

DRAINAGE CALCULATIONS

DA#	AREA	C	TC	I ₁₀₀	Q ₁₀₀	COMMENTS
1	0.10	0.90	10	9.80	00.88	TO GOLIAD STREET (PERMANENT LANDSCAPE)
2	1.47	0.90	10	12.97	00.62	TO CONCRETE FLUME/DETENTION POND
3	0.07	0.90	10	0.80	00.62	TO DEVELOPMENT TO SOUTH
4	1.07	0.90	10	9.80	09.43	TO DETENTION POND
5	0.62	0.90	10	9.80	05.46	DETENTION POND
E1	3.76	0.90	10	9.80	33.16	TO SIDS ROAD (EXISTING D.A.)
E2	0.08	0.90	10	9.80	00.71	TO DEVELOPMENT TO WEST (EXISTING D.A.)
P1	0.37	0.90	10	9.80	03.26	TO DETENTION POND. PASS THRU.
P2	0.88	0.90	10	9.80	07.76	TO DETENTION POND. PASS THRU.
P3	0.39	0.90	10	9.80	03.44	TO DETENTION POND. PASS THRU.

NOTES

- Boundary per filed plat recorded in Cabinet D, Slide 107, P.R.R.C.T., Topographic Survey by Peiser Surveying Company, dated 01/05/09.
- See sheet C2 for Grading and Drainage Plan.
- See sheet C6 for Erosion Control Plan.
- See sheet C7 for General Notes & Details
- Offsite Topo per City of Rockwall Aerial Maps.

BENCHMARK

Elevations are based on City of Rockwall survey Control Monument No. M929, NAVD 88 Elevation of 524.552 feet.

EVENT	DISCHARGE FROM POND			
	TOTAL ALLOW. BYPASS FROM POND "A" (CFS)	TOTAL ALLOW. ON-SITE RELEASE FROM POND "A" (CFS)	TOTAL ALLOW. RELEASE FROM POND "A" (CFS)	ACTUAL RELEASE FROM POND (CFS)
10-YEAR	10.63	5.78	16.41	16.37
25-YEAR	12.25	6.54	18.79	17.83
50-YEAR	13.28	7.24	20.52	19.72
100-YEAR	14.46	8.17	22.63	22.55

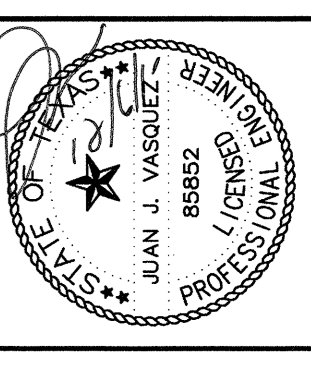
RECORD DRAWING

THE IMPROVEMENTS SHOWN ON THIS PLAN WERE COMPLETED IN GENERAL COMPLIANCE WITH THE DESIGN PLANS TO THE BEST OF OUR KNOWLEDGE. THIS DETERMINATION WAS MADE BASED ON POST-CONSTRUCTION SURVEY DATA AND INFORMATION PROVIDED BY THE CONTRACTOR.

SIGNED: [Signature] DATE: 12/6/11
 VASQUEZ ENGINEERING, TEXAS REG. F-12266

NO.	DATE	APP.

VASQUEZ ENGINEERING
 4300 Alpha Road
 Building 1, Suite 100
 Dallas, Texas 75244
 Ph: 972-385-6212
 TX Registration # F-12266



TRANSAM TRUCKING, INC.
 2670 SOUTH GOLIAD
 ROCKWALL, TEXAS 75032
 PHONE: 972-722-0675
 FAX: 972-961-9050

DRAINAGE AREA MAP
 TRANSAM TRUCKING, INC.
 LOT 1, BLOCK A
 CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

Scale: 1" = 100'
 Designed by: J.J.V.
 Drawn by: J.N.M.
 Checked by: J.J.V.
 508-01.dwg \030C00DAM.dwg
 12/06/10

SHEET
C5

10-YEAR STORM
 A. TOTAL AREA DRAINING TO POND = 4.80 ACRES (DA P1-P3 & 1-5)
 B. TOTAL BYPASS AREA THRU POND = 1.64 ACRES (DA P1-P3)
 C. TOTAL BYPASS AROUND POND = 0.17 ACRES (DA 1 & 3)
 D. TOTAL SITE AREA BEING DETAINED = 3.16 ACRES (DA 2, 4-5)
 E. ALLOW. BYPASS THRU POND = CIA=(0.9)(7.20)(1.64)=10.63 CFS
 F. ON-SITE RUNOFF BYPASSING POND = CIA=(0.9)(7.2)(0.17)=1.10 CFS
 G. ALLOW. DISCHARGE FROM DEV. AREA = CIA=(0.35)(5.9)(3.33)=6.98 CFS
 H. ALLOW. DISCHARGE FROM POND = (G+H+E)=6.88+1.10+5.78 CFS
 I. ALLOW DISCHARGE FROM POND + BYPASS =H+E=5.78+10.63=16.41 CFS

