

# Lake Ridge Addition



BAUGHMAN COMPANY, P.A.

By  
CB

Date  
4/22/92

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Lake Ridge Addition And Lake Ridge Addition  
Commercial Drainage Plan.

Soil Type: From SCS Soil Survey for Sedgwick  
County, K2NS25.

$\frac{1}{2}$  = TA = Type D Hydro. Group

$\frac{1}{2}$  = FA = Type B Hydro. Group

∞ Use Type C Soil For Analysis.

Lot Types:  $\frac{1}{4}$  Acre Lots (Average)

From City Drainage Policy Statement:  
Single Family (Group C)

$\frac{1}{4}$  Ac Lots 

$C_2 = 0.48$ $C_{100} = 0.68$
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For Back Lot Drg: 

$C_2 = 0.24$ $C_{100} = 0.51$
----------------------------------

Commercial Areas

Assume Neighborhood Areas

$C_2 = 0.68$ $C_{100} = 0.80$
----------------------------------

For All Areas,  $T_c = 15 \text{ min.}$

$i_2 = 3.83 \text{ "/hr}$

$i_{100} = 7.37 \text{ "/hr}$

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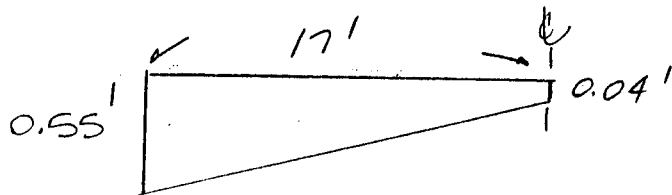
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BAUGHMAN COMPANY, P.A.

Street Capacity: 17' @ Fe Avmt.



$$\frac{1}{2}A = 5.01 \text{ ft}^2 \therefore A = 10.02 \text{ ft}^2$$

$$WP = (17.55)^2 = 35.1'$$

$$S = 0.0035$$

$$n = 0.014$$

$$V = \frac{1.49}{0.014} \left( \frac{10.02}{35.1} \right)^{0.67} (0.0035)^{1/2} = 2.72 \text{ f/sec}$$

$$Q = 2.72(10.02) = 27.2 \text{ cfs Total Capacity For 2 yr storm.}$$

From Eng. Map, Street Cap. for 2 yr. Storm O.K. @ All Locations.

