MODIFIED RATIONAL METHOD DETENTION CALCULATIONS

Runoff Coefficient C =	0.9		
Drainage Area - A =	14.26	acres	
Time of Concentration - tc =	10	minutes	
Allowable Outflow Rate - Q* =	64.97	cfs	

Duration (minutes)	Intensity (inches/hr)	Depth (inches)	Inflow Discharge Q=CiA	Inflow Volume Cu. Ft.	Outflow Duration (minutes)	Outflow Volume Cu. Ft.	Storage Volume Cu. Ft.	Outflow Discharge (cfs)
5	10.56	0.88	135.5	40,658	15	29,237	11,422	38.1
10	9.80	1.63	125.8	75,464	20	38,982	36,482	60.8
15	9.10	2.28	116.8	105,110	25	48,728	56,383	62.6
20	8.30	2.77	106.5	127,827	30	58,473	69,354	57.8
25	7.50	3.13	96.3	144,383	35	68,219	76,164	50.8
30	6.90	3.45	88.6	159,398	40	77,964	81,434	45.2
35	6.50	3.79	83.4	175,184	45	87,710	87,475	41.7
40	5.80	3.87	74.4	178,649	50	97,455	81,194	33.8
50	5.00	4.17	64.2	192,510	60	116,946	75,564	25.2
60	4.50	4.50	57.8	207,911	70	136,437	71,474	19.9
70	4.10	4.78	52.6	221,001	80	155,928	65,073	15.5
80	3.75	5.00	48.1	231,012	90	175,419	55,593	11.6
90	3.48	5.22	44.7	241,177	100	194,910	46,267	8.6
120	2.65	5.30	34.0	244,873	130	253,383	(8,510)	(1.2)
180	1.93	5.78	24.7	267,050	190	370,329	(103,279)	(9.6)
360	1.16	6.98	14.9	322,493	370	721,167	(398,674)	(18.5)
720	0.73	8.80	9.4	406,581	730	1,422,843	(1,016,262)	(23.5)
1440	0.40	9.55	5.1	441,233	1,450	2,826,195	(2,384,962)	(27.6)
						Required Storage Volume	87,475	cubic feet
							2.01	acre-feet

*Allowable Q= (A1+A2+A3+A4+A5+A6+A7)(0.35)(8.3) + (OS1+OS2+OS3)(0.9)(9.8) - (A3+A7)(0.9)(9.8)

Calculations based on City of Rockwall 100-yr IDF Curve

POND STAGE VS. STORAGE & DISCHARGE

Orifice Coefficient C =	0.60		
Orifice Area A =	4.77	Sq. Ft.	

Water Surface Elevation	Height of Water in Detention Pond (ft)	Storage (ft^3)	Outflow (cfs)
520	1	5,693	22.97
521	2	15,527	32.49
522	3	25,361	39.79
523	4	35,639	45.94
524	5	47,227	51.36
525	6	60,186	56.27
526	7	74,184	60.77
527	8	89,939	64.97

BY STRAIGHT LINE INTERPOLATION, BASED ON MAX. STORAGE VOLUME REQUIRED OF 87,475 CUBIC FEET, MAX. WATER SURFACE ELEV. = 526.84

