

AREA NO.	DRAINAGE AREA 'A' (ACRES)	TIME OF CONCENTRATION (IN MINUTES)	RUNOFF COEFFICIENT 'C'	INTENSITY 'I' 100' (IN./HR.)	DESIGN FLOW Q 'Q' 100' (cfs)	REMARKS
A1	0.56	10	0.70	9.8	3.84	GRASS - AREA DRAIN
A2	0.11	10	0.70	9.8	0.75	GRASS - AREA DRAIN
A3	0.17	10	0.70	9.8	1.17	GRASS - AREA DRAIN
A4	0.67	10	0.70	9.8	4.60	BUILDING - 10' CURB INLET
A5	0.54	10	0.70	9.8	3.70	BUILDING - 10' CURB INLET
A6	0.77	10	0.70	9.8	5.28	BUILDING ROOF DRAINS
A7	0.19	10	0.70	9.8	1.30	BUILDING ROOF DRAINS
A8	0.23	10	0.70	9.8	1.58	BUILDING ROOF DRAINS
A9	0.32	10	0.70	9.8	2.20	BUILDING ROOF DRAINS
A10	0.33	10	0.70	9.8	2.26	GRASS - COURT YARD
A11	0.93	10	0.70	9.8	6.38	BUILDING ROOF DRAINS
A12	0.39	10	0.70	9.8	2.66	BUILDING ROOF DRAINS
A13	0.64	10	0.70	9.8	4.39	GRASS
A14	0.27	10	0.70	9.8	1.85	GRASS
A15	0.53	10	0.70	9.8	3.64	ROOF DRAINS - NAT.
A16	2.74	10	0.70	9.8	18.80	20' INLET
A17	3.86	10	0.70	9.8	26.48	PARKING AND DETENTION POND
OS-A18	10.80	10	0.35	8.3	31.37	OFF - SITE
B1	0.21	10	0.70	9.8	1.44	EXISTING BUILDING ROOF DRAINS
B2	0.47	10	0.70	9.8	3.22	EXISTING BUILDING / COURTYARD ROOF DRAINS
B3	0.27	10	0.70	9.8	1.85	EXISTING BUILDING / COURTYARD ROOF DRAINS
B4	0.52	10	0.70	9.8	3.57	EXISTING BUILDING / COURTYARD ROOF DRAINS
B5	2.10	10	0.70	9.8	14.40	EXISTING BUILDING / COURTYARD ROOF DRAINS - 10' INLET
B6	0.23	10	0.70	9.8	1.58	EXISTING BUILDING ROOF DRAINS
B7	0.34	10	0.70	9.8	2.33	EXISTING BUILDING ROOF DRAINS
OS-B8	10.90	10	0.35	8.30	31.66	OFF-SITE
B9	0.20	10	0.70	9.8	1.37	EXISTING BUILDING ROOF DRAINS
B10	0.43	10	0.70	9.8	2.95	BUILDING ROOF DRAINS
B11	0.51	10	0.70	9.8	3.50	GRASS - DRIVE - 5' 10' INLET
B12	0.60	10	0.70	9.8	4.11	GRASS - DRIVE - 5' 10' INLET
C1	1.41	10	0.70	9.8	9.67	EXISTING STORM
C2	1.30	10	0.70	9.8	8.92	EXISTING STORM
C3	0.36	10	0.70	9.8	2.40	TO TOWNSEND DRIVE
C4	0.50	10	0.70	9.8	3.43	ROOF DRAINS - NAT. - TO STORM
C5	4.50	10	0.70	9.8	30.87	EXISTING STADIUM
D1	0.42	10	0.70	9.8	2.88	TO TOWNSEND DRIVE
D2	1.30	10	0.70	9.8	8.92	EXISTING 10' CURB INLET
D3	0.66	10	0.70	9.8	4.53	EXISTING 10' CURB INLET
D4	0.52	10	0.70	9.8	3.57	EXISTING 10' CURB INLET
D5	1.97	10	0.70	9.8	13.51	EXISTING STORM
D6	2.28	10	0.70	9.8	15.64	EXISTING STORM
D7	0.69	10	0.70	9.8	4.73	EXISTING 10' CURB INLET
D8	1.85	10	0.70	9.8	15.98	TO POND "B"
E1	1.63	10	0.70	9.8	9.11	TO POND "B"
F1	0.68	10	0.70	9.8	2.33	OFFSITE TO ELLIS ADDN.
G1	0.72	10	0.70	9.8	4.94	TO TOWNSEND BLVD

