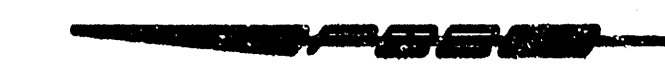


NORTHRIDGE LAKES PATIO HOMES ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS DRAINAGE PLAN



SCALE: 1"=50'

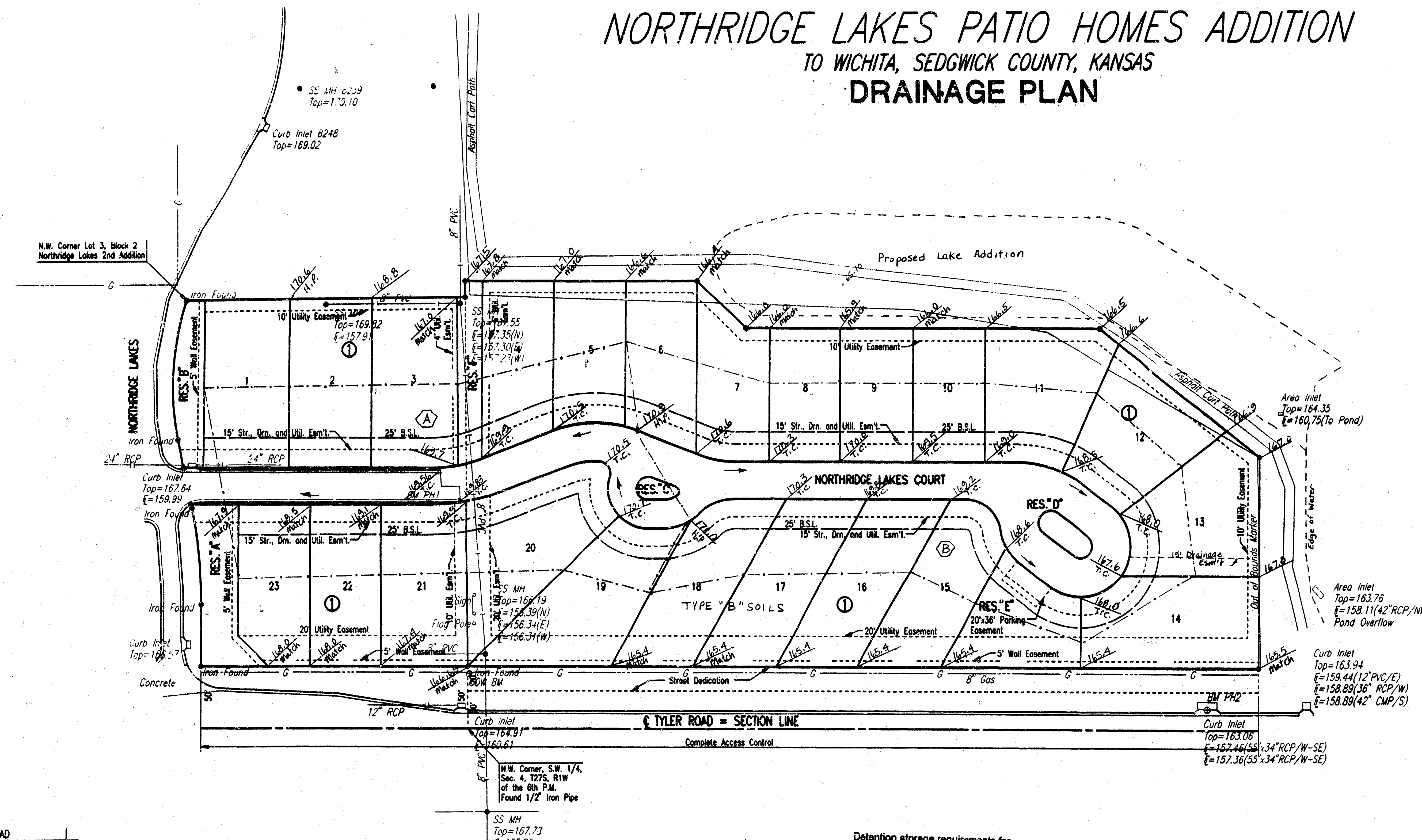
● = IRON SET

JULY 1998
TOPOGRAPHY MAY 1998

C.O.M. B.M.: BRASS DISK 1/2 MILE NORTH OF 21ST STREET
NORTH AND 44' EAST OF E. 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 E CURB INLET EAST SIDE TYLER
ROAD AND 150' NORTH OF E. STERLING STREET.
ELEV.=163.06



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.
 $C_2 = 0.52$
 $i_2 = 3.80$
 $Q_{2C} = A \cdot C_2 \cdot i_2$
 $Q_{2C} = 1.205$ cfs
 $Q_{100C} = A \cdot C_{100} \cdot i_{100}$
 $Q_{100C} = 3.008$ cfs

Size pipes for the 100-Yr storm:
 $n = 0.013$ Try 16 inch pipe
 $R = \frac{D}{4}$ D = 1.35
 $A_p = \frac{\pi \cdot D^2}{4}$ Minimum slope for 16" pipe
 $S = 0.0038$

