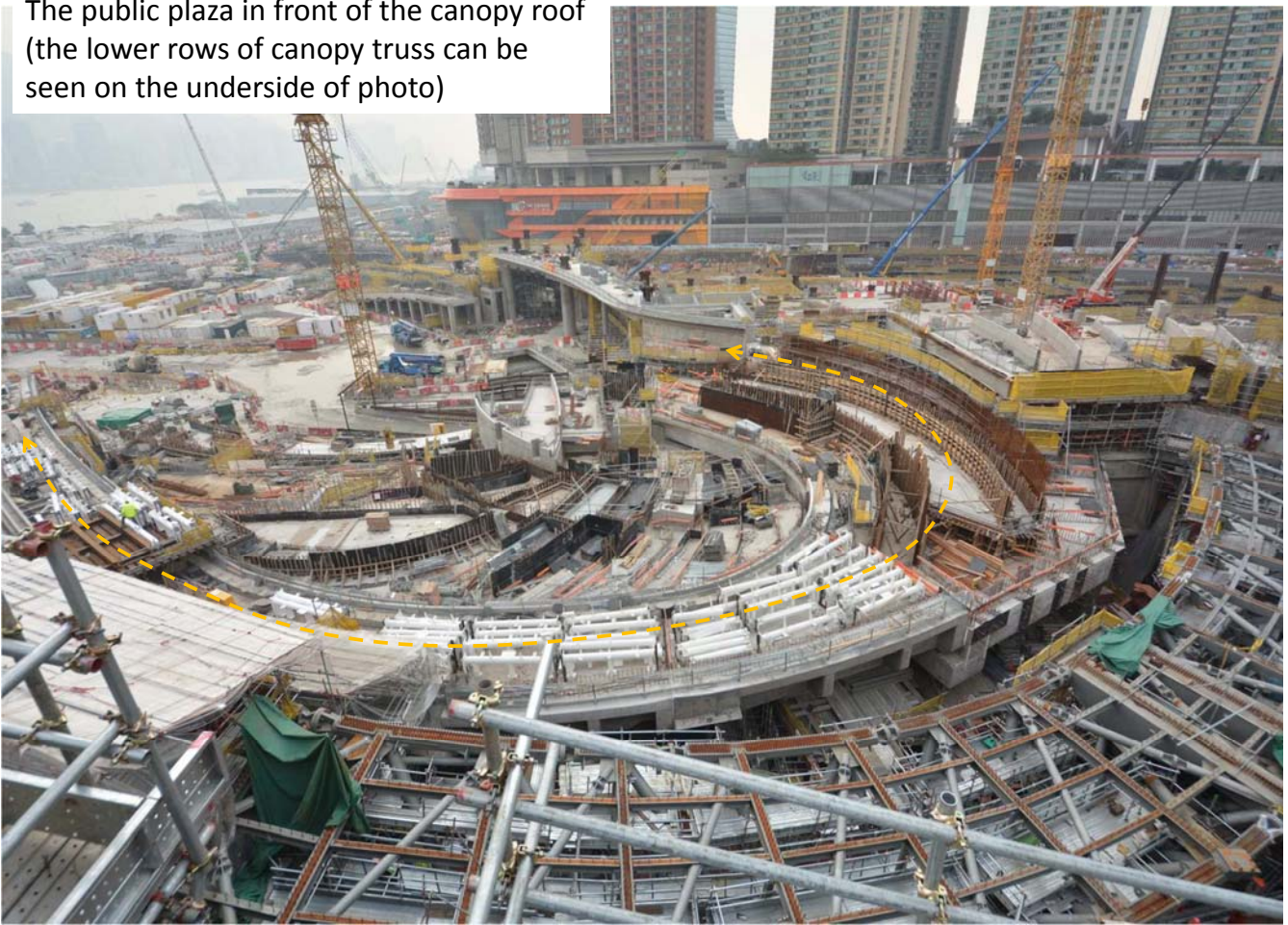


Close up look of some of the jointing knots



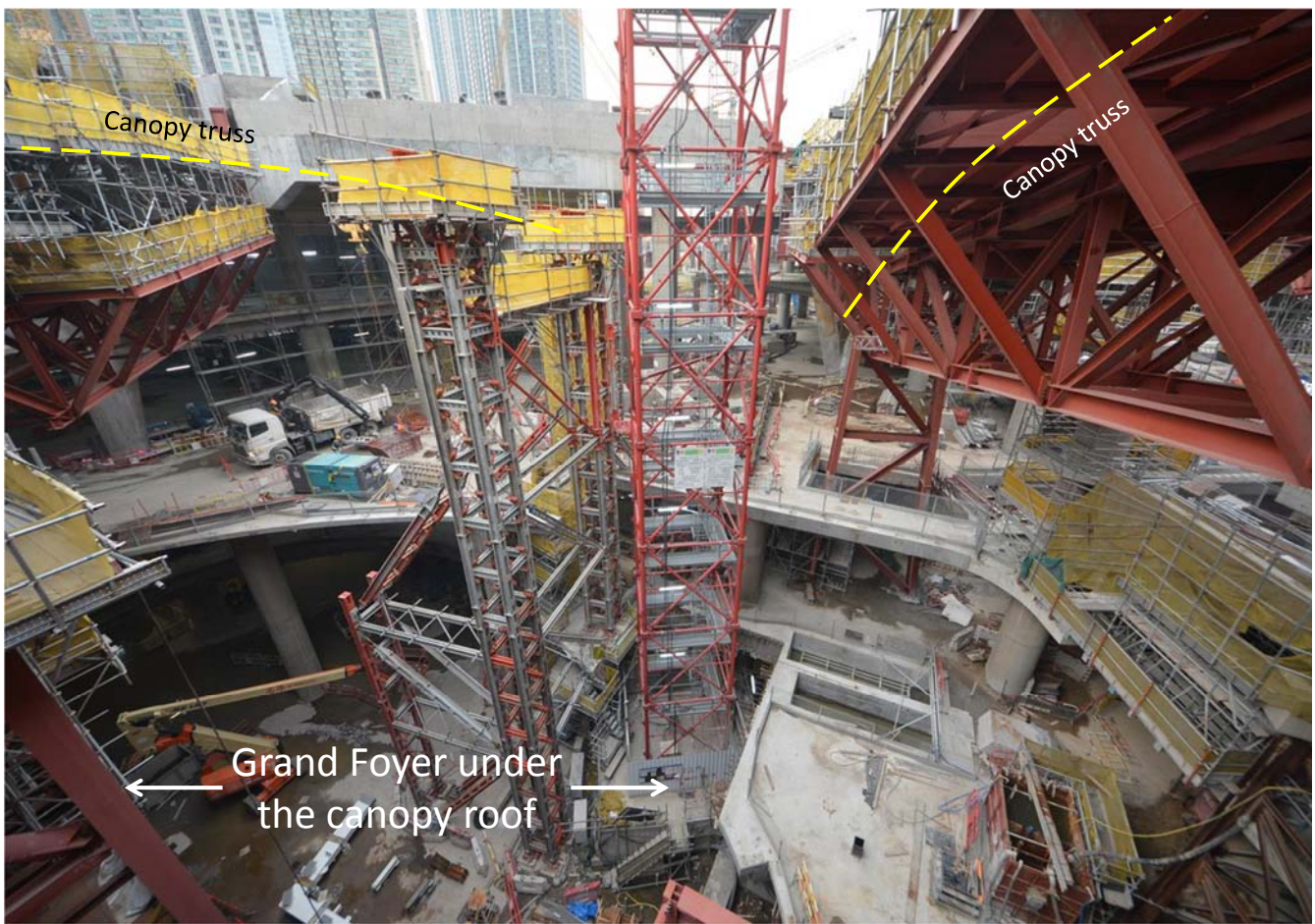


The public plaza in front of the canopy roof
(the lower rows of canopy truss can be seen on the underside of photo)



Intermediate frame
supporting the future
