

OVERBROOK 2ND ADDN.  
DRAINAGE PLAN 10-4-79

DA # 1

135 x 465 =	62775
(390 + 325) ÷ 2 x 100 =	35750
245 x 63 =	15435
100 x 80 ÷ 2 =	4000
250 + 130 ÷ 2 x 125 =	<u>23750</u>

141710 ÷ 43560 = 3.25 AC

L = 550 = 0.10 mi. F = 36 - 28 = 8

$T_c = \left( \frac{11.9 \times 0.10^3}{8} \right)^{0.385} = .08 \text{ hrs} = 4.9 \text{ min. USE 15 MIN.}$

$T_{24} T_c = \frac{1.8 (1.1 - C) \sqrt{L}}{\sqrt{S}} \quad S = \frac{8}{550} \times 100 = 1.45\%$

$T_c = \frac{1.8 (1.1 - .5) \sqrt{550}}{\sqrt{1.45}} = 22.4 \text{ MIN. } \underline{21 \text{ min}}$

$i_2 = 4.06 \quad i_{100} = 8.98$

$Q_2 = 3.25 \times 0.5 \times 4.06 = 6.6 \text{ cfs}$   
 $Q_{100} = 3.25 \times 0.5 \times 8.98 = 14.6 \text{ cfs}$

USE 18" RCP @ 0.45% Q = 7 cfs V = 4.0 fps

REMAINING 8 cfs FOR Q<sub>100</sub> TO BE CARRIED IN SWALE

DA #2

$210 \times 375 - 80 \times 75 \div 2 = 75750 \div 43400 = 1.74 \text{ Ac}$

$T_c = 15 \text{ min} \quad \bar{L} = 4.06 \quad i_{100} = 8.98$

$Q_2 = 1.74 \times 0.5 \times 4.06 = 3.5 \text{ cfs}$

$Q_{100} = 1.74 \times 0.5 \times 8.98 = 7.8 \text{ cfs}$

DA #3

$80 \times 75 \div 2 = 3000$

$205 + 135 \div 2 \times 225 = 36250$

$235 \div 2 \times 80 = 9400$

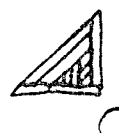
$325 \times 75 \div 2 = 12187.5$

$335 \times 80 \div 2 = 13400$

$260 \times 45 \div 2 = 5850$

$190 \times 36 \div 2 = 3420$

$65507.5 \div 43500 = 1.96 \text{ Ac}$



$Q_2 = 1.96 \times 0.5 \times 4.06 = 4.0 \text{ cfs}$

$Q_{100} = 1.96 \times 0.5 \times 8.98 = 8.8 \text{ cfs}$

DA #4

$125 \times 58 \div 2 = 3625$

$290 \times 225 \div 2 = 31500$

$110 \times 116 \div 2 = 11210$

$46335 \div 43500 = 1.06 \text{ Ac}$

$$Q_2 = 1.06 \times 0.5 \times 4.06 = 2.15 \text{ cfs}$$

$$Q_{100} = 1.06 \times 0.5 \times 8.98 = 4.76 \text{ cfs}$$

DA #5

$$175 \times 90 \div 2 = 7875$$

$$160 \times 70 \div 2 = 5600$$

$$170 + 205 \div 2 \times 202 = 37675$$

$$94 \times 10 \div 2 = 470$$

$$51290 \div 43960 = 1.18 \text{ Ac}$$

$$Q_2 = 1.18 \times 0.5 \times 4.06 = 2.40 \text{ cfs}$$

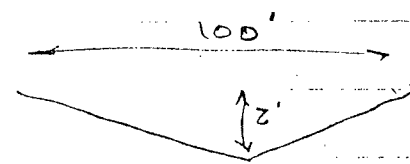
$$Q_{100} = 1.18 \times 0.5 \times 8.98 = 5.30 \text{ cfs}$$

