2-24" CMP 50' length 0.5' vert. drop $S_0 = 1\%$

Total off-site drainage equals 4.5 acres

Hydrologic Soil Types: B & C

Average of C.O.W. runoff coefficients for Single Family - 1-acre lots

$C_2 = 0.35$

$C_5 = 0.38$

$C_{10} = 0.44$

$C_{100} = 0.56$

using rational method and city design criteria $T_c = 15$ min

$Q_2 = 6.0$ cfs

$Q_5 = 7.8$ cfs

$Q_{10} = 10$ cfs

$Q_{100} = 19$ cfs

Assuming equal distribution

R.P.	Q_{pipe}	normal depth	critical depth	Flow regime
2	3	0.674	0.604	subcritical
5	3.9	0.775	0.692	↓
10	5	0.890	0.788	↓
100	9.5	1.383	1.101	subcritical

using Bernoulli's Eq.

$$\frac{P_1}{\gamma_0} + \frac{V_1^2}{2g_0} + y_1 = \frac{P_2}{\gamma_0} + \frac{V_2^2}{2g_0} + y_0 + \frac{k_e V^2}{2g} + \frac{8fLQ^2}{\pi^2 g D^5}$$

$$y_1 = y_2 + 0.5\frac{Q_{pipe}^2}{2g} + \frac{(8)(.03)(50)Q^2}{\pi^2 g (2)^5}$$

$$y_1 = y_2 + \frac{Q^2}{1271.2} + \frac{Q^2}{847.47}$$

2-yr. $y_1 = 0.692'$ $WS_2 = 1333.2$

5-yr. $y_1 = 0.805'$ $WS_5 = 1333.3$

10-yr. $y_1 = 0.939'$ $WS_{10} = 1333.4$

100-yr. $y_1 = 1.50'$ $WS_{100} = 1334.0$

WS elev for 100-yr. flood exceeds calculated WS elev. this implies that flood waters will back pressure through pipe and inundate 100-yr flow path as depicted

Leave East Pipe @ Existing grade and reset West pipe to $y_1 = 31.0$

Concentrated flow to West culvert 4.3 acres

$C_2 = 0.35$ $Q_2 = 5.7$

$C_5 = 0.38$ $Q_5 = 7.5$

$C_{10} = 0.44$ $Q_{10} = 9.9$

$C_{100} = 0.56$ $Q_{100} = 17.7$

R.P.	normal depth	critical depth	Flow regime
2	0.957	0.843	subcritical
5	1.131	0.973	↓
10	1.363	1.135	↓
100	1.876	1.490	supercritical

