



Professional Engineering Consultants, PA.

303 S. TOPEKA ■ WICHITA, KANSAS 67202 ■ 316-262-2691 ■ FAX 316-262-3003 ■ www.pec1.com ■ designers@pec1.com

LETTER OF TRANSMITTAL

TO: Vicky Huang, P.E.
City Hall - 7th Floor, 455 N. Main
Wichita, KS 67202

PROJECT NO.: 36-98363-3466
PROJECT: Northridge Lakes Patio Homes
Drainage Plan

ATTENTION: Vicky Huang

DATE: 11/10/98

COPIES TO: Marv Schellenberg, North Ridge Lakes, Inc.

FROM: Karen Rand

REFERENCE: Revised Drainage Plan

- WE ARE SENDING YOU: Attached Under separate cover via _____ the following items:
- Shop drawings Prints Plans Samples Specifications
- Copy of letter Change order AutoCAD Drawing Files - Version 14 on 3.5" diskette(s)

COPIES	DATE	NO.	DESCRIPTION
2	10/30/1998		Revised Drainage Plan for Northridge Lakes Patio Homes

THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit _____ copies for approval
- For your use Approved as noted Submit _____ copies for distribution
- As requested Returned for corrections Return _____ corrected prints
- For review and comment _____
- FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

~~RECEIVED~~
~~NOV 12 1998~~
~~CITY - ENGINEERING~~

RECEIVED
NOV 13 1998
CITY - ENGINEERING

COPY TO FILE

SIGNED Karen Rand

If enclosures are not as noted, kindly notify us at once.

NORTHRIDGE LAKES PATIO HOMES ADDITION

TO WICHITA, SEDGWICK COUNTY, KANSAS

DRAINAGE PLAN

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

SWYS Pipe Sizing Basin C
 $A = 0.61 \text{ Ac.}$ $C_{100} = 0.67$
 $C_2 = 0.52$ $i_{100} = 7.36$
 $i_2 = 3.80$
 $Q_{2C} = A \cdot C_2 \cdot i_2$ $Q_{100C} = A \cdot C_{100} \cdot i_{100}$
 $Q_{2C} = 1.205 \text{ cfs}$ $Q_{100C} = 3.008 \text{ cfs}$

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
 $S = 0.0038$

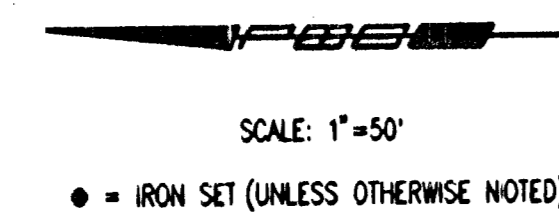
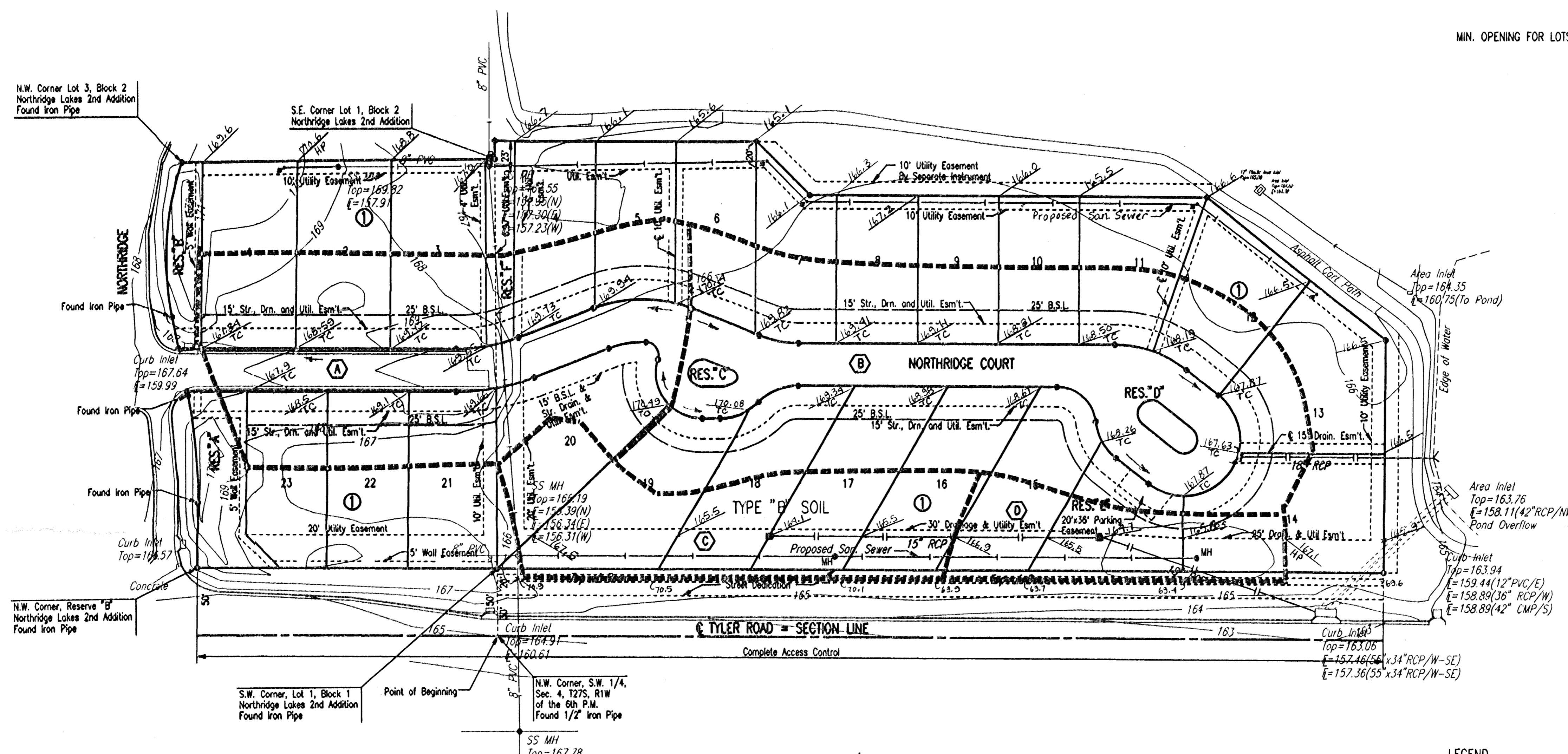
Manning's Equation:
 $Q = \frac{1.49}{n} R^2 \sqrt{S} A_p$
 $Q = 3.993 \text{ cfs}$
 $Q > Q_{100}$ therefore a 15" pipe is acceptable.