skylight glazed panels



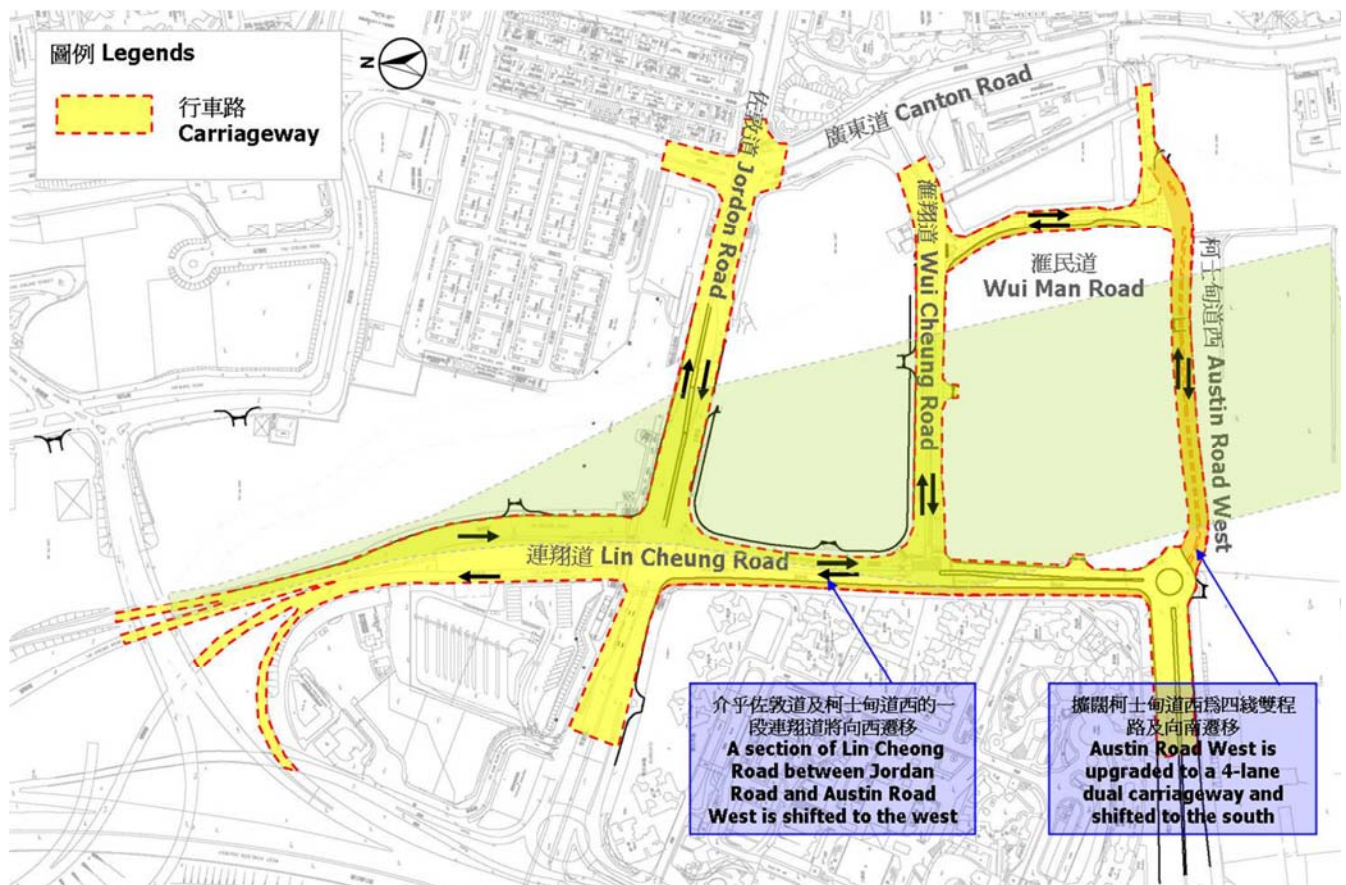


Erection of the main canopy truss as in December 2015



Erection of the main
canopy truss as in Feb 2016

Other public facilities need to be
removed and re-instate afterward
(public traffic and pedestrian facilities)



