

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		0.25	3,025	756.25
	Building/paving		0.95	1,137	1080.15
				10,789	3161.8
	Weighted C Factor		0.29		
L	Hydraulic Length, L	130	feet		
	Slope, in %, S	0.9231			0.009231
C	Runoff Coefficient, C	0.29			
Tc	Time of Concentration	Tc	19.3	minutes	
		6.730256	4.00703	1.016015	
i	intensity from Region 1		6.37		
		D	0.321451		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.248			
	Q25 Flow, cfs	C*i*A	0.46	cfs	

Q25 Predev Flow 0.46 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		0.25	6,388	1597.00
	Building/ paving		0.95	2,792	2652.40
				10,789	4571.20
	Weighted C Factor		0.424		
L	Hydraulic Length, L	106	feet		
	Slope, in %, S	1.8868			0.018868
C	Runoff Coefficient, C	0.424			
Tc	Time of Concentration	Tc	10.2	minutes	
		6.213157	2.641011	0.881594	
i	intensity from Region 1		7.82		
		D	0.169711		
		a	4.611		
		b	0.346		
		c	-0.798		
A	Area, Acres	0.248			
	Q25 Flow, cfs	C*i*A	0.82	cfs	

Q25 Postdev Flow 0.82 cfs

Q25 Allowable Flow- 90% Undeveloped Flow = 0.42 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	0.82	243	0.006
20	min	6.28	0.66	414	0.010
30	min	5.27	0.55	494	0.011
60	min	3.64	0.38	499	0.011
75	min	3.18	0.33	437	0.010
100	min	2.64	0.28	287	0.007
125	min	2.27	0.24	101	0.002

Discharge End Area Calculations :

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

Allowable Run Off, q	0.42 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	0.12 s.f.	5.674504
Square Inches	17.02 s.i.	
Diameter, Inches	4.66 inches	

Use 8.03" Diameter Orifice Plate in Terminal CB

