

DETENTION CALCULATIONS

MODIFIED RATIONAL METHOD DETENTION POND VOLUME

FREQUENCY=100 YRS

PROJECT: Rockwall Centre Corners

Pre-development Condition

20 minutes	0.35
Developed	0.9
<i>Q</i> (cfs)	<i>C</i>
<i>I</i> (in/hr)	<i>A</i> (acres)
31.11	0.35
2.70	0.35
2.12	0.35
35.93	0.9
0.00	0.9

Post Development Condition

10 minutes	9.80
Developed	23.50
<i>Q</i> (cfs)	<i>C</i>
<i>I</i> (in/hr)	<i>A</i> (acres)
223.50	9.80
8.20	0.90
6.44	0.90
238.14	0.87

Post-Pre= 202.21

Allowable Peak Discharge = 35.93 cfs

NOTE: 0.93 ACRES EAST OF DETENTION BASIN AND 0.73 ACRES OF SOUTHEAST PROP. CORNER DO NOT DRAIN TO THE BASIN AND IS NOT FACTORED IN THE ALLOWABLE PEAK DISCHARGE FOR SIZING THE OUTFALL STRUCTURE.

TOTAL ALLOWABLE DISCHARGE = 35.93 cfs - 2.70 cfs - 6.44 cfs = 26.79 cfs

Required Detention Volume: 360,060 Cubic Feet

STORM DURATION (minute)	INTENSITY <i>I</i> (in/hr)	PEAK DISCHARGE <i>Q</i> (cfs)	INFLOW (cf)	OUTFLOW (cf)	STORAGE (cf)
10	9.80	229.94	137,962.44	20.00	116,401.53
20	8.30	194.74	233,691.48	30.00	201,350.12
30	6.90	161.89	291,410.46	40.00	248,288.04
40	5.80	136.09	326,604.96	50.00	272,702.69
50	5.00	117.32	351,945.00	60.00	287,262.27
60	4.50	105.58	380,100.80	70.00	304,637.42
70	4.10	96.20	404,032.86	80.00	317,789.22
80	3.9	91.507	439,227.36	90	342,203.27
90	3.6	84.668	456,120.72	100	348,316.17
100	3.4	79.742	478,645.20	110	360,060.20

DETENTION BASIN VOLUME CALCULATIONS

Elevation	Area	Ave. Area	Depth	Volume	Cum. Volume	Area (acres)
525.0	19,433.37					0.446
526.0	45,552.26	32,493	1.0	32,493	32,493	1.046
527.0	49,690.11	34,562	1.0	34,562	67,055	1.141
528.0	53,908.30	51,799	1.0	51,799	118,854	1.238
529.0	58,230.48	56,069	1.0	56,069	174,923	1.337
530.0	62,615.16	60,423	1.0	60,423	235,346	1.437
531.0	67,113.06	64,864	1.0	64,864	300,210	1.541
531.86	-	-	-	-	360,060	-
532.0	71,698.00	69,406	1.0	69,406	369,616	1.646
532.76	-	-	-	-	425,896	-
533.0	76,354.07	74,026	1.0	74,026	443,642	1.753
534.0	81,058.47	78,706	1.0	78,706	522,348	1.861
535.0	84,895.55	82,977	1.0	82,977	605,325	1.949

← DETENTION VOLUME MET
← WEIR ELEVATION

ACTUAL VS ALLOWABLE FLOW TABLE

Frequency	<i>Q</i> allowable	<i>Q</i> actual
10YR	18.79	18.01
25YR	20.82	19.06
100YR	26.79	26.26

NOTE: DETAILED DRAINAGE CALCULATIONS ARE INCLUDED IN THE DRAINAGE REPORT, PREPARED BY CPH ENGINEERS, INC.

