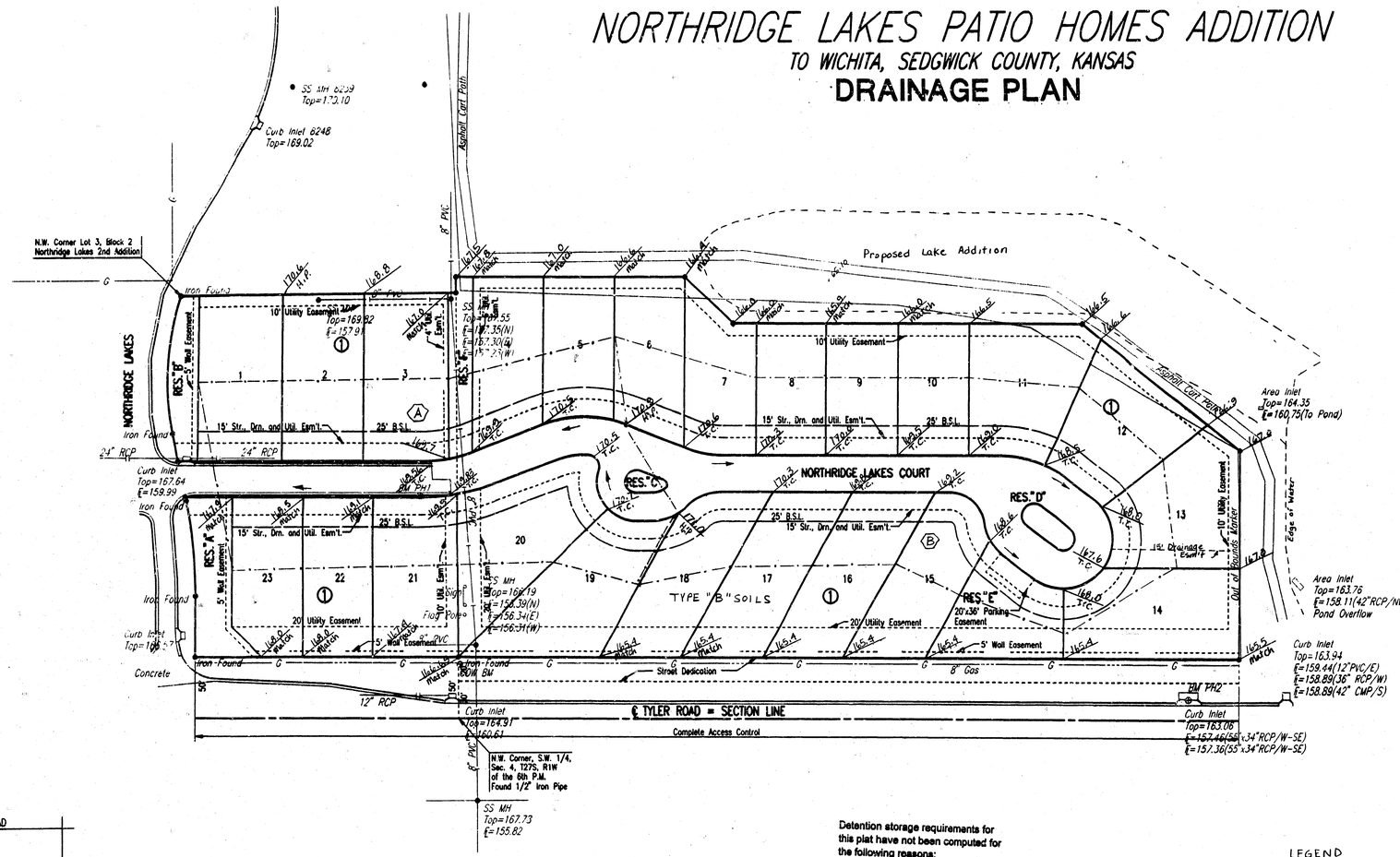
NORTHRIDGE LAKES PATIO HOMES ADDITION

TO WICHITA, SEDGWICK COUNTY, KANSAS

DRAINAGE PLAN



SCALE: 1"=50'

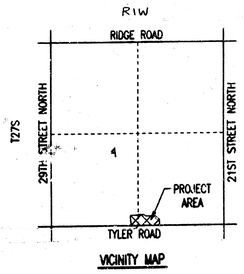
● = IRON SET

JULY 1998
TOPOGRAPHY MAY 1998

C.O.W. B.M.: BRASS DISK 1/2 MILE NORTH OF 21ST STREET NORTH AND 44' EAST OF ℄ TYLER ROAD.
ELEV.=165.61

B.M. PH-1: CHISELED "d" IN TOP WEST CURB OF NORTHRIDGE LAKES COURT AND 25' NORTH OF FIRE HYDRANT ON EAST CURB.
ELEV.=169.505

B.M. PH-2: CHISELED "d" ON TOP ℄ CURB INLET EAST SIDE TYLER ROAD AND 150± NORTH OF ℄ STERLING STREET.
ELEV.=163.06



VICINITY MAP

	2 yr	5 yr	100 yr
i	3.80	4.61	7.36
C	0.52	0.54	0.67

	Area(Ac)	Q_2	Q_5	Q_{100}
Basin A	1.35	2.69	3.39	6.71
Basin B	1.69	3.34	4.21	8.33

Detention storage requirements for this plat have not been computed for the following reasons:

Drainage from Lots 4 thru 20 has already been considered in the Reflection Ridge drainage design.

