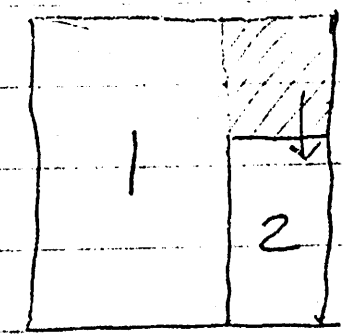


# Villa Centra Addition Lot Split Runoff Calculations

11-6-95  
JCR

Area of Parcel 1 lying north  
of Parcel 2 = 0.54 Ac.  
Parcel 2 = 0.81 Ac.  
Total D.A. = 1.35 Ac.



Parcel 1 A<sub>s</sub> = 0.54 Time of concentration = 5 min.  
using Rational Method Q = CIA, calculate Q<sub>100</sub>.  
(From City of Wichita Drainage Criteria manual)  
Assume 95% impervious, 5% grass surface  
C value for impervious = 0.92 (x 95% of area = 0.874)  
for grass = 0.50 (x 5% = 0.025)  
Weighted C factor = 0.899 (use 0.90)  
I<sub>100</sub> for t<sub>c</sub> = 5 min. = 10.32 inches/hour  
Q<sub>100</sub> = 0.90 (10.32) (0.54) = 5.0 cfs @ N. line Parcel 2

For combined D.A. = 1.35 Ac. using same parameters:  
Q<sub>100</sub> = 0.90 (10.32) (1.35) = 12.5 cfs (total @ S. line of  
Parcel 2, including flow intercepted by inlet system).

Assume inlet system is limited to capacity of 12" RCP  
@ 0.5% slope = 2.5 cfs

∴ Net surface flow Q<sub>100</sub> @ S. line Parcel 2 =  
12.5 - 2.5 = 10.0 cfs

Use 10.0 cfs for surface flow through parking lot.

For parking lot flow section use:  
using Manning's Equation,  $V = 1.486 R^{2/3} S^{1/2}$   
where n = 0.016 (asphalt)  
Slope = 0.20%, S<sup>1/2</sup> = 0.045 V = A/WP  
A = 8.0 sf WP = 40.0' r = 0.250 r<sup>2/3</sup> = 0.340  
 $V = 1.486 (0.340) (0.045)^{1/2} = 1.26$  fps (x A = Q)  
0.016

