APPENDIX C

SIZING STORM WATER DRAINAGE SYSTEMS

C 1.0 Roof Drainage.

The rainfall rates should be as per the data available with Meteorological Department of Abu Dhabi.

C 2.0 Sizing by Flow Rate.

Storm drainage systems shall be permitted to be sized by storm water flow rates, using the appropriate L/min./m² (gpm/ft.²) of rainfall rate based on the local area (25mm [1 in.] per rain fall converts to 0.0394L/min./m² (0.0104 gpm/ft.²). For any given rainfall, multiply the mm/hr by 0.0394 (in./hr by 0.0104) to arrive at the L/min./m² (gpm/ft.²) of roof area. Multiplying the listed L/min./m² (gpm/ft.²) by the roof area being drained by each inlet (in m² [ft.²]) produces the L/min. (gpm) of required flow for sizing each drain inlet. The flow rates (L/min. [gpm]) can then be added to determine the flows in each section of the drainage system. Required pipe sizes for various flow rates (L/min. [gpm]) are listed in Table 11-1 and Table 11-2 of this code.

C 3.0 Sizing by Roof Area.

Storm drainage systems shall be permitted to be sized using the roof area served by each section of the drainage system. Maximum allowable roof areas with various rainfall rates are listed in Table 11-1 and Table 11-2, along with the required pipe sizes. Using this method, it may be necessary to interpolate between two listed rainfall rate columns mm/h (in./h). To determine the allowable roof area for a listed pipe size at a listed slope, divide the allowable m² (ft.²) of roof for 25mm/h (1 in./h) rainfall rate by the listed rainfall rate for the local area. For example, the allowable roof area for a 150mm (6 in.) drain at a slope equal to 3mm (1/8 in.) with a rainfall rate of 80mm/h (3.2 in./h) is:

$$\frac{[1{,}988\text{m}^2 \times 25\text{mm/h}]}{80\text{mm/h}} = 621\text{m}^2\ (6{,}688\ \text{ft.}^2)$$

C 4.0 Capacity of Rectangular Scuppers.

Table D-1 lists the discharge capacity of rectangular roof scuppers of various widths with various heads of water. The maximum allowable level of water on the roof should be obtained from the structural engineer, based on the design of the roof.

TABLE C-1[1,4]
Discharge from Rectangular Scuppers – L/sec.

Water Head[2]	Width of Scupper in mm.[3]					
mm	150	300	450	600	750	900
15	0.4	0.8	1.2	1.6	2.0	2.4
25	1.1	2.2	3.3	4.5	5.6	6.8
40	2.0	4.0	6.1	8.2	10.3	12.4
50		6.2	9.4	12.6	15.8	19.1
65		8.6	13.1	17.5	22.0	26.5
80		11.2	17.1	23.0	28.9	34.8
90			21.4	28.8	36.3	43.7
100			26.0	35.1	44.2	53.3

SI: 1mm = 0.04 in.; 1L/s = 0.26gpm

Notes:

1. Table D-1 is based on discharge over a rectangular weir with end contractions.
2. Head is the depth of water above bottom of the scupper opening.
3. The height of the scupper opening shall be not less than two times the design head.
4. Coordinate the allowable head of water with the structural design of the roof.