

LEGEND

- B. BOLLARD
- EM. ELECTRIC METER
- PP. POWER POLE
- LS. LIGHT STANDARD
- WM. WATER METER
- WV. WATER VALVE
- ICV. IRRIGATION CONTROL VALVE
- FH. FIRE HYDRANT
- CO. CLEANOUT
- MH. MANHOLE
- TSC. TRAFFIC SIGNAL CONTROL
- TSP. TRAFFIC SIGNAL POLE
- TE. TELEPHONE BOX
- FP. FLAG POLE
- TS. TRAFFIC SIGN
- X— PROPERTY LINE
- X— FENCE
- DA #3 DRAINAGE AREA NUMBERS
- PROPOSED DRAINAGE DIVIDE

CITY OF ROCKWALL DETENTION BASIN DESIGN

TP 40

GIVEN: Area = 2.44 RESULT: Maximum
 Prop C = 0.70 Required Storage = 14,025 cf
 Prop Tc = 10.0 min
 Max Q = 6.50 cfs

100 Year

5 min. In	10.1	Q = 0.7	10.15	x 2.44	= 17.34 cfs
10 min. In	9.80	Q = 0.7	9.8	x 2.44	= 16.74 cfs
15 min. In	9.10	Q = 0.7	9.1	x 2.44	= 15.54 cfs
20 min. In	8.30	Q = 0.7	8.3	x 2.44	= 14.18 cfs
30 min. In	6.80	Q = 0.7	6.8	x 2.44	= 11.61 cfs
40 min. In	5.80	Q = 0.7	5.8	x 2.44	= 9.91 cfs
50 min. In	5.00	Q = 0.7	5	x 2.44	= 8.54 cfs
60 min. In	4.30	Q = 0.7	4.3	x 2.44	= 7.34 cfs
120 min. In	2.70	Q = 0.7	2.7	x 2.44	= 4.61 cfs

5 min Sto In 5 x 17.34 x 60 = 5,201 cf
 Out 0.5 x 15 x 6.50 = 60 = 2,925 cf
 Storage = 2,276 cf

10 min Sto In 10 x 16.74 x 60 = 10,043 cf
 Out 0.5 x 20 x 6.50 = 60 = 3,900 cf
 Storage = 6,143 cf

15 min Sto In 15 x 15.54 x 60 = 13,989 cf
 Out 0.5 x 25 x 6.50 = 60 = 4,875 cf
 Storage = 9,114 cf

20 min Sto In 20 x 14.18 x 60 = 17,012 cf
 Out 0.5 x 30 x 6.50 = 60 = 5,850 cf
 Storage = 11,162 cf

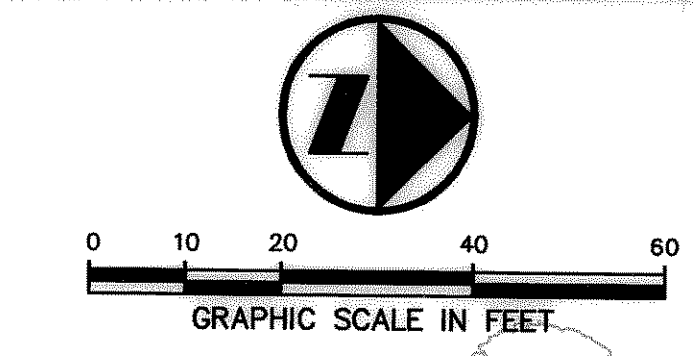
30 min Sto In 30 x 11.61 x 60 = 20,906 cf
 Out 0.5 x 40 x 6.50 = 60 = 7,800 cf
 Storage = 13,106 cf

40 min Sto In 40 x 9.91 x 60 = 23,776 cf
 Out 0.5 x 50 x 6.50 = 60 = 9,750 cf
 Storage = 14,025 cf

50 min Sto In 50 x 8.54 x 60 = 25,620 cf
 Out 0.5 x 60 x 6.50 = 60 = 11,700 cf
 Storage = 13,920 cf

60 min Sto In 60 x 7.34 x 60 = 26,440 cf
 Out 0.5 x 70 x 6.50 = 60 = 13,650 cf
 Storage = 12,790 cf

120 min Sto In 120 x 4.61 x 60 = 33,204 cf
 Out 0.5 x 130 x 6.50 = 60 = 25,350 cf
 Storage = 7,854 cf



