PLAN OF RECORD

This record drawing is a compilation of the sealed engineering drawing for permit and construction, by others; modified based on a field observation by BIG RED DOG. The information shown on the record drawings that was provided for permit and construction, by others not associated with the record drawing engineer, cannot be verified for accuracy or completeness. Review is for general conformance with construction documents and on-site improvements. The original approved sealed drawings are on file at the offices of the City of Rockwall.

Therefore, with the exceptions noted and clouded, this "Plan of Record" is true and correct to the best of my knowledge and was prepared under my supervision.

STATE OF TEXAS
GRAYSON K. HUGHES
114327
LICENSED
PROFESSIONAL ENGINEER

September 28, 2018

DETENTION CALCULATIONS 25 YR STORM

Detention Calculations 25 Yr Storm
Larsen Retail Site Basin A
Release Rate = 1.26

Various Duration Storms

Duration (min.)	C	I25 (in/hr)	A (ac.)	Q25 (c.f.s.)	Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)	
10	0.90	8.1	0.86	6.27	3,762	756	3,006	
15	0.90	7.1	0.86	5.50	4,946	945	4,001	
20	0.90	6.3	0.86	4.88	5,851	1,134	4,717	
30	0.90	5.2	0.86	4.02	7,245	1,512	5,733	
40	0.90	4.4	0.86	3.41	8,173	1,890	6,283	
50	0.90	3.8	0.86	2.94	8,824	2,268	6,556	
60	0.90	3.3	0.86	2.55	9,195	2,646	6,549	
70	0.90	3.1	0.86	2.38	9,997	3,024	6,973	<-- Peak Storage 9677.60 Available
80	0.90	2.8	0.86	2.17	10,412	3,402	7,010	
90	0.90	2.6	0.86	2.00	10,781	3,780	7,001	
100	0.90	2.4	0.86	1.85	11,114	4,158	6,956	
110	0.90	2.2	0.86	1.73	11,418	4,536	6,882	

Areas Draining to Basin A

Area	Acres	Cdev	Qdev	Cundev	Qundev
A1	0.07	0.90	0.51	0.35	0.15
A2	0.49	0.90	3.57	0.35	1.08
A3	0.30	0.90	2.19	0.35	0.66
Total	0.86	0.90	6.27	0.35	1.90

Volume	Elevation
7162.054	551.83
6,973	551.77
6919.69	551.75

Larsen Retail Site Basin B
Release Rate = 2.80

Various Duration Storms

Duration (min.)	C	I25 (in/hr)	A (ac.)	Q25 (c.f.s.)	Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)	
10	0.90	8.1	1.63	11.85	7,130	1,680	5,450	
15	0.90	7.1	1.63	10.42	9,374	2,100	7,274	
20	0.90	6.3	1.63	9.24	11,091	2,520	8,571	
30	0.90	5.2	1.63	7.63	13,731	3,360	10,371	
40	0.90	4.4	1.63	6.45	15,492	4,200	11,292	
50	0.90	3.8	1.63	5.57	16,724	5,040	11,684	
60	0.90	3.3	1.63	4.84	17,428	5,880	11,548	
70	0.90	3.1	1.63	4.51	18,947	6,720	12,227	<-- Peak Storage 16450.70 Available
80	0.90	2.8	1.63	4.11	19,734	7,560	12,174	
90	0.90	2.6	1.63	3.78	20,434	8,400	12,034	
100	0.90	2.4	1.63	3.51	21,065	9,240	11,825	
110	0.90	2.2	1.63	3.28	21,641	10,080	11,561	

Areas Draining to Basin B

Area	Acres	Cdev	Qdev	Cundev	Qundev
B1	0.65	0.90	4.74	0.35	1.43
C1	0.69	0.90	5.03	0.35	1.52
D1	0.29	0.90	2.11	0.35	0.64
Total	1.63	0.90	11.88	0.35	3.59