Temporary Traffic Arrangement (1st stage) to provide temporary roadway for the carrying out of the Terminus excavation



Temporary carriageway for Jordon Road



Temporary carriageway for Austin Road West

October 2011



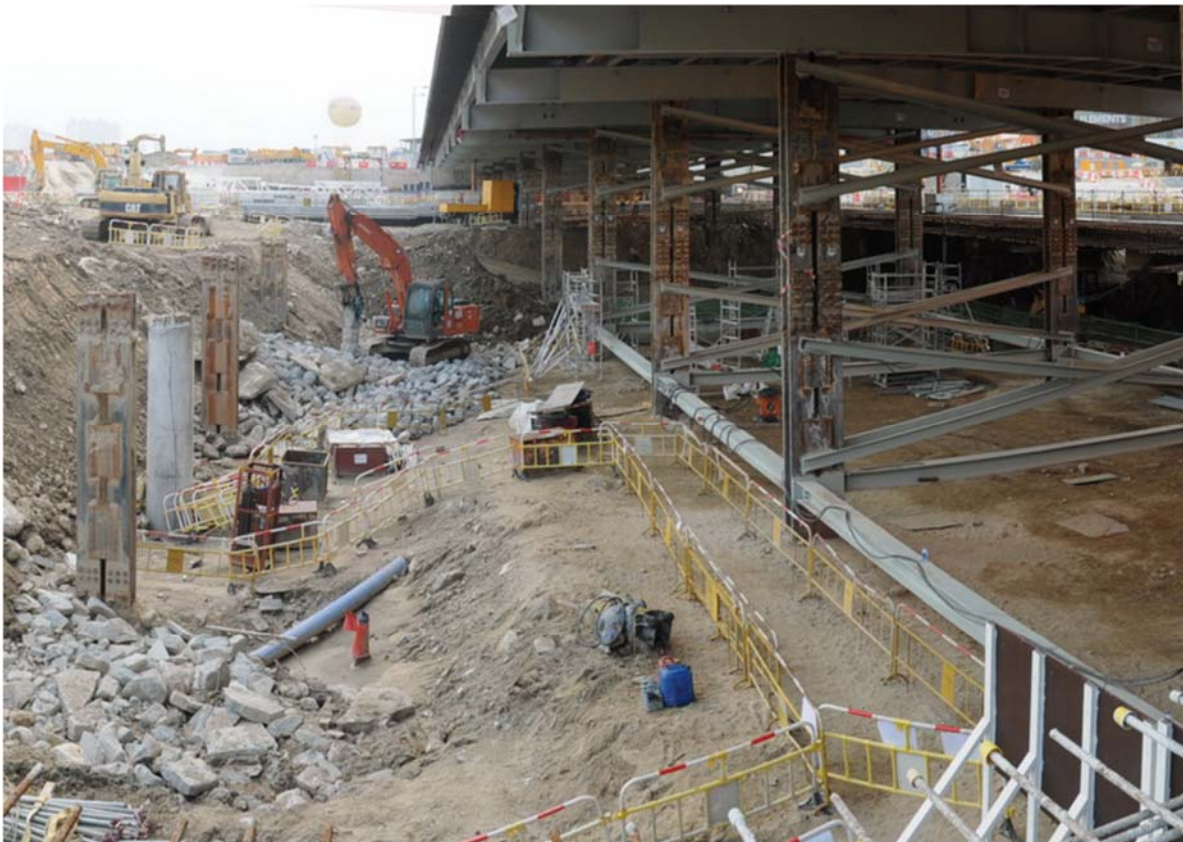
Mid 2012

Excavation under the temporary
carriageway started in July 2011





Excavation under the carriageway and construction of the first slab of the Terminus as part of the top-down construction arrangement

