BUROHAPPOLD ENGINEERING

BH-ZSG-CAL-P-0003

STORM DRAINAGE CALCULATION

Revision	Description	Issued by	Date	Checked by
00	Tender	TA	Nov-15	TA
01	Tender	TA	Dec-15	TA

BUROHAPPOLD ENGINEERING

Project	Lodha Clarient		
		Revision	00
Area of Project	Plot-C Sales gallery	Prepared by	TA
		Date	01/12/15
Element Description	Sitewide Storm Drainage	Checked by	TA
		Date	01/12/2015

Input	Output	Calculated

Sr. No	Area Tag	Area Served	Area	Cumulative Area	Run-Off Coeff.	Rainfall Intensity	Flow	Mannings Roughness	Filling Degree	Horizontal Trench Run					Horizontal Pipe run			Horizontal Run	Slope		Fall	Wetted Perimeter (P)	Cross Sectional Area (A)	Hydraullic Radius (R) = A / P	V = 1/N*R^(2/3)*sqrt (S)	Flow Q = A x V	Flow Check
										W Channel Starting Width	H Channel Starting Height	Y Channel Final Height	Wetted Perimeter (P)	Cross Sectional Area (A)	D Ø Dia	Wetted Perimeter (P)	Cross Sectional Area (A)										
			m^2	m^2		mm/hr	Litres/sec			mm	mm	mm	m	m^2	mm	m	m^2	m			mm	m	m^2	m	m/sec	Litres/sec	
TRENCHES																											
1	For 60 m Trench		1140.0	1140.0	1	100	31.67	0.015	0.50	**250**	**150**	**366.7**	0.4	0.0		0.000	0.000	65	1	: 300	216.7	0.433	0.046	0.11	0.86	39.5	OK
2	Behind office	For 130m Trench	5000.0	5000.0	0.8	100	111.11	0.015	0.50	**400**	**150**	**583.3**	0.7	0.1		0.000	0.000	130	1	: 300	433.3	0.692	0.117	0.17	1.18	137.1	OK
3	Mid	For 50m Trench	2100.0	2100.0	0.8	100	46.67	0.015	0.50	**400**	**150**	**316.7**	0.6	0.1		0.000	0.000	50	1	: 300	166.7	0.558	0.063	0.11	0.90	57.1	OK
4	V corner	For 80m Trench	2500.0	2500.0	0.8	100	55.56	0.015	0.50	**400**	**150**	**416.7**	0.6	0.1		0.000	0.000	80	1	: 300	266.7	0.608	0.083	0.14	1.02	85.2	OK
PIPES																											
1	For 60 m						31.67	0.015	0.80				0	0	**ø 250**	0.628	0.039	3	1	: 100	30	0.628	0.039	0.06	1.05	41.2	OK
2	Behind office						111.11	0.015	0.80				0	0	**ø 400**	1.005	0.101	3	1	: 100	30	1.005	0.101	0.10	1.44	144.4	OK
3	Mid						46.67	0.015	0.80				0	0	**ø 350**	0.880	0.077	3	1	: 200	15	0.880	0.077	0.09	0.93	71.5	OK
4	V corner						55.56	0.015	0.80				0	0	**ø 350**	0.880	0.077	3	1	: 100	30	0.880	0.077	0.09	1.31	101.1	OK

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Project	Lodha Clarient		
		Revision	00
Area of Project	Plot-C Sales gallery	Prepared by	TA
		Date	01/12/15
Element Description	Roof rainwater downtake sizing	Checked by	TA
		Date	01/12/2015

Input	Output

City	Mumbai
Pipe Material	UPVC/CPVC

Sr No.	Parameter	Value	Unit
1	Rate of rain fall	100	mm/hr
2	Diameter of pipe considered	200	mm
3	Run off co-efficient	1	
4	Effective Roof Area with 1 pipe	309	m^2
5	Total roof area	600	m^2
6	No of downcomer pipes	2	mm
7	Flow through each pipe	8.58	L/s

where

d = Pipe diameter; mm

I = Intensity of rainfall (mm/h).

Table 28 Sizing of Rain-Water Pipes for Roof Drainage

(*Clause* 5.5.11.6.8)

Dia of Pipe	Average Rate of Rainfall (mm/h)					
(mm)	50	75	100	125	150	200
	Roof Area (m^2)					
50	13.4	8.9	6.6	5.3	4.4	3.3
65	24.1	16.0	12.0	9.6	8.0	6.0
75	40.8	27.0	20.4	16.3	13.6	10.2
100	85.4	57.0	42.7	34.2	28.5	21.3
125	159.71	106.73	80.50	64.3	53.5	40.0
150	249.60	166.82	125.27	100.00	83.6	62.7

NOTE — For rain-water pipes of other materials, the roof areas shall be multiplied by (0.013/coefficient of roughness of surface of that material).