INLET DESIGN CALCULATIONS		PROJECT NAME UTLEY SITE BY RAH DATE 06/29/08														
Drain Area	Inlet Location	Design Storm Frequency (yrs.)	AREA RUNOFF Q = CIA					Carry-Over From Upstream Inlet (c.f.s.)	Total Gutter Flow (c.f.s.)	Gutter Capacity (c.f.s.)	Gutter Slope (ft./100ft.)	Gutter Crown Type	SELECTED INLET			Carry-Over To Downstream Inlet (c.f.s.)
			Time of Conc. (min.)	Intensity I (in./hr.)	Runoff Coeff "C"	Area (ac.)	"Q" (c.f.s.)						Length "L" (Feet)	Inlet Capacity (c.f.s.)	Inlet Type	
A5	0+42 - LINE "B3"	100	10	9.8	0.70	0.54	3.70	0	N/A	LOW	POINT	N/A	10	10	C.I.	0
A4	0+36 - LINE "B2"	100	10	9.8	0.70	0.67	4.60	0	N/A	LOW	POINT	N/A	10	10	C.I.	0
PART OF A13	0+27 - LINE "B7"	100	10	9.8	0.70	0.19	1.32	0	N/A	LOW	POINT	N/A	5	5	C.I.	0
PART OF A13	0+54 - LINE "B6"	100	10	9.8	0.70	0.13	0.90	0	N/A	LOW	POINT	N/A	24"x24"	4.5	GRATE	0
A14	0+52 - LINE "B5"	100	10	9.8	0.70	0.64	4.40	0	N/A	LOW	POINT	N/A	24"x24"	4.5	GRATE	0
B1,2,3,4,6,7	5+14 - LINE "C"	100	10	9.8	0.70	2.04	13.99	0	N/A	LOW	POINT	N/A	1'-4"x4'	20	"Y"	0
B5	0+30 - LINE "C2"	100	10	9.8	0.70	2.10	14.4	0	N/A	LOW	POINT	N/A	15'	15	C.I.	0
PART OF A12	0+20 - LINE "C1"	100	10	9.8	0.70	0.58	4.0	0	N/A	LOW	POINT	N/A	5'	5	C.I.	0
PART OF A12	0+06 - LINE "C4"	100	10	9.8	0.70	1.07	7.38	0	N/A	LOW	POINT	N/A	10'	10	C.I.	0

**LEGEND**

- = PROPOSED DRAINAGE DIVIDE
- = PROPOSED DRAINAGE AREA
- = PROPOSED NUMBER OF ACRES
- = PROPOSED CONTOUR
- = PROPOSED FINISH FLOOR
- = PROPOSED STORM SEWER
- = DIRECTION OF FLOW
- = EXISTING CONTOUR
- = EXISTING STORM SEWER

FF = 582.00

ONSITE 35.00 ACRES + TENNIS COURTS 3.94 ACRES + OFF-SITE 21.7 ACRES = 60.64 ACRES  
PRESENT CONDITIONS

Q = C\*I\*A  
C = 0.35  
Tc = 20 MINUTES  
I100 = 8.3 in/hr  
Q100 = (0.35)(8.3)(60.64 ACRES) = 176.16 MAXIMUM RELEASE RATE

