

Fleur De Lis Title US 190 Business Slidell

Lot 11A

442 Frenaux Ave

Slidell, La

Drainage Calculations - Modified Rational Method, LDOTD Hydraulics Manual

Predevelopment Condition

25 Year Frequency

Q= CiA			Factor	Area, sf	Total
	Undeveloped Area		0.2	6,627	1325.4
	Gravel Area		0.6	3,025	1815
	Building/paving		0.95	1,137	1080.15
				10,789	4220.55
	Weighted C Factor		0.39		
L	Hydraulic Length, L	130	feet		
	Slope, in %, S	0.9231			0.009231
C	Runoff Coefficient, C	0.39			
Tc	Time of Concentration	Tc	13.9	minutes	
		6.730256	2.890471	1.016015	
i	intensity from Region 1		7.14		
		D	0.231878		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.248			
	Q25 Flow, cfs	C*i*A	0.69	cfs	

Q25 Predev Flow 0.69 cfs

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Postdevelopment Condition

25 Year Frequency

Q= CiA			Factor	Area, sf	Total
	Undeveloped Area		0.2	1,609	321.80
	Gravel Area		0.6	6,388	3832.80
	Building/ paving		0.95	2,792	2652.40
				10,789	6807.00
	Weighted C Factor		0.631		
L	Hydraulic Length, L	106	feet		
	Slope, in %, S	1.8868			0.018868
C	Runoff Coefficient, C	0.631			
Tc	Time of Concentration	Tc	6.5	minutes	
		6.213157	1.683483	0.881594	
i	intensity from Region 1		8.66		
		D	0.108181		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.248			
	Q25 Flow, cfs	C*i*A	1.35	cfs	

Q25 Postdev Flow 1.35 cfs

Q25 Allowable Flow- 90% Undeveloped Flow = 0.62 cfs

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Storage Requirements for a 25 Year Frequency Storm Event**

$$i = a(D + b)^c$$

$$q = CiA$$

$$\text{Max Storage Volume} = [(D \times q) - (.5 \times Q_{25} \text{ Allowable Flow} \times (D + T_c))]$$

Storm Duration (D)	Time	i	q, cfs	Max. Storage Volume, cf	Max. Storage Volume, ac-ft
10	min	7.86	1.23	429	0.010
20	min	6.28	0.98	682	0.016
30	min	5.27	0.82	800	0.018
60	min	3.64	0.57	804	0.018
75	min	3.18	0.50	710	0.016
100	min	2.64	0.41	484	0.011
125	min	2.27	0.35	204	0.005

Discharge End Area Calculations :

$$q = cA(2gh)^{1/2}$$

Allowable Run Off, q	0.62 cfs	
Friction Factor, c	0.62	
Acceleration, g	32.2 ft/ft/sec	
Height above Invert, H ft	0.5 ft	
End Area, Sq ft	0.18 s.f.	5.674504
Square Inches	25.49 s.i.	
Diameter, Inches	5.70 inches	

Use 8.03" Diameter Orifice Plate in Terminal CB