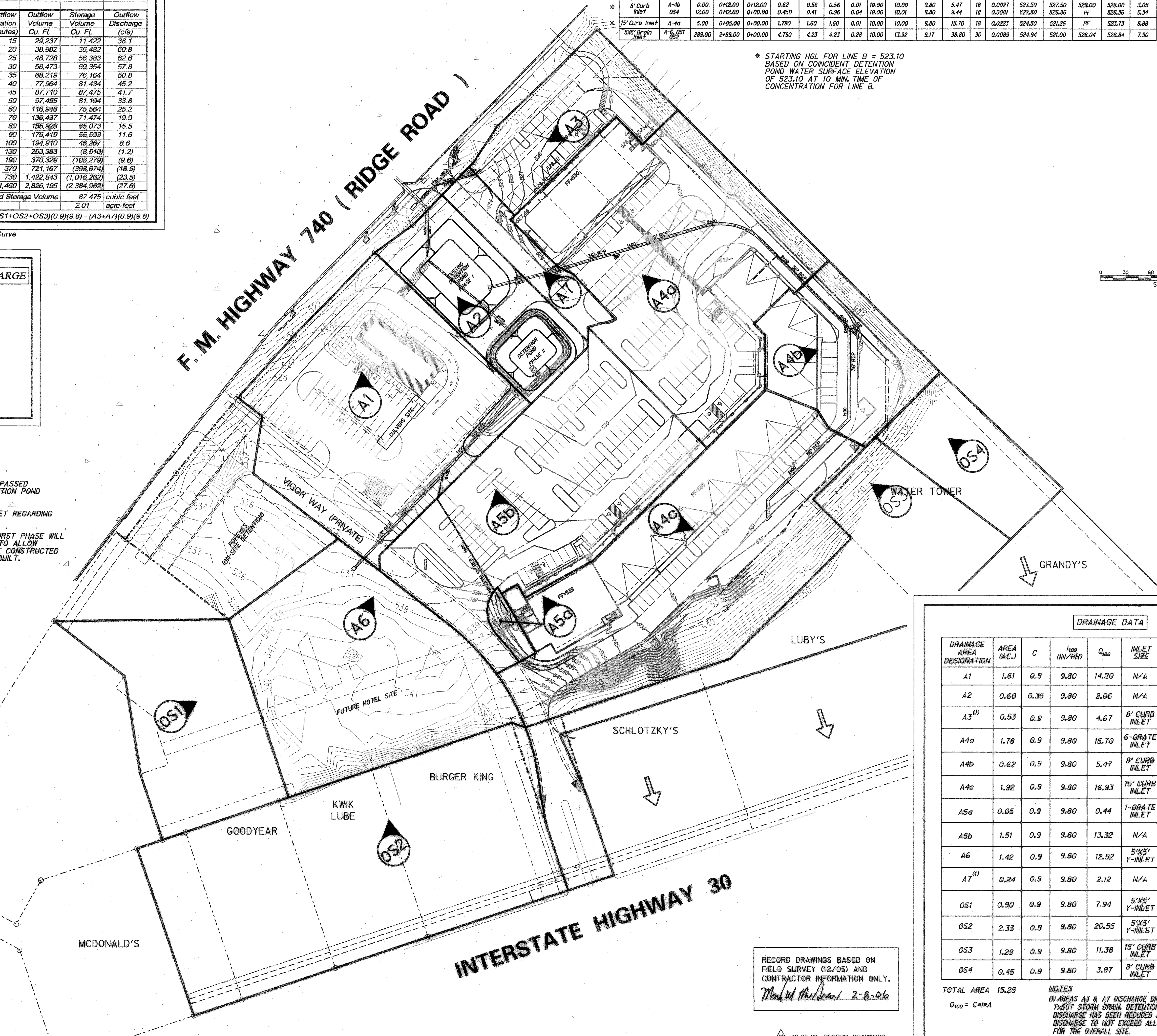
NOTE: 1. RUNOFF FROM AREA 051, 052 & 053 IS BEING PASSED THROUGH THE PROPOSED DEVELOPMENT & DETENTION POND UNDETAINED.

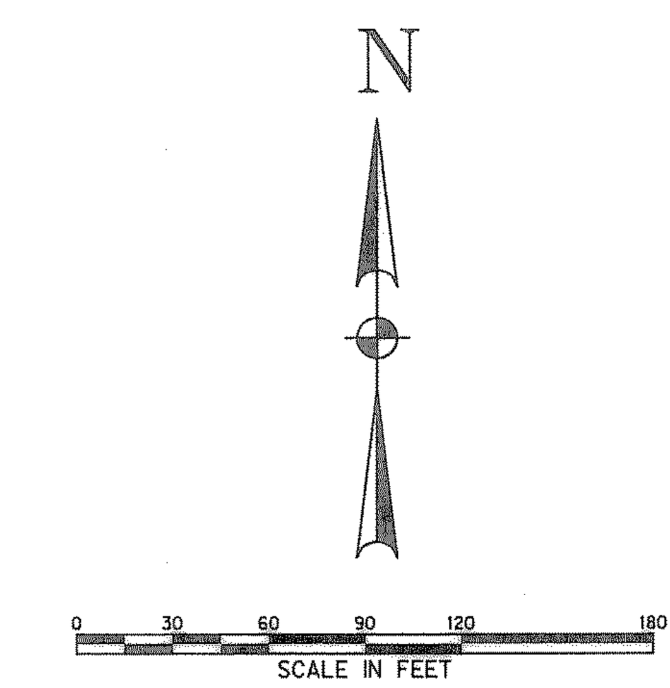
2. SEE NOTE IN DRAINAGE DATA TABLE THIS SHEET REGARDING AREAS A3 & A7.