**EXISTING CONDITIONS POND "A"**

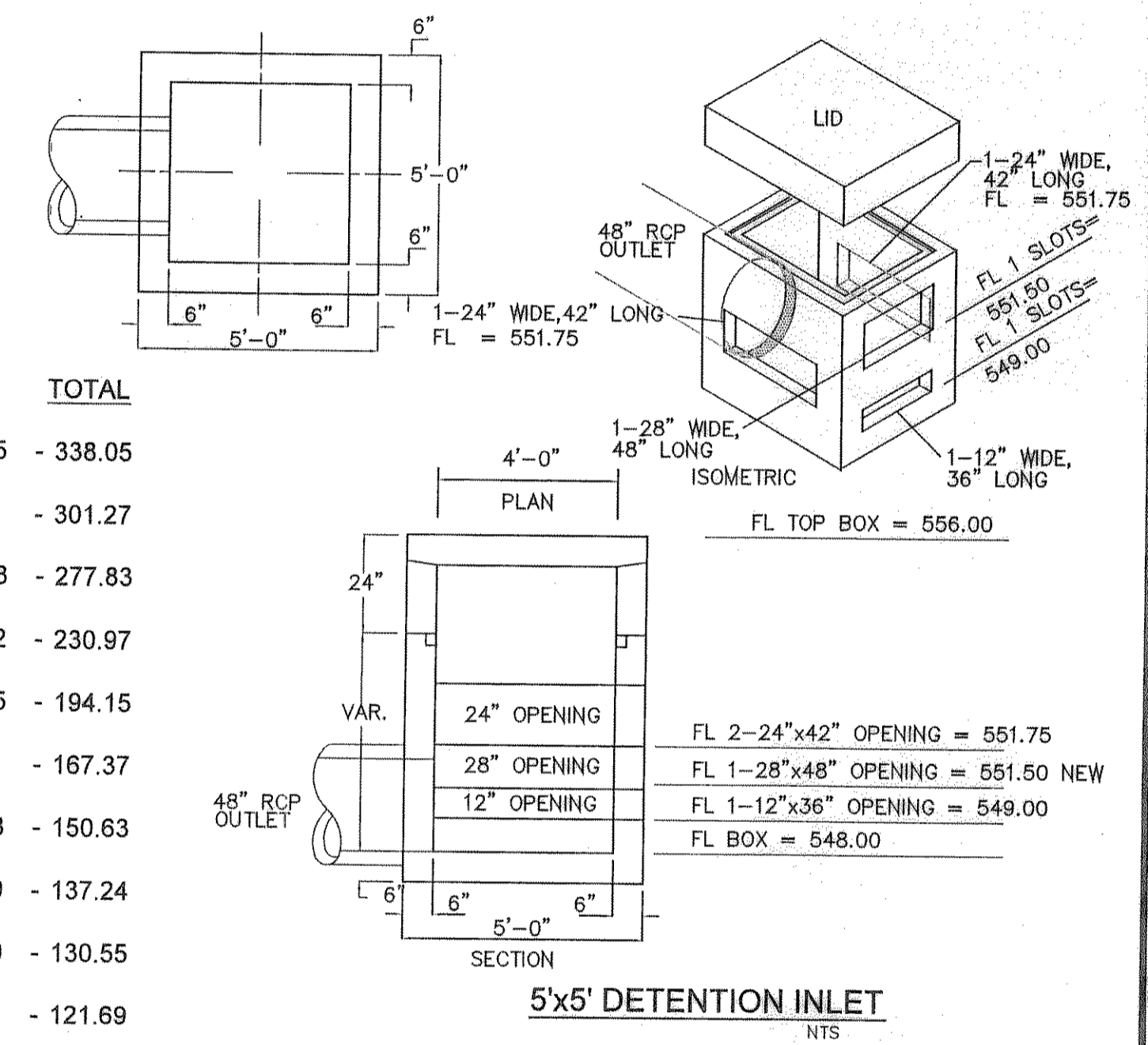
Q = C\*I\*A  
C = 0.70 SCHOOL  
Tc = 10 MINUTES  
I100 = 9.8 in/hr  
Q100 = (0.70)(9.8)(35.0 ACRES) = 240.10

**PROPOSED CONDITIONS WITH POND "B"**

STORM DURATIONS	ONSITE DEVELOPED	STORM DURATIONS	OFFSITE UNDEVELOPED	TOTAL
10 MINUTES	I = 9.8 Q = (0.70)(9.8)(35.0 ACRES) = 240.10	10 MINUTES	I = 9.8 Q = (0.35)(9.8)(25.64 ACRES) = 97.95	- 338.05
15 MINUTES	I = 9.0 Q = (0.70)(9.0)(35.0 ACRES) = 220.50	15 MINUTES	I = 9.0 Q = (0.35)(9.0)(25.64 ACRES) = 80.77	- 301.27
20 MINUTES	I = 8.3 Q = (0.70)(8.3)(35.0 ACRES) = 203.35	20 MINUTES	I = 8.3 Q = (0.35)(8.3)(25.64 ACRES) = 74.48	- 277.83
30 MINUTES	I = 6.9 Q = (0.70)(6.9)(35.0 ACRES) = 169.05	30 MINUTES	I = 6.9 Q = (0.35)(6.9)(25.64 ACRES) = 61.92	- 230.97
40 MINUTES	I = 5.8 Q = (0.70)(5.8)(35.0 ACRES) = 142.10	40 MINUTES	I = 5.8 Q = (0.35)(5.8)(25.64 ACRES) = 52.05	- 194.15
50 MINUTES	I = 5.0 Q = (0.70)(5.0)(35.0 ACRES) = 122.50	50 MINUTES	I = 5.0 Q = (0.35)(5.0)(25.64 ACRES) = 44.87	- 167.37
60 MINUTES	I = 4.5 Q = (0.70)(4.5)(35.0 ACRES) = 110.25	60 MINUTES	I = 4.5 Q = (0.35)(4.5)(25.64 ACRES) = 40.38	- 150.63
70 MINUTES	I = 4.0 Q = (0.70)(4.0)(36.48 ACRES) = 100.45	70 MINUTES	I = 4.0 Q = (0.35)(4.0)(25.64 ACRES) = 36.79	- 137.24
80 MINUTES	I = 3.7 Q = (0.70)(3.7)(36.48 ACRES) = 95.55	80 MINUTES	I = 3.7 Q = (0.35)(3.7)(25.64 ACRES) = 35.00	- 130.55
90 MINUTES	I = 3.5 Q = (0.70)(3.5)(36.48 ACRES) = 89.38	90 MINUTES	I = 3.5 Q = (0.35)(3.5)(25.64 ACRES) = 32.31	- 121.69