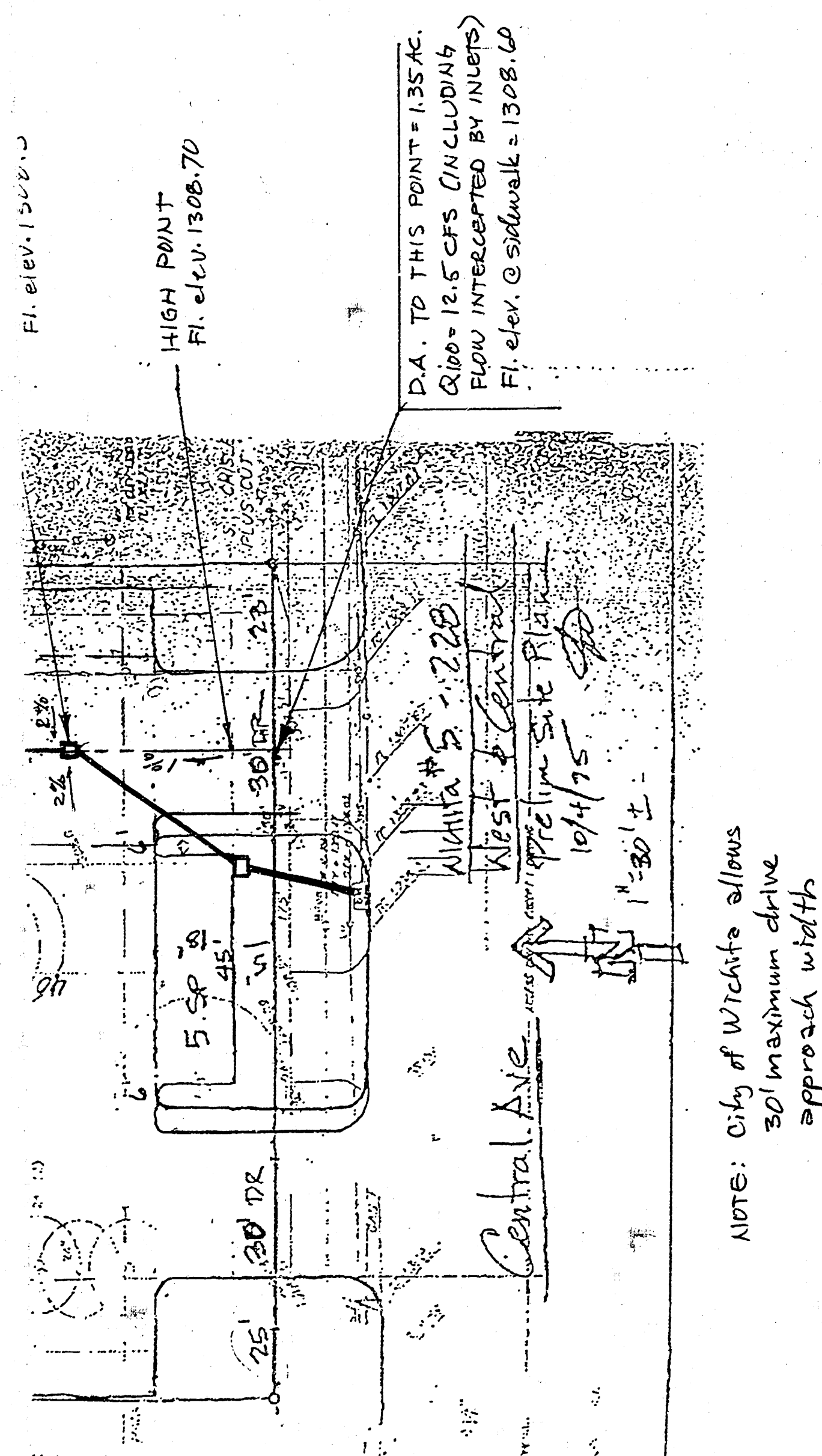
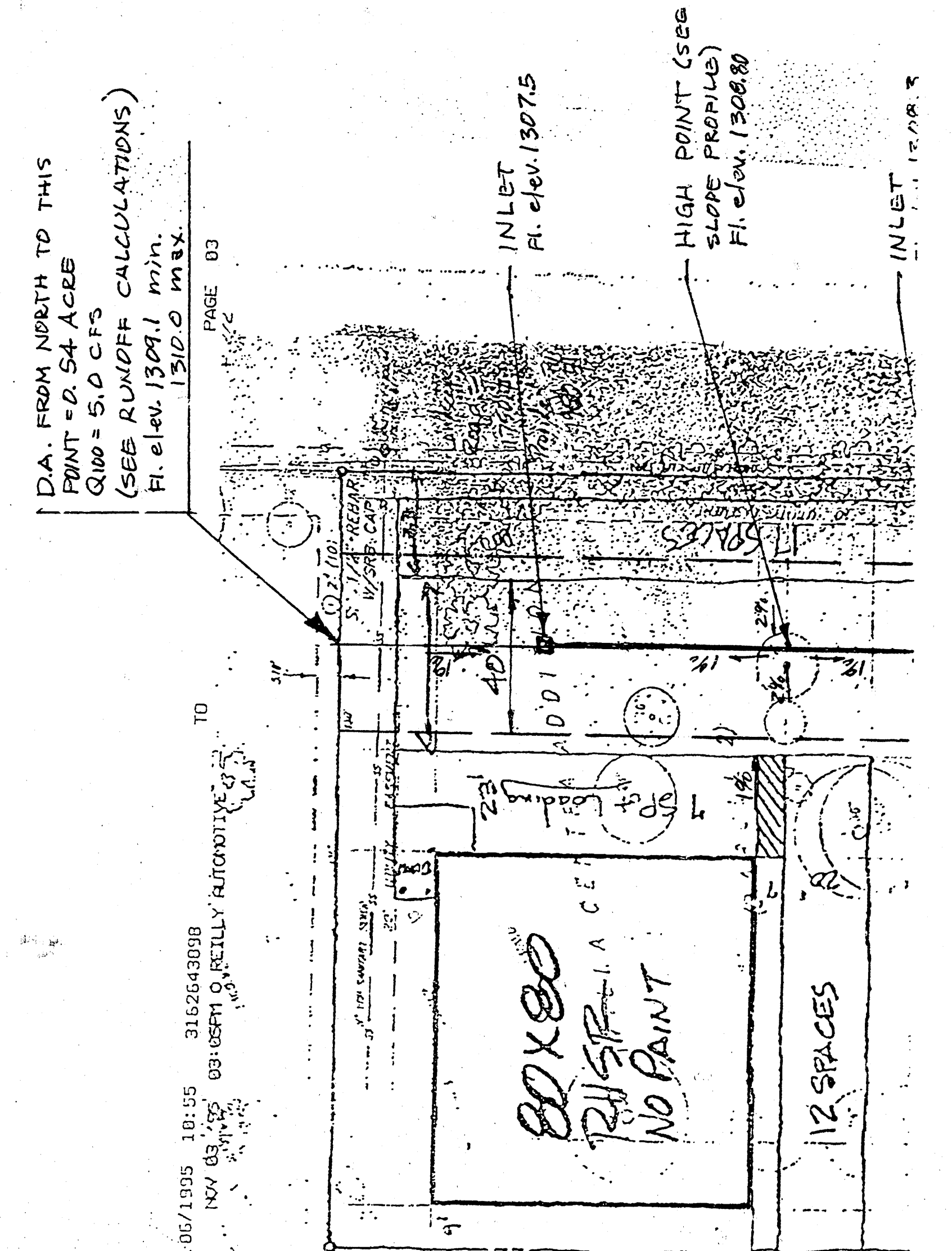
