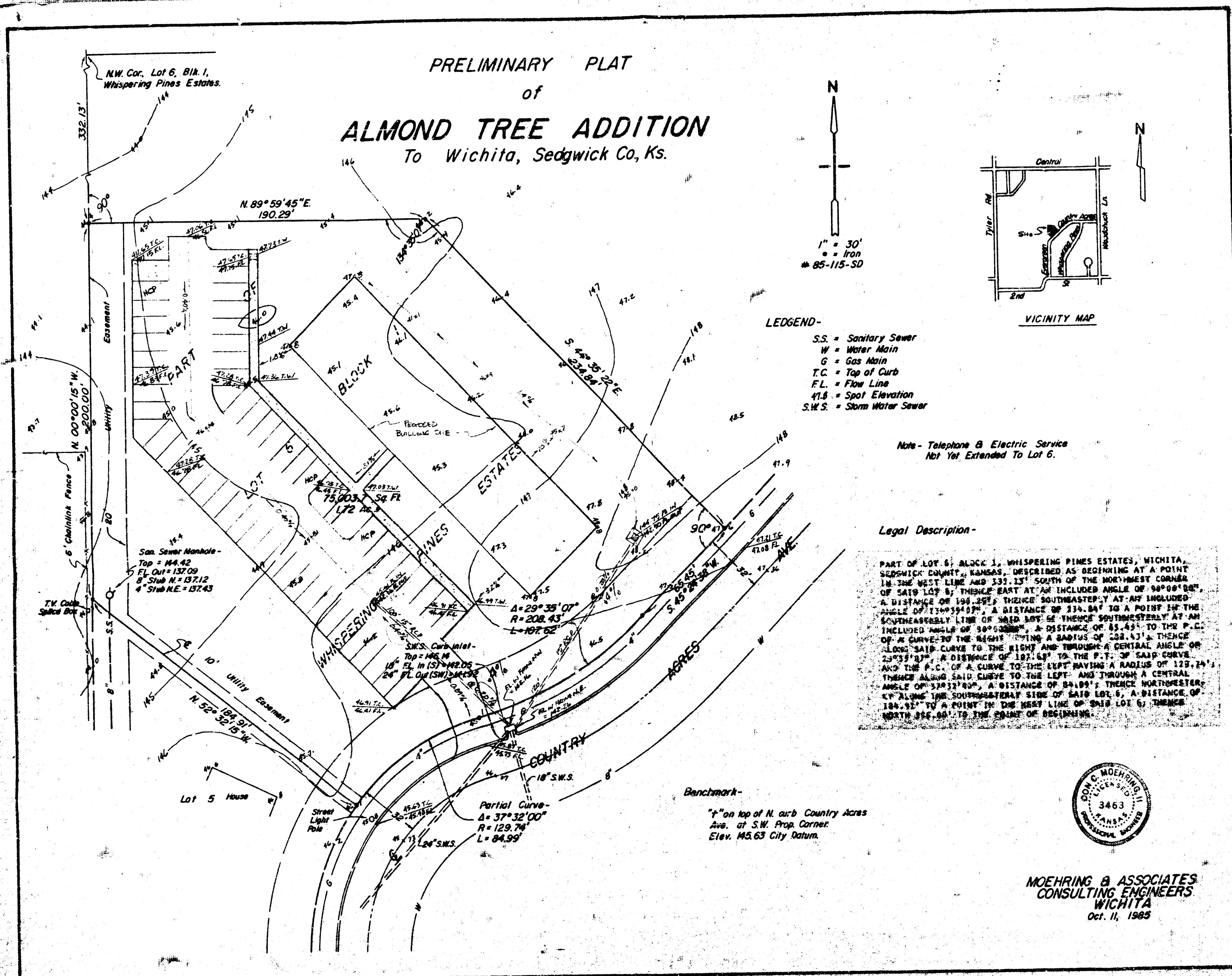




10-27-85

ALMOND TREE ADDITION
DRAINAGE CALCULATIONS:

① EXISTING SOIL TYPE - MILAN LOAM (See attached sheet for soil characteristics)
Hydrologic Soil Group "B"

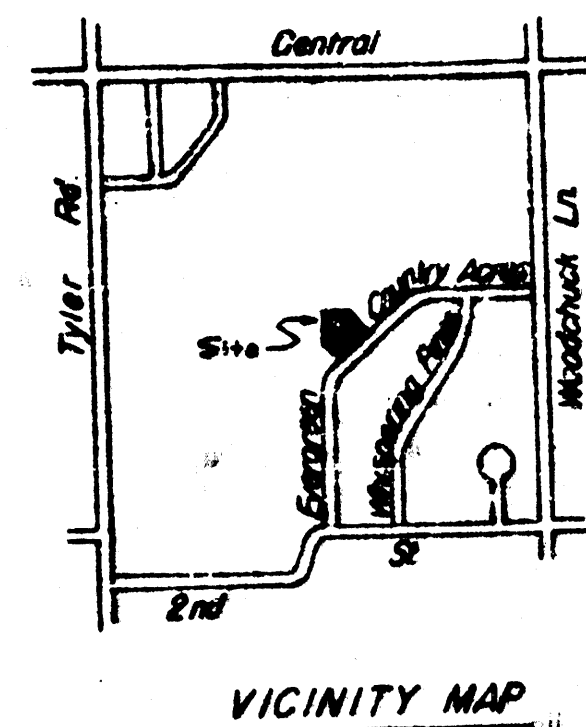
② EXISTING RUNOFF CALCULATIONS - Consider the Rational Formula method for determining discharge rates;
Coefficient of runoff C , from the Ad Hoc Drainage Committee for Urban Lawn Group "C" = 0.20
Site Area = 1.72 Ac.
From F.A.A. method for time of concentration,
 $T_{10} = 1.8(1.1 - C)L_0^{1/2}/S^{1/2}$; Where L_0 = Length of overland flow
 S = Average slope of overland flow in percent.
 $L_0 = 434 - 440/340 = 1.29\%$
 $T_{10} = 1.8(1.1 - 0.20)240^{1/2}/1.29^{1/2} = 27 \text{ min.}$
 i_2 = Rainfall intensity per 2 year frequency
 $= 3.13 \text{ in/hr}$
 $Q = C \times i_2 \times A = 0.20 \times 3.13 \times 1.72 = 1.14 \text{ cfs}$