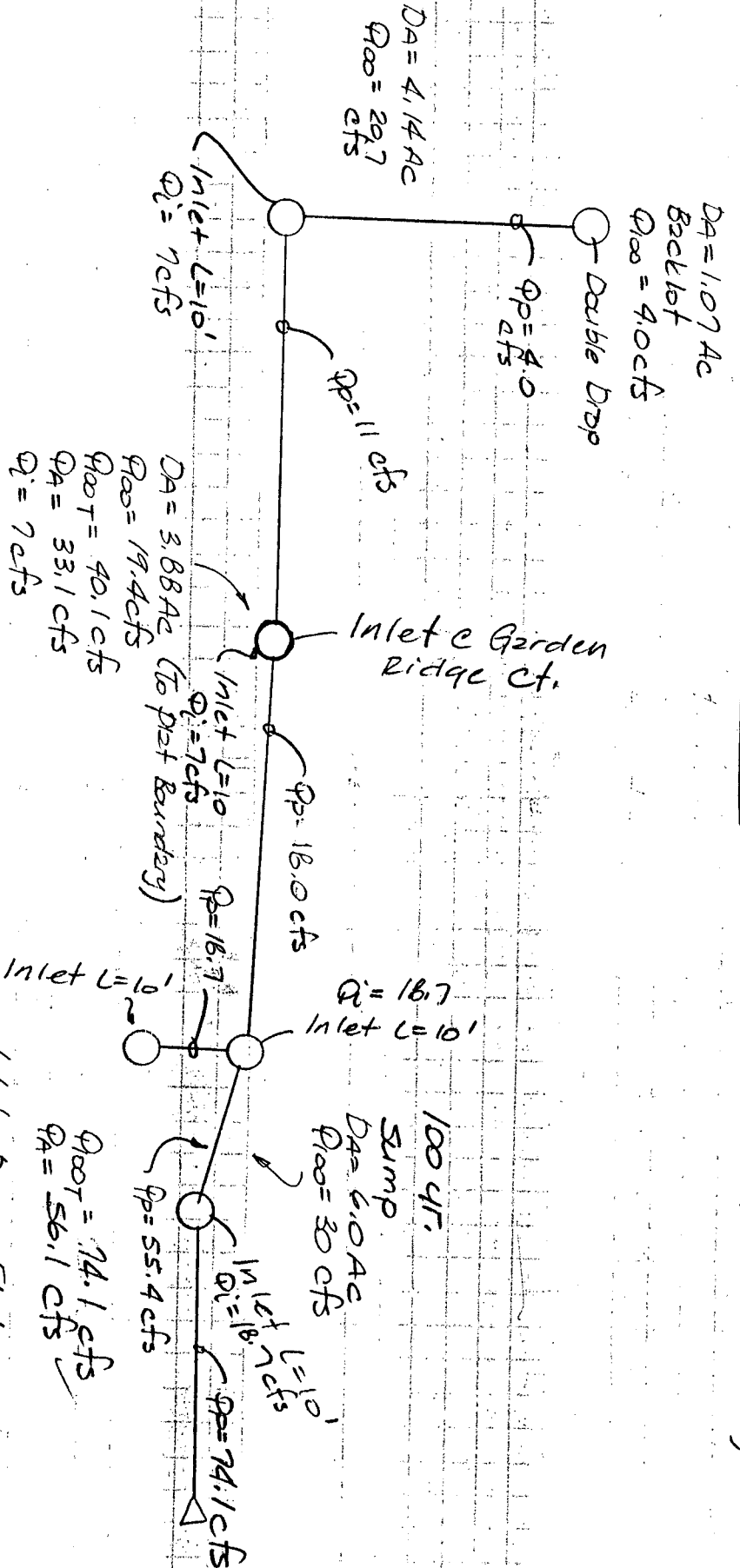
Garden Ridge S.W.S. System:

(See Next Page)



100 year Storm

(With No Overspill Outlet)



Relief Channel To Pond

$TC = 1323^\circ$  Back lot = 1321.5  
 $R/w = 1323.20$

Slope =  $23.2 - 21.5 = 1.7$  feet in  $150'$  = 1.0% (Use)