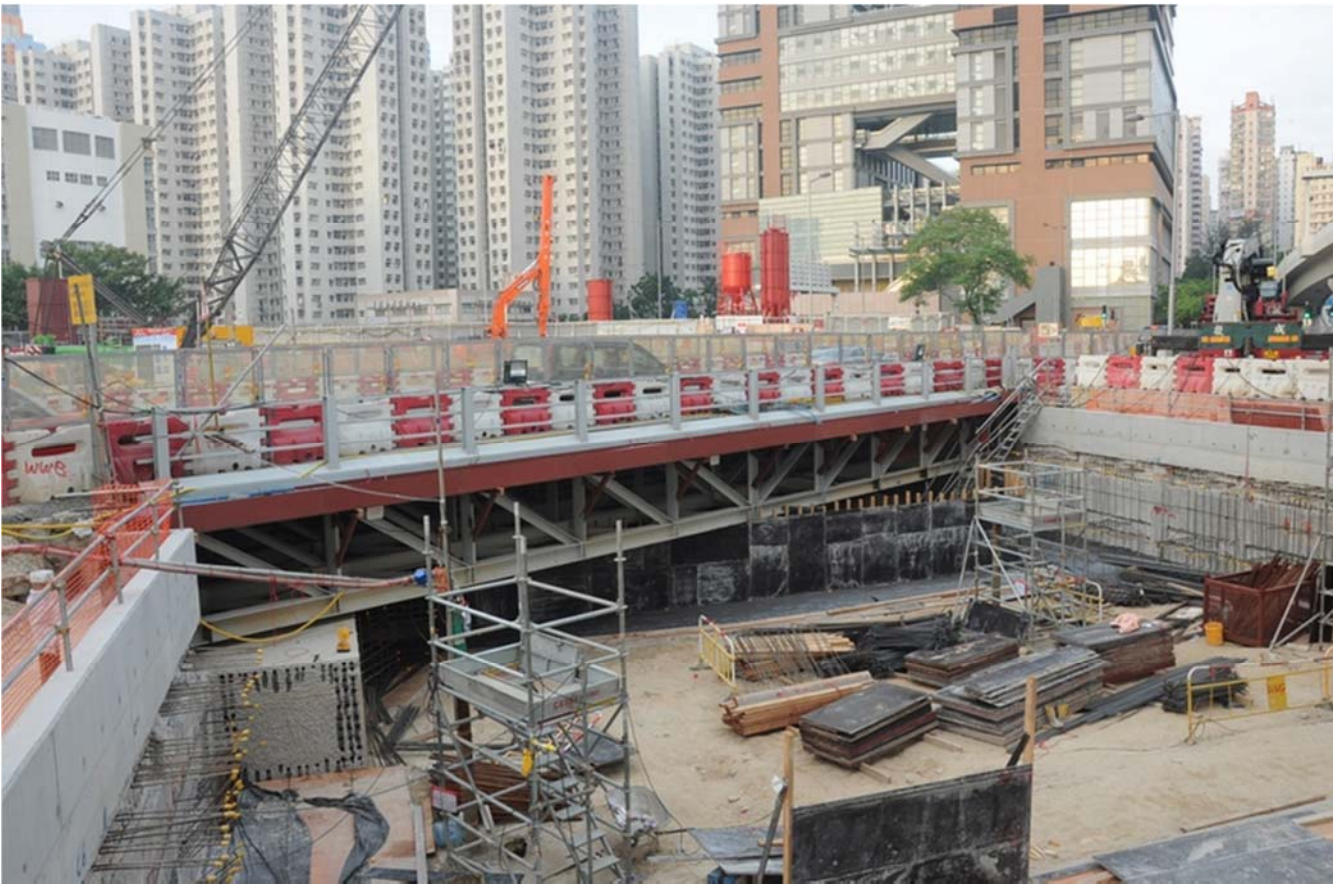




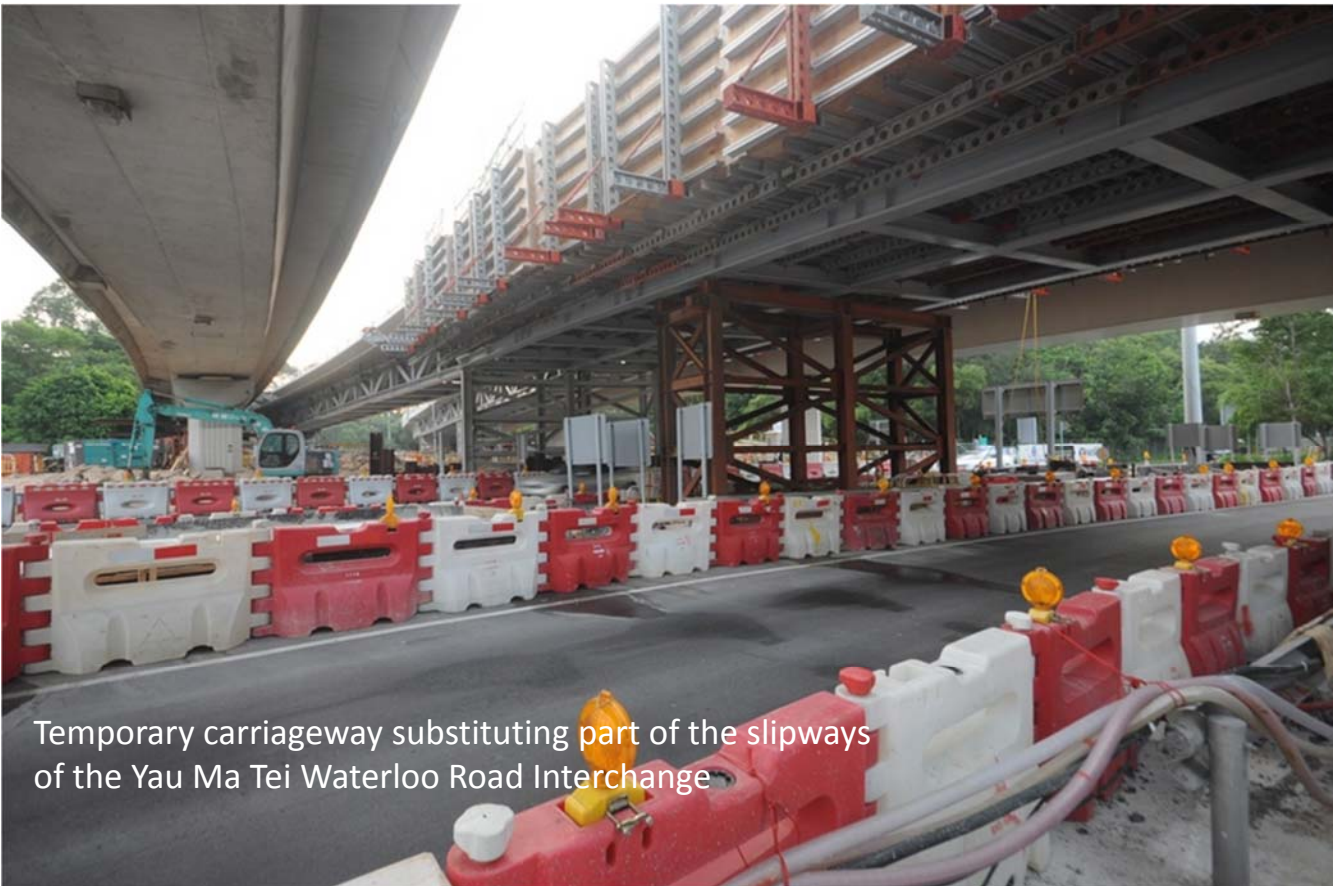


Construction using
partial top-down
approach





A temporary carriage at the northern end of the approach tunnel (substituting Lai Cheung Road) before the tunnel section constructed using TBM



Temporary carriageway substituting part of the slipways of the Yau Ma Tei Waterloo Road Interchange



A 500m pedestrian foot-bridge being removed in stages and replaced by a new bridge after completion of the Terminus (photo of the original footbridge as seen in 2010)



The newly
completed
Austin Station

The footbridge as seen in 2005



The footbridge as seen in 2014

Site for the approach tunnel as seen in late 2010



2005





Original footbridge partially demolished (2013)