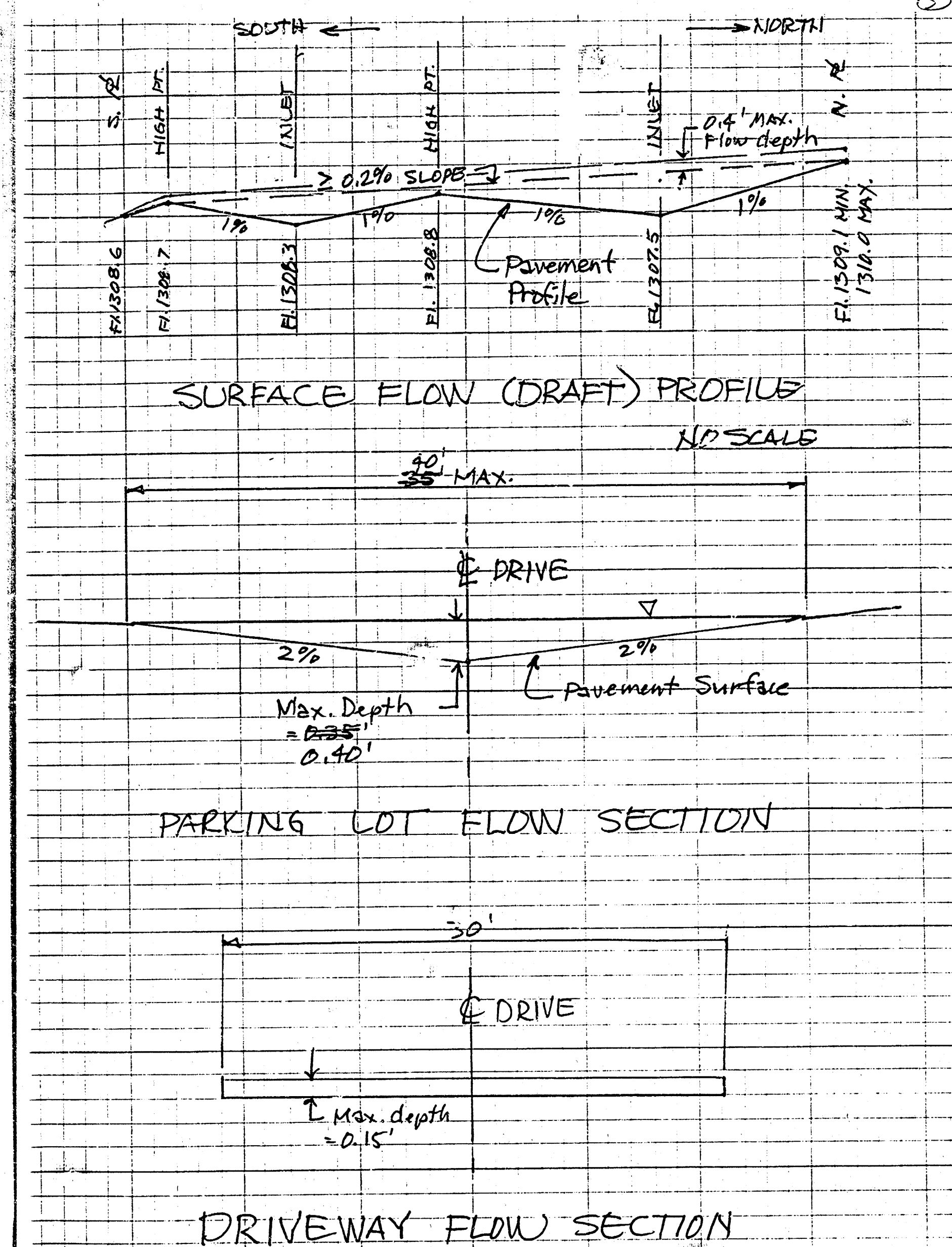
Q = 1.26 x 8.0 = 10.1 cfs > Q<sub>100</sub> surface flow