FLUME CALCULATIONS

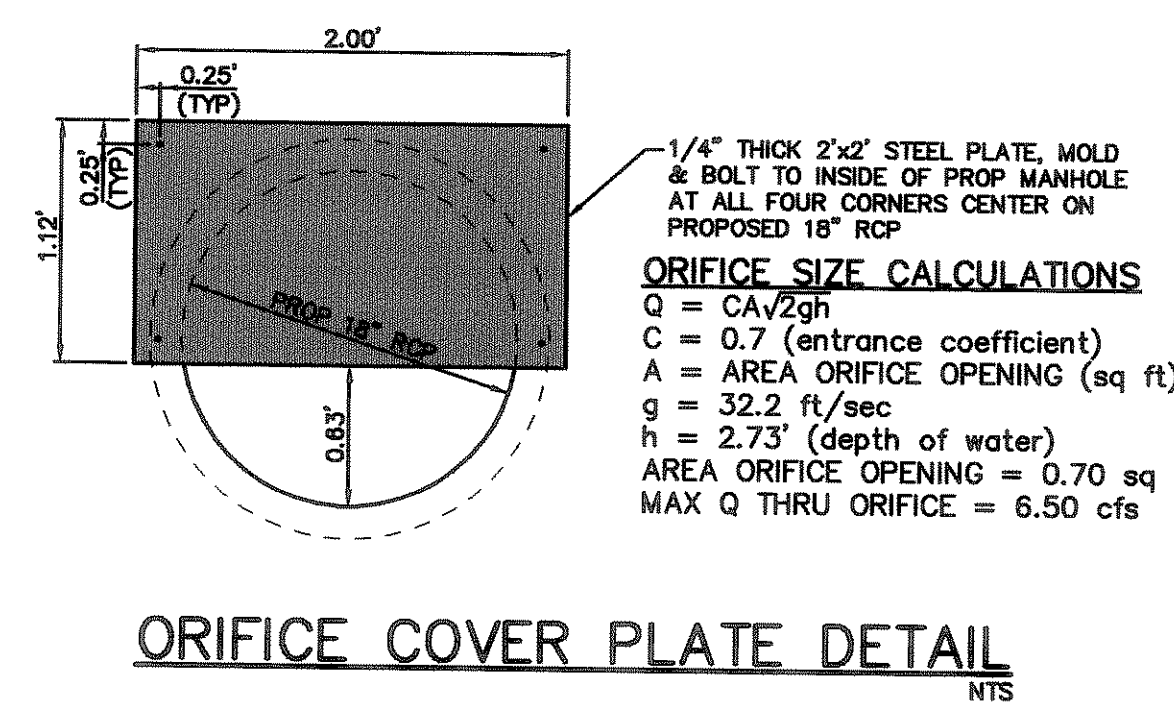
Q = CA^{2/3}g
 C = 0.65 (entrance coefficient)
 A = AREA INLET OPENING (sq ft)
 g = 32.2 ft/sec
 h = 0.7 (depth of water)
 AREA REQUIRED = 1.5 sq ft
 USE 3' WIDE FLUME
 PROPOSED 15" WATER EASEMENT

LOT 10R, BLOCK A
 HORIZON RIDGE ADDITION
 (CAB. E, SLIDE 325-326)
 YANCEY-HAUSMAN DEVELOPMENT, INC.
 (VOL. 2918, PG. 0221)