③ DEVELOPED RUNOFF CALCULATIONS - Applying the same method as above for developed conditions, a weighted C value may be found;
Description Area C Area $\times C$
Urban Lawn 1.07 0.20 0.214
Impervious Surfaces 0.65 0.85 0.552
 $C = 1.72$ $\Sigma = 0.766$
 $\therefore \text{Weighted } C = 0.766/1.72 = 0.45$
 $L_0 = 240 \text{ ft.}$ $L_0 = 50 \text{ ft.}$ $S = 0.80\%$ $V = 2.0 \text{ fps}$
 $T_{10} = 1.8(1.1 - 0.45)240^{1/2}/0.80^{1/2} = 20 \text{ min.}$
 $T_2 = 50/2 \times 60 = 0.4$
 $\therefore \text{USE } T_2 = 21 \text{ min.}$

ALMOND TREE ADDITION
(Drainage)

PRELIMINARY PLAT
of
ALMOND TREE ADDITION
To Wichita, Sedgwick Co, Ks.

1" = 30'
• = Iron
85-115-SD



LEGEND-

- S.S. = Sanitary Sewer
- W = Water Main
- G = Gas Main
- T.C. = Top of Curb
- F.L. = Flow Line
- 41.8 = Spot Elevation
- S.W.S. = Storm Water Sewer

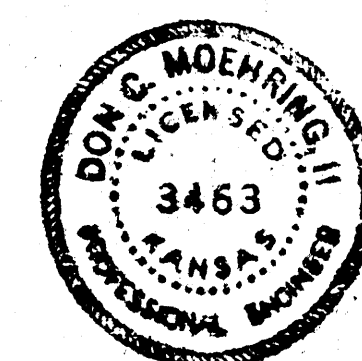
Note - Telephone & Electric Service
Not Yet Extended To Lot 6.

Legal Description-

PART OF LOT 6, BLOCK 1, WHISPERING PINES ESTATES, WICHITA, SEDGWICK COUNTY, KANSAS, DESCRIBED AS BEGINNING AT A POINT IN THE WEST LINE AND 332.13' SOUTH OF THE NORTHWEST CORNER OF SAID LOT 5; THENCE EAST AT AN INCLUDED ANGLE OF 98°00'00", A DISTANCE OF 198.28'; THENCE SOUTHEASTERLY AT AN INCLUDED ANGLE OF 134°39'07", A DISTANCE OF 234.84' TO A POINT IN THE SOUTHEASTLY LINE OF SAID LOT 6; THENCE SOUTHWESTERLY AT AN INCLUDED ANGLE OF 106°01'00", A DISTANCE OF 65.45' TO THE P.C. OF A CURVE TO THE RIGHT HAVING A RADIUS OF 342.43'; THENCE ALONG SAID CURVE TO THE RIGHT AND THROUGH A CENTRAL ANGLE OF 28°35'37", A DISTANCE OF 182.63' TO THE P.T. OF SAID CURVE; AND THE P.C. OF A CURVE TO THE LEFT HAVING A RADIUS OF 125.24'; THENCE ALONG SAID CURVE TO THE LEFT AND THROUGH A CENTRAL ANGLE OF 174°21'00", A DISTANCE OF 24.99'; THENCE NORTHWESTERLY ALONG THE SOUTHWESTERLY SIDE OF SAID LOT 6, A DISTANCE OF 184.31' TO A POINT IN THE WEST LINE OF SAID LOT 6; THENCE NORTH 84°00' TO THE POINT OF BEGINNING.

Benchmark-

"B" on top of N. on Country Acres
Ave. at S.W. Prop. Corner
Elev. 145.63 City Datum.



MOEHRING & ASSOCIATES
CONSULTING ENGINEERS
WICHITA
Oct. 11, 1983

$$i_c = 3.56 \text{ in/hr}$$

$$Q_2 = 3.56 \times 0.45 \times 1.72 = 2.8 \text{ cfs}$$

⇒ Try a 15" R.C.P. @ 0.40% gradient.
Applying Manning's Formula to evaluate the hydraulic capacity;

$$Q = 1.486 \times A \times R^{2/3} \times S^{1/2}$$

where; n = Manning's roughness coefficient, for concrete pipe use (n = 0.012).

A = Cross-Sectional area of flow, for 15" pipe (A = 1.227 ft²).

R = Hydraulic radius, or flow area per wetted perimeter (R = 0.312 ft).

S = Slope of pipe (S = 0.004 ft/ft).

$$Q = 1.486 \times 1.227 \times (0.312)^{2/3} \times (0.004)^{1/2}$$

$$Q_{max} = 4.4 \text{ cfs} > 2.8 \text{ cfs} \quad \text{OK}$$

⇒ Try a 15" R.C.P. @ 0.20% gradient

$$Q = 1.486 \times 1.227 \times (0.312)^{2/3} \times (0.002)^{1/2}$$

$$Q_{max} = 3.1 \text{ cfs} > 2.8 \text{ cfs} \quad \text{OK}$$

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