$$y_1 = y_2 + \frac{Q^2}{1271.2} + \frac{Q^2}{847.47}$$

2-yr. $y_1 = 1.02'$ $WS_2 = 1338.0$

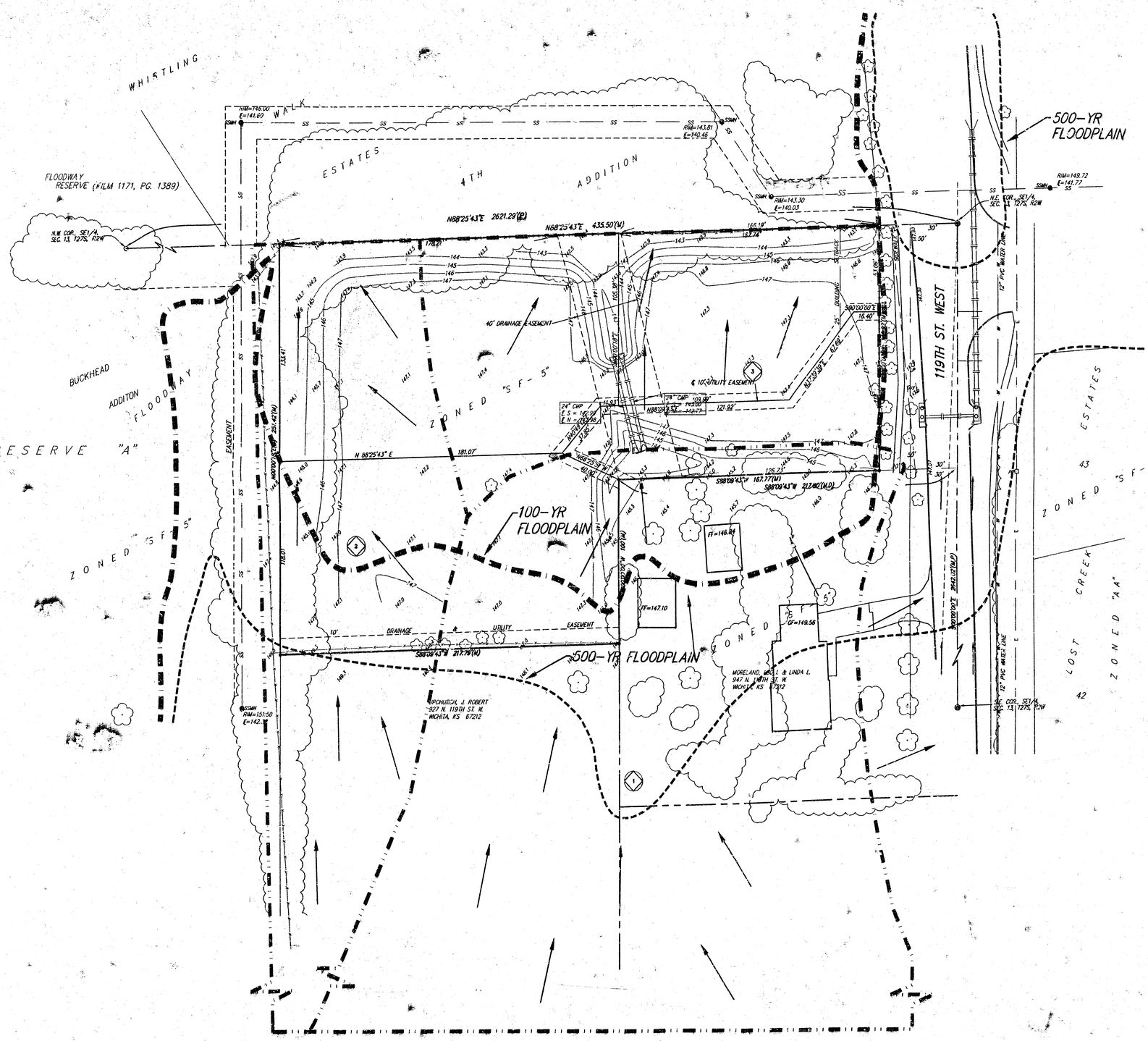
5-yr. $y_1 = 1.09'$ $WS_5 = 1338.0$

10-yr. $y_1 = 1.55'$ $WS_{10} = 1338.6$

100-yr. $y_1 = 2.49$ $WS_{100} = 1339.5$

The effect concentrated or impounding the minor storm runoff against the 100-yr flow exceeds the calculated WS elev. Thus the flood waters will back pressure the pipe and inundate the flood plain as shown on the plan sheet.

DRAINAGE PLAN
WOODS EDGE
AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



0 30 60

DATE OF PREPARATION = MAY 24, 2002
DATE OF TOPOGRAPHY = JANUARY 28, 2002
CONTOUR INTERVAL = 1 FOOT

= Drainage Basin Boundary
= 100 yr Floodplain Boundary
= 500-yr Floodplain Boundary
= Basin Identifier

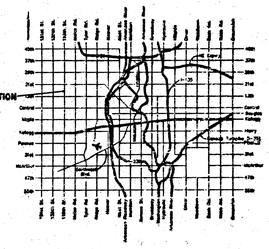
MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION CITY DATUM
1	A	148.1
2	A	148.1

OWNER:
James Goolsby
628 W. 9th Street
Wichita, Ks 67203

LEGAL DESCRIPTION:
Beginning at NE cor. of the SE 1/4 of Sec. 13, Twp. 27-S, R-2-W of the 6th P.M., Sedgwick County, Kansas; thence South 149.75 feet more or less to a point 2492.5 feet north of SE cor. of said SE 1/4; thence west parallel with the south line of said SE 1/4, 100.00 feet; thence west parallel with the south line of said SE 1/4, 217.80 feet; thence north parallel with the east line of said SE 1/4, 251.79 feet more or less, to the north line of said SE 1/4; thence east 435.6 feet to beginning.

BENCHMARK:
"□" Cut - Top of curb, W. side of 119th St. W. next to catch basin.
Elev. = 147.32 City Datum
(1334.72 M.S.L.)

RESERVE "A" IS RESERVED FOR PRIVATE ACCESS DRIVE, DRAINAGE PURPOSES, OPEN SPACE, LANDSCAPING, AND UTILITIES AS CONFINED TO EASEMENTS.



NOTE:
PORTIONS OF THIS PROPERTY HAVE BEEN REMOVED FROM THE SPECIAL FLOOD HAZARD AREA (SFHA), BY LETTER OF MAP REVISION, BASED ON FILL (LOMR-F), CASE # 02-07-180A, EFFECTIVE DATE FEBRUARY 27, 2002. CONSTRUCTION PROJECTS ON THIS PROPERTY SHALL CONFORM TO ANY AND ALL CONDITIONS OF THIS LOMR-F.

Drainage calculations have been performed with the following:
1. Average City of Wichita runoff coefficients for single family 1-acres lots
2. Hydrologic soil types B and C
3. Calculations of pipe capacity has been previously submitted to the City of Wichita's Storm Water Management Dept.
4. 100-yr Base Flood Elevation = 1334.0 msl
   = 146.6 (City Datum)

Drainage Area	Area (acres)	C_f	C_{ave}	T_c (min.)	I_f (in/hr)	I_{ave} (in/hr)	Q_n (cfs)	Q_{ave} (cfs)
1	4.5	0.35	0.56	15	3.83	7.37	6.0	19
2	1.1	0.35	0.56	15	3.83	7.37	1.5	4.5
3	0.9	0.35	0.56	15	3.83	7.37	1.2	3.7

01 JULY 2002

BAUGHMAN COMPANY P.A.
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