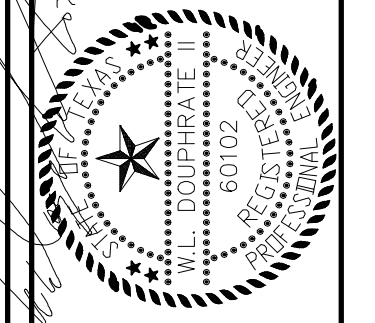


REVISED TO CONFORM TO CONSTRUCTION RECORDS.

W. Douglas

DATE: 6-5-16



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY W.L. DOUPHRADE, P.E., LICENSE NO. 60102, STATE OF TEXAS, DATE: JULY 20, 2016.

DOUPHRADE & ASSOCIATES, INC.
ENGINEERING • PROJECT MANAGEMENT • SURVEYING
2235 RIDGE RD., # 200 ROCKWALL, TEXAS 75087
PHONE: (972)771-9004 FAX: (972)771-9005

OUR HOUSE - ROCK DRIVE 5 YR STORM CALCULATIONS			
Present Conditions			
Q=CIA			
A =	0.056		
C =	0.5		
Tc =	10		
I ₁₀₀ =	6.1		
Q ₁₀₀ =	0.1708		
Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass			
A =	0.056	A =	0
Aadj =	0.05	A =	0.006
C =	0.9	C =	0.9
Tc =	10	Tc =	10
I ₁₀₀ =	6.1	I ₁₀₀ =	6.1
Q ₁₀₀ =	0.30744	Q ₁₀₀ =	0
Flow for Storm Durations (Developed)			
Time	L	C	Q
10 min	6.1	0.9	0.2745
15 min	5.5	0.9	0.2475
20 min	5	0.9	0.225
30 min	4	0.9	0.18
40 min	3.4	0.9	0.153
50 min	2.9	0.9	0.1305
60 min	2.6	0.9	0.117
70 min	2.4	0.9	0.108
80 min	2.2	0.9	0.099
90 min	2	0.9	0.09
100 min	1.8	0.9	0.081
110 min	1.7	0.9	0.0765
Storage Calculations			
10 min			
Inflow	164.7	Storage	81.984
Outflow	82.716		
15 min			
Inflow	222.75	Storage	119.355
Outflow	103.395		
20 min			
Inflow	270	Storage	145.926
Outflow	124.074		
30 min			
Inflow	324	Storage	158.568
Outflow	165.432		
40 min			
Inflow	367.2	Storage	160.41
Outflow	206.79		
50 min			
Inflow	391.5	Storage	143.352
Outflow	248.148		
60 min			
Inflow	421.2	Storage	131.694
Outflow	289.506		
70 min			
Inflow	453.6	Storage	122.736
Outflow	330.864		
80 min			
Inflow	475.2	Storage	102.978
Outflow	372.222		
90 min			
Inflow	486	Storage	72.42
Outflow	413.58		
100 min			
Inflow	486	Storage	31.062
Outflow	454.938		
110 min			
Inflow	459	Storage	-37.296
Outflow	496.296		

OUR HOUSE - ROCK DRIVE 10 YR STORM CALCULATIONS			
Present Conditions			
Q=CIA			
A =	0.056		
C =	0.5		
Tc =	10		
I ₁₀₀ =	7.2		
Q ₁₀₀ =	0.2016		
Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass			
A =	0.056	A =	0
Aadj =	0.05	A =	0.006
C =	0.9	C =	0.9
Tc =	10	Tc =	10
I ₁₀₀ =	7.2	I ₁₀₀ =	7.2
Q ₁₀₀ =	0.36288	Q ₁₀₀ =	0
Flow for Storm Durations (Developed)			
Time	L	C	Q
10 min	7.2	0.9	0.324
15 min	6.5	0.9	0.2925
20 min	5.8	0.9	0.261
30 min	4.7	0.9	0.2115
40 min	4	0.9	0.18
50 min	3.5	0.9	0.1575
60 min	3	0.9	0.135
70 min	2.7	0.9	0.1215
80 min	2.5	0.9	0.1125
90 min	2.3	0.9	0.1035
100 min	2.2	0.9	0.099
110 min	1.9	0.9	0.0855
Storage Calculations			
10 min			
Inflow	194.4	Storage	96.768
Outflow	97.632		
15 min			
Inflow	263.25	Storage	141.21
Outflow	122.04		
20 min			
Inflow	313.2	Storage	166.752
Outflow	146.448		
30 min			
Inflow	380.7	Storage	185.436
Outflow	195.264		
40 min			
Inflow	432	Storage	187.92
Outflow	244.08		
50 min			
Inflow	472.5	Storage	179.604
Outflow	292.896		
60 min			
Inflow	486	Storage	144.288
Outflow	341.712		
70 min			
Inflow	510.3	Storage	119.772
Outflow	390.528		
80 min			
Inflow	540	Storage	100.656
Outflow	439.344		
90 min			
Inflow	558.9	Storage	70.74
Outflow	488.16		
100 min			
Inflow	594	Storage	57.024
Outflow	536.976		
110 min			
Inflow	513	Storage	-72.792
Outflow	585.792		

