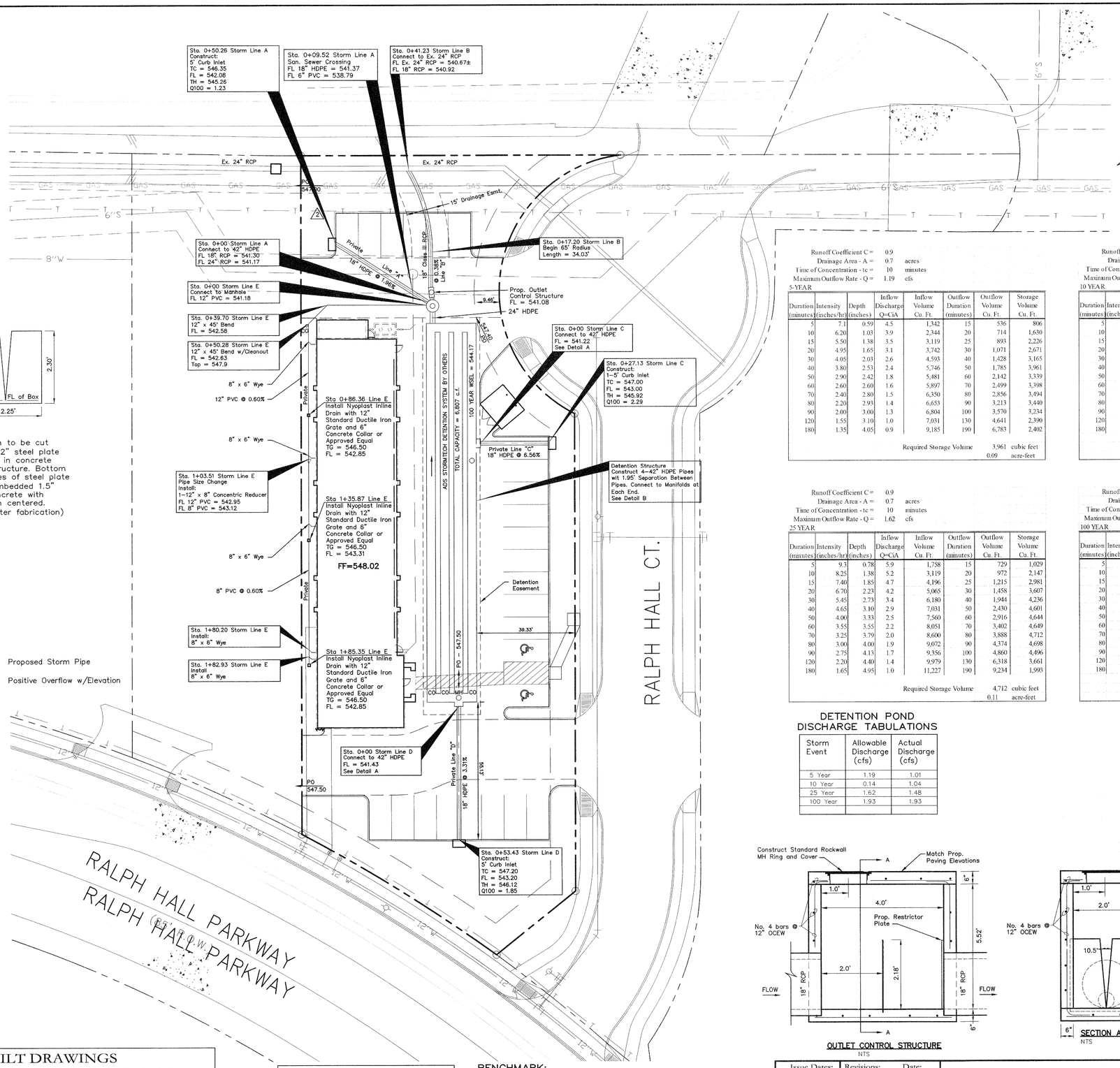


1.5"
2.30'
FL of Box
2.25'

V-Notch to be cut from 1/2" steel plate and set in concrete base structure. Bottom and sides of steel plate to be imbedded 1.5" into concrete with V-Notch centered. (HDG after fabrication)

Legend

Proposed Storm Pipe

PO 544.00 — Positive Overflow w/Elevation

Runoff Coefficient C = 0.9
Drainage Area - A = 0.7 acres
Time of Concentration - tc = 10 minutes
Maximum Outflow Rate - Q = 1.19 cfs