**MAXIMUM STORM VOLUMES**

10 MINUTES	INFLOW	(10 min)*(338.05 cfs)*(60 sec/min)	= 196,827 cf
	OUTFLOW	(0.50)*(20 min)*(176.16 cfs)*(60 sec/min)	= 105,696 cf
			= 91,132 cf
15 MINUTES	INFLOW	(15 min)*(301.27 cfs)*(60 sec/min)	= 271,139 cf
	OUTFLOW	(0.50)*(25 min)*(176.16 cfs)*(60 sec/min)	= 132,120 cf
			= 139,020 cf
20 MINUTES	INFLOW	(20 min)*(277.83 cfs)*(60 sec/min)	= 333,401 cf
	OUTFLOW	(0.50)*(30 min)*(176.16 cfs)*(60 sec/min)	= 158,544 cf
			= 174,858 cf
* 30 MINUTES	INFLOW	(30 min)*(230.97 cfs)*(60 sec/min)	= 415,747 cf
	OUTFLOW	(0.50)*(40 min)*(176.16 cfs)*(60 sec/min)	= 211,392 cf
			= 204,355 cf*
40 MINUTES	INFLOW	(40 min)*(194.15 cfs)*(60 sec/min)	= 465,958 cf
	OUTFLOW	(0.50)*(50 min)*(176.16 cfs)*(60 sec/min)	= 264,239 cf
			= 201,719 cf
50 MINUTES	INFLOW	(50 min)*(167.37 cfs)*(60 sec/min)	= 502,110 cf
	OUTFLOW	(0.50)*(60 min)*(176.16 cfs)*(60 sec/min)	= 317,087 cf
			= 185,023 cf



**SPECIFICATIONS**  
CONCRETE: Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction of floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.  
REINFORCEMENT: Grade 60 reinforced. No. 4 steel rebar to conform to ASTM A615 on required centers or equal.  
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

EXIST. OUTLET - 1 - 12" x 36" OPENING 549.00  
EXSIT. OUTLET - 2 - 24" x 42" OPENINGS 551.75  
NEW OUTLET - 1 - 28" x 48" OPENINGS ELEV. 551.50

Q allowable OUT OF POND	WITH POND "B" Q actual OUT OF OUT FALL STRUCTURE		
4.0	Q5 = 84.90	81.49 cfs	552.94 W.S.
5.8	Q25 = 123.10	122.62 cfs	553.50 W.S.
7.4	Q50 = 157.06	155.04 cfs	553.95 W.S.
8.3	Q100 = 176.16	166.39 cfs	554.17 W.S.

PROPOSED CONDITIONS WITH POND "B"  
MAXIMUM VOLUME REQUIRED IS 204,355 CF AT THE 30 MIN. STORM DURATION  
MAXIMUM VOLUME PROVIDED IS 205,147 CF AT THE 30 MIN. STORM DURATION

TOP OF POND = 557.00  
100 YEAR WATER SURFACE = 554.17 WS

**RECORD DRAWING**  
This is to certify that changes and corrections have been made to conform to the contractor's record of this project.  
Signed *J. Glenn* 5/26/10 Date  
Glenn Engineering Corporation

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Final Plans for Bidding and Construction

Rockwall  
INDEPENDENT SCHOOL DISTRICT  
TENNIS COMPLEX AT  
WILKERSON SANDERS  
STADIUM, TEXAS  
ROCKWALL, TEXAS

CHECKED: \_\_\_\_\_  
File: \_\_\_\_\_  
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Revisions:  
1 08/06/09 CITY REVISIONS  
2 08/11/09 CITY REVISIONS

Sheet Title:  
**DETENTION POND "A" CALCULATIONS**

**CG 1.06**

SHW Project: 4109.045.00

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