RUSTIC WAREHOUSE
5 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.33
C =	0.5
Tc =	10
I_{100} =	6.1
Q_{100} =	1.0065

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.33	A =	0	A=	0.08
Aadj=	0.25				
C =	0.9	C =	0.9	C=	0.9
Tc =	10	Tc =	10	Tc=	10
I_{100} =	6.1	I_{100} =	6.1	I_{100} =	6.1
Q_{100} =	1.8117	Q_{100} =	0	Q_{100} =	0.4392

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	6.1	0.9	1.3725	10 min	9.8	0.9	0
15 min	5.5	0.9	1.2375	15 min	9	0.9	0
20 min	5	0.9	1.125	20 min	8.3	0.9	0
30 min	4	0.9	0.9	30 min	6.9	0.9	0
40 min	3.4	0.9	0.765	40 min	5.8	0.9	0
50 min	2.9	0.9	0.6525	50 min	5	0.9	0
60 min	2.6	0.9	0.585	60 min	4.5	0.9	0
70 min	2.4	0.9	0.54	70 min	4	0.9	0
80 min	2.2	0.9	0.495	80 min	3.7	0.9	0
90 min	2	0.9	0.45	90 min	3.5	0.9	0
100 min	1.8	0.9	0.405	100 min	3.3	0.9	0
110 min	1.7	0.9	0.3825	110 min	2.9	0.9	0

Storage Calculations

10 min			
Inflow	823.5	Storage	483.12
Outflow	340.38		
15 min			
Inflow	1113.75	Storage	688.275
Outflow	425.475		
20 min			
Inflow	1350	Storage	839.43
Outflow	510.57		
30 min			
Inflow	1620	Storage	939.24
Outflow	680.76		
40 min			
Inflow	1836	Storage	985.05
Outflow	850.95		
50 min			
Inflow	1957.5	Storage	936.36
Outflow	1021.14		
60 min			
Inflow	2106	Storage	914.67
Outflow	1191.33		
70 min			
Inflow	2268	Storage	906.48
Outflow	1361.52		
80 min			
Inflow	2376	Storage	844.29
Outflow	1531.71		
90 min			
Inflow	2430	Storage	728.1
Outflow	1701.9		
100 min			
Inflow	2430	Storage	557.91
Outflow	1872.09		
110 min			
Inflow	2295	Storage	252.72
Outflow	2042.28		

RUSTIC WAREHOUSE
10 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.33
C =	0.5
Tc =	10
I_{100} =	7.2
Q_{100} =	1.188

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.33	A =	0	A=	0.08
Aadj=	0.25				
C =	0.9	C =	0.9	C=	0.9
Tc =	10	Tc =	10	Tc=	10
I_{100} =	7.2	I_{100} =	7.2	I_{100} =	7.2
Q_{100} =	2.1384	Q_{100} =	0	Q_{100} =	0.5184

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	7.2	0.9	1.62	10 min	9.8	0.9	0
15 min	6.5	0.9	1.4625	15 min	9	0.9	0
20 min	5.8	0.9	1.305	20 min	8.3	0.9	0
30 min	4.7	0.9	1.0575	30 min	6.9	0.9	0
40 min	4	0.9	0.9	40 min	5.8	0.9	0
50 min	3.5	0.9	0.7875	50 min	5	0.9	0
60 min	3	0.9	0.675	60 min	4.5	0.9	0
70 min	2.7	0.9	0.6075	70 min	4	0.9	0
80 min	2.5	0.9	0.5625	80 min	3.7	0.9	0
90 min	2.3	0.9	0.5175	90 min	3.5	0.9	0
100 min	2.2	0.9	0.495	100 min	3.3	0.9	0
110 min	1.9	0.9	0.4275	110 min	2.9	0.9	0

Storage Calculations

10 min			
Inflow	972	Storage	570.24
Outflow	401.76		
15 min			
Inflow	1316.25	Storage	814.05
Outflow	502.2		
20 min			
Inflow	1566	Storage	963.36
Outflow	602.64		
30 min			
Inflow	1903.5	Storage	1099.98
Outflow	803.52		
40 min			
Inflow	2160	Storage	1155.6
Outflow	1004.4		
50 min			
Inflow	2362.5	Storage	1157.22
Outflow	1205.28		
60 min			
Inflow	2430	Storage	1023.84
Outflow	1406.16		
70 min			
Inflow	2551.5	Storage	944.46
Outflow	1607.04		
80 min			
Inflow	2700	Storage	892.08
Outflow	1807.92		
90 min			
Inflow	2794.5	Storage	785.7
Outflow	2008.8		
100 min			
Inflow	2970	Storage	760.32
Outflow	2209.68		
110 min			
Inflow	2565	Storage	154.44
Outflow	2410.56		

RUSTIC WAREHOUSE
25 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.33
C =	0.5
Tc =	10
I_{100} =	8.2
Q_{100} =	1.353

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.33	A =	0	A=	0.08
Aadj=	0.25				
C =	0.9	C =	0.9	C=	0.9
Tc =	10	Tc =	10	Tc=	10
I_{100} =	8.2	I_{100} =	8.2	I_{100} =	8.2
Q_{100} =	2.4354	Q_{100} =	0	Q_{100} =	0.5904