Dimensional Data

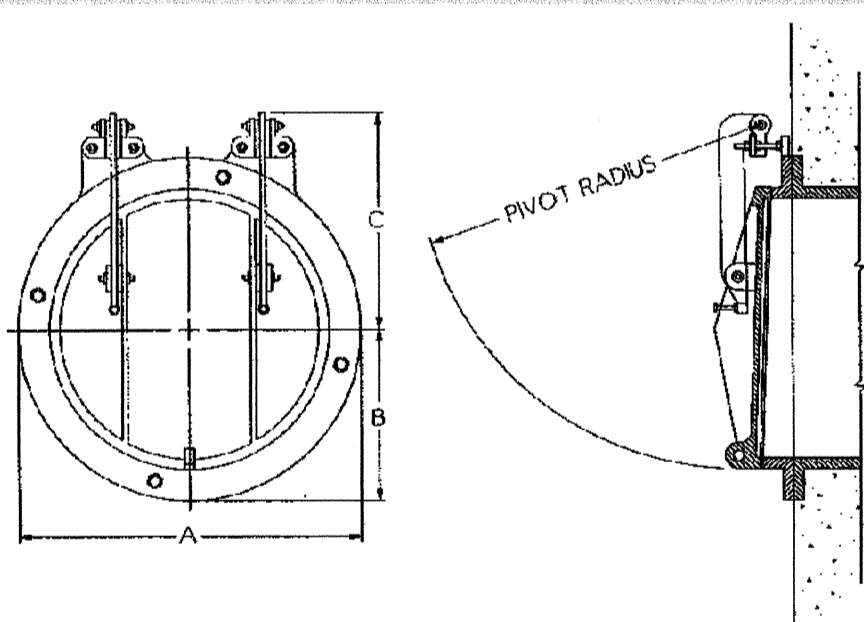
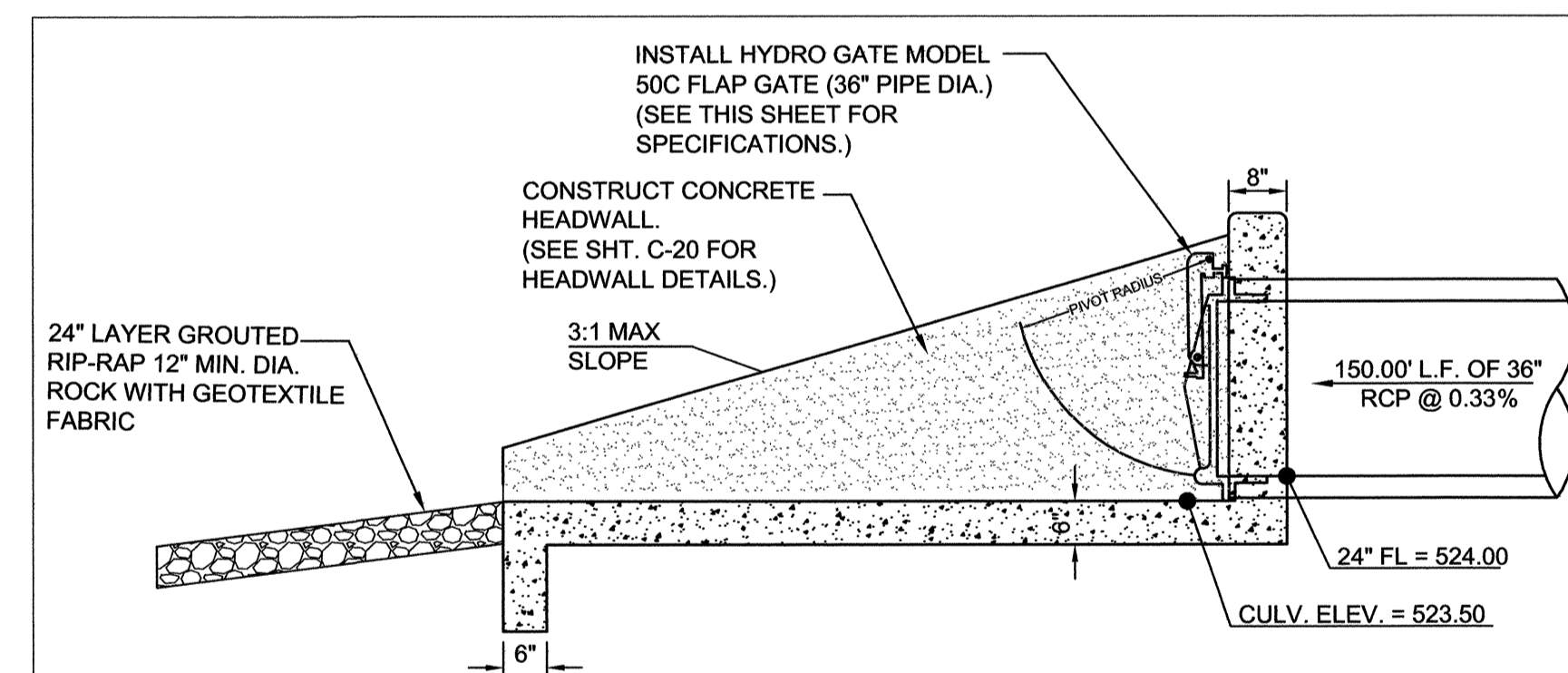