## OVERBROOK ADDN. DRAINAGE THRU RESERVE A

$$D.A. = 186 \text{ AC.} \quad L = 8850 \quad F = 1342 - 1314 = 68'$$

$$T.C. = \left( \frac{11.9 \times 1.65^3}{68} \right)^{0.345} = 0.93 \text{ HRS} = 56 \text{ MIN.} \quad i_o = 3.7$$

$$Q = 186 \times 0.5 \times 3.7 = 344 \text{ cfs}$$



CROSS SECTION AT FATEST POINT

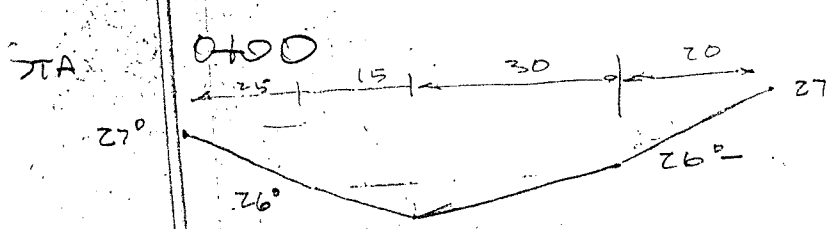
$$Q = 100 \text{ S.F.} \quad R = 1 \quad 1328 - 1314 = 14 \quad L = 1750 \text{ W RESERVE}$$

$$S = \frac{14}{1750} = .008 \text{ FT/FT}$$

$$Q = 100 \frac{1.486}{.030} \left( .008 \right)^{2/3} = 443 \text{ cfs}$$

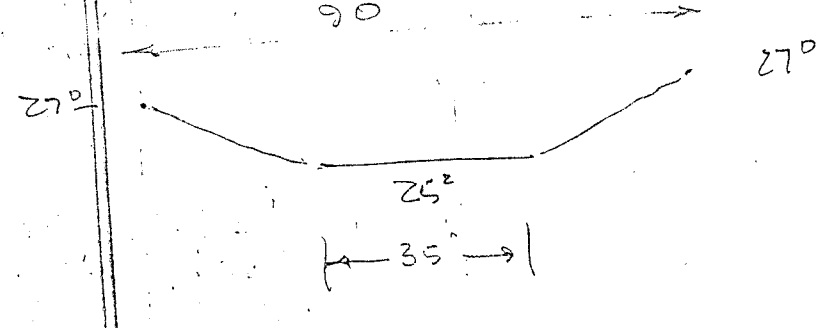
USE 100' WIDE FLOODWAY THRU RESERVE A WITH  
EXISTING DRAINAGE  $\phi$  AS  $\phi$  OF FLOODWAY

OVERBROOK CWD  
DRAINAGE THRU RESERVE A  
Q<sub>100</sub> = 344 cfs



$a = 85.5$      $R = \frac{85.5}{90} = .95$      $S = .006$   
 $Q = 85.5 \cdot \frac{1.486}{.035} \cdot .95^{2/3} \cdot .006^{1/2} = 271.7 \text{ cfs}$

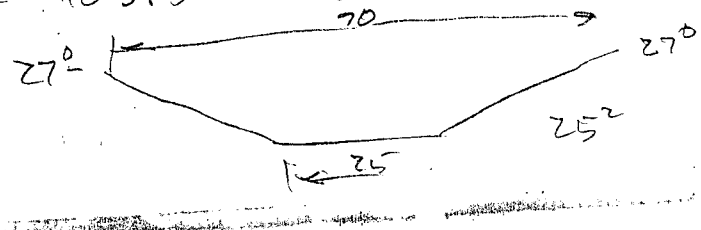
CHANGE EXIST. X-SEC.



