



Construction of Transfer Plate - from various case studies

Presentation prepared by
Raymond Wong

Transfer plate is a structure sometimes found in high-rise buildings in Hong Kong. Building design often involves a podium structure that houses other functional spaces such as a shopping mall or a large lift lobby which require an unobstructed spatial layout in order to give a more impressive view.

While for the upper structure, it is often used as office or residential units using more economical shorter span design, or sometimes even with the putting in of very congested core wall for lift shaft and other building services.

To achieve this result, the layout of the podium structure can use regularly spaced columns in longer span design. While the upper floor using columns, load bearing walls and central core arranged in a more congested layout can still be maintained. What it needs to do to accommodate the difference in loading is by the placing in of a transfer plate at the base of the tower structure, such that the loading of the upper floors can be taken up and transferred downward through the podium.

However, the construction of the transfer plate is usually quite difficult. Below are some of the reasons.

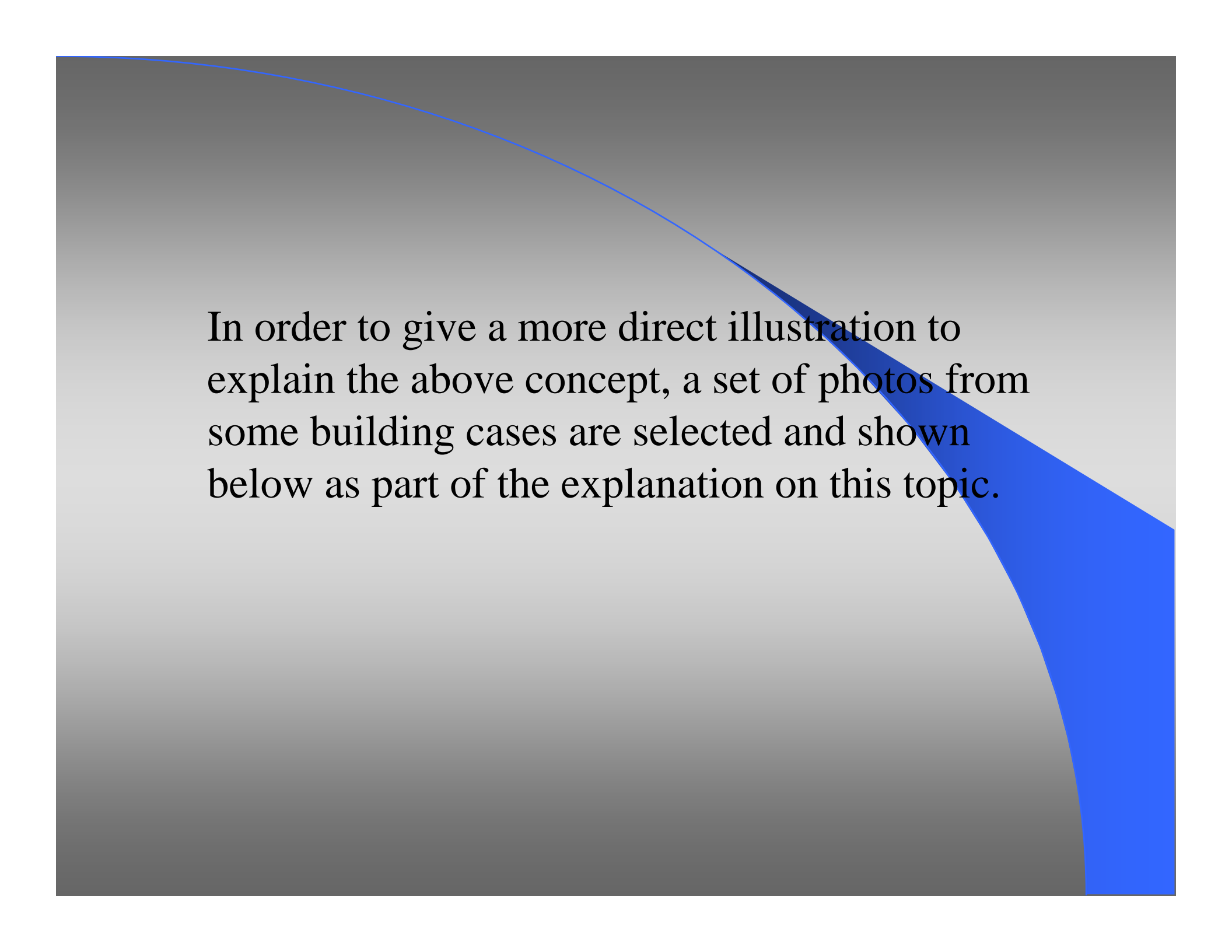
1. It usually located at a high altitude on top of the podium structure. In some design it can be over-hung from the building line.
2. The podium structure may not able to provide the working space or support ground for the construction of the transfer plate due to differences in floor layout.
3. The transfer plate is usually very large and heavy in weight. The thickness of the plate averaged around 2.5m to 3.5m and with size from 600m² to 1500m². It weighs more than 3000 tons.
4. To provide the working space and falsework to support the construction of the transfer plate is difficult and costly with reasons as explained above.

