

DETENTION CALCULATIONS

DETENTION BASED ON CURRENTLY UNDEVELOPED AREA OF THE PROJECT. AREAS 'A' & 'B' CONTRIBUTE FLOW TO DETENTION SYSTEM. THE FOLLOWING INDICATES AMOUNT OF STORM WATER RUNOFF FROM AREAS 'A' & 'B' THAT IS CONSIDERED DEVELOPED AND UNDEVELOPED.

Developed Discharge	Undeveloped Discharge
Area = 3.07 Acres	Area = 0.9 Acres
Cres = 0.9	Cres = 0.35
I100 = 9.8	I100 = 8.3
TC = 10 min	TC = 20 min
Q = 27.1 cfs	Q = 2.6 cfs

$Q(\text{allowable}) = 27.1 + 2.6 = 29.7 \text{ cfs}$

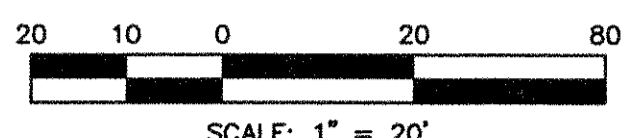
Storm Duration calculations $CA = (0.9)(3.97) = 3.573$

10min = 9.8	Q = 35.02
20min = 8.3	Q = 29.66
30min = 6.9	Q = 24.65
40min = 5.8	Q = 20.72
50min = 5.0	Q = 17.87
60min = 4.5	Q = 16.08
70min = 4.2	Q = 15.01
80min = 3.9	Q = 13.93
90min = 3.5	Q = 12.51

Volume Determination

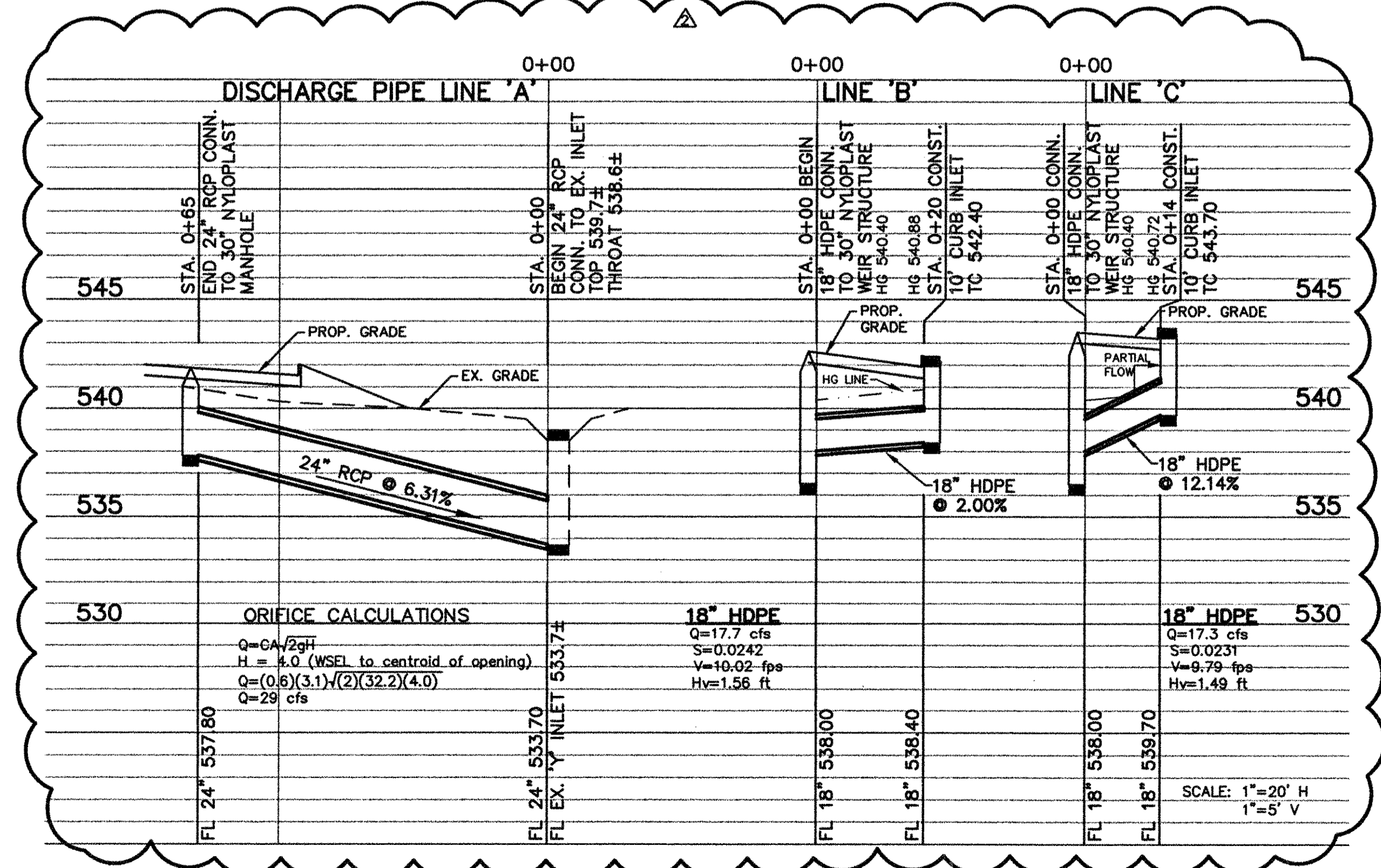
10min	10 x 35.02 x 60	= 21,012
	0.5 x 20 x 29.7 x 60	= 17,820
		3,192 c.f.
20min	20 x 29.66 x 60	= 35,592
	0.5 x 30 x 29.7 x 60	= 26,730
		8,862 c.f.*
30min	30 x 24.65 x 60	= 44,370
	0.5 x 40 x 29.7 x 60	= 35,640
		8,730 c.f.
40min	40 x 20.72 x 60	= 49,728
	0.5 x 50 x 29.7 x 60	= 44,550
		5,178 c.f.