3. DETENTION WILL BE BUILT IN 2 PHASES. THE FIRST PHASE WILL BUILD THE PHASE I PORTION OF THE DETENTION TO ALLOW THE CULVERS SITE TO DEVELOP. PHASE II WILL BE CONSTRUCTED WHEN THE REMAINDER OF THE DEVELOPMENT IS BUILT.

	Pipe/Inlet Description	Drainage Area Name	Pipe Length [ft]	From Upstream Station	To Downstr. Station	Total Drainage Area (acres)	Incrmnt C*A	Cumltv C*A	Flow Time in Pipe [min]	Inlet Time [min]	Time of Concentr. [min]	100-Year Storm [in\hr]	100-Year Storm [cfs]	Pipe Size [in]	Hydraulic Slope	U/S Flowline Elevation (ft)	D/S Flowline Elevation (ft)	U/S H.G. Elevation [ft]	D/S H.G. Elevation [ft]	Full Flow Velocity [fps]	MINOR LOSSES: V^2/2g (this Pipe) Upstream	V^2/2g (D/S Pipe) Downstr.	D/S End Junction Loss k	Junction Headloss at D/S end of Pipe [ft]	Pipe Minor Loss k	Pipe Minor Loss k*V^2/2g [ft]
*	Lat 'B-2'	A-4c,OS3	290.00	2+90.00	0+00.00	1.290	2.89	2.89	1.21	10.00	10.00	9.80	28.31	36	0.0018	527.02	525.36	PF	528.36	4.01	0.25	0.43	0.50	0.30	0.00	0.00
*	Line 'B'	A-4b,OS4 A-4a	342.00 71.00	4+13.00 0+71.00	0+71.00 0+00.00	0.450 1.780	0.96 1.60	3.85 5.45	1.09 0.16	10.00 10.00	11.21 12.30	9.61 9.43	37.01 51.45	36 36	0.0031 0.0059	525.35 520.51	520.51 519.50	PF 523.52	524.13 523.10	5.24 7.28	0.43 0.82	0.82	0.50 0.50	0.61	0.00 0.00	0.00 0.00
*	6-Grate Inlet	A-4c OS3	0.00 0.00	0+00.00 0+00.00	0+00.00 0+00.00	1.920 1.290	1.73 1.16	1.73 2.89	0.00 0.00	10.00 10.00	10.00 10.00	9.80 9.80	16.93 28.31	36 36	0.0006 0.0018	527.00 527.00	527.00 527.02	530.22 530.02	530.22 530.02	2.40 4.01	0.09 0.25	0.25 0.25	0.50 0.50	0.20 0.12	0.00 0.00	0.00 0.00
*	8' Curb Inlet	A-4b OS4	0.00 12.00	0+12.00 0+12.00	0+12.00 0+00.00	0.62 0.450	0.56 0.41	0.56 0.96	0.01 0.04	10.00 10.00	10.00 10.01	9.80 9.80	5.47 9.44	18 18	0.0027 0.0081	527.50 527.50	527.50 526.86	529.00 PF	529.00 528.36	3.09 5.34	0.15 0.44	0.44 0.43	0.50 0.50	0.37 0.20	0.00 0.00	0.00 0.00
*	15' Curb Inlet	A-4a	5.00	0+05.00	0+00.00	1.790	1.60	1.60	0.01	10.00	10.00	9.80	15.70	18	0.0223	524.50	521.26	PF	523.73	8.88	1.23	0.82	0.50	0.21	0.00	0.00
	5X5' Drain Inlet	A-6,OS1 OS2	289.00	2+89.00	0+00.00	4.790	4.23	4.23	0.28	10.00	13.92	9.17	38.80	30	0.0089	524.94	521.00	528.04	526.84	7.90	0.97	0.97	0.50	0.14	0.00	0.00