OUR HOUSE - ROCK DRIVE 25 YR STORM CALCULATIONS			
Present Conditions			
Q=CIA			
A =	0.056		
C =	0.5		
Tc =	10		
I ₁₀₀ =	8.2		
Q ₁₀₀ =	0.2296		
Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass			
A =	0.056	A =	0
Aadj =	0.05	A =	0.006
C =	0.9	C =	0.9
Tc =	10	Tc =	10
I ₁₀₀ =	8.2	I ₁₀₀ =	8.2
Q ₁₀₀ =	0.41328	Q ₁₀₀ =	0
Flow for Storm Durations (Developed)			
Time	L	C	Q
10 min	8.2	0.9	0.369
15 min	7.5	0.9	0.3375
20 min	6.7	0.9	0.3015
30 min	5.5	0.9	0.2475
40 min	4.7	0.9	0.2115
50 min	4	0.9	0.18
60 min	3.5	0.9	0.1575
70 min	3.2	0.9	0.144
80 min	2.7	0.9	0.1215
90 min	2.5	0.9	0.1125
100 min	2.4	0.9	0.108
110 min	2.3	0.9	0.1035
Storage Calculations			
10 min			
Inflow	221.4	Storage	110.208
Outflow	111.192		
15 min			
Inflow	303.75	Storage	164.76
Outflow	138.99		
20 min			
Inflow	361.8	Storage	195.012
Outflow	166.788		
30 min			
Inflow	445.5	Storage	223.116
Outflow	222.384		
40 min			
Inflow	507.6	Storage	229.62
Outflow	277.98		
50 min			
Inflow	540	Storage	206.424
Outflow	333.576		
60 min			
Inflow	567	Storage	177.828
Outflow	389.172		
70 min			
Inflow	604.8	Storage	160.032
Outflow	444.768		
80 min			
Inflow	583.2	Storage	82.836
Outflow	500.364		
90 min			
Inflow	607.5	Storage	51.54
Outflow	555.96		
100 min			
Inflow	648	Storage	36.444
Outflow	611.556		
110 min			
Inflow	621	Storage	-46.152
Outflow	667.152		

OUR HOUSE - ROCK DRIVE 100 YR STORM CALCULATIONS			
Present Conditions			
Q=CIA			
A =	0.056		
C =	0.5		
Tc =	10		
I ₁₀₀ =	9.8		
Q ₁₀₀ =	0.2744		
Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass			
A =	0.056	A =	0
Aadj =	0.05	A =	0.006
C =	0.9	C =	0.9
Tc =	10	Tc =	10
I ₁₀₀ =	9.8	I ₁₀₀ =	9.8
Q ₁₀₀ =	0.49392	Q ₁₀₀ =	0
Flow for Storm Durations (Developed)			
Time	L	C	Q
10 min	9.8	0.9	0.441
15 min	9	0.9	0.405
20 min	8.3	0.9	0.3735
30 min	6.9	0.9	0.3105
40 min	5.8	0.9	0.261
50 min	5	0.9	0.225
60 min	4.5	0.9	0.2025
70 min	4	0.9	0.18
80 min	3.7	0.9	0.1665
90 min	3.5	0.9	0.1575
100 min	3.3	0.9	0.1485
110 min	2.9	0.9	0.1305
Storage Calculations			
10 min			
Inflow	264.6	Storage	131.712
Outflow	132.888		
15 min			
Inflow	364.5	Storage	198.39
Outflow	166.11		
20 min			
Inflow	448.2	Storage	248.868
Outflow	199.332		
30 min			
Inflow	558.9	Storage	293.124
Outflow	265.776		
40 min			
Inflow	626.4	Storage	294.18
Outflow	332.22		
50 min			
Inflow	675	Storage	276.336
Outflow	398.664		
60 min			
Inflow	729	Storage	263.892
Outflow	465.108		
70 min			
Inflow	756	Storage	224.448
Outflow	531.552		
80 min			
Inflow	799.2	Storage	201.204
Outflow	597.996		
90 min			
Inflow	850.5	Storage	186.06
Outflow	664.44		
100 min			
Inflow	891	Storage	160.116
Outflow	730.884		
110 min			
Inflow	783	Storage	-14.328
Outflow	797.328		

RETENTION CALCULATIONS
OUR HOUSE - CONCRETE DRIVE
CITY OF ROCKWALL
ROCKWALL COUNTY, TEXAS

REVISION
W.L.D.
CHECKED
G.C.W.
DRAWN
1"=10' H
1"= V
JULY 20, 2015
DATE
15016
PROJECT
SCALE 7/8