Drainage from Lots 1 thru 3 & 21 thru 23 has already been considered in the Northridge Lakes drainage design.

LEGEND

- BASIN BOUNDARY
- FLOW DIRECTION
- (A) BASIN IDENTIFIER
- T.C. TOP OF CURB ELEVATION

DSNR: KER OPER: KER SCALE: 1=50.00
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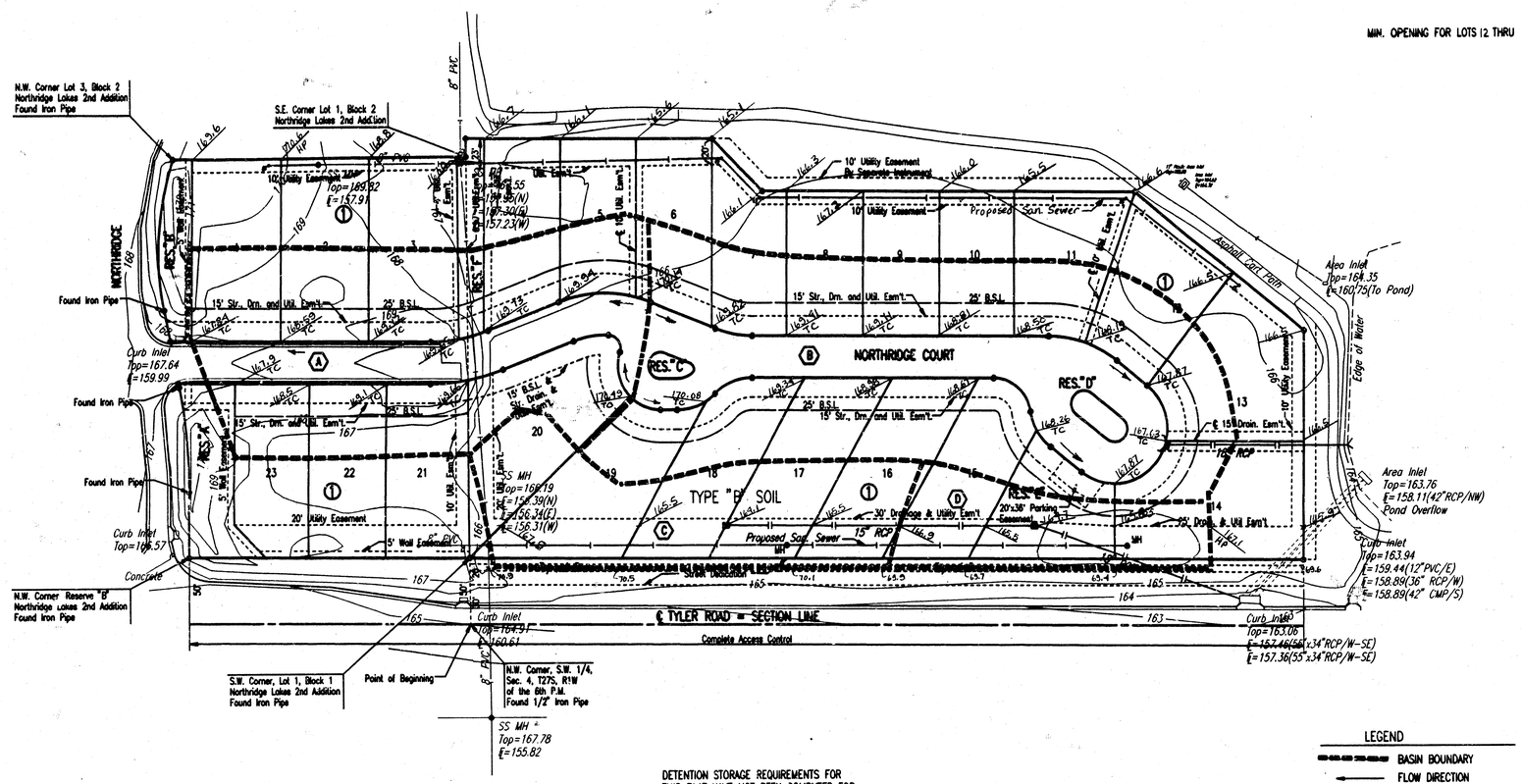
NORTHRIDGE LAKES PATIO HOMES ADDITION

TO WICHITA, SEDGWICK COUNTY, KANSAS

DRAINAGE PLAN

MIN. OPENING FOR LOTS 12 THRU 14 = 167.0 CITY DATUM



SWS Pipe Sizing
Basin C

$A := 0.61$ Ac.

