

East Drainage Open Channel Hydraulic Calculations

Channel @ Most Downstream Point

1	2	3	4	5	6	7	8	12	13	14	15	16	19	20	21	22	23	24	25
From	To	Channel Type	Rainfall Intensity "I" In/Hr	Area "A" Acres	100 YR Flow "Q" CFS	Roughness Coefficient "n"	Slope "S"	Flow Depth "d" Ft	Side Slope Average Ft/Ft	Area "A" Acre	Wetted Per. "WP" Ft	Hydraulic Radius "R" A/WP Ft	Velocity V=Q/A Ft <sup>2</sup> /sec	Velocity Head V <sup>2</sup> /2G	EI @ ROW Ft	EI @ Ditch CL Ft	Channel Depth Ft	Freeboard Ft	Top Width Ft
165+00	169+50	V-Shape	8.3	3.3	9.50	0.035	0.03	0.81	3.88	2.54	6.67	0.38	3.74	0.22	546.00	542.55	3.45	2.64	6.48
169+50	171+00	V-Shape	8.3	5.2	15.00	0.035	0.02	1.00	4.00	4.00	8.24	0.49	3.75	0.22	542.92	539.75	3.17	2.17	8.00
171+00	175+00	V-Shape	8.3	10.9	31.70	0.035	0.01	1.33	4.80	8.49	10.96	0.77	3.73	0.22	537.92	535.60	2.32	0.99	10.64
175+00	178+00	4 ft Bottom Width	8.3	14.8	43.05	0.035	0.0035	1.50	4.85	16.91	16.36	1.03	2.55	0.10	535.87	533.60	2.27	0.77	16.00
178+00	179+00	4 ft Bottom Width	8.3	17.2	50.00	0.035	0.0035	1.70	4.19	18.89	18.01	1.05	2.65	0.11	537.10	533.35	3.75	2.05	17.60
179+00	180+00	4 ft Bottom Width	8.3	19.4	56.25	0.035	0.0035	1.85	4.00	21.09	19.24	1.10	2.67	0.11	538.14	533.00	5.14	3.29	18.80
180+00	183+00	4 ft Bottom Width	8.3	23.7	68.75	0.035	0.0035	1.88	4.63	23.87	19.49	1.22	2.88	0.13	536.40	532.00	4.40	2.52	19.04
183+00	185+00	4 ft Bottom Width	8.3	28.0	81.25	0.035	0.0035	1.70	6.55	25.73	18.01	1.43	3.16	0.15	533.93	531.30	2.63	0.93	17.60

Quail Run Open Channel Hydraulic Calculations

Channel @ Most Downstream Point



1	2	3	4	5	6	7	8	12	13	14	15	16	19	20	21	22	23	24	25
From	To	Channel Type	Rainfall Intensity "I" In/Hr	Area "A" Acres	100 YR Flow "Q" CFS	Roughness Coefficient "n"	Slope "S"	Flow Depth "d" Ft	Side Slope Average Ft/Ft	Area "A" Acre	Wetted Perimeter Ft	Hydraulic Radius "R" A/WP Ft	Velocity V=Q/A Ft <sup>2</sup> /sec	Velocity Head V <sup>2</sup> /2G	EI @ ROW Ft	EI @ Ditch CL Ft	Channel Depth Ft	Freeboard Ft	Top Width Ft
8+00	7+00	8 Ft Bottom Width	8.3	8.6	25.00	0.035	0.008	0.80	4.16	9.06	14.59	0.62	2.76	0.12	537.09	535.70	1.39	0.59	14.40
7+00	6+40	8 Ft Bottom Width	8.3	10.3	30.00	0.035	0.004	1.08	4.00	13.31	16.90	0.79	2.25	0.08	537.31	535.50	1.81	0.73	16.64
6+40	6+40	Overland Flow	8.3	6.3	18.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6+40	6+00	8 Ft Bottom Width	8.3	6.5	18.75	0.035	0.02	0.55	3.50	5.46	12.53	0.44	3.43	0.18	538.00	536.00	2.00	1.45	12.40

NOTES:

- HYDRAULIC CALCULATIONS BASED ON "OPEN CHANNEL CALCULATIONS" FORM 3.4 FROM CITY OF ROCKWALL'S DESIGN MANUAL.
- ALL COMPUTATIONS ARE BASED ON ROCKWALL'S 100-YR FLOWS AND EXISTING WATERSHED CONDITIONS.
- DITCH FLOW DOES NOT INCLUDE ENTIRE OSBI AREA. 6.3 ACRES OF AREA OSBI FLOWS DIRECTLY TO THE DROP INLET.

**RECORD DRAWING**  
 This drawing is a compilation of the original sealed engineering drawing and modifications by addenda, change orders and information furnished by the contractor. Information shown that was provided by the contractor and others not associated with the design engineer cannot be verified for accuracy or completeness. Original sealed drawing is on file at the office of AECOM USA Group, Inc., TBPE REG. NO. F-3082

**ORIGINAL DRAWING SEALED & SIGNED BY**  
 Matthew L. Abbe, P.E.  
 TX NO. 92715

NO.	REVISION	BY	DATE
 <b>City of Rockwall, Texas</b> <b>205 BYPASS SECTION 1</b> <b>OPEN CHANNEL HYDRAULIC CALCULATIONS - 100 YR FLOWS</b>			
8 OF 8			
		TCB INC. WWW.TCB.AECOM.COM 17300 DALLAS PARKWAY, SUITE 1010 DALLAS, TEXAS 75248	
Unit	PW-DAL-FW	Scale: Horiz AS SHOWN Vert: AS SHOWN	Date 11/11/2009
Designed	SRR/SDB	Checked TCB	Project No. 60004153
Drawn	FG	Approved TCB	Sheet 84 of 217