Basin D
 $A_D = 0.31$
 $Q_{2D} = A_D \cdot C_2 \cdot i_2$ $Q_{100D} = A_D \cdot C_{100} \cdot i_{100}$
 $Q_{2D} = 0.613 \text{ cfs}$ $Q_{100D} = 1.529 \text{ cfs}$
 $Q_{100CD} = Q_{100C} + Q_{100D}$
 $Q_{100CD} = 4.537 \text{ cfs}$
 Assume $S = 0.0038$

Try 18" pipe:
 $D_D = 1.5 \text{ ft}$ $R_D = \frac{D_D}{4}$
 $A_{pD} = \pi \cdot \frac{D_D^2}{4}$ Area of pipe
Manning's Equation:
 $Q_{CD} = \frac{1.49}{n} R_D^2 \sqrt{S} A_{pD}$
 $Q_{CD} = 6.493 \text{ cfs}$
 $Q_{CD} > Q_{100CD}$ Therefore a 18" pipe is acceptable for flow from Basins C and D.

Basin B
 $A = 1.81 \text{ Ac.}$ $C_{100} = 0.67$
 $C_2 = 0.52$ $i_{100} = 7.36$
 $i_2 = 3.80$
 $Q_{2C} = A \cdot C_2 \cdot i_2$ $Q_{100C} = A \cdot C_{100} \cdot i_{100}$
 $Q_{2C} = 3.577 \text{ cfs}$ $Q_{100C} = 8.925 \text{ cfs}$

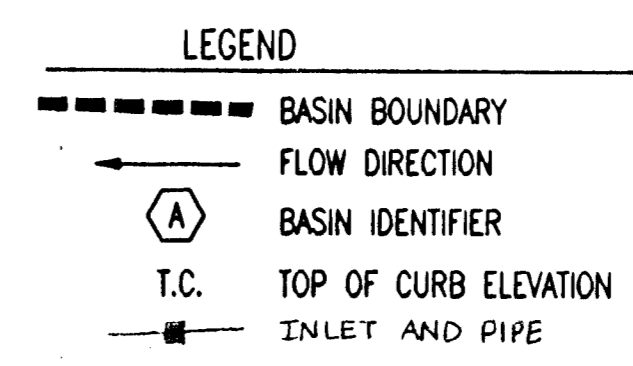
Size pipes for the 100-Yr storm:
 $n = 0.013$ Try 18 inch pipe
 $R = \frac{D}{4}$ $D = 1.5$
 $A_p = \pi \cdot \frac{D^2}{4}$ Assume slope of 1%
 $S = 0.01$
Manning's Equation:
 $Q = \frac{1.49}{n} R^2 \sqrt{S} A_p$
 $Q = 10.533 \text{ cfs}$
 $Q > Q_{100}$ therefore a 18" pipe is acceptable.



- 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 COURT AND 25' NORTH OF FIRE HYDRANT ON EAST CURB. ELEV.=169.505
- B.M. PH-2: CHISELED "d" ON TOP OF CURB INLET EAST SIDE TYLER ROAD AND 150± NORTH OF STERLING STREET. 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



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

MINIMUM OPENINGS:
 LOTS 4-11 = 167.3
 LOTS 14-19 = 168.1

DSNR, KER OPER. SCALE: 1"=50.00
 C:\1998\98363\grad 10-29-1998 09:46:43 am