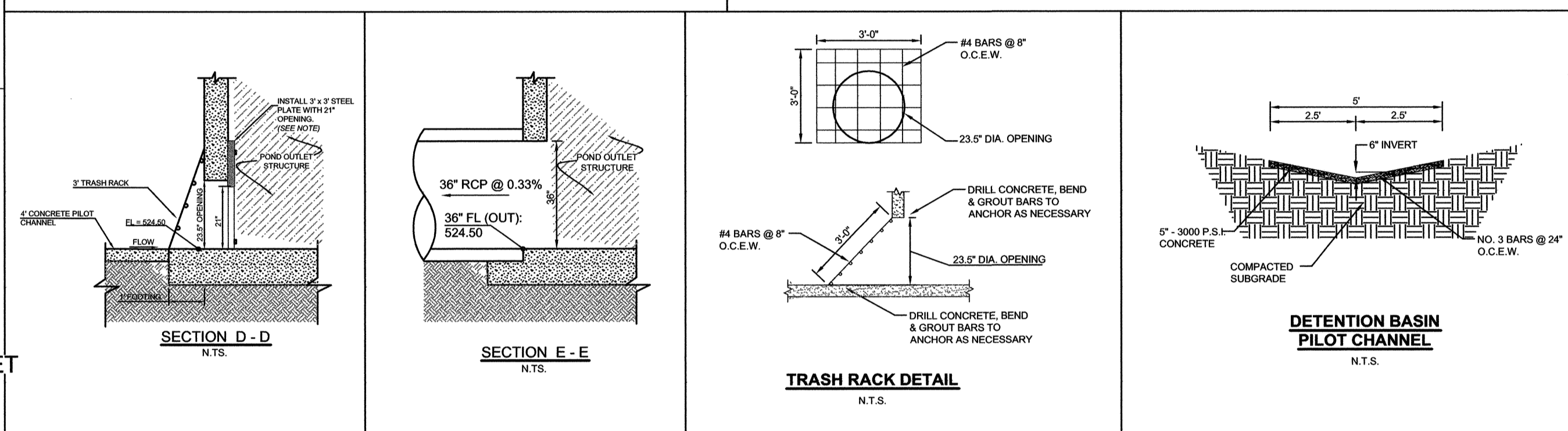
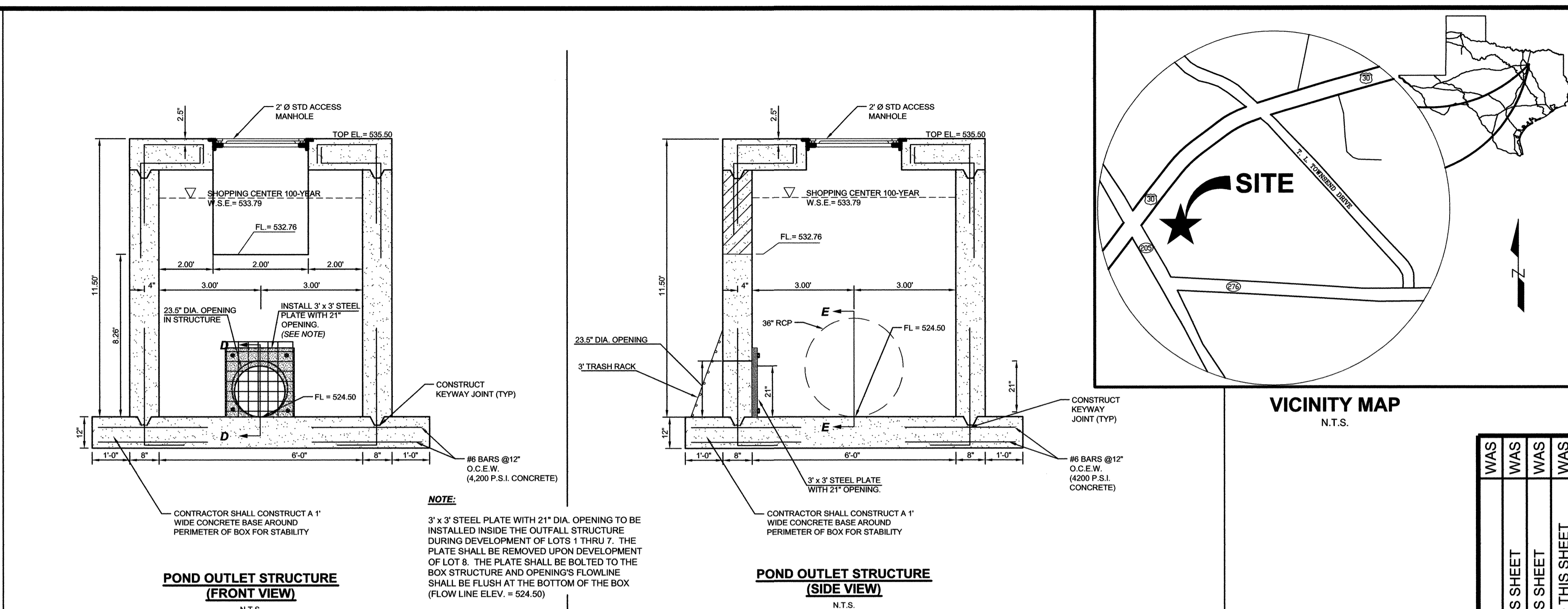


