

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

Total off-site drainage equals 4.5 acres

Hydrologic Soil Types B+C

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

$$C_p = 0.35$$

$$C_s = 0.38$$

$$C_{10} = 0.44$$

$$C_{100} = 0.56$$

Using rational method and city design criteria $t_c = 15$ min.

$$Q_p = 6.0 \text{ cfs}$$

$$Q_s = 7.8 \text{ cfs}$$

$$Q_{10} = 10 \text{ cfs}$$

$$Q_{100} = 19 \text{ cfs}$$

Assume equal distribution

R.P.	Depth	runoff depth	critical depth	Flow regime
8	3	0.674	0.604	subcritical
5	3.9	0.775	0.696	subcritical
10	5	0.890	0.788	
100	9.5	1.383	1.101	subcritical

using Bernoulli's eq

$$\frac{y_1}{2} + \frac{V_1^2}{2g} + y_1 = \frac{y_2}{2} + \frac{V_2^2}{2g} + y_2 + \frac{h_f V^2}{2g} + \frac{8fLQ^2}{\pi^2 g D^5}$$

$$y_1 = y_2 + 0.5 \frac{Q_1^2}{g y_1^3} + \frac{(8)(.03)(50) Q^2}{\pi^2 g D^5}$$

$$y_1 = y_2 + \frac{Q^2}{1271.3} + \frac{Q^2}{847.77}$$

$$3 \text{ yr. } y_1 = 0.692'$$

$$WS_2 = 1333.2$$

$$5 \text{ yr. } y_1 = 0.805'$$

$$WS_5 = 1333.3$$

$$10 \text{ yr. } y_1 = 0.939'$$

$$WS_{10} = 1333.4$$

$$100 \text{ yr. } y_1 = 1.50'$$

$$WS_{100} = 1334.0$$

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

Leave East Pipe @ existing grade and reset West pipe to $S_p = 3/8$

Concentrated flow to West culvert 4.3 acres

$$C_p = 0.35 \quad C_s = 5.7$$

$$C_{10} = 0.38 \quad C_{100} = 7.5$$

$$C_{10} = 0.44 \quad C_{100} = 9.9$$

$$C_{100} = 0.56 \quad C_{100} = 17.7$$

R.P.	runoff depth	critical depth	Flow regime
8	0.359	0.843	subcritical
5	1.131	0.973	subcritical
10	1.363	1.105	
100	1.876	1.490	subcritical

$$y_1 = y_2 + \frac{Q^2}{1271.3} + \frac{Q^2}{847.77}$$

$$8 \text{ yr. } y_1 = 1.00' \quad WS_8 = 1333.0$$

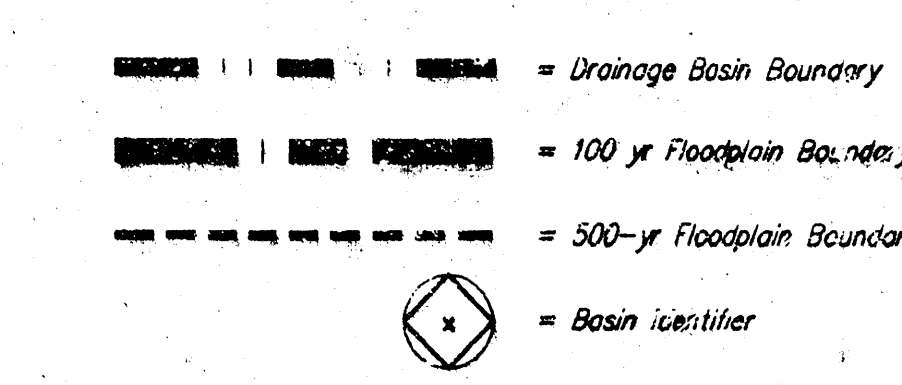
$$5 \text{ yr. } y_1 = 1.54' \quad WS_5 = 1333.6$$

$$10 \text{ yr. } y_1 = 1.55' \quad WS_{10} = 1333.6$$

$$100 \text{ yr. } y_1 = 6.49' \quad WS_{100} = 1333.5$$

The pipe is concentrated or improving the main pipe outlet
 again the 100-yr flow exceeds the calculated WS elev.
 Thus the flood water will back pressure through the
 pipe and inundate the flood plain as shown on the plan view.