Volume	Elevation
12581.52	554.92
12,227	554.84
12179.87	554.83

Loreen Retail Site Basin C
Release Rate = 4.00

Various Duration Storms

Duration (min.)	C	I25 (in/hr)	A (ac.)	Q25 (c.f.s.)	Local Inflow (c.f.)	Flow from B (c.f.)	Total Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)
10	0.90	8.1	0.49	3.57	2,143	1,880	3,823	2,400	1,423
15	0.90	7.1	0.49	3.13	2,818	2,100	4,918	3,000	1,918
20	0.90	6.3	0.49	2.78	3,334	2,520	5,854	3,600	2,254
30	0.90	5.2	0.49	2.29	4,128	3,360	7,488	4,800	2,688
40	0.90	4.4	0.49	1.94	4,657	4,200	8,857	6,000	2,857
50	0.90	3.8	0.49	1.68	5,027	5,040	10,067	7,200	2,867
60	0.90	3.3	0.49	1.46	5,238	5,880	11,119	8,400	2,719
70	0.90	3.1	0.49	1.36	5,698	6,720	12,418	9,600	2,818
80	0.90	2.8	0.49	1.24	5,932	7,560	13,492	10,800	2,692
90	0.90	2.6	0.49	1.14	6,143	8,400	14,543	12,000	2,543
100	0.90	2.4	0.49	1.06	6,332	9,240	15,572	13,200	2,372
110	0.90	2.2	0.49	0.99	6,505	10,080	16,585	14,400	2,185

<-- Peak Storage 3774.15 Available

Areas Draining to Basin C

Area	Acres	Cdev	Qdev	Cundev	Qundev
C1	0.16	0.90	1.17	0.35	0.35
E2	0.33	0.90	2.41	0.35	0.73
System B			2.80		3.59
Total	0.49	0.90	6.37	0.35	4.67

Volume	Elevation
2877.87	550.25
2,857	550.24
2785.53	550.16

DETENTION CALCULATIONS 100 YR STORM

Detention Calculations 100 Yr Storm
Larsen Retail Site Basin A
Release Rate = 1.71 cfs

Various Duration Storms

Duration (min.)	C	I (in/hr)	A (ac.)	Q (c.f.s.)	Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)	
10	0.90	9.8	0.86	7.59	4,551	1,027	3,524	
15	0.90	9.0	0.86	6.97	6,269	1,284	4,985	
20	0.90	8.3	0.86	6.42	7,709	1,540	6,169	
30	0.90	6.9	0.86	5.34	9,613	2,054	7,559	
40	0.90	5.8	0.86	4.49	10,774	2,567	8,207	
50	0.90	5.0	0.86	3.87	11,610	3,081	8,529	
60	0.90	4.5	0.86	3.45	12,539	3,594	8,945	
70	0.90	4.0	0.86	3.10	13,003	4,107	8,896	
80	0.90	3.7	0.86	2.86	13,745	4,621	9,125	
90	0.90	3.5	0.86	2.71	14,829	5,134	9,694	
100	0.90	3.3	0.86	2.55	15,325	5,648	9,677.60	<-- Peak Storage 9677.60 Available At Elevation 663.00
110	0.90	2.9	0.86	2.24	14,814	6,161	8,653	

Areas Draining to Basin A

Area	Acres	Cdev	Qdev	Cundev	Qundev
A1	0.07	0.90	0.62	0.35	0.20
A2	0.49	0.90	4.32	0.35	1.42
A3	0.30	0.90	2.65	0.35	0.87
Total	0.86	0.90	7.59	0.35	2.50

Larsen Retail Site Basin B
Release Rate = 3.82

Various Duration Storms

Duration (min.)	C	I (in/hr)	A (ac.)	Q (c.f.s.)	Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)	
10	0.90	9.8	1.63	14.38	8,626	2,290	6,336	
15	0.90	9.0	1.63	13.20	11,883	2,863	9,020	
20	0.90	8.3	1.63	12.18	14,611	3,435	11,176	
30	0.90	6.9	1.63	10.12	18,220	4,580	13,640	
40	0.90	5.8	1.63	8.51	20,421	5,725	14,696	
50	0.90	5.0	1.63	7.34	22,005	6,870	15,135	
60	0.90	4.5	1.63	6.60	23,765	8,016	15,750	
70	0.90	4.0	1.63	5.87	24,648	9,161	15,486	
80	0.90	3.7	1.63	5.43	26,054	10,306	15,748	
90	0.90	3.5	1.63	5.13	27,286	11,451	16,275	
100	0.90	3.3	1.63	4.84	29,047	12,596	16,450.70	<-- Peak Storage 16450.70 Available At Elevation 556.00
110	0.90	2.9	1.63	4.25	28,078	13,741	14,337	