DRAINAGE AREA TABLE

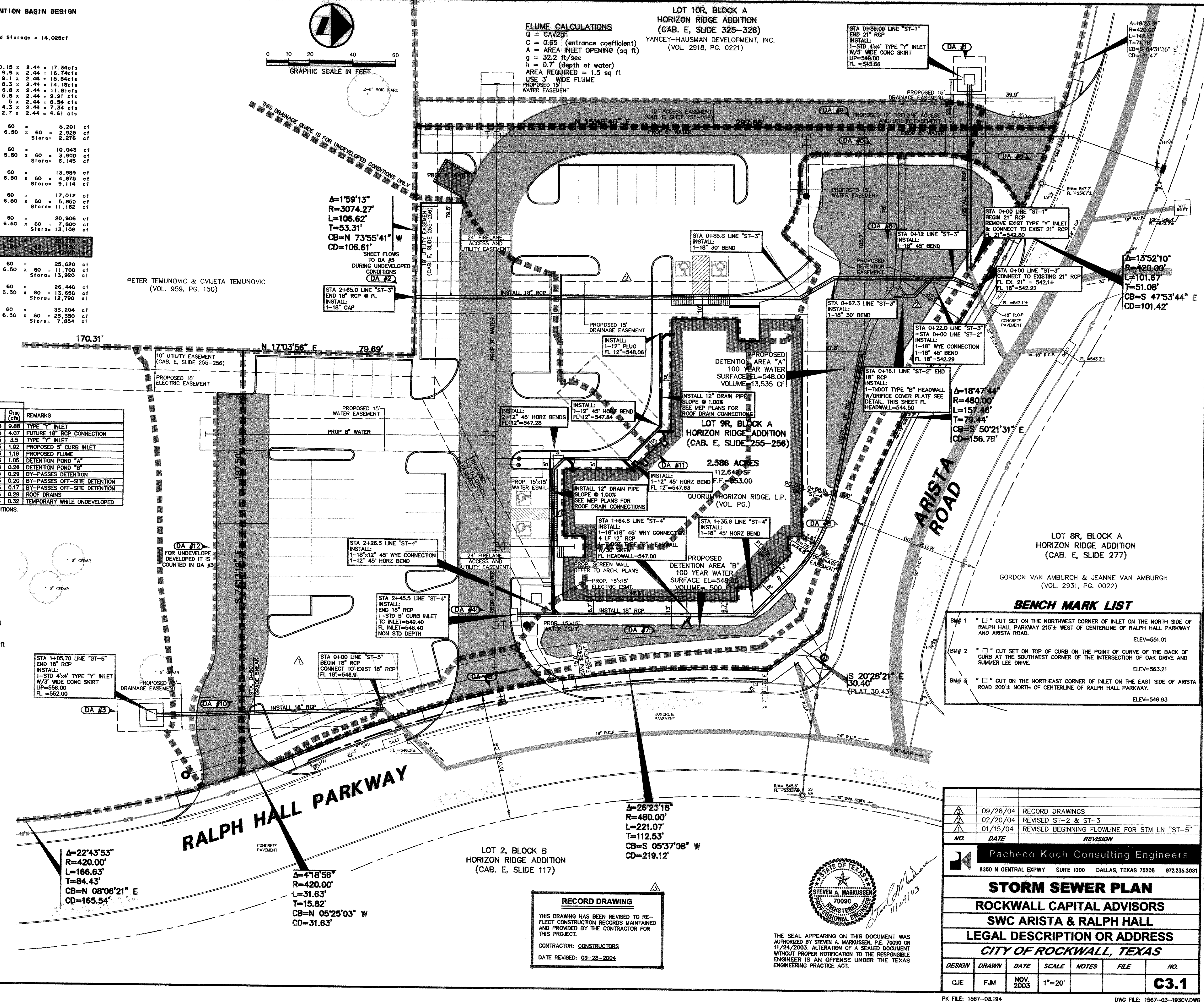
DRAINAGE AREA No.	AREA (acres)	DEVELOPED				UN-DEVELOPED				REMARKS
		Tc (minutes)	I ₁₀₀ (in/hour)	C	Q ₁₀₀ (cfs)	Tc (minutes)	I ₁₀₀ (in/hour)	C	Q ₁₀₀ (cfs)	
DA #1	3.4	100 YEAR	NA	NA	NA	20	8.3	0.35	9.88	TYPE "Y" INLET
DA #2	1.4	100 YEAR	NA	NA	NA	20	8.3	0.35	4.07	FUTURE 18" RCP CONNECTION
DA #3	1.2	100 YEAR	10	9.8	0.90	10.6	20	8.3	3.5	TYPE "Y" INLET
DA #4	0.68	100 YEAR	10	9.8	0.90	5.82	20	8.3	1.92	PROPOSED 5" CURB INLET
DA #5	0.40	100 YEAR	10	9.8	0.90	3.18	20	8.3	1.05	PROPOSED FLUME
DA #6	0.38	100 YEAR	10	9.8	0.90	3.18	20	8.3	1.05	DETENTION POND "A"
DA #7	0.09	100 YEAR	10	9.8	0.90	0.79	20	8.3	0.26	DETENTION POND "B"
DA #8	0.10	100 YEAR	10	9.8	0.90	0.88	20	8.3	0.29	BY-PASSES DETENTION
DA #9	0.07	100 YEAR	10	9.8	0.90	0.61	20	8.3	0.20	BY-PASSES OFF-SITE DETENTION
DA #10	0.08	100 YEAR	10	9.8	0.90	0.53	20	8.3	0.17	BY-PASSES OFF-SITE DETENTION
DA #11	0.10	100 YEAR	10	9.8	0.90	0.88	20	8.3	0.29	ROOF DRAINS
DA #12	0.11	100 YEAR	NA	NA	NA	NA	20	8.3	0.32	TEMPORARY WHILE UNDEVELOPED

* OF THE 1.4 ACRES, 0.83 MI. SHEET FLOW INTO THE DETENTION POND IN UNDEVELOPED CONDITIONS.