Temporary footbridge as part of the temporary diversions

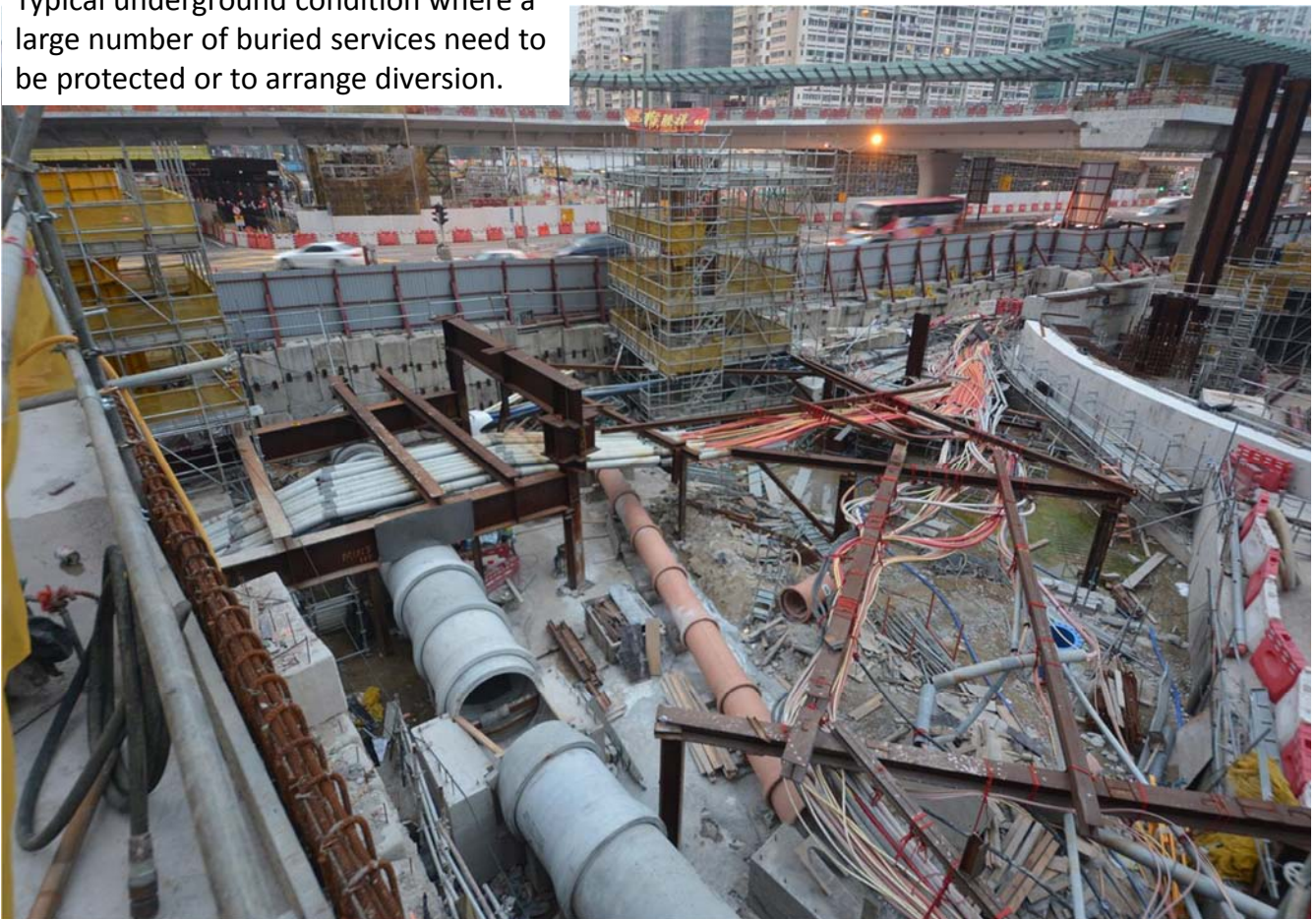


