



Question No. 1 – Cost Estimate (Cont'd)

NOTES TO ASSESSORS

		Quantity	Unit	Rate (HK\$)	Amount (HK\$)
	G/F area = $50 \times 40 + 10 \times 15 = 2,150\text{m}^2$				
	CFA = $50 \times 40 + 10 \times 15 \times 2 = 2,300\text{m}^2$			(rounded to nearest \$10,000)	
1.	<u>Ground investigation</u>				
	Allow for say 4 boreholes and trial pits		Sum		500,000
2.	<u>Foundation and substructure</u>				
	<u>Raft footing</u>				
	Assume average 500mm thick concrete 45D raft footing not projecting beyond building faces, with top 1m below existing ground levels, for both facility and office				
	Excavation incl. backfill and disposal (working space 0.25m)				
	$(50.5 \times 40.5 + 10.0 \times 15.5) \times 1.50 \text{ m}^3 =$	3,300	m ³	400	1,320,000
	Concrete, say 45D, $2,150\text{m}^2 \times 0.5\text{m} =$	1,075	m ³	1,600	1,720,000
	Formwork, $(50 + 40 + 10) \times 2 \times 0.5\text{m}^2 =$	100	m ²	400	40,000
	Reinforcement, $1,075\text{m}^3 \times \text{say } 200\text{kg/m}^3 =$	215,000	kg	12.0	2,580,000
	Blinding layer, $2,150\text{m}^2 \times \text{say } 0.05\text{m} =$	108	m ³	1,400	151,200
	<u>Substructure</u>				
	Allow for ground slab, ground beams and substructure columns				
	Concrete, say 30D, $2,150\text{m}^2 \times \text{overall } 0.25\text{m thick} =$	538	m ³	1,400	753,200
	Formwork, say $2,150\text{m}^2 \times 0.2\text{m}^2/\text{m}^2 \text{ G/F area} =$	430	m ²	400	172,000
	Reinforcement, $538\text{m}^3 \times \text{say } 200\text{kg/m}^3 =$	107,600	kg	12.0	1,291,200
	<u>Miscellaneous</u>				
	e.g. vapour barrier, hardcore, joints, openings for services, etc. (10%)				802,760
					8,830,360
				Say	8,830,000
3.	<u>Structural frame and slabs</u>				
	Structural steel, $2,300\text{m}^2 \times 180\text{kg/m}^2 =$	414,000	kg	30	12,420,000
	(assume connections deemed to have been included in the given steel ratio)				
	Fire proofing paint	20 %			2,484,000
	(In lieu of % basis, by assuming a typical steel member size, the area of paint per kg can be estimated)				
	Allow for sundries like water tanks, staircases, expansion joints etc.	5 %			745,200
					15,649,200
				Say	15,650,000
4.	<u>Roof</u>				
	Allow for proprietary type corrugated metal roof system				
	Rate inclusive of extra cost for pitched roof, projection, gutters, etc.	2,150	m ²	4,000	8,600,000
5.	<u>External wall</u>				
	Corrugated sheet wall panel system, (60+40) x 2 x 6m high	1,200	m ²	3,000	3,600,000
	Rate inclusive of allowance for windows of minimal area				
	Allow for canopy, logo, external lighting etc.	15 %			540,000
					4,140,000



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6.	<u>Interior architectural</u>				
	Manufacturing facility, 50 x 40m =				
	Allow for open plan with minimal doors and partitions, floor screed with hardener, no paint to walls, open ceiling	2,000	m2	1,000	2,000,000
	Office, 150m2 x 2 =				
	Allow for open plan office with pantry and toilets, open ceiling and office furniture	300	m2	5,000	1,500,000
					3,500,000
7.	<u>Building services</u>				
	Plumbing and drainage	2,300	m2	500	1,150,000
	Electrical	2,300	m2	1,500	3,450,000
	Fire services	2,300	m2	1,000	2,300,000
	Mechanical ventilation by oscillating fans to manufacturing facility, split type a/c to office	2,300	m2	500	1,150,000
	Builder's works in connection with building services	5	%		402,500
					8,452,500
				Say	8,450,000
8.	<u>External works</u>				
	External area = 3,000m2 - 2,150m2 = 850m2				
	Allow for concrete paving generally	850	m2	1,000	850,000
	Allow for upgrading boundary fence, entrance gate, guard house etc.		Sum		500,000
	Underground drainage	3,000	m2	200	600,000
	Utilities Connections		Sum		200,000
					2,150,000
9.	<u>Preliminaries</u>				
	Preliminaries	12	%		6,218,400
				Say	6,220,000
10.	<u>Contingencies</u>				
	Contingencies	10	%		5,804,000
				Say	5,800,000
	Total of 1 to 10				63,840,000

[16 marks]