For drive approach section use  
A = 4.5 sf WP = 30.0' r = 0.149 r<sup>2/3</sup> = 0.279  
use slope 2.1% S<sup>1/2</sup> = 0.10  
 $V = 1.486 (0.279) (0.10)^{1/2} = 2.30$  fps (x A = Q)  
0.016

Q<sub>100</sub> = 10.4 cfs > Q<sub>100</sub> surface flow

Recommend 40' wide easement from n. line of  
Parcel 2 to s. curb of parking lot; may narrow  
to 30' to s. line Parcel 2 through drive.

See Profile / Sections, Pages 4-5



NOTE: City of Wichita allows  
30' maximum drive  
approach width

NOV 08 '95 THU 08:48 AM P.03  
NOV 08 '95 08:30PM O'REILLY AUTOMOTIVE P.2/3

Drainage Easement  
This Drainage Easement is entered into this day of  
1995 by and between Leo A. Borst and Kathleen A. Borst, husband and wife  
(the "Borst"), Jeckl Investment Co., a limited partnership ("Jeckl") and  
O'Reilly Automotive, Inc., a Missouri corporation ("O'Reilly").  
Whereas, the Borsts own the following described real property:  
Lot 1, except the south 200 feet thereof, Villa Centra Addition to  
Wichita, Sedgewick County, Kansas  
(the "Borst's Property");  
Whereas, the Borsts own an undivided one-half (1/2) interest and Jeckl  
owns an undivided one-half (1/2) interest in the following described real  
property:  
Lot 2, except the east 25 feet of the south 200 feet thereof, Block A,  
Agile Third Addition to Wichita, Sedgewick County, Kansas  
(the "Borst and Jeckl Property"); (the Borst's Property and the Borst and Jeckl  
Property are collectively referred to as "Parcel 1");  
Whereas, O'Reilly owns the following described real property, located  
south of the Borst's Property and south of a portion of the Borst and Jeckl  
Property:  
The east 25 feet of the south 200 feet of Lot 2, Block A, Agile Third  
Addition to Wichita, Sedgewick County, Kansas, and the south 200 feet of  
Lot 1, Villa Centra Addition to Wichita, Sedgewick County, Kansas  
(\*Parcel 2\*);  
Whereas, the northeast portion of Parcel 1 drains storm and surface water  
south across Parcel 2;  
Whereas, O'Reilly is agreeable to allowing the northeast portion of  
Parcel 1 to drain storm and surface water across a portion of Parcel 2.  
Now, therefore, in consideration of the premises, the parties hereto  
agree as follows:  
1. O'Reilly shall allow the Borsts and Jeckl to drain storm and surface  
water from the northeast portion of Parcel 1 across the cross-hatched portion  
of Parcel 2 as illustrated on the attached Exhibit A.  
2. This agreement may be modified at any time by the owners of Parcel 1  
and Parcel 2 by mutual agreement in order to allow for future development of  
Parcel 2.

NOV 08 '95 THU 08:49 AM P.04  
NOV 08 '95 08:31PM O'REILLY AUTOMOTIVE P.3/3

In witness whereof, the parties hereto have executed this agreement as of  
the day and year set forth above.

Leo A. Borst Kathleen A. Borst  
Jeckl Investment Co., a  
limited partnership

By: \_\_\_\_\_  
O'Reilly Automotive, Inc.,  
a Missouri corporation

By: \_\_\_\_\_  
Attest:  
Secretary  
Seal