$A = 10$  ft<sup>2</sup>  
 $WP = 40.05'$   
 $n = 0.03$

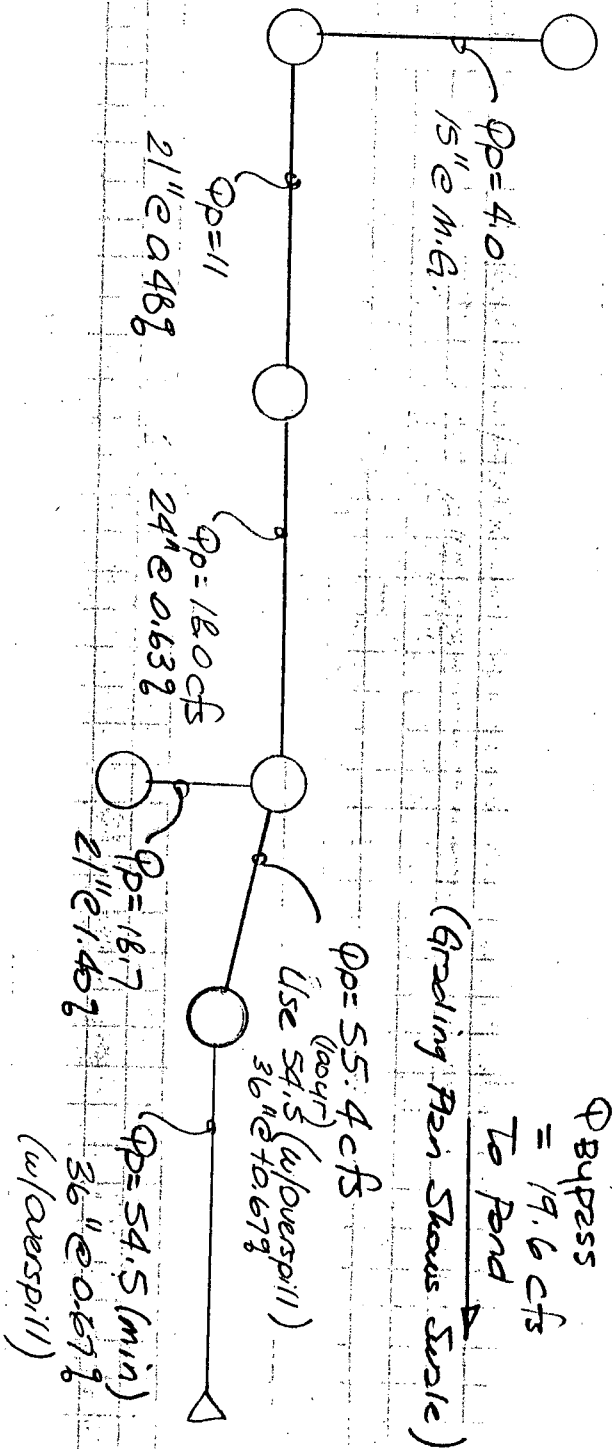
$V = 1.96$  ft/sec ;  $Q = 19.6$  cfs csp.

Pipe out =  $74.1$  cfs -  $19.6 = 54.5$  cfs

Inlets Beg =  $\frac{56.1}{13} = 5$  inlet Eq.  
Use Double Inlets For All  
Csp = 78 cfs O.K.



100 year Pipe Size:



2 year storm works fine w/ This system.

Grades And Pipe Even work Also



### Commercial S.W.S. System.

Inlet locations may vary from Drainage Plan.  
Assume 100 year system and size pipes:

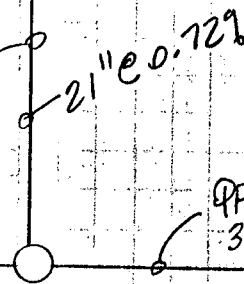
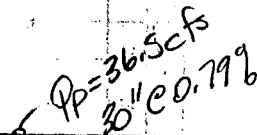
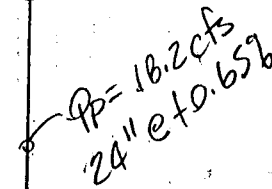
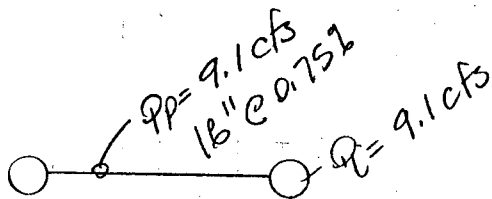
$$DA \text{ Total} = 11.2 \text{ Acres}$$

$$Q_2 = (11.2 \times 3.83) \times (0.68) = 29.2 \text{ cfs}$$

$$Q_{100} = (11.2 \times 7.37) \times (0.80) = 66.0 \text{ cfs}$$

+ 2.2 Backlot  
68.2 cfs

DA = 2.9 Ac  
QS = 9.1 cfs  
L<sub>s</sub> = 4.56' / in  
CS = 0.69



DA = 3.55 Ac  
QS = 11.2 cfs  
15" e.m.g.  
DA = 0.57 Ac  
Backlot  
Q<sub>100</sub> = 2.2 cfs

Inlets to be sized when final geometry of site is known. Pipe sizes may vary on site due to inlet configuration.

Outlet pipe to pond shall carry 100 yr storm from commercial site.