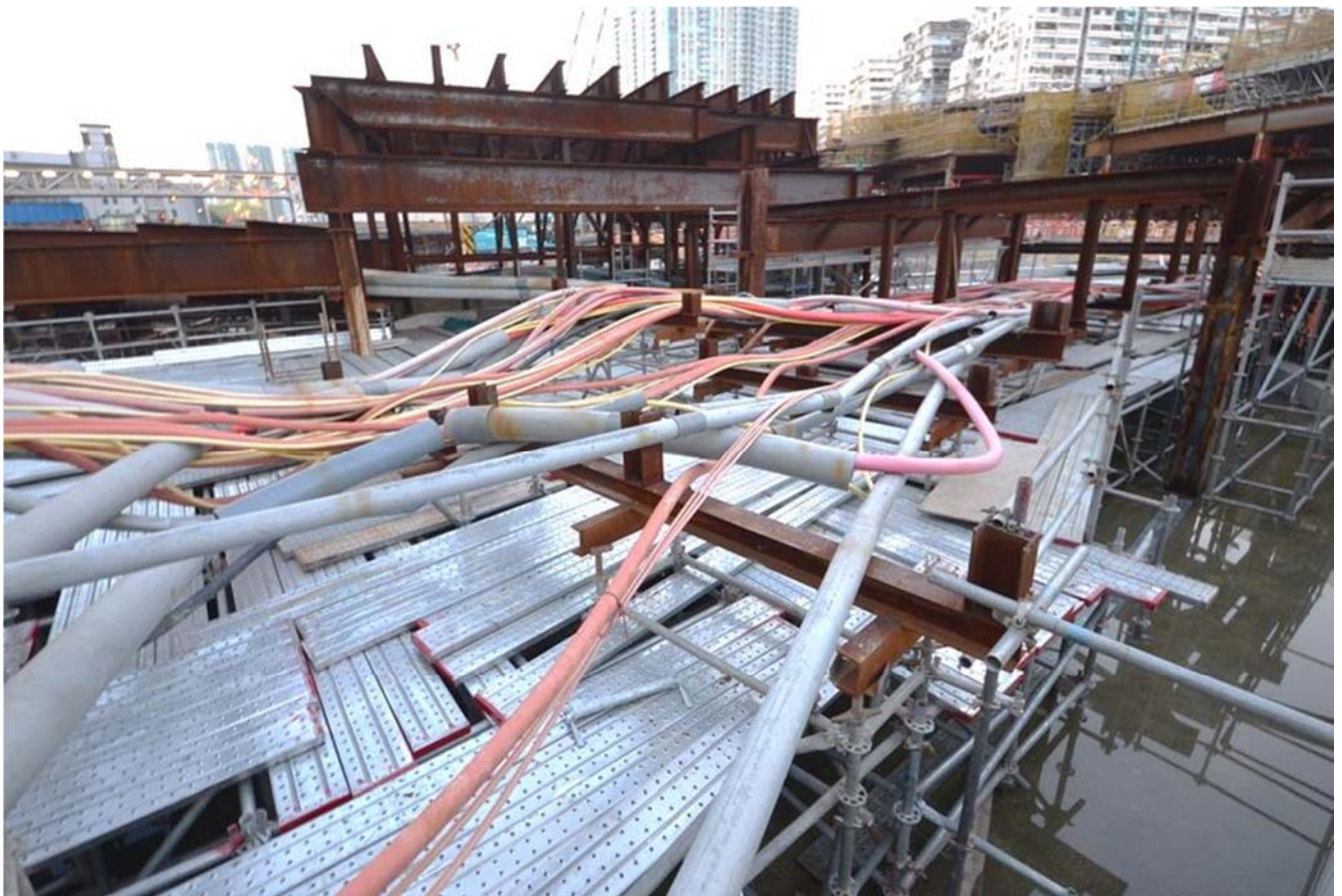
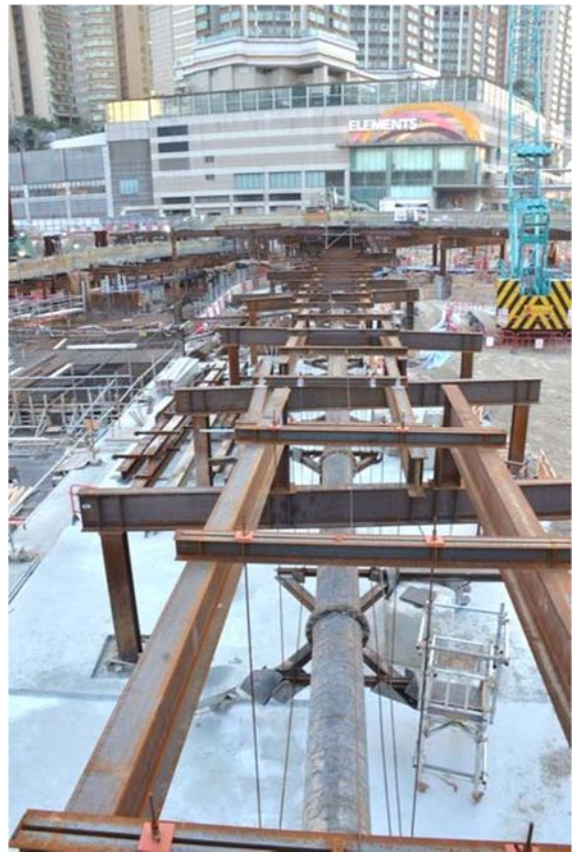


