

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	5,334	1066.7
	Gravel Area		0.6	0	0
	Building/paving		0.95	0	0
				5,334	1066.7
	Weighted C Factor		0.20		
L	Hydraulic Length, L	67	feet		
	Slope, in %, S	1.7910			0.01791
C	Runoff Coefficient, C	0.20			
Tc	Time of Concentration	Tc	20.1	minutes	
		5.191269	6.172558	0.890755	
i	intensity from Region 1		6.27		
		D	0.334855		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.122			
	Q25 Flow, cfs	C*i*A	0.15	cfs	

Q25 Predev Flow**0.15 cfs**

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Postdevelopment Condition**25 Year Frequency**

Q= CiA			Factor	Area, sf	Total
	Undeveloped Area		0.2	1,217	243.46
	Gravel Area		0.6	3,499	2099.52
	Building/ paving		0.95	617	586.15
				5,334	2929.13
	Weighted C Factor		0.549		
L	Hydraulic Length, L	137	feet		
	Slope, in %, S	1.8248			0.018248
C	Runoff Coefficient, C	0.549			
Tc	Time of Concentration	Tc	8.5	minutes	
		6.869948	1.969443	0.887458	
i	intensity from Region 1		8.19		
		D	0.140865		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.122			
	Q25 Flow, cfs	C*i*A	0.55	cfs	

Q25 Postdev Flow 0.55 cfs**Q25 Allowable Flow- 90% Undeveloped Flow = 0.14 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	0.53	241	0.006
20	min	6.28	0.42	389	0.009
30	min	5.27	0.35	478	0.011
60	min	3.64	0.24	597	0.014
75	min	3.18	0.21	615	0.014
100	min	2.64	0.18	615	0.014
125	min	2.27	0.15	592	0.014

Discharge End Area Calculations :

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

Allowable Run Off, q	0.14 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	0.04 s.f.	5.674504
Square Inches	5.65 s.i.	
Diameter, Inches	2.68 inches	

Use 2.68" Diameter Orifice Plate in Terminal CB