

100 YEAR DETENTION POND CALCULATIONS

- DRAINAGE AREAS 1 CONTRIBUTES FLOW TO THE DETENTION POND - 1.04 ACRES
 - DRAINAGE AREAS 2-3 BY PASS THE DETENTION POND - 0.04 ACRES
 - SITE ALLOWABLE RELEASE RATE = "C" FACTOR = .35
 $Q = CIA$, $I_{100} = 7.56 \text{ IN/HR}$ (TC = 15 MIN.)
 $Q = \text{ALLOW} = (0.35)(7.56)(1.08 \text{ ACRES}) = 2.88$
 - DETENTION POND ALLOWABLE RELEASE RATE =

TOTAL Q_{ALLOW}	2.88 CFS
TOTAL Q_{BYPASS}	0.35 CFS
TOTAL Q_{CHANGE}	2.50 CFS
 - STORAGE REQUIRED
 DETENTION AREA (A) = 1.04 ACRES
 REFERENCE: TECHNICAL PAPER 40
 ALLOWABLE STORMWATER FLOW FROM DETENTION: 2.50
- STORM DURATION DATA:**
- | MIN | 1-100YR (IN/HR) | C | AREA (ACRES) | TOTAL FLOW (CFS) | TOTAL FLOW (FT ³ /S) | OUTFLOW STORAGE (FT ³) | STORAGE (FT ³) |
|-----|-----------------|------|--------------|------------------|---------------------------------|------------------------------------|----------------------------|
| 5 | 10.56 | 0.90 | 1.04 | 9.88 | 2985 | 1125 | 1840 |
| 10 | 8.25 | 0.93 | 1.04 | 8.31 | 4987 | 1550 | 3487 |
| 20 | 6.80 | 0.90 | 1.04 | 6.36 | 7638 | 2250 | 5388 |
| 30 | 5.70 | 0.90 | 1.04 | 5.34 | 8603 | 3000 | 6603 |
| 40 | 5.00 | 0.90 | 1.04 | 4.65 | 11232 | 3750 | 7482 |
| 50 | 4.40 | 0.90 | 1.04 | 4.12 | 12355 | 4500 | 7855 |
| 60 | 3.95 | 0.90 | 1.04 | 3.71 | 13344 | 5250 | 8094 |
| 70 | 3.60 | 0.90 | 1.04 | 3.37 | 14152 | 6000 | 8152 |
| 80 | 3.30 | 0.90 | 1.04 | 3.09 | 14828 | 6750 | 8076 |
8. VOLUME PROVIDED IS EQUAL TO 516 LF OF 54" CONTECH STORAGE PIPE X 15.904 CFLF = 8,208 CF
7. OUTFALL DESIGN - CRIFICE PLATE
 OUTFALL ELEVATION = 587.80
 MAX. 100 YR. WATER SURFACE = 595.15
 $Q = (0.62)(A)(2g^2h^3)^{1/4}$ WHERE $g = 32.2 \text{ ft/sec}^2$
 $A = \frac{3.14D^2}{4}$ $h = H_1 D$ $V = Q/A$
 $Q_{\text{ALLOW}} = 2.50$ CFS
 $D = 0.40$ FEET = 5.88 INCHES
 $H = 7.11$ FEET
 $A = 0.1686$ FEET²
 $V = 1.87$ FT/SEC
 $Q_{\text{CHANGE}} = 2.50$ CFS

DEVELOPED DRAINAGE AREA CALCULATION

NO.	AREA (ACRES)	C	I_{100} (IN/HR)	Q_{100} (CFS)	REMARKS
1	1.04	0.90	8.88	8.31	SHEET FLOW TO 10' C.I. (DETAINED)
2	0.03	0.90	8.88	0.24	SHEET FLOW TO BELT LINE (RELEASED)
3	0.01	0.90	8.88	0.08	SHEET FLOW TO SURVEYOR (RELEASED)
4	0.19	0.35	8.88	0.59	SHEET FLOW TO SURVEYOR
5	0.09	0.35	8.88	0.28	SHEET FLOW TO SURVEYOR
6	0.10	0.35	8.88	0.31	SHEET FLOW TO BELT LINE

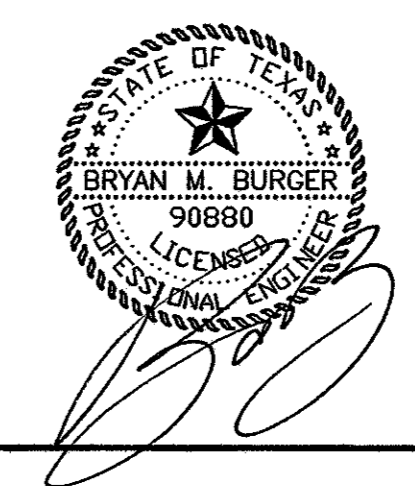
NOTE: SINCE AREAS 4-6 ARE TO REMAIN AS GRASS, THEY ARE NOT INCLUDED IN DETENTION CALCULATIONS & BYPASS THE DETENTION POND.

LEGEND

- ⊕ FIRE HYDRANT
- ⊗ CHEELED "X" SET
- ⊗ CHEELED "X" FOUND
- /X IRON ROD FOUND (SIZE AS NOTED)
- /X IRON ROD SET (SIZE AS NOTED)
- /X OVERHEAD UTILITY POLE W/ GUY
- /X UNDERGROUND ELECTRIC OR TELEPHONE
- /X LIGHT POLE
- /X SANITARY SEWER MANHOLE
- /X SAN. SWR. CLEAN OUT
- /X GAS VALVE
- /X WATER VALVE
- /X TREE
- 000--- PROPOSED CONTOUR
- 000--- EXISTING CONTOUR
- 000--- DRAINAGE DIVIDE
- DRAINAGE AREA NUMBER
- AREA/100



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY BRYAN M. BURGER, P.E. 90880 ON 5/27/04



REV.	DATE	REMARKS

DRAINAGE AREA MAP

SOUTHRUST BANK
 BELT LINE - SURVEYOR VILLAGE ADDITION
 TOWN OF ADDISON, TEXAS

LAWRENCE A. CATES & ASSOC., LLP
 14200 MIDWAY ROAD, SUITE 122 (972) 385-2272 CONSULTING ENGINEERS DALLAS, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
BMB	CAC	FEB-04	1"=30'	D.P.	24001 DAMAP	C-5