$C_2 := 0.52$ $C_{100} := 0.67$

$i_2 := 3.80$ $i_{100} := 7.36$

$Q_{2C} := A \cdot C_2 \cdot i_2$ $Q_{100C} := A \cdot C_{100} \cdot i_{100}$

$Q_{2C} = 1.205$ cfs $Q_{100C} = 3.008$ cfs

Size pipes for the 100-Yr storm:

$n := 0.013$ Try 15 inch pipe

$R := \frac{D}{4}$ $D := 1.25$

$A_p := \pi \cdot \frac{D^2}{4}$ Minimum slope for 15" pipe $S := 0.0038$

Manning's Equation:

$Q := \frac{1.49}{n} \cdot R^{\frac{2}{3}} \cdot \sqrt{S} \cdot A_p$

$Q = 3.993$ cfs

$Q > Q_{100}$ therefore a 15" pipe is acceptable.

Basin D

$A_D := 0.31$

$Q_{2D} := A_D \cdot C_2 \cdot i_2$ $Q_{100D} := A_D \cdot C_{100} \cdot i_{100}$

$Q_{2D} = 0.613$ cfs $Q_{100D} = 1.529$ cfs

$Q_{100CD} := Q_{100C} + Q_{100D}$

$Q_{100CD} = 4.537$ cfs

Assume S=0.0038

Try 18" pipe:

$D_D := 1.5$ ft $R_D := \frac{D_D}{4}$

$A_{pD} := \pi \cdot \frac{D_D^2}{4}$ Area of pipe

Manning's Equation:

$Q_{CD} := \frac{1.49}{n} \cdot R_D^{\frac{2}{3}} \cdot \sqrt{S} \cdot A_{pD}$

$Q_{CD} = 6.493$ cfs

$Q_{CD} > Q_{100CD}$ Therefore a 18" pipe is acceptable for flow from Basins C and D.

Basin B

$A := 1.81$ Ac.

$C_2 := 0.52$ $C_{100} := 0.67$

$i_2 := 3.80$ $i_{100} := 7.36$

$Q_{2C} := A \cdot C_2 \cdot i_2$ $Q_{100C} := A \cdot C_{100} \cdot i_{100}$

$Q_{2C} = 3.577$ cfs $Q_{100C} = 8.925$ cfs

Size pipes for the 100-Yr storm:

$n := 0.013$ Try 18 inch pipe

$R := \frac{D}{4}$ $D := 1.5$

$A_p := \pi \cdot \frac{D^2}{4}$ Assume slope of 1%

Manning's Equation: $S := 0.01$

$Q := \frac{1.49}{n} \cdot R^{\frac{2}{3}} \cdot \sqrt{S} \cdot A_p$

$Q = 10.533$ cfs

$Q > Q_{100}$ therefore a 18" pipe is acceptable.

SCALE: 1"=50'

● = IRON SET (UNLESS OTHERWISE NOTED)

C.O.W. B.M.: BRASS DISK 1/2 MILE NORTH OF 21ST STREET NORTH AND 44' EAST OF ℄ TYLER ROAD.
ELEV.=165.61

B.M. PH-1: CHISELED "I" IN TOP WEST CURB OF NORTHRIDGE COURT AND 25' NORTH OF FIRE HYDRANT ON EAST CURB.
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ELEV.=163.06

DETENTION STORAGE REQUIREMENTS FOR THIS PLAT HAVE NOT BEEN COMPUTED FOR THE FOLLOWING REASONS:

DRAINAGE FROM LOTS 4 THRU 20 HAS ALREADY BEEN CONSIDERED IN THE REFLECTION RIDGE DRAINAGE DESIGN.

DRAINAGE FROM LOTS 1 THRU 3 & 21 THRU 23 HAS ALREADY BEEN CONSIDERED IN THE NORTHRIDGE LAKES DRAINAGE DESIGN.

Basin	Area (Ac)	I_2	C_2	Q_2 (cfs)	i_{100}	C_{100}	Q_{100} (cfs)
A	1.24	3.80	0.52	2.45	7.36	0.67	6.11
B	1.81	3.80	0.52	3.58	7.36	0.67	8.93
C	0.61	3.80	0.52	1.21	7.36	0.67	3.01
D	0.31	3.80	0.52	0.61	7.36	0.67	1.53

LEGEND

- BASIN BOUNDARY
- FLOW DIRECTION
- (A) BASIN IDENTIFIER
- T.C. TOP OF CURB ELEVATION
- INLET AND PIPE

NOTE:
TOP OF CURB ELEVATIONS SHOWN ARE FOR ROLL CURB.

MINIMUM OPENINGS:

LOTS 4-11 =167.3

LOTS 14-19 =168.1

DSNR: BER DPER: KER SCALE: 1=50.00
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