* Volume Required: 8,862 cft
Volume Provided: 8,990 cft



LEGEND

- SCHEMATIC UNDERGROUND DETENTION LAYOUT
- ACCESS MANHOLE
- CLEANOUT



ORIFICE CALCULATIONS

$Q = CA \sqrt{2gh}$
 $H = 1.0$ (WSEL to centroid of opening)
 $C = (0.6)(3.1) / (2)(32.2)(4.0)$
 $Q = 29 \text{ cfs}$

18\"/>

18\"/>

RELEASE RATE CALCULATION

STORM EVENT	VOLUME REQ.	DEPTH OF POND	ALLOWABLE DISCHARGE	ACTUAL DISCHARGE
10 yr	4,344	2.4'	22.8 cfs	17.3 cfs
25 yr	6,840	3.8'	24.8 cfs	24.8 cfs
50 yr	7,680	4.3'	27.2 cfs	27.0 cfs
100 yr	8,862	5.0'	29.7 cfs	29.0 cfs

RATING TABLE

DEPTH (ft)	DISCHARGE (cfs)
0.0	N/A
1.0	9.8
2.0	14.8
3.0	21.0
4.0	25.8
5.0	29.0

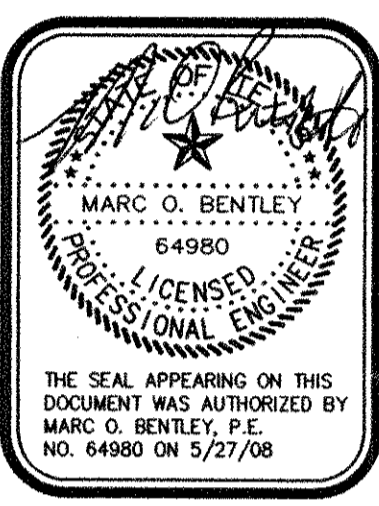
BENCHMARK: CENTER RIM OF EXISTING SANITARY SEWER MANHOLE LOCATED ON THE NORTHEAST CORNER OF EXISTING PARKING LOT AND 180' SOUTH OF THE NORTHEAST PROPERTY CORNER.

ELEV. 545.99

RECORD DRAWING

IMPROVEMENTS INDICATED ON THESE PLANS WHERE REVISED IN ACCORDANCE WITH THE ASBUILT SURVEY PERFORMED BY LANE'S SOUTHWEST SURVEYING, INC. AND PROVIDED TO BENTLEY ENGINEERING, INC. ON 12/03/08.

DATE: DECEMBER 3, 2008



UNDERGROUND DETENTION
 SHENANIGANZ
 CITY OF ROCKWALL, TEXAS

RECORD DRAWING

No.	Date	Revision
2	9/05/08	REVISED TO STORM SYSTEM
1	6/12/08	REVISED PER CITY COMMENTS

Scale:	1"=20'
File Name:	SSSITE
Date:	APRIL 2008
Project No.:	28110