5-YEAR

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.
5	7.1	0.59	4.5	1,342	15	536	806
10	6.20	1.03	3.9	2,344	20	714	1,630
15	5.50	1.38	3.5	3,119	25	893	2,226
20	4.95	1.65	3.1	3,742	30	1,071	2,671
30	4.05	2.03	2.6	4,593	40	1,428	3,165
40	3.80	2.53	2.4	5,746	50	1,785	3,961
50	2.90	2.42	1.8	5,481	60	2,142	3,339
60	2.60	2.60	1.6	5,897	70	2,499	3,398
70	2.40	2.80	1.5	6,350	80	2,856	3,494
80	2.20	2.93	1.4	6,653	90	3,213	3,440
90	2.00	3.00	1.3	6,804	100	3,570	3,234
120	1.55	3.10	1.0	7,031	130	4,641	2,390
180	1.35	4.05	0.9	9,185	190	6,783	2,402

Required Storage Volume 3,961 cubic feet
0.09 acre-feet

Runoff Coefficient C = 0.9
Drainage Area - A = 0.7 acres
Time of Concentration - tc = 10 minutes
Maximum Outflow Rate - Q = 1.40 cfs

10 YEAR

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.
5	8.25	0.69	5.2	1,559	15	630	929
10	7.30	1.22	4.6	2,759	20	840	1,919
15	6.45	1.61	4.1	3,657	25	1,050	2,607
20	5.80	1.93	3.7	4,385	30	1,260	3,125
30	4.75	2.38	3.0	5,387	40	1,680	3,707
40	4.00	2.67	2.5	6,048	50	2,100	3,948
50	3.45	2.88	2.2	6,521	60	2,520	4,001
60	3.05	3.05	1.9	6,917	70	2,940	3,977
70	2.80	3.27	1.8	7,409	80	3,360	4,049
80	2.60	3.47	1.6	7,862	90	3,780	4,082
90	2.40	3.60	1.5	8,165	100	4,200	3,965
120	1.80	3.60	1.1	8,165	130	5,460	2,705
180	1.40	4.20	0.9	9,526	190	7,980	1,546

Required Storage Volume 4,001 cubic feet
0.09 acre-feet

Runoff Coefficient C = 0.9
Drainage Area - A = 0.7 acres
Time of Concentration - tc = 10 minutes
Maximum Outflow Rate - Q = 1.62 cfs

25 YEAR

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.
5	9.3	0.78	5.9	1,758	15	729	1,029
10	8.25	1.38	5.2	3,119	20	972	2,147
15	7.40	1.85	4.7	4,196	25	1,215	2,981
20	6.70	2.23	4.2	5,065	30	1,458	3,607
30	5.45	2.73	3.4	6,180	40	1,944	4,236
40	4.65	3.10	2.9	7,031	50	2,430	4,601
50	4.00	3.33	2.5	7,560	60	2,916	4,644
60	3.55	3.55	2.2	8,051	70	3,402	4,649
70	3.25	3.79	2.0	8,600	80	3,888	4,712
80	3.00	4.00	1.9	9,072	90	4,374	4,698
90	2.75	4.13	1.7	9,356	100	4,860	4,496
120	2.20	4.40	1.4	9,979	130	6,318	3,661
180	1.65	4.95	1.0	11,227	190	9,234	1,993

Required Storage Volume 4,712 cubic feet
0.11 acre-feet

Runoff Coefficient C = 0.9
Drainage Area - A = 0.7 acres
Time of Concentration - tc = 10 minutes
Maximum Outflow Rate - Q = 1.93 cfs

100 YEAR

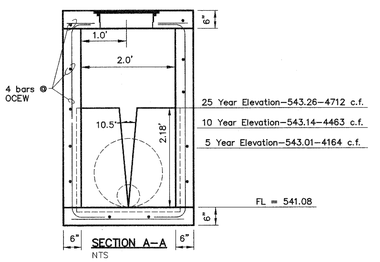
Duration (minutes)	Intensity (inches/hr)	Depth (inches)	Inflow Discharge Q=CiA	Inflow Volume Cu. Ft.	Outflow Duration (minutes)	Outflow Volume Cu. Ft.	Storage Volume Cu. Ft.
5	10.6	0.88	6.7	2,003	15	869	1,135
10	9.80	1.63	6.2	3,704	20	1,158	2,546
15	9.00	2.25	5.7	5,103	25	1,448	3,656
20	8.30	2.77	5.2	6,275	30	1,737	4,538
30	6.90	3.45	4.3	7,825	40	2,316	5,509
40	5.80	3.87	3.7	8,770	50	2,895	5,875
50	5.00	4.17	3.2	9,450	60	3,474	5,976
60	4.45	4.45	2.8	10,093	70	4,053	6,040
70	4.05	4.73	2.6	10,716	80	4,632	6,084
80	3.80	5.07	2.4	11,491	90	5,211	6,280
90	3.50	5.25	2.2	11,907	100	5,790	6,117
120	2.70	5.40	1.7	12,247	130	7,527	4,720
180	2.00	6.00	1.3	13,608	190	11,001	2,607