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



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

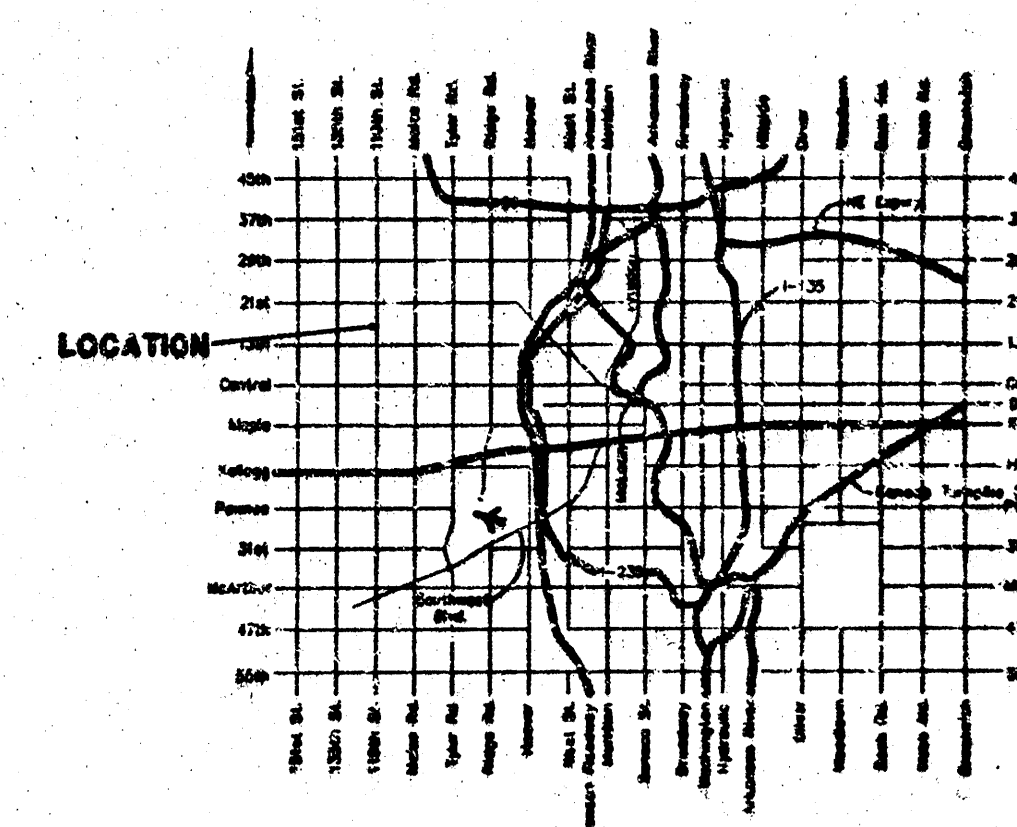
OWNER:
James Goolsby
628 W. 9th Street
Wichita, Ks 67203

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 433.6 feet to beginning.

BENCHMARK:

"□" Cut - Top of curb, W. side of 119th
St. W. next to catch basin.
Elev. = 147.32 City Datum
(11334.72 M.S.L.)

RESERVE "A" IS RESERVED FOR PRIVATE ACCESS DRIVE, DRAINAGE PURPOSES, OPEN SPACE, LANDSCAPING, AND UTILITIES AS CONFIRMED IN 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 Flood Elevation = 1334.0 msl
= 146.6 (City Datum)

Drainage Area	Area (acres)	C _s	C _{mp}	T _c (min.)	I _s (in/hr)	I _{mp} (in/hr)	C _t (cfs)	Q (cfs)
1	4.5	0.35	0.56	15	3.83	7.37	6.0	1
2	1.1	0.35	0.56	15	3.83	7.37	1.5	4
3	0.9	0.35	0.56	15	3.83	7.37	1.2	3