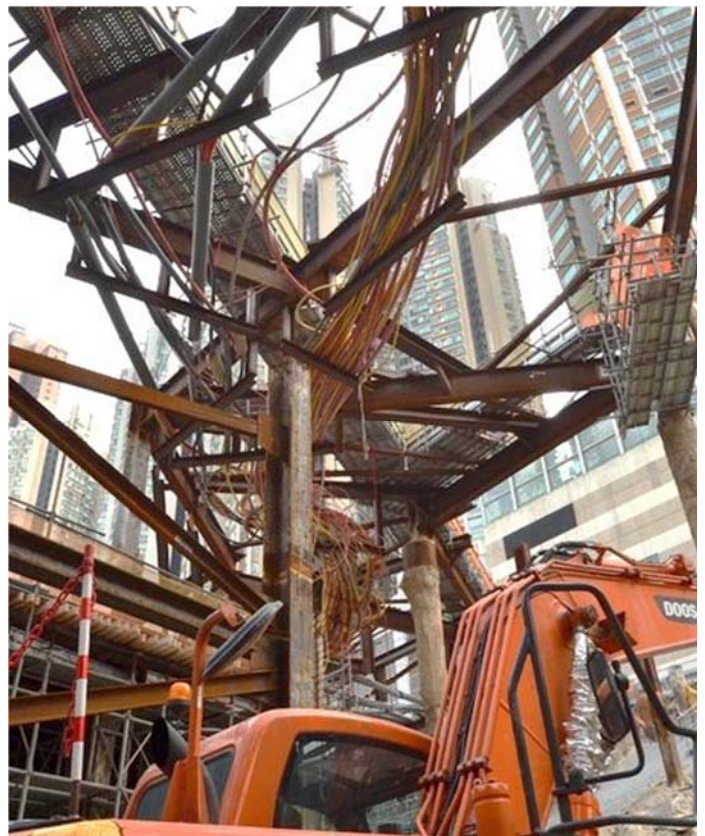
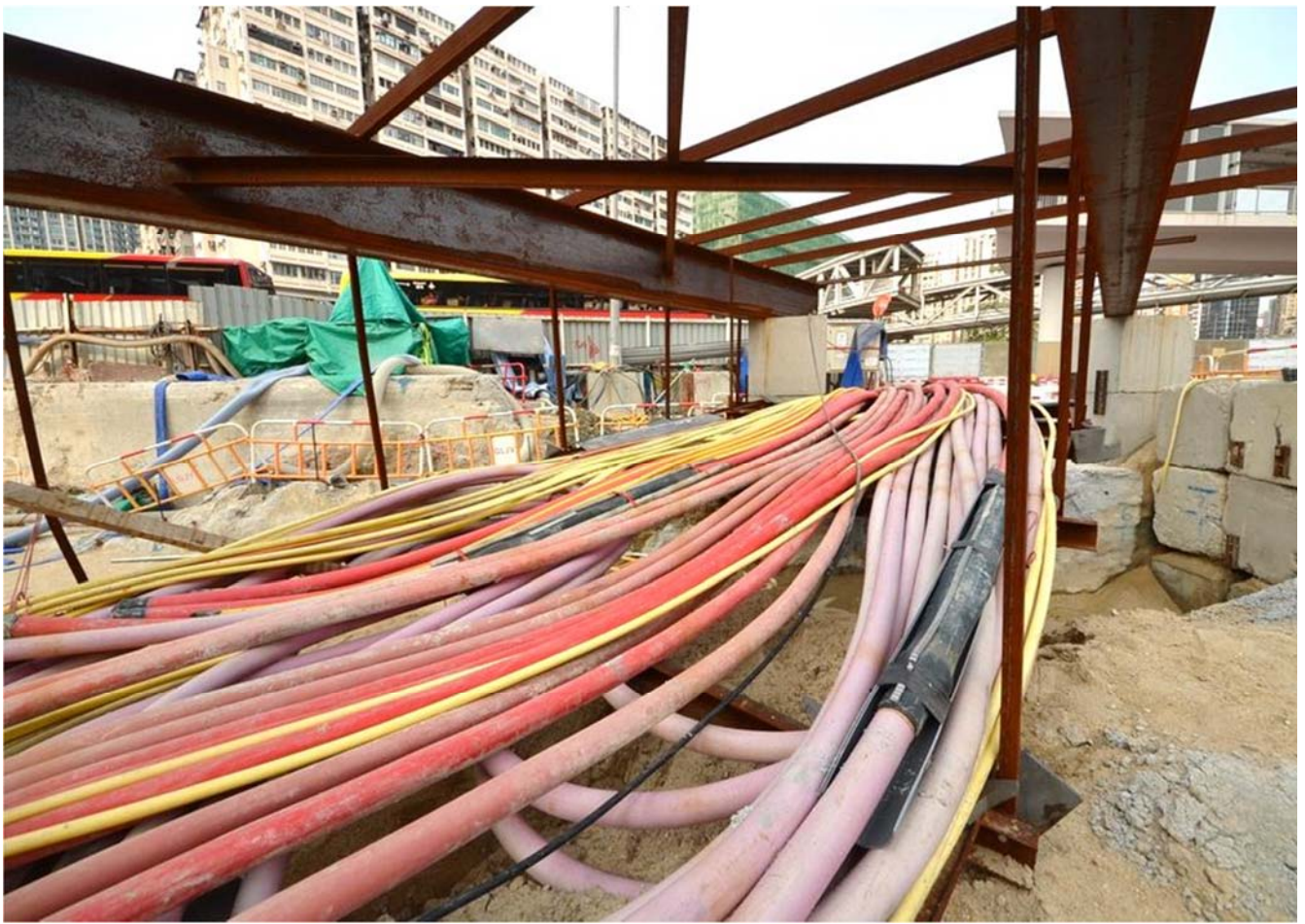


