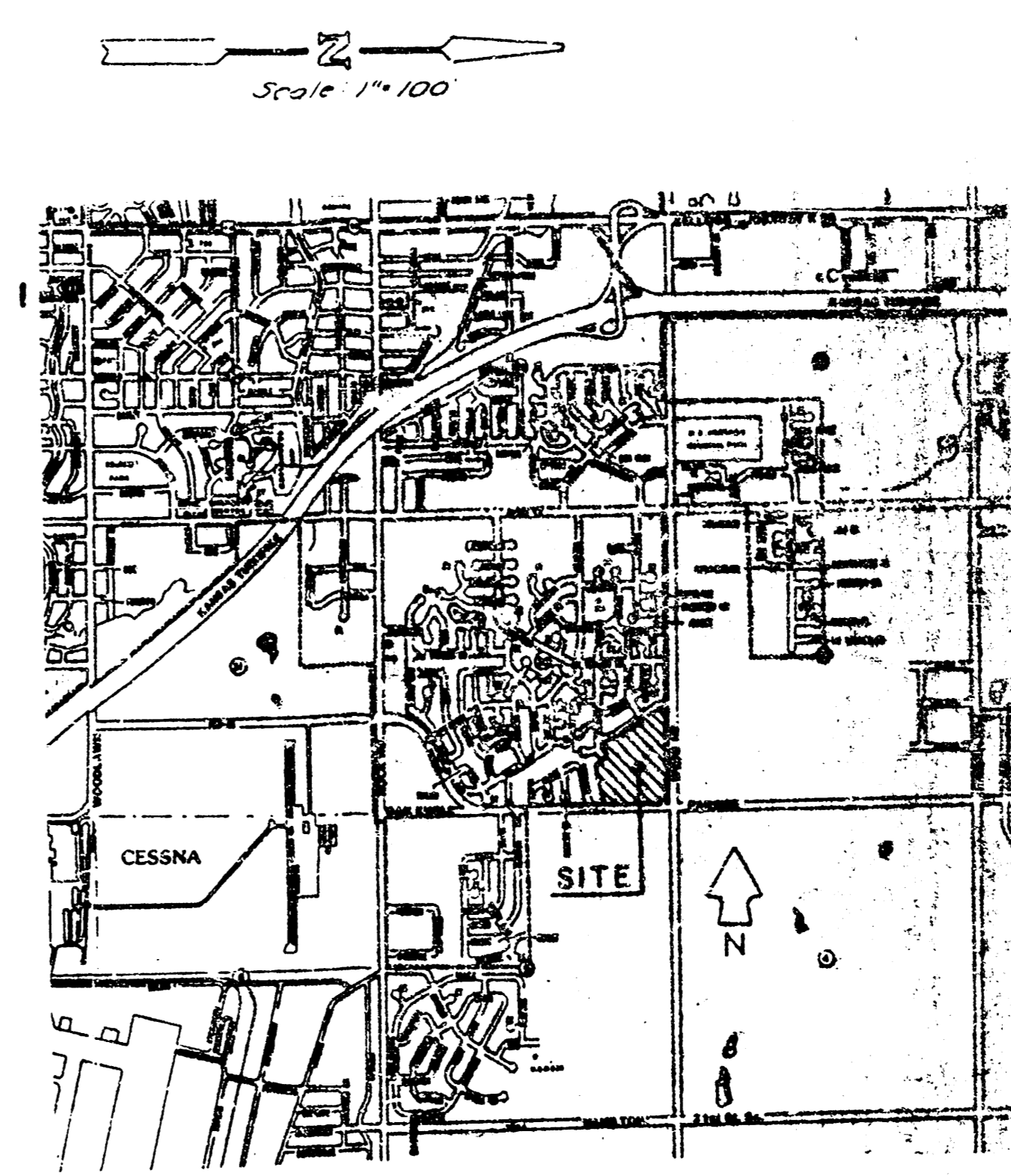


**DRAINAGE PLAN
PRELIMINARY PLAN
HEDGECLIFF 5TH ADDITION**
PART OF SE 1/4 SEC. 32, T27S, R2E
OWNER - FIDELITY INVESTMENT



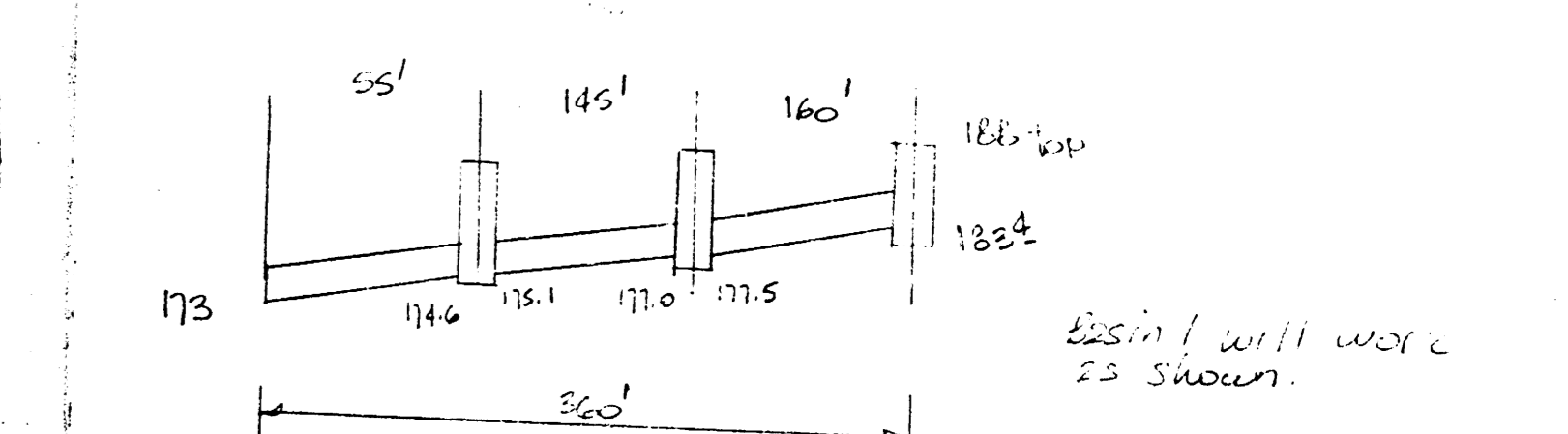
