
UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2007/2008

April 2008

RQK 337 – Ukur Bahan 2
(Quantity Surveying II)

Masa: 2 jam
Duration: 2 hours

Sila pastikan bahawa kertas peperiksaan ini mengandungi **LAPAN** muka surat yang tercetak sebelum anda memulakan peperiksaan ini.

*Please check that this examination paper consists of **EIGHT** pages of printed material before you begin the examination.*

Kaedah pengukuran perlu berdasarkan kepada prinsip-prinsip dalam Kaedah Ukuran Standard bagi Kerja Bangunan Edisi Kedua (SMM2).

Jawab **SEMUA** soalan.

Answer **ALL** questions.

1. Ukur segala item yang berkaitan dengan kerja besi yang dipasang impal untuk ruang bumbung pentas dalam **Lukisan 1**. Untuk ini, anda perlu rujuk kepada jadual besi yang disediakan. Seluruh item komponen mesti dicat dengan satu lapisan primer plumbum merah di luar tapak. Lukisan adalah tidak mengikut skala. Sila gunakan ukuran yang tertulis dalam lukisan.

*Measure all items connected with the welded fabricated steelwork to stage loft as **Drawing 1**. For this, you need to refer to the steel tables that are provided. The entire composite item must be painted with one coat of red lead primer off site. Drawings are not to scale. Please use the written dimension on the drawings.*

(100 markah/marks)

2. Ukurkan kerja-kerja jalan untuk tempat letak kereta berpandukan kepada **Lukisan R**. Setiap petak bersaiz 2.4 m x 4.8 m. Sila ambil perhatian, lukisan adalah tidak mengikut skala.

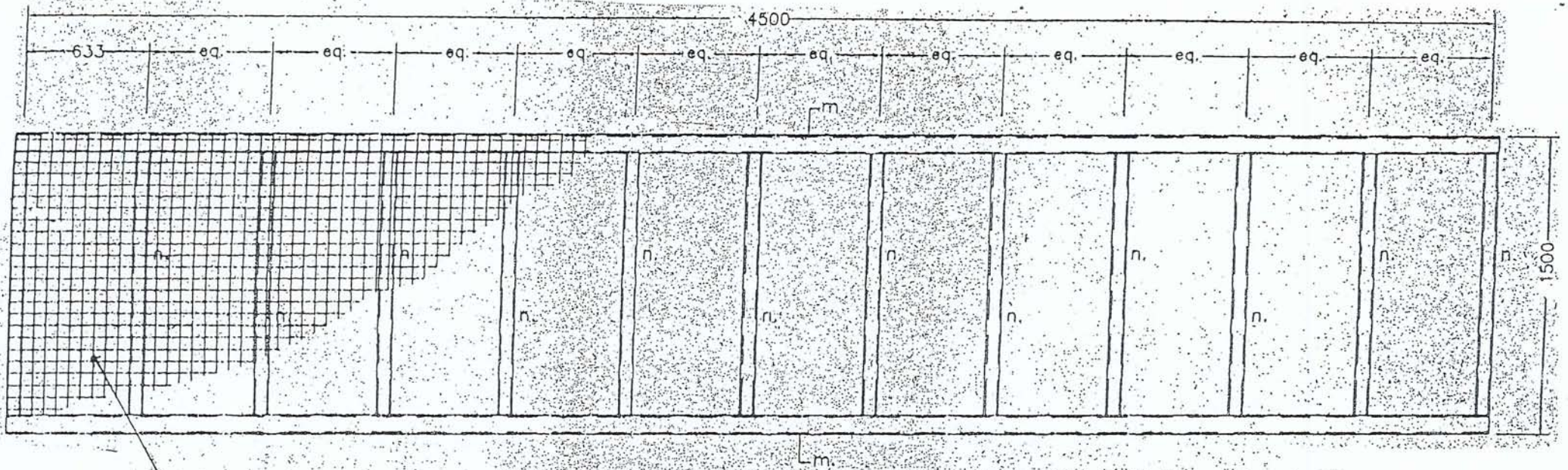
*In accordance with **Drawing R**, measure the road works items for the car park area. The size of each bay is 2.4 m x 4.8 m. Please note that the drawings are not to scale.*

(100 markah/marks)

3. Merujuk kepada **Drawing A-Site Plan**, anda diminta mengira jumlah kuantiti tanah yang perlu dikorek/ditimbus bagi meratakan tanah di kawasan tapak bina yang ditandakan dengan garisan putus-putus. Dengan menggunakan skala 1:500, anda perlu membahagikan kawasan tersebut kepada grid-grid bersaiz 20 m setiap satu. Anda tidak perlu membawa kuantiti tersebut ke kertas ukuran. (Perhatian: Paras yang mempunyai 2 nombor perpuluhan adalah paras yang dikehendaki).