Areas Draining to Basin B

Area	Acres	Cdev	Qdev	Cundev	Qundev
B1	0.65	0.9	5.73	0.35	1.89
C1	0.69	0.9	6.09	0.35	2.00
D1	0.29	0.9	2.56	0.35	0.84
Total	1.63	0.90	14.38	0.35	4.74

System B flows into System C

Larsen Retail Site Basin C
Release Rate = 5.42

Various Duration Storms

Duration (min.)	C	I (in/hr)	A (ac.)	Q (c.f.s.)	Local Inflow (c.f.)	Flow from B (c.f.)	Total Inflow (c.f.)	Outflow (c.f.)	Storage (c.f.)
10	0.90	9.8	0.49	4.32	2,593	2,290	4,883	3,253	1,630
15	0.90	9.0	0.49	3.97	3,572	2,863	6,435	4,066	2,369
20	0.90	8.3	0.49	3.65	4,392	3,435	7,828	4,880	2,948
30	0.90	6.9	0.49	3.04	5,477	4,580	10,058	6,506	3,551
40	0.90	5.8	0.49	2.56	6,139	5,725	11,864	8,133	3,732
50	0.90	5.0	0.49	2.21	6,615	6,870	13,485	9,759	3,726
60	0.90	4.5	0.49	1.98	7,144	8,016	15,160	11,386	3,774.15
70	0.90	4.0	0.49	1.76	7,499	9,161	16,659	13,012	3,647
80	0.90	3.7	0.49	1.63	7,832	10,306	18,138	14,639	3,499
90	0.90	3.5	0.49	1.54	8,335	11,451	19,786	16,265	3,521
100	0.90	3.3	0.49	1.46	8,722	12,596	21,318	17,892	3,426
110	0.90	2.9	0.49	1.28	8,441	13,741	22,182	19,518	2,664

<-- Peak Storage 3774.15 Available At Elevation 551.33

Areas Draining to Basin C

Area	Acres	Cdev	Qdev	Cundev	Qundev
C1	0.16	0.90	1.41	0.35	0.48
E2	0.33	0.90	2.91	0.35	0.96
System B			3.82		4.74
Total	0.49	0.90	8.14	0.35	6.18

SITE BENCHMARK:
CUT "X" ON TOP OF NORTH CURBLINE OF EXISTING CONCRETE DRIVE APPROX. 45 FEET SOUTH OF SOUTH BUILDING WALL OF GALAXY RANCH PRIVATE SCHOOL AND 148 FEET +/- EAST OF EXISTING EAST CURBLINE OF T.L. TOWNSEND LANE.
ELEVATION = 554.56

STATE OF TEXAS
MARK W. ROBERTS
55447
REGISTERED
PROFESSIONAL ENGINEER

REVISIONS	DATE

NDM
NATHAN D. MAIER CONSULTING ENGINEERS, INC.
TEXAS FIRM REGISTRATION #356
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Two Northpark 8080 Park Lane Suite 600
Dallas, Texas 75231 214.739.4741

DETENTION CALCULATIONS
100 AND 25 YEAR STORMS
LARSEN RETAIL DEVELOPMENT
3.154 ACRE TRACT - LARSEN SCHOOL ADDITION
ROCKWALL ROCKWALL COUNTY, TEXAS

DESIGN	DRAWN	SCALE	DATE	NOTES
NDMCE	NDMCE	N/A	2018-09-05	

JOB NUMBER 08-04-008.A

SHEET NO. 13 / 16