

MARSH LANE

BELT LINE ROAD

NOT THIS CONTRACT  
PROPOSED TACO CABANA

**DETENTION CALCULATIONS**

**ALLOWABLE FLOW**  
 $Q = \left(\frac{1.49}{n}\right) AR^{2/3} S^{1/2}$   
 $n = 0.013$   
 $A = 3.1416$   
 $R = 0.5000$   
 $S = 0.0137$   
 $Q_{top} = 26.5 \text{ cfs}$   
 LESS 8 cfs (estimated contribution from Belt Line Road)  
 $Q_{allowable} = 18.5 \text{ cfs}$

**DEVELOPED CONDITIONS**

AREA	ACRES	C	CA
B	0.64	0.9	0.576
B-1	0.32	0.9	0.288
OS-1	7.72	0.5	3.860
OS-2	1.22	0.9	1.098
TOTAL SITE CA =			5.822

$\frac{5.822 \text{ acres}}{9.90 \text{ acres}} = 0.588 = \text{WEIGHTED "C"}$   
 $t_c = 10 \text{ min}$   
 $I_{100} = 8.88 \text{ in/hr}$   
 $Q_{100} = (0.588)(8.88)(9.9) = 51.7 \text{ cfs}$

50 min  $I_{100} = 4.4 \text{ in/hr}$   $Q = (0.588)(4.4)(9.90) = 25.6 \text{ cfs}$   
 60 min  $I_{100} = 4.0 \text{ in/hr}$   $Q = (0.588)(4.0)(9.90) = 23.3 \text{ cfs}$   
 70 min  $I_{100} = 3.7 \text{ in/hr}$   $Q = (0.588)(3.7)(9.90) = 21.5 \text{ cfs}$   
 80 min  $I_{100} = 3.4 \text{ in/hr}$   $Q = (0.588)(3.4)(9.90) = 19.8 \text{ cfs}$

**DETENTION PROVIDED**

WS ELEV 601.4 VOLUME = 45941 c.f.

**OUTLET CALCULATION**

PIPE DIAMETER 18"  
 $h = 2.85'$   
 MAX WS 601.40  
 EX 24" RCP W/ 18" RESTRICTOR PLATE  
 597.80  
 $Q = CA \sqrt{2gh}$   
 $[(0.70)(1.77)][(2)(32.2)(2.85)]^{1/2} = 16.8 \text{ cfs}$

DRAINAGE AREA NO.	DRAINAGE AREA (acres)	C	$I_{100}$ (in/hr)	$Q_{100}$ (cfs)	Comments
A	1.16	0.90	8.88	9.3	5' CURB INLET
A-1	0.62	0.90	8.88	5.0	ROOF DRAIN TO 15" RCP
A-2	0.20	0.90	8.88	1.6	5' CURB INLET
B	0.49	0.90	8.88	3.9	5' CURB INLET - DETAINED
B-1	0.34	0.90	8.88	2.7	5' CURB INLET - DETAINED
B-2	0.47	0.90	8.88	3.8	5' CURB INLET - DETAINED
C	0.60	0.90	8.88	4.8	5' CURB INLET
D	0.19	0.90	8.88	1.5	SHEET FLOW TO BELT LINE ROAD
E	0.14	0.90	8.88	1.1	SHEET FLOW TO MARSH LANE
F	0.42	0.90	8.88	3.4	SHEET FLOW TO MARSH LANE
G	0.07	0.90	8.88	0.6	SHEET FLOW TO MARSH LANE
H	0.08	0.90	8.88	0.7	SHEET FLOW TO BELT LINE ROAD
I	0.07	0.90	8.88	0.6	SHEET FLOW TO BELT LINE ROAD
OS1	7.72	0.50	8.88	34.3	SHEET FLOW - DETAINED
OS2	1.22	0.90	8.88	9.8	10' CURB INLET - DETAINED

**DRAINAGE CRITERIA**

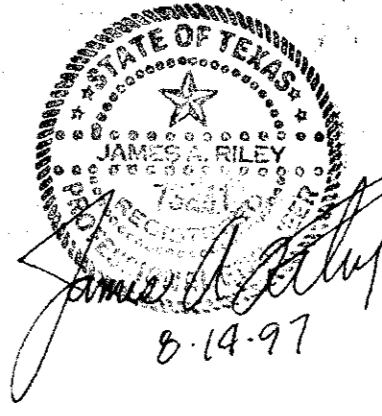
$Q = C I A$   
 $C = 0.85$   
 $I_{100} = 8.88 \text{ in/hr}$   
 $t_c = 10 \text{ min}$

**LEGEND**

- Existing Curb
- Proposed Curb
- Drainage Divide Line
- ① Area No.

**DRAINAGE AREA MAP**  
 MARSH/BELT LINE SHOPPING CENTER  
 TOWN OF ADDISON  
 DALLAS COUNTY, TEXAS

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**BENCHMARK:**  
 TOP CURB EXISTING 10' INLET ±100' WEST OF CHIC-FIL-A RESTAURANT NORTH SIDE OF BELT LINE ROAD.  
 ELEV. 601.63

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
JAR	DJR	AUG 97	1"=50'	BDD	C97268	C-5