*With reference to **Drawing A-Site Plan**, you are required to calculate the quantity of earth/soil to be excavated/filled for the leveling work within the site area enclosed within the dotted line. Using the scale of 1:500, you are required to use a grid size of 20 m for each divided section. You are not required to transfer the quantity to the taking off paper.
(Note: The levels with two decimal places represent the proposed finished level).*

(100 markah/marks)



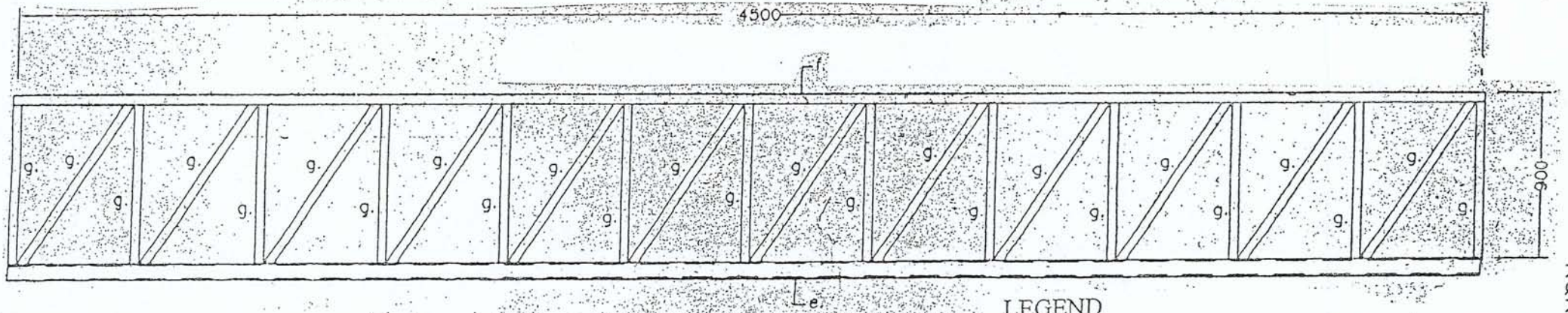
4.5mm THK. M.S. CHECKER PLATE

BIRD VIEW - CAT WALK

LEGEND

- m. 100x75x3.0 thk. RHS
- n. 75x50x3.0 thk. RHS

-3-



SIDE VIEW - CAT WALK

LEGEND

- e. 100x75x3.0 thk. RHS
- f. 50mm Ø CLASS 'A' BLACK PIPE
- g. 40mm Ø CLASS 'A' BLACK PIPE

-4-

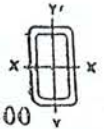
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CHEQUERED PLATE

WEIGHT TABLE, kg(lb)

Thickness	Unit Weight,	Width and Length, mm (Figures in the lower row – e.g., 3 x 6 – are nominal sizes in feet)							
		914 x 1,829	914 x 3,658	1,219 x 2,438	1,219 x 3,048	1,219 x 4,877	1,219 x 6,096	1,524 x 3,048	1,524 x 6,096
mm (in)	kg/m ² (lb/ft ²)	(3 x 6)	(3 x 12)	(4 x 8)	(4 x 10)	(4 x 16)	(4 x 20)	(5 x 10)	(5 x 20)
2.3 (0.091)	19.73 (4.04)	33.0 (72.75)	66.0 (145.5)	58.6 (129.2)	73.3 (161.6)	117 (257.9)	147 (324.1)	91.6 (201.9)	183 (403.4)
3.2 (0.126)	26.79 (5.49)	44.8 (98.77)	89.6 (197.5)	79.6 (175.5)	99.6 (219.6)	159 (350.5)	199 (438.7)	124 (273.4)	249 (549.0)
4.5 (0.177)	36.99 (7.58)	61.8 (136.2)	124 (273.4)	110 (242.5)	137 (302.0)	220 (485.0)	275 (606.3)	172 (379.2)	344 (758.4)
6.0 (0.236)	48.77 (9.99)	81.5 (179.7)	163 (359.4)	145 (319.7)	181 (399.0)	290 (639.3)	362 (798.1)	227 (500.4)	453 (998.7)
8.0 (0.315)	64.47 (13.2)	108 (238.1)	216 (476.2)	192 (423.3)	240 (529.1)	383 (844.4)	479 (1,056)	299 (659.2)	599 (1,321)
9.0 (0.354)	72.32 (14.8)	121 (266.8)	242 (533.5)	215 (474.0)	269 (593.9)	430 (948.0)	537 (1,184)	336 (740.8)	672 (1,482)
10.0 (0.394)	80.17 (16.4)	134 (295.4)	268 (590.8)	238 (524.7)	298 (657.0)	477 (1,052)	596 (1,314)	372 (820.1)	745 (1,642)
12.0 (0.472)	95.87 (19.6)	167 (368.2)	320 (705.5)	285 (628.3)	356 (748.8)	570 (1,257)	712 (1,570)	445 (981.1)	891 (1,964)