To overcome these difficulties, the following methods or provisions are often employed.

1. A very heavy duty falsework system is erected as support and work platform to carry out the works (including formwork erection, steel fixing, concreting and sometimes tensioning works).
2. Using the completed lower floors as support to erect the the transfer plate during construction, with additional propping erected, say, spreading through the below 3 to 4 floors in order to take up the loading of the transfer plate during concreting.

To overcome these difficulties, the following methods or provisions are often employed (continue).

3. A very heavy duty falsework system is erected as The placing of concrete to be done in several layers in order to reduce the total loading of the falsework. The hardened concrete on the bottom layer can take up loading very quickly.
4. The use of tensioning technique in the transfer plate to lower the thickness and thus the weight of the structure.
5. Or, the combination of method 2 and 3.

The background of the slide features a light gray gradient. A prominent blue arc starts from the top left and curves towards the bottom right. A solid blue wedge-shaped area is located on the right side of the slide, pointing towards the center.

In order to give a more direct illustration to explain the above concept, a set of photos from some building cases are selected and shown below as part of the explanation on this topic.

The background of the slide is a light gray gradient. A blue curve starts from the top left and arcs towards the right. A blue wedge-shaped area is located on the right side of the slide, pointing towards the center.

Project Case :

The Olympian City in Tai Kwok Tsui



Construction of the columns on the podium level, on top of which will support the transfer plate and the tower-type superstructure



Erection of a temporary platform using universal steel sections with bracket support to the columns as work station for the transfer plate





Aerial view of the temporary platform erection for 4 tower blocks in stages



Two transfer plates gradually take shape at the base of two tower blocks



Sectional view of a tower block before the completion of the transfer plate.



View showing the construction of the transfer plate and the podium structure which worked at the same time on the upper and lower level



Closer look at the
formwork setup of
the transfer plate
before concreting





Closer look seeing the layout of the transfer plate with the reinforcement in place during the concreting process