Underground situation obstructed by buried utility services

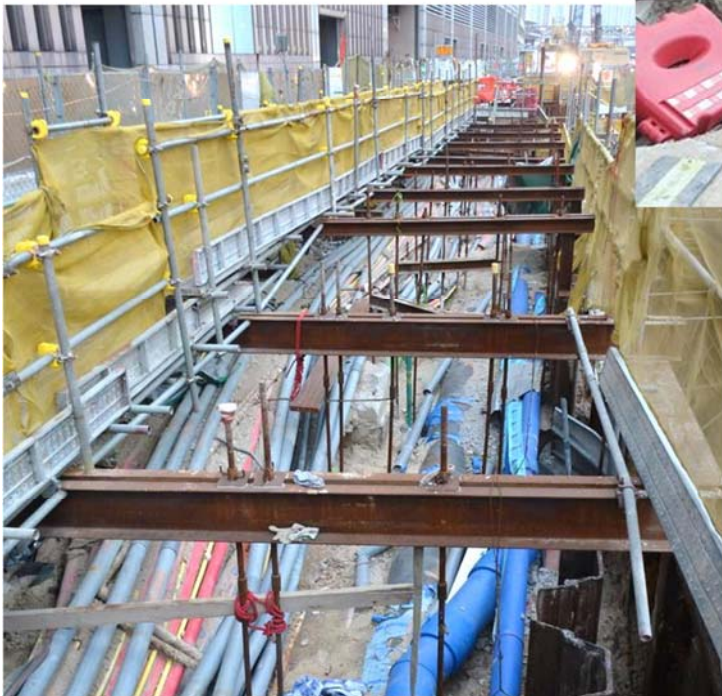
Typical underground condition where a large number of buried services need to be protected or to arrange diversion.





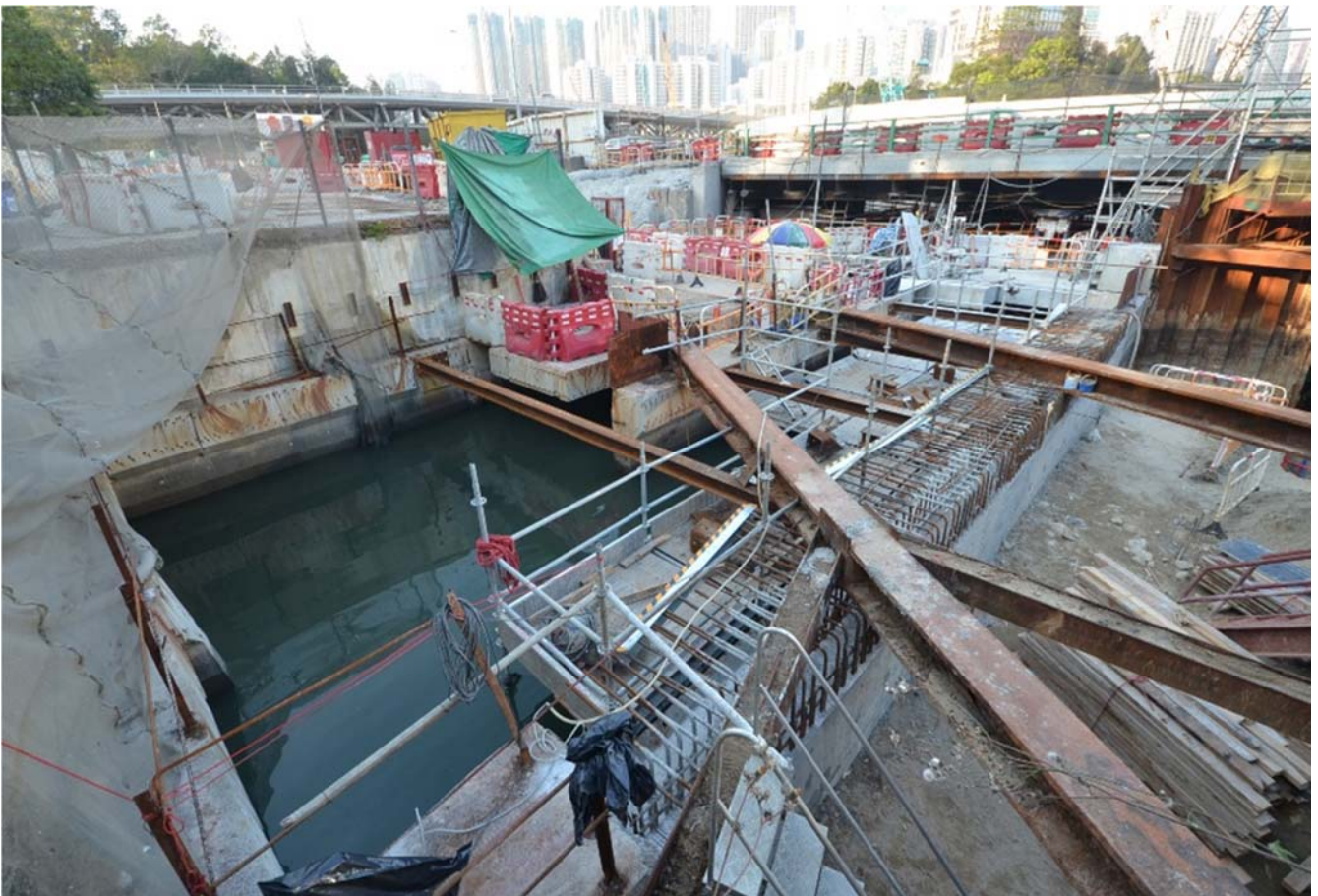








A series of existing storm water box culverts outside Yan Cheung Road need to be diverted





End of presentation

You can also see some other information prepared
by Raymond Wong in his homepage under
City University server

http://personal.cityu.edu.hk/~bswmwong/contents/studies_con.html