Rectangular Hollow Sections



ASTM A-500

DIMENSIONS								AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
SIZE		WALL THICKNESS		CALCULATED WEIGHT					I_x	I_y	Z_x	Z_y	r_x	r_y	S_x	S_y
NOMINAL	ACTUAL															
75 x 50	3 x 2	1.9	0.075	3.60	21.618	1.10	2.42	0.714	0.88	0.486	0.587	0.486	1.12	0.325	0.85	0.650
		2.3	0.091	4.31	25.878	1.32	2.90	0.863	1.06	0.578	0.707	0.578	1.11	0.818	0.91	0.696
		2.4	0.095	4.51	27.060	1.37	3.03	0.900	1.10	0.589	0.734	0.589	1.11	0.813	0.97	0.739
		3.0	0.120	5.59	23.540	1.70	3.76	1.11	1.34	0.711	0.890	0.711	1.10	0.802	1.09	0.826
		3.2	0.125	5.80	34.800	1.77	3.90	1.15	1.38	0.733	0.920	0.733	1.10	0.800	1.13	0.855
		4.0	0.156	7.08	42.480	2.16	4.76	1.40	1.63	0.864	1.09	0.864	1.08	0.785	1.36	1.02
		4.5	0.177	7.88	47.271	2.40	5.30	1.58	1.82	0.958	1.21	0.958	1.07	0.778	1.50	1.12
100 x 75	4 x 3	3.0	0.120	8.02	48.120	2.44	5.39	1.59	3.63	2.33	1.81	1.55	1.51	1.21	2.17	1.78
		3.2	0.125	8.33	49.980	2.54	5.60	1.65	3.76	2.41	1.88	1.61	1.51	1.21	2.25	1.85
		4.0	0.156	10.2	61.200	3.12	6.88	2.02	4.52	2.90	2.26	1.93	1.49	1.20	2.74	2.25
		4.5	0.177	11.5	69.105	3.51	7.74	2.27	4.99	3.19	2.50	2.13	1.48	1.19	3.03	2.50
		4.6	0.180	11.7	70.200	3.56	7.84	2.31	5.07	3.24	2.53	2.16	1.48	1.19	3.09	2.54
		5.0	0.197	12.8	76.582	3.88	8.55	2.52	5.50	3.50	2.75	2.33	1.477	1.18	3.38	2.78
		6.0	0.236	15.1	90.865	4.60	10.14	2.99	6.43	4.07	3.21	2.71	1.466	1.16	4.04	3.33

CIRCULAR HOLLOW SECTIONS
British Standard Welded Steel Pipe

M.S. Black Pipe : BS 1387:1985

Thickness CLASS	Normal Size		Outside Diameter		Wall Thickness	Calculated Weight (Plain End)		Hexagon Packing
	mm	in.	max. mm	min. mm		kg/m	kg/6m	
			D	D	t			pcs
Class A (Light)	15	1/2"	21.4	21.0	2.0	0.947	5.68	91
	20	3/4"	26.9	26.4	2.3	1.38	8.28	91
	25	1"	33.8	33.2	2.6	1.98	11.88	91
	32	1-1/4"	42.5	41.9	2.6	2.54	15.24	44
	40	1-1/2"	48.4	47.8	2.9	3.23	19.38	44
	50	2"	60.2	59.6	2.9	4.08	24.48	44
	65	2-1/2"	76	75.2	3.2	5.71	34.26	19
	80	3"	88.7	87.9	3.2	6.72	40.32	19
	100	4"	113.9	113.0	3.6	9.75	58.50	10
Class B (Medium)	15	1/2"	21.7	21.1	2.6	1.21	7.26	91
	20	3/4"	27.2	26.6	2.6	1.56	9.36	91
	25	1"	34.2	33.4	3.2	2.41	14.46	91
	32	1-1/4"	42.9	42.1	3.2	3.10	18.60	44
	40	1-1/2"	48.8	48.0	3.2	3.57	21.42	44
	50	2"	60.8	59.8	3.6	5.03	30.18	44
	65	2-1/2"	76.6	75.4	3.6	6.43	38.58	19
	80	3"	89.5	88.1	4.0	8.37	50.22	19
	100	4"	114.9	113.3	4.5	12.2	73.20	10
Class C (Heavy)	15	1/2"	21.7	21.1	3.2	1.44	8.64	91
	20	3/4"	27.2	26.6	3.2	1.87	11.22	91
	25	1"	34.2	33.4	4.0	2.94	17.64	91
	32	1-1/4"	42.9	42.1	4.0	3.80	22.80	44
	40	1-1/2"	48.8	48.0	4.0	4.38	26.28	44
	50	2"	60.8	59.8	4.5	6.19	37.14	44
	65	2-1/2"	76.6	75.4	4.5	7.93	47.58	19
	80	3"	89.5	88.1	5.0	10.30	61.80	19
	100	4"	114.9	113.3	5.4	14.50	87.00	10

LUKISAN R (DRAWING R)

ROAD AND DRAINAGE
SITE PLAN AND SECTION OF ROAD