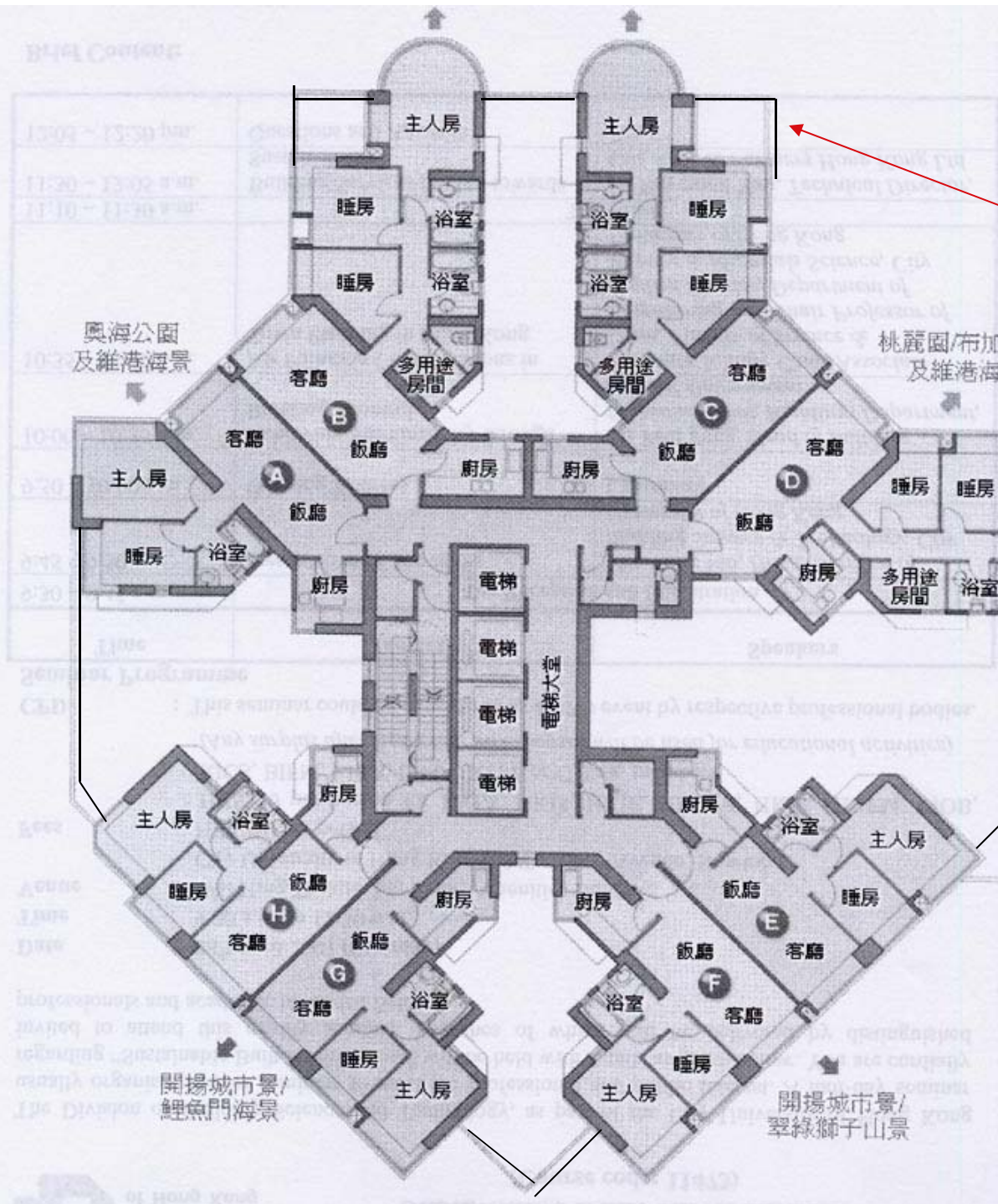


Commencement of the superstructure construction on top of the transfer plate. Note also that the construction of the podium was carried out at the same time meaning that the construction time was maximized under this arrangement





Overview of the project with the construction of the 4 tower blocks proceeded in full speed under typical cycle



Approx.
location of
transfer plate

Floor plan showing
the layout of the
typical floor and the
approx footprint of
the transfer plate



The final completed external appearance of the project with the 4 tower blocks and the podium structure in place



Transfer plate (3.25m thick) to be constructed with supporting falsework for erection of the formwork



A similar case as in the Lee Tung Street Redevelopment project using steel column to support the transfer plate for the residential tower.



Another residential block in the project with the transfer plate completed ready for the construction of the super-structure in typical floor cycle.



Project Case :

The Belcher's Garden in Kennedy Town



The falsework system and the formwork being erected for the construction of one of the transfer plates for a tower block. Note a completed one at the rear.



Closer look at the transfer plates lining in row format with the centre one recently completed while the other on the sides soon ready for the placing of concrete



Detail look at the transfer plate with the reinforcing bars being fixed near the building core location. Note also the hose pipe forming ducts inside the plate for the insertion of tendons for post-tensioning work after concreting.

View of the transfer plate located on top of the podium structure ready for the commencement of the upper towers





The transfer plate with the formwork for the first residential floor as seen on the upper level of the podium structure