Figure 6-2 Heavy-Duty Flap Gate (Model 50C)

Model 50C Round Opening for Heads to 50 Ft

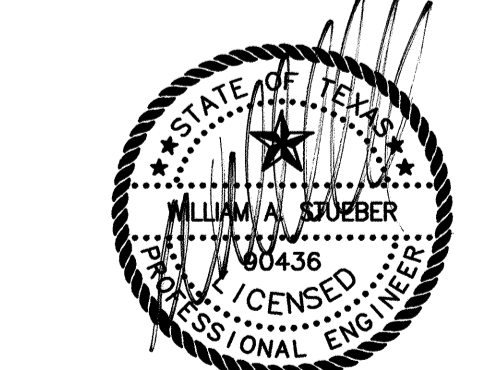
Opening Size Dia. (In.)	Dimensions (In.)			Pivot Radius (In.)
	A	B	C	
6	11.00	5.50	8.25	1' 7.5"
8	13.50	6.75	9.50	14.00
10	16.00	8.00	9.75	15.25
12	19.00	9.50	10.25	16.75
14	21.00	10.50	12.50	19.75
16	22.25	11.25	12.50	20.31
18	23.50	11.75	13.00	2' 2.5"
20	24.75	12.50	15.75	25.00
22	27.50	13.75	16.25	26.25
24	28.00	14.00	16.50	27.50
26	32.00	16.00	19.25	3' 2.5"
28	34.00	17.00	2' 2.5"	35.50
30	36.75	19.50	23.25	38.50
36	46.00	23.00	27.50	45.50
42	53.00	26.50	32.50	53.50
48	59.50	29.75	37.75	61.75
54	66.25	33.25	39.75	67.25
60	73.00	36.50	46.00	76.00
66	80.00	40.00	50.00	83.00
72	86.50	43.25	54.25	90.00
78	93.50	46.75	58.25	97.00
84	100.00	50.00	62.25	104.25
90	106.50	53.25	63.50	111.25
96	114.00	51.00	69.00	117.25