* STARTING HGL FOR LINE B = 523.10 BASED ON COINCIDENT DETENTION POND WATER SURFACE ELEVATION OF 523.10 AT 10 MIN. TIME OF CONCENTRATION FOR LINE B.





RECORD DRAWINGS BASED ON FIELD SURVEY (12/05) AND CONTRACTOR INFORMATION ONLY.
Mark W. McGraw 2-8-06

16 02-08-06 RECORD DRAWINGS

DRAINAGE DATA

DRAINAGE AREA DESIGNATION	AREA (AC.)	C	I_{100} (IN/HR)	Q_{100}	INLET SIZE	INLET CAPACITY	COMMENT
A1	1.61	0.9	9.80	14.20	N/A	N/A	TO DETENTION POND
A2	0.60	0.35	9.80	2.06	N/A	N/A	TO DETENTION POND
A3 (1)	0.53	0.9	9.80	4.67	8' CURB INLET	17.00	SEE NOTE 1
A4a	1.78	0.9	9.80	15.70	6-GRATE INLET	18.00	TO DETENTION POND
A4b	0.62	0.9	9.80	5.47	8' CURB INLET	17.00	TO DETENTION POND
A4c	1.92	0.9	9.80	16.93	15' CURB INLET	32.00	TO DETENTION POND
A5a	0.05	0.9	9.80	0.44	1-GRATE INLET	1.50	TO DETENTION POND
A5b	1.51	0.9	9.80	13.32	N/A	N/A	TO DETENTION POND
A6	1.42	0.9	9.80	12.52	5'X5' Y-INLET	49.80	TO DETENTION POND
A7 (1)	0.24	0.9	9.80	2.12	N/A	N/A	SEE NOTE 1
OS1	0.90	0.9	9.80	7.94	5'X5' Y-INLET	49.80	ROUTED OFFSITE (NOT DETAINED)
OS2	2.33	0.9	9.80	20.55	5'X5' Y-INLET	49.80	ROUTED OFFSITE (NOT DETAINED)
OS3	1.29	0.9	9.80	11.38	15' CURB INLET	32.00	ROUTED OFFSITE (NOT DETAINED)
OS4	0.45	0.9	9.80	3.97	8' CURB INLET	17.00	ROUTED OFFSITE (NOT DETAINED)

TOTAL AREA 15.25

$Q_{100} = C*I*A$

NOTES

(1) AREAS A3 & A7 DISCHARGE DIRECTLY TO THE TxDOT STORM DRAIN. DETENTION POND ALLOWABLE DISCHARGE HAS BEEN REDUCED BY A3's & A7's DISCHARGE TO NOT EXCEED ALLOWABLE DISCHARGE FOR THE OVERALL SITE.

RIDGE ROAD TOWN CENTRE

ROCKWALL, TEXAS

Vigor PROPERTIES INC.

Ridge Road Town Centre Partners, L.P. by its General Partners:

RIDGE ROAD PARTNERS L.L.C.

STATE OF TEXAS
MARK W. McGRAW
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Project No: AVO # 20817

Issued:

Revisions:

No.	Date	Description
1	11/04/02	FIRST SUBMITTAL
2	4/08/03	SECOND SUBMITTAL
3	5/09/03	THIRD SUBMITTAL
4	6/06/03	FOURTH SUBMITTAL
5	7/02/04	FIFTH SUBMITTAL
7	10/26/04	SEVENTH SUBMITTAL

Drawn by:

Checked by:

Sheet Title: DRAINAGE AREA MAP

C3.1

Sheet Number

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