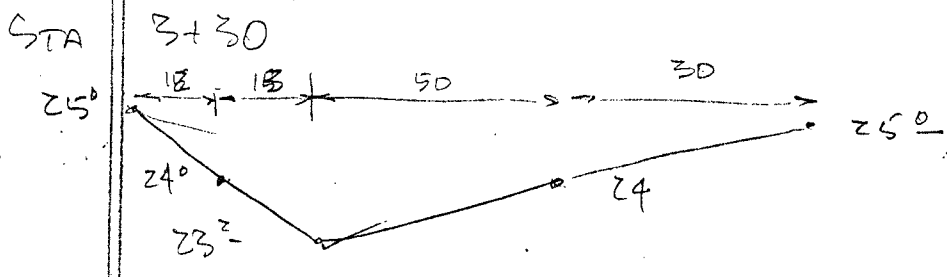
$a = 112.5$      $R = \frac{112.5}{90} = 1.25$   
 $Q = 112.5 \cdot \frac{1.486}{.035} \cdot 1.25^{2/3} \cdot .006^{1/2} = 429.3 \text{ cfs}$

TRY 25 BOT.

$a = 103.5$      $R = \frac{103.5}{90} = 1.15$   
 $Q = 103.5 \cdot \frac{1.486}{.035} \cdot 1.15^{2/3} \cdot .006^{1/2} = 373.6 \text{ cfs}$

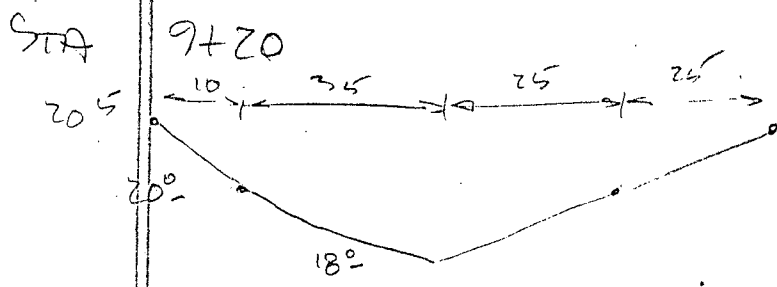


X-SEC OK  
W.C. 1327'



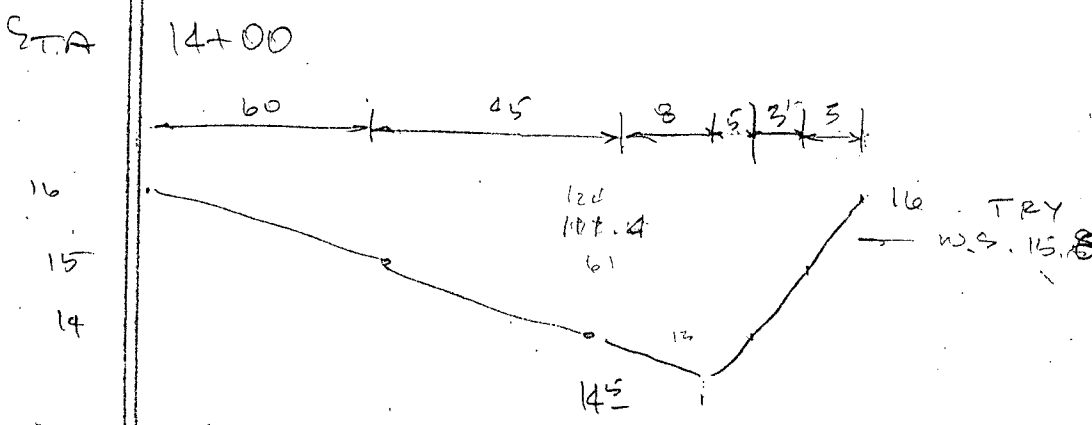
$a = 109.2 \quad R = \frac{109.2}{105} = 1.04 \quad S = .006$

$Q = 109.2 \cdot \frac{1.446}{.035} \cdot 1.04^{2/3} \cdot .006^{1/2} = 368.6 \text{ cfs}$



$a = 98.8 \quad R = \frac{98.8}{95} = 1 \quad \text{Avg } S \text{ 3+30 to 9+20 } .044$

$Q = 98.8 \cdot \frac{1.446}{.035} \cdot 1^{2/3} \cdot .0088^{1/2} = 393.5 \text{ cfs}$



$a = 109 \quad R = \frac{109}{111.4} = 1 \quad Q = 109 \cdot \frac{1.446}{.035} \cdot .0075^{1/2} = 395 \text{ cfs}$

