

Add Basement w Lower Height

2013 PP

THE HONG KONG INSTITUTE OF SURVEYORS
QUANTITY SURVEYING DIVISION
ASSESSMENT OF PROFESSIONAL COMPETENCE
FINAL ASSESSMENT – 17TH & 18TH SEPTEMBER 2013
PRACTICE PROBLEM
NOTES TO ASSESSORS



Question No. 1 – Cost Estimate

NOTES TO ASSESSORS

Candidates should be able to identify the cost implications of the additional items of works in connection with the additional basement level for carparking.

Description	Quantities	Unit	Rate HK\$	Estimated Cost HK\$
Additional Costs of Foundation				
From the summary sheet, foundations cost per m2 CFA = 2,427m2				
Additional foundations for 3,000m2 carparking =	3,000	m2 CFA	2,427	7,281,000
Additional Cost =				7,280,000

(Rate can be adjusted lower for the empty boring pile portion)

Additional Costs of Pile Caps and Basement Slab

a. Add pile caps	3,000	m2 CFA (additional CFA)	450	1,350,000
b. Ground beam and slab			Assume remain unchanged	
Additional Cost =				1,350,000

Additional Costs of Basement Enclosure

Basement floor plan =	3,000	m2 (60 x 50m)		
Basement perimeter =	220	m		
Basement storey height =	8.0	m (4.5 + 3.5)		
Excavation depth =	10.0	m (4.5m + 3.5 + 2m for basement slab and pile caps)		
Depth of sheet piles =	20.0	m (2 times the excavation depth)		
a. Excavate and cart away = 3000m2 x 10m =	30,000	m3	375	11,250,000
b. Steel sheet piles av. 20m deep (150kg/m2) = 220 x 20m x 150kg/m2 =	660,000	kg	15	9,900,000
c. Strutting for sheet piles (400kg/m2); = 220 x 10m x 400kg/m2 =	880,000	kg	15	13,200,000
d. Grout curtain, assume not required	-	-	-	-
e. 400mm RC Screen wall, 8m high	1,760	m2	2,120	3,731,200
f. Waterproofing to screen wall	1,760	m2	300	528,000
g. Waterproofing to basement slab	3,000	m2	300	900,000
h. Wearing slab to basement slab	3,000	m2	450	1,350,000
i. Sundries and dewatering (5%)		sum		2,042,960
				42,902,160
say				42,900,000
Less original Basement Enclosure Cost =				(28,320,000)
Additional Cost =				14,580,000

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B. ELEMENTAL BREAKDOWNS FOR BUILDING AND BUILDING SERVICES				
I. CARPARK (4.5m floor height)				
Construction Floor Area (CFA) = 3,000 m2		9th August 2013		
Element	Elemental Total (HK\$)	Elemental Unit Cost (HK\$/m2 CFA)	Estimated Cost for Additional Carpark with 3.5m floor height (HK\$)	Remarks
1. Carcase				
1.1 Frame and slabs (assume same as office)	10,140,000	3,380	9,190,000	Referring to the Back-up Calculations of Office, cost of horizontal elements around 58% cost of vertical elements around 42% Adjusted cost = 58% + 42% / 4.5 * 3.5 = 90.67%
1.2 Internal walls	600,000	200	460,000	Adjusted cost = 100% / (4.5 - 0.15) * (3.5 - 0.15) = 77.01% (internal wall = storey ht less 150mm slab)
1.3 Doors and Fire Shutters	600,000	200	600,000	
	[11,340,000]	[3,780]	10,250,000	
2. Finishings				
2.1 Roof finishes	900,000	300	900,000	
2.2 Floor finishes	1,050,000	350	1,050,000	
2.3 Internal wall finishes	750,000	250	580,000	Adjusted cost = 100% / (4.5 - 0.15) * (3.5 - 0.15) = 77.01% (internal wall finishes = storey ht less 150mm slab)
2.4 Ceiling finishes	600,000	200	600,000	
2.5 Decor, graphics and signage	300,000	100	300,000	
	[3,600,000]	[1,200]	3,430,000	
3. Furniture and Fittings				
3.1 Metal works and sundries	240,000	80	240,000	
4. Services				
4.1 Plumbing and disposal	900,000	300	860,000	Cost of vertical elements around 20% Adjusted cost = 80% + 20% / 4.5 * 3.5 = 95.56%
4.2 Electrical	1,800,000	600	1,720,000	
4.3 Fire services	1,050,000	350	1,000,000	
4.4 MVAC	2,100,000	700	2,010,000	
4.5 Lifts (included in office cost)				
4.6 Carpark control system	800,000	267	800,000	
4.7 Builders work, profit and attendance	330,000	110	320,000	Adjusted accordingly
	[6,980,000]	[2,327]	6,710,000	
Total	22,160,000	7,387	20,630,000	



Question No. 1 – Cost Estimate

Summary

NOTES TO ASSESSORS

Total Additional Cost for the additional basement level would be presented as follows:-

	<u>Estimated Cost for the Additional Basement Level for Carparking (HK\$)</u>
Foundation	7,280,000
Pile Caps and Basement Slab	1,350,000
Basement Enclosure	14,580,000
Building and Building Services	20,630,000
Sub-total	43,840,000
Add Preliminaries (15%)	6,570,000
Add Contingencies (10%)	5,040,000
Total	55,450,000

[12 Marks]



Question No. 1 – Cost Estimate

NOTES TO ASSESSORS

Candidates should be able to identify the additional and varied items of works in connection with the multi-tenancy provisions.

Providing tenancy partitioning for 6 tenants each floor

(total 30 office floors)

<u>Additional Cost for One Office Floor</u>				
<u>Quantity</u>	<u>Unit</u>	<u>Rate (HK\$)</u>	<u>Estimated Cost (HK\$)</u>	
a. Provide 150mm thick concrete block wall between tenant areas; including with plaster and emulsion paint on both sides (61 x 4.05m high)	247	m2	650	160,550
b. Provide 150mm thick concrete block wall forming corridors; including plaster and emulsion paint on the side facing tenant areas and wall paper on the other side facing corridor (37.4 x 4.05m high)	125	m2	850	106,250
c. Provide double leaf glazed entrance doors at tenant areas (2 x 2.2m high)	6	no.	25,000	150,000
d. Provide carpet on top of raised floor to newly formed corridors (original is floor of tenant areas)	54	m2	400	21,600
e. Change core wall finishes from plaster and emulsion paint to wall paper (original is wall of tenant areas; 26.6 x 3.5m high)	93	m2	200	18,600

Additional Cost for 1 floor	457,000
x 30 floors	
Additional Costs for 30 Floors =	13,710,000
Add Preliminaries (15%)	2,060,000
Add Contingencies (10%)	1,580,000
Total Additional Cost for 30 Floors	17,350,000

[5 Marks]