OUTFALL STRUCTURE FLAP GATE / HEADWALL ELEVATION

N.T.S.

RECORD DRAWING TO THE BEST OF OUR KNOWLEDGE CPH ENGINEERS, INC., HEREBY STATES THAT THIS PLAN IS A REPRESENTATION OF THE AS-BUILT CONDITIONS OF THE SUBJECT PROJECT. THE INFORMATION PRESENTED IS BASED ON INFORMATION PROVIDED BY THE CONTRACTOR ALONG WITH DATA PROVIDED BY THE PROJECT LAND SURVEYOR.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY WILLIAM A. STUEBER, P.E. 00436 ON 05/04/2009 - ALTERATION OF A SEALED DOCUMENT TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

NOTICE: THE SIZE OF THIS PLAN MAY HAVE BEEN SLIGHTLY ALTERED BY REPRODUCTION PROCESSES. THIS MUST BE CONSIDERED WHEN SCALING ANY REPRODUCED PLAN FOR THE PURPOSE OF COLLECTING DATA.

gph
5728 LBJ Freeway
Suite 330
Dallas, Texas 75240
Phone: 972.490.1515
Fax: 972.490.1517

Certificate of Authorization No. F4830 © 2008

Engineers
Surveyors
Architects
Planners
Landscape Architects
Environmental Scientists
Construction Management
Design / Build

By	Date	Revision
WAS	05/04/09	PER AS-BUILTS
WAS	01/09/09	NO CHANGES THIS SHEET
WAS	11/06/08	NO CHANGES THIS SHEET
WAS	09/23/08	NO CHANGES TO THIS SHEET
WAS	08/04/08	NO CHANGES TO THIS SHEET
WAS	06/26/08	PER COSTCO ENGINEERING PLANS
WAS	06/03/08	PER CITY COMMENTS ON 5/29/08
WAS	05/19/08	NO CHANGES TO THIS SHEET
WAS	03/07/08	NO CHANGES TO THIS SHEET
WAS	12/05/07	PER CITY COMMENTS 11/26/07
WAS	10/31/07	PER CITY COMMENTS 10/22/07

By	Date	Revision
WAS	03/05/09	NO CHANGES THIS SHEET
WAS	11/21/08	NO CHANGES THIS SHEET
WAS	10/03/08	NO CHANGES THIS SHEET
WAS	09/08/08	NO CHANGES TO THIS SHEET
WAS	06/30/08	NO CHANGES TO THIS SHEET
WAS	06/10/08	NO CHANGES TO THIS SHEET
WAS	05/23/08	PER CITY COMMENTS ON 5/21/08
WAS	05/06/08	PER COSTCO PLANS
WAS	01/29/08	NO CHANGES TO THIS SHEET
WAS	11/15/07	PER CITY COMMENTS 11/05/07
WAS	10/19/07	PER CLIENTS NEW SITE LAYOUT

Designed by: HMH
Drawn by: HMH
Checked by: WAS
Approved by: WAS
Scale: N.T.S.
Date: 10/19/2007
Job No.: S13217
File: DAM II

DRAINAGE CALCULATIONS
ROCKWALL CENTRE CORNERS
INTERSTATE HIGHWAY 30 AND S.H. 205
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

Sheet No.
C-10A