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	8.2	0.9	1.845	10 min	9.8	0.9	0
15 min	7.5	0.9	1.6875	15 min	9	0.9	0
20 min	6.7	0.9	1.5075	20 min	8.3	0.9	0
30 min	5.5	0.9	1.2375	30 min	6.9	0.9	0
40 min	4.7	0.9	1.0575	40 min	5.8	0.9	0
50 min	4	0.9	0.9	50 min	5	0.9	0
60 min	3.5	0.9	0.7875	60 min	4.5	0.9	0
70 min	3.2	0.9	0.72	70 min	4	0.9	0
80 min	2.7	0.9	0.6075	80 min	3.7	0.9	0
90 min	2.5	0.9	0.5625	90 min	3.5	0.9	0
100 min	2.4	0.9	0.54	100 min	3.3	0.9	0
110 min	2.3	0.9	0.5175	110 min	2.9	0.9	0

Storage Calculations

10 min			
Inflow	1107	Storage	649.44
Outflow	457.56		
15 min			
Inflow	1518.75	Storage	946.8
Outflow	571.95		
20 min			
Inflow	1809	Storage	1122.66
Outflow	686.34		
30 min			
Inflow	2227.5	Storage	1312.38
Outflow	915.12		
40 min			
Inflow	2538	Storage	1394.1
Outflow	1143.9		
50 min			
Inflow	2700	Storage	1327.32
Outflow	1372.68		
60 min			
Inflow	2835	Storage	1233.54
Outflow	1601.46		
70 min			
Inflow	3024	Storage	1193.76
Outflow	1830.24		
80 min			
Inflow	2916	Storage	856.98
Outflow	2059.02		
90 min			
Inflow	3037.5	Storage	749.7
Outflow	2287.8		
100 min			
Inflow	3240	Storage	723.42
Outflow	2516.58		
110 min			
Inflow	3105	Storage	359.64
Outflow	2745.36		

RUSTIC WAREHOUSE
100 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.33
C =	0.5
Tc =	10
I_{100} =	9.8
Q_{100} =	1.617

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.33	A =	0	A=	0.08
Aadj=	0.25				
C =	0.9	C =	0.9	C=	0.9
Tc =	10	Tc =	10	Tc=	10
I_{100} =	9.8	I_{100} =	9.8	I_{100} =	9.8
Q_{100} =	2.9106	Q_{100} =	0	Q_{100} =	0.7056

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	9.8	0.9	2.205	10 min	9.8	0.9	0
15 min	9	0.9	2.025	15 min	9	0.9	0
20 min	8.3	0.9	1.8675	20 min	8.3	0.9	0
30 min	6.9	0.9	1.5525	30 min	6.9	0.9	0
40 min	5.8	0.9	1.305	40 min	5.8	0.9	0
50 min	5	0.9	1.125	50 min	5	0.9	0
60 min	4.5	0.9	1.0125	60 min	4.5	0.9	0
70 min	4	0.9	0.9	70 min	4	0.9	0
80 min	3.7	0.9	0.8325	80 min	3.7	0.9	0
90 min	3.5	0.9	0.7875	90 min	3.5	0.9	0
100 min	3.3	0.9	0.7425	100 min	3.3	0.9	0
110 min	2.9	0.9	0.6525	110 min	2.9	0.9	0

Storage Calculations

10 min			
Inflow	1323	Storage	776.16
Outflow	546.84		
15 min			
Inflow	1822.5	Storage	1138.95
Outflow	683.55		
20 min			
Inflow	2241	Storage	1420.74
Outflow	820.26		
30 min			
Inflow	2794.5	Storage	1700.82
Outflow	1093.68		
40 min			
Inflow	3132	Storage	1764.9
Outflow	1367.1		
50 min			
Inflow	3375	Storage	1734.48
Outflow	1640.52		
60 min			
Inflow	3645	Storage	1731.06
Outflow	1913.94		
70 min			
Inflow	3780	Storage	1592.64
Outflow	2187.36		
80 min			
Inflow	3996	Storage	1535.22
Outflow	2460.78		
90 min			
Inflow	4252.5	Storage	1518.3
Outflow	2734.2		
100 min			
Inflow	4455	Storage	1447.38
Outflow	3007.62		
110 min			
Inflow	3915	Storage	633.96
Outflow	3281.04		

REVISED TO CONFORM TO CONSTRUCTION RECORDS.

DATE: 6-16-16

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY W.L. DOUPHRATE II TEXAS P.E. NO. 60102, F-886, ON DATE: FEB 2, 2016

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

DETENTION CALCULATIONS
RUSTIC WAREHOUSE
1411 S. GOLIAD ST.
B.J.T. LEWIS SURVEY, ABST. 255
CITY OF ROCKWALL
ROCKWALL COUNTY, TEXAS

REVISION
W.L.D.
CHECKED
G.C.W.
DRAWN
SCALE
1"= 20' H
1"= V
JAN., 2016
DATE
15029
PROJECT
5/7