DETENTION CRITERIA:

Storm Event	Total Area	Tc	C	I ₁₀₀	Q ₁₀₀	Area Bypass	Q _{bypass}	A _{NET}	Q _{NET}	Storage Required	Expected Depth	Q _{EXPECTED}
10 Year Storm Event	2.54 acres	20 min.	0.35	7.9 in/hr	5.25 cfs	0.10 acres	0.65 cfs	2.44 acres	4.6 cfs (ALLOWABLE RELEASE)	9500 cf	2.38 FT	5.6 cfs
25 Year Storm Event	2.54 acres	20 min.	0.35	8.70 in/hr	5.98 cfs	0.10 acres	0.70 cfs	2.44 acres	5.20 cfs (ALLOWABLE RELEASE)	11110 cf	2.77 FT	8.07 cfs
50 Year Storm Event	2.54 acres	20 min.	0.35	9.8 in/hr	6.67 cfs	0.10 acres	0.81 cfs	2.44 acres	5.86 cfs (ALLOWABLE RELEASE)	11350 cf	2.83 FT	8.1 cfs
100 Year Storm Event	2.54 acres	20 min.	0.35	8.30 in/hr	7.38 cfs	0.10 acres	0.88 cfs	2.44 acres	6.50 cfs (ALLOWABLE RELEASE)	14025 cf	3.5 FT	8.50 cfs



BENCH MARK LIST

BM #	Description	ELEVATION
BM # 1	"X" CUT SET ON THE NORTHWEST CORNER OF INLET ON THE NORTH SIDE OF RALPH HALL PARKWAY 215'± WEST OF CENTERLINE OF RALPH HALL PARKWAY AND ARISTA ROAD.	ELEV=551.01
BM # 2	"X" CUT SET ON TOP OF CURB ON THE POINT OF CURVE OF THE BACK OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF OAK DRIVE AND SUMMER LEE DRIVE.	ELEV=563.21
BM # 3	"X" CUT ON THE NORTHEAST CORNER OF INLET ON THE EAST SIDE OF ARISTA ROAD 200'± NORTH OF CENTERLINE OF RALPH HALL PARKWAY.	ELEV=546.93

09/28/04 RECORD DRAWINGS
 02/20/04 REVISED ST-2 & ST-3
 01/15/04 REVISED BEGINNING FLOWLINE FOR STM LN "ST-5"

Pacheco Koch Consulting Engineers
 8350 N CENTRAL EXPWY SUITE 1000 DALLAS, TEXAS 75208 972.235.3031

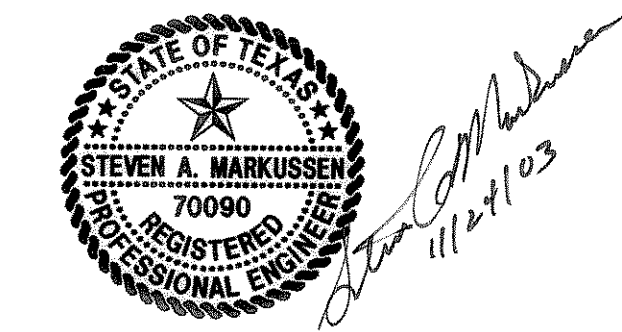
STORM SEWER PLAN
ROCKWALL CAPITAL ADVISORS
SWC ARISTA & RALPH HALL
CITY OF ROCKWALL, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
CJE	FJM	NOV. 2003	1"=20'			C3.1

RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO REFLECT CONSTRUCTION RECORDS MAINTAINED AND PROVIDED BY THE CONTRACTOR FOR THIS PROJECT.

CONTRACTOR: CONSTRUCTORS
 DATE REVISED: 08-28-2004



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY STEVEN A. MARKUSSEN, P.E. 70990 ON 11/24/2003. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.