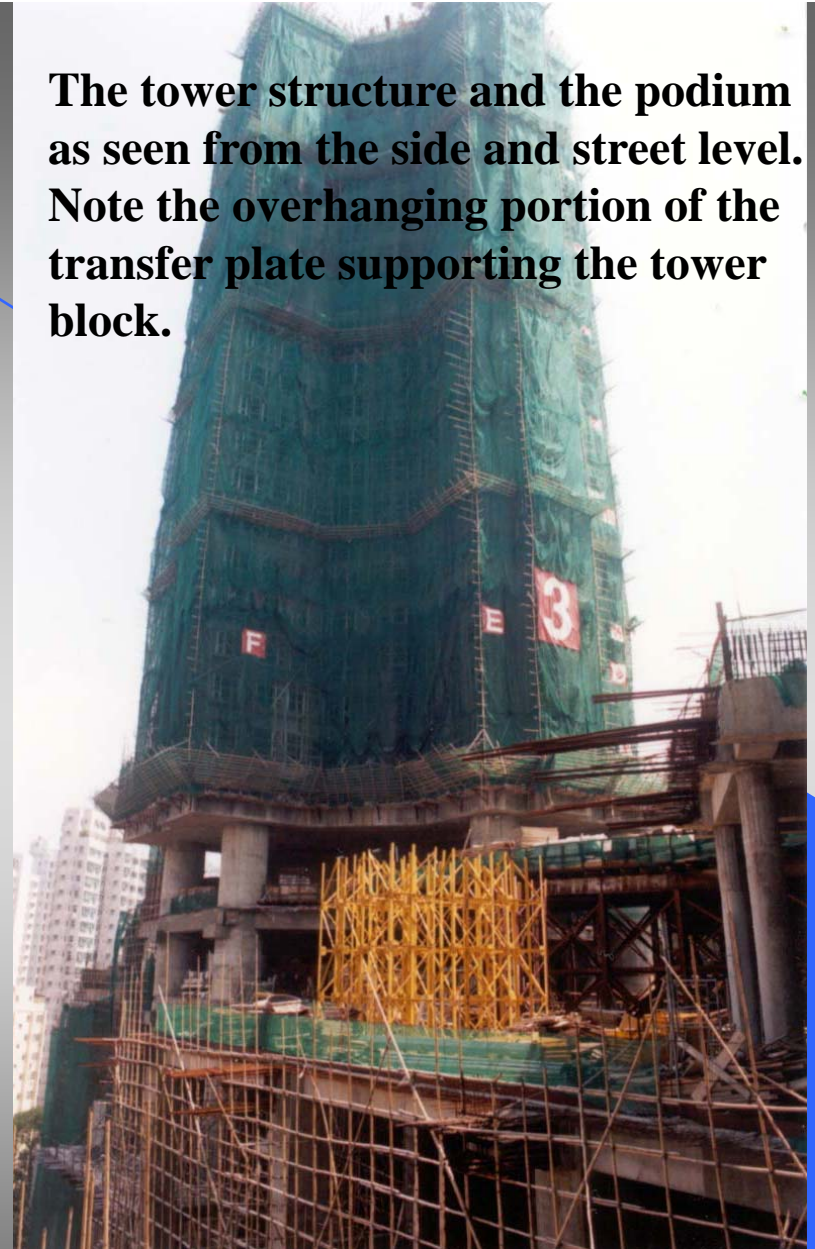
Overview of the tower blocks seated on the transfer plate above the gigantic podium structure. Note the complicated spatial environment especially the working height in this job.



Overview of the tower blocks and the transfer plate in relation to the layout of the podium structure



The tower structure and the podium as seen from the side and street level. Note the overhanging portion of the transfer plate supporting the tower block.





The background of the slide is a light gray gradient. A large, thin blue arc starts from the top left and curves towards the right. A solid blue wedge-shaped area is located on the right side of the slide, pointing towards the center.

Project Case :

Office Tower of Langham Place



The 4m thick transfer plate supporting the office tower of Langham Place. Formwork to construct the core wall of the superstructure had been set up on top of the transfer plate



The transfer plate and the core wall formwork as seen from the adjacent building



Construction of the upper structure using table form to form the floor slab. Note the difference in column layout (eight 900mm diameter columns below the transfer plate and fourteen 600mm diameter columns on top)





Project Case :

Residential Development project
in Tiu Keng Leng, Metro Town













Project Case :

Residential Development project
in To Kwa Wan

Future location of
Transfer Plate











Construction joint to
allow the casting of the
transfer plate in smaller
sections

Falsework supporting the formwork
of transfer plate





Other examples



**Residential building in
Jordan (Previous
Police Quarters)**



**Residential
development in Yau
Ma Tei**

**Residential
redevelopment for
KMB previous depot
at Kai Chi Kok**





Les Saisons at Sai Wa Ho

**Residential buildings in
West Kowloon near
Olympic Station**



**Residential buildings in
West Kowloon near
Cheung Sai Wan/Lai Chi Kok**



Other residential projects with eye-catching transfer plate structure





End of presentation

Hoping that the photos selected for illustration here can help you to get a general understanding about the construction of transfer plate.