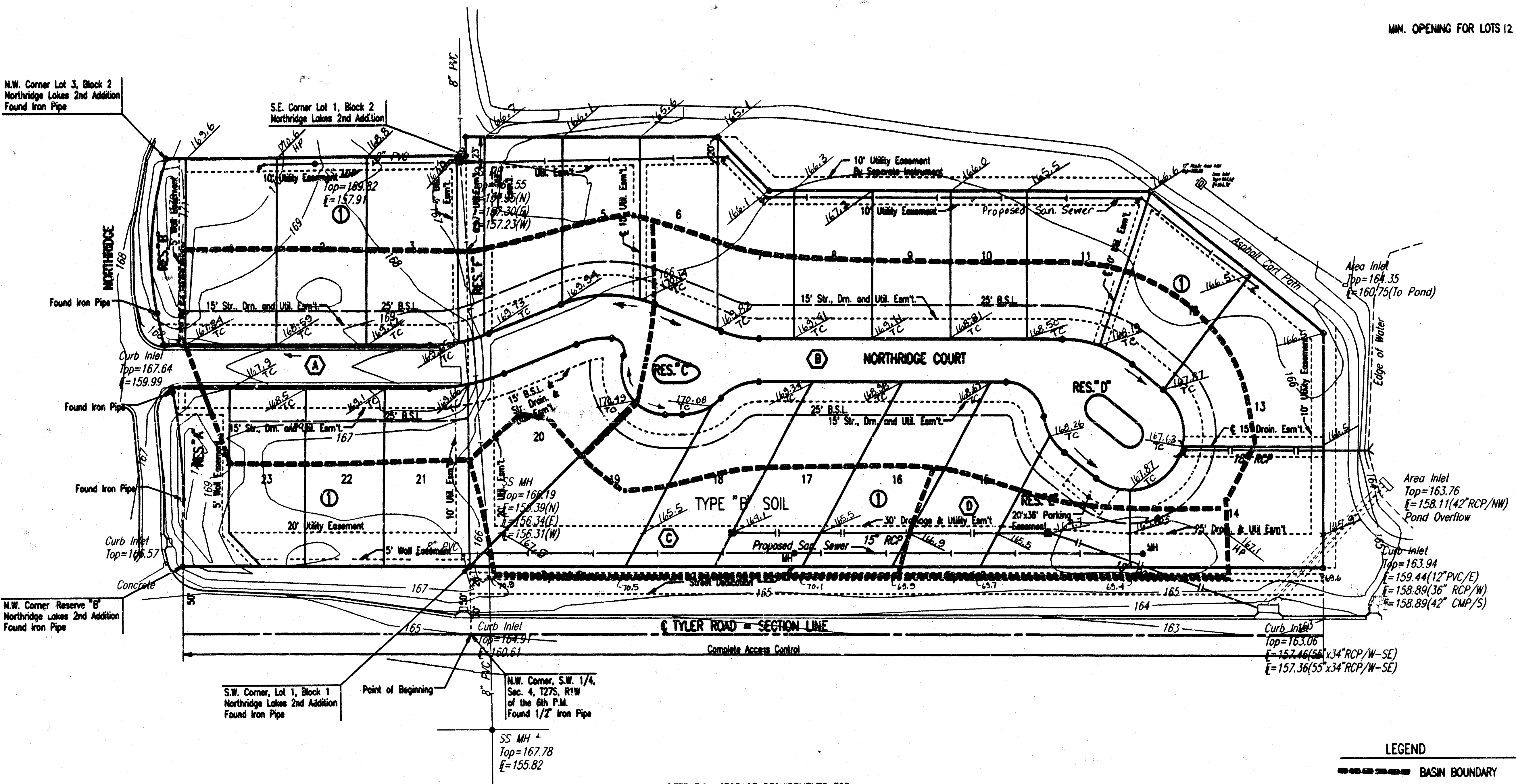
Manning's Equation:
 $Q = \frac{1.49}{n} \cdot A \cdot R^2 \cdot S^{0.48}$
 $Q = 3.993$ cfs
 $Q > Q_{100}$ therefore a 16" pipe is acceptable.

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 $R_D = \frac{D_D}{4}$
 $A_{pD} = \frac{\pi \cdot D_D^2}{4}$ Area of pipe
Manning's Equation:
 $Q_{CD} = \frac{1.49}{n} \cdot A_{pD} \cdot R_D^2 \cdot S^{0.48}$
 $Q_{CD} = 6.493$ cfs
 $Q_{CD} > Q_{100CD}$ Therefore a 18" pipe is acceptable for flow from Basins C and D.

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

Size pipes for the 100-Yr storm:
 $n = 0.013$ Try 18 inch pipe
 $R = \frac{D}{4}$ D = 1.5
 $A_p = \frac{\pi \cdot D^2}{4}$ Assume slope of 1%
 $S = 0.01$
Manning's Equation:
 $Q = \frac{1.49}{n} \cdot A \cdot R^2 \cdot S^{0.48}$
 $Q = 10.533$ 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 E TYLER ROAD. ELEV.=165.61
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 ROAD AND 150' NORTH OF E 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	0.87	6.11
B	1.81	3.80	0.52	3.55	7.36	0.87	8.93
C	0.61	3.80	0.52	1.21	7.36	0.87	3.01
D	0.31	3.80	0.52	0.61	7.36	0.87	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

DRAWN BY: JER. SCALE: 1"=50.00
 C:\1998\10\15\10-23-1998 09:46:43 am