Determine Qp for developed off-site areas (Bypass) 1.64 ac

Tc	A	C	I	Qp
10	1.64	0.90	7.20	10.63
20	1.64	0.90	5.90	8.71
30	1.64	0.90	4.90	7.23
40	1.64	0.90	4.00	6.20
50	1.64	0.90	3.50	5.17
60	1.64	0.90	3.00	4.43
70	1.64	0.90	2.70	3.99
80	1.64	0.90	2.45	3.62

Determine Storage Volume Required for Bypass Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	6376	3673.32	0
20	10	10450	9664.48	886
30	10	13018	12752.64	266
40	10	14170	15940.8	-1771
50	10	15498	19128.96	-3631
60	10	16811	22317.12	-6376
70	10	18738	25505.28	-8767
80	10	17558	28693.44	-11336

Determine Qp for On-Site Areas

Tc	A	C	I	Qp
10	3.16	0.90	7.20	20.48
20	3.16	0.90	5.90	16.78
30	3.16	0.90	4.90	13.94
40	3.16	0.90	4.00	11.38
50	3.16	0.90	3.50	9.95
60	3.16	0.90	3.00	8.53
70	3.16	0.90	2.70	7.68
80	3.16	0.90	2.45	6.97

Determine Storage Volume Required for On-Site Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	12286	3468	9818
20	10	20136	5202	14934
30	10	25084	6936	18148
40	10	27302	8670	19632
50	10	29862	10404	19458
60	10	30715	12138	18577
70	10	32251	13872	18379
80	10	33445	15606	17639

Total Combined Storage Required at 60 min. = 19,458 CF

Determine Water Surface Elev.

Pond Overflow Elevation =	544.50					
Layer	Surface	Average	Layer	Cumulative	100-year	100-year
Elevation	Area (sf)	Area (sf)	Volume (cf)	Volume (cf)	Volume (cf)	WSEL
544.00	16617					
543.00	12999	14808	14808	29659	19458	543.31
542.00	6538	9769	9769	14851		
541.00	2176	4357	4357	5082		
540.00	0	725	725	725		

25-YEAR STORM
 A. TOTAL AREA DRAINING TO POND = 4.80 ACRES (DA P1-P3 & 1-5)
 B. TOTAL BYPASS AREA THRU POND = 1.64 ACRES (DA P1-P3)
 C. TOTAL BYPASS AROUND POND = 0.17 ACRES (DA 1 & 3)
 D. TOTAL SITE AREA BEING DETAINED = 3.16 ACRES (DA 2, 4-5)
 E. ALLOW. BYPASS THRU POND = CIA=(0.9)(8.3)(1.64)=12.25 CFS
 F. ON-SITE RUNOFF BYPASSING POND = CIA=(0.9)(8.3)(0.17)=1.27 CFS
 G. ALLOW. DISCHARGE FROM DEV. AREA = CIA=(0.35)(6.7)(3.33)=7.81 CFS
 H. ALLOW. DISCHARGE FROM POND = (G+H+E)=7.81+1.27+6.54 CFS
 I. ALLOW DISCHARGE FROM POND + BYPASS =H+E=6.54+12.25=18.79 CFS

Determine Qp for developed off-site areas (Bypass) 1.64 ac

Tc	A	C	I	Qp
10	1.64	0.90	8.30	12.25
20	1.64	0.90	6.70	9.89
30	1.64	0.90	5.50	8.12
40	1.64	0.90	4.85	6.86
50	1.64	0.90	4.00	5.90
60	1.64	0.90	3.55	5.24
70	1.64	0.90	3.20	4.72
80	1.64	0.90	2.85	4.21

Determine Storage Volume Required for Bypass Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	7350	7350.48	0
20	10	11867	11025.72	841
30	10	14612	14700.96	-89
40	10	16472	18376.2	-1904
50	10	17712	22051.44	-4339
60	10	18863	25726.68	-6863
70	10	19837	29401.92	-9564
80	10	20192	33077.16	-12885

Determine Qp for On-Site Areas

Tc	A	C	I	Qp
10	3.16	0.90	8.30	23.61
20	3.16	0.90	6.70	19.05
30	3.16	0.90	5.50	15.64
40	3.16	0.90	4.65	13.22
50	3.16	0.90	4.00	11.38
60	3.16	0.90	3.55	10.10
70	3.16	0.90	3.20	9.10
80	3.16	0.90	2.85	8.11

Determine Storage Volume Required for On-Site Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	14163	3924	10239
20	10	23886	5886	16890
30	10	31227	7848	20308
40	10	37339	9810	21929
50	10	34128	11772	22356
60	10	36346	13734	22812
70	10	38223	15696	22527
80	10	38906	17658	21248

Total Combined Storage Required at 60 min. = 22,612 CF

Determine Water Surface Elev.