Required Storage Volume 6,280 cubic feet
0.14 acre-feet

DETENTION POND DISCHARGE TABULATIONS

Storm Event	Allowable Discharge (cfs)	Actual Discharge (cfs)
5 Year	1.19	1.01
10 Year	0.14	1.04
25 Year	1.62	1.48
100 Year	1.93	1.93

OUTLET CONTROL STRUCTURE
NTS



NTS

GENERAL/DRAINAGE NOTES

1. All materials and construction shall be in accordance with the City of Rockwall Standard Specifications and Construction Standards, and Standard Specifications for Public Works Construction prepared by North Central Texas Council of Governments (3rd Edition).

2. Existing utilities are shown schematically and are for the contractors guidance only. The location and/or elevation of existing utilities as shown on these plans are based on records of the various utility companies, and, where possible, measurements taken in the field. The contractor must call the appropriate utility company at least 48 hours prior to any excavation to request exact field location of utilities.

3. The contractor shall be responsible for protecting all existing improvements in the construction of this project. The contractor is responsible for repairs of damage to any existing improvements during construction. Repairs shall be equal to or better than condition prior to construction.

4. All storm sewer pipe 18" and larger shall be Class III RCP. All storm sewer pipe 15" and smaller shall be PVC drainage pipe or approved equal.

5. Contractor shall be responsible for maintaining trench safety requirements in accordance with the latest standards of O.S.H.A. or any other agency having jurisdiction for excavation and trenching procedures. Contractor shall provide and implement a trench safety plan complying with O.S.H.A.

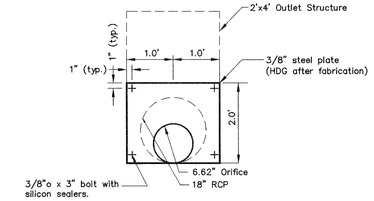
6. All RCP pipe joints shall have Ram-Neck joint sealer, in the absence of a City Standard for joint sealant.

7. All roof drain laterals shall be 0.50% min. slope.

8. Underground detention system to be installed per ADS technical specifications for pipes and all fittings.

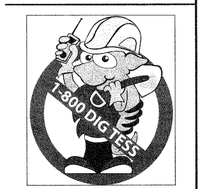
ORIFICE RESTRICTION CALCULATIONS

$Q = 0.6A\sqrt{2gh}$
h = 2.80' (Based On 100 yr. WSEL of 544.16)
$1.93 \text{ cfs} = 0.6A\sqrt{2(32.2)(2.80')}$
A = 0.2395 SF
$0.2395 \text{ SF} = Pi * r^2$
r = 3.31"
Use 18" RCP/2'x4' Junction w/ Restrictor



Detail D - 6.62" ORIFICE PLATE DETAIL
NTS

STOP!
CALL BEFORE YOU DIG



(@ least 72 hours prior to digging)

AS-BUILT DRAWINGS

To the best of our knowledge, Cross Engineering Consultants, Inc., hereby states that this plan is As-Built. The information provided is based on surveying at the site and information provided by the contractor.

JON DAVID CROSS, P.E.
2/23/2012
DATE

Responsibility Note:
"ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN."

BENCHMARK:

BM#1

TOP NORTHEAST CORNER OF CONCRETE WYE INLET LOCATED IN SOUTHWEST CORNER OF HOME DEPOT.

ELEV. = 540.69

Issue Dates:	Revisions:	Date:
1 4/22/11	1 Water	6/14/11
2	2 Grd & SW	8/31/11
3	3	
4	4	
5	5	
6	6	

CROSS ENGINEERING CONSULTANTS
106 W. Louisiana Street • McKinney, Texas 75069
972.562.4409 • Texas P.E. Firm No. F-5935

Drawn By:	Checked By:	Scale:
C.E.C.I.	J.D.C.	1" = 20'

STATE OF TEXAS
JON DAVID CROSS
82618
REGISTERED PROFESSIONAL ENGINEER
2/23/2012

STORM SEWER PLAN

CHRISTIAN BROTHERS - ROCKWALL

Rockwall Market Center South Addition
CITY OF ROCKWALL, TEXAS

Sheet No. C4 of 8

Project No. 11014

DRAINAGE AREA MAP

CHRISTIAN BROTHERS AUTOMOTIVE