Pond Overflow Elevation =	544.50					
Layer	Surface	Average	Layer	Cumulative	100-year	100-year
Elevation	Area (sf)	Area (sf)	Volume (cf)	Volume (cf)	Volume (cf)	WSEL
544.00	16617					
543.00	12999	14808	14808	29659	22612	543.52
542.00	6538	9769	9769	14851		
541.00	2176	4357	4357	5082		
540.00	0	725	725	725		

50-YEAR STORM
 A. TOTAL AREA DRAINING TO POND = 4.80 ACRES (DA P1-P3 & 1-5)
 B. TOTAL BYPASS AREA THRU POND = 1.64 ACRES (DA P1-P3)
 C. TOTAL BYPASS AROUND POND = 0.17 ACRES (DA 1 & 3)
 D. TOTAL SITE AREA BEING DETAINED = 3.16 ACRES (DA 2, 4-5)
 E. ALLOW. BYPASS THRU POND = CIA=(0.9)(9.0)(1.64)=13.28 CFS
 F. ON-SITE RUNOFF BYPASSING POND = CIA=(0.9)(9.0)(0.17)=1.38 CFS
 G. ALLOW. DISCHARGE FROM DEV. AREA = CIA=(0.35)(7.4)(3.33)=8.62 CFS
 H. ALLOW. DISCHARGE FROM POND = (G+H+E)=8.62+1.38+7.24 CFS
 I. ALLOW DISCHARGE FROM POND + BYPASS =H+E=7.24+13.28=20.52 CFS

Determine Qp for developed off-site areas (Bypass) 1.64 ac

Tc	A	C	I	Qp
10	1.64	0.90	9.00	13.28
20	1.64	0.90	7.40	10.92
30	1.64	0.90	6.10	9.00
40	1.64	0.90	5.20	7.68
50	1.64	0.90	4.50	6.64
60	1.64	0.90	3.90	5.76
70	1.64	0.90	3.50	5.17
80	1.64	0.90	3.20	4.72

Determine Storage Volume Required for Bypass Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	7970	7970.4	0
20	10	13107	11955.6	1151
30	10	16206	15940.8	266
40	10	18420	19926	-1506
50	10	19926	23911.2	-3985
60	10	20723	27896.4	-7173
70	10	21697	31881.6	-10184
80	10	22671	35866.8	-13195

Determine Qp for On-Site Areas

Tc	A	C	I	Qp
10	3.16	0.90	9.00	25.60
20	3.16	0.90	7.40	21.05
30	3.16	0.90	6.10	17.35
40	3.16	0.90	5.20	14.79
50	3.16	0.90	4.50	12.80
60	3.16	0.90	3.90	11.09
70	3.16	0.90	3.50	9.95
80	3.16	0.90	3.20	9.10

Determine Storage Volume Required for On-Site Areas

Qa	Tc	Inflow = Tc*Qp*60	Outflow = 0.5*(Tc+10)Qa*60	Storage
10	10	15358	3924	11014
20	10	25255	6516	18739
30	10	31227	8688	22539
40	10	35493	10860	24633
50	10	38394	13032	25362
60	10	39930	15204	24726
70	10	41807	17376	24431
80	10	43884	19548	24136

Total Combined Storage Required at 60 min. = 25,362 CF

Determine Water Surface Elev.

Pond Overflow Elevation =	544.50					
Layer	Surface	Average	Layer	Cumulative	100-year	100-year
Elevation	Area (sf)	Area (sf)	Volume (cf)	Volume (cf)	Volume (cf)	WSEL
544.00	16617					
543.00	12999	14808	14808	29659	25362	543.71
542.00	6538	9769	9769	14851		
541.00	2176	4357	4357	5082		
540.00	0	725	725	725		

100-YEAR STORM
 A. TOTAL AREA DRAINING TO POND = 4.80 ACRES (DA P1-P3 & 1-5)
 B. TOTAL BYPASS AREA THRU POND = 1.64 ACRES (DA P1-P3)
 C. TOTAL BYPASS AROUND POND = 0.17 ACRES (DA 1 & 3)
 D. TOTAL SITE AREA BEING DETAINED = 3.16 ACRES (DA 2, 4-5)
 E. ALLOW. BYPASS THRU POND = CIA=(0.9)(9.8)(1.64)=14.46 CFS
 F. ON-SITE RUNOFF BYPASSING POND = CIA=(0.9)(9.8)(0.17)=1.50 CFS
 G. ALLOW. DISCHARGE FROM DEV. AREA = CIA=(0.35)(8.3)(3.33)=9.67 CFS
 H. ALLOW. DISCHARGE FROM POND = (G+H+E)=9.67+1.50+8.17 CFS
 I. ALLOW DISCHARGE FROM POND + BYPASS =H+E=8.17+14.46=22.63 CFS

Determine Qp for developed off-site areas (Bypass) 1.64 ac

Tc	A	C	I	Qp
10	1			