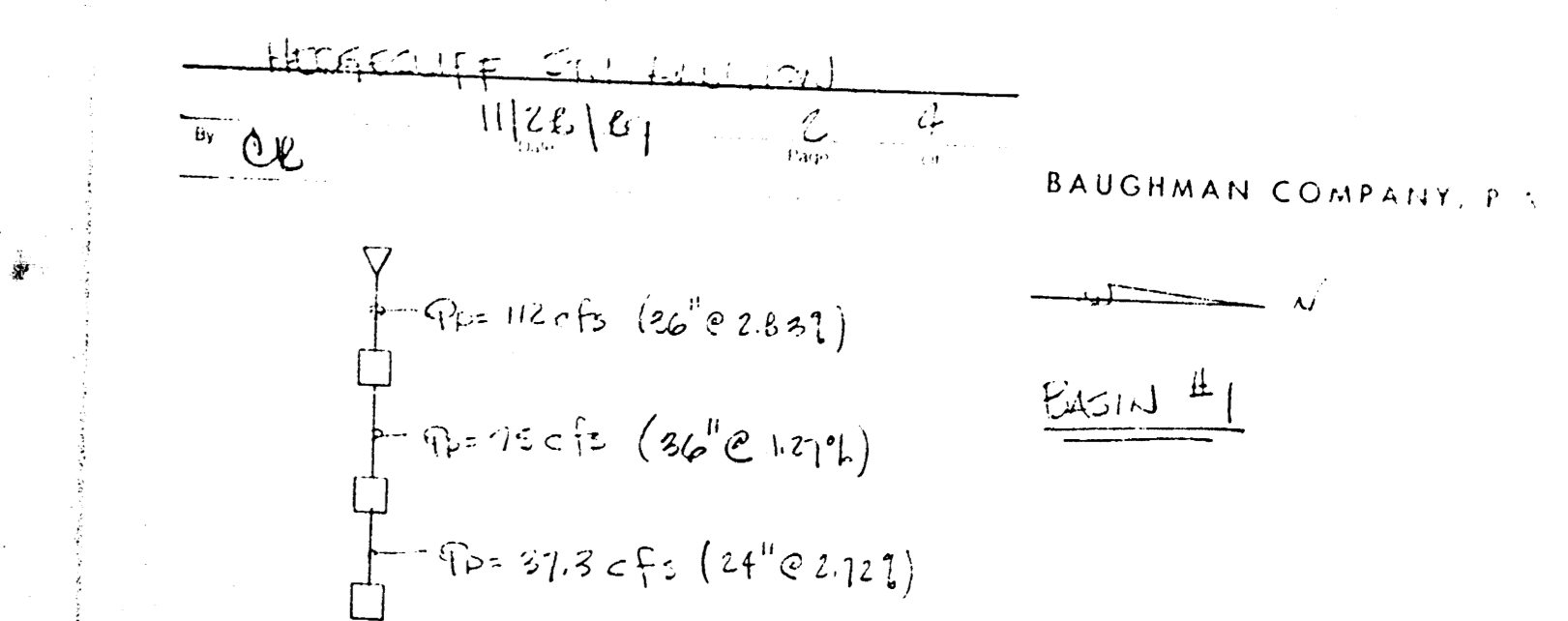
VICINITY MAP
B.M. City disc 53' So. P. 97' W. E
Webb & Pawnee El. 205.68

BAUGHMAN COMPANY, P.A.
SURVEYING & ENGINEERING
316282-7271 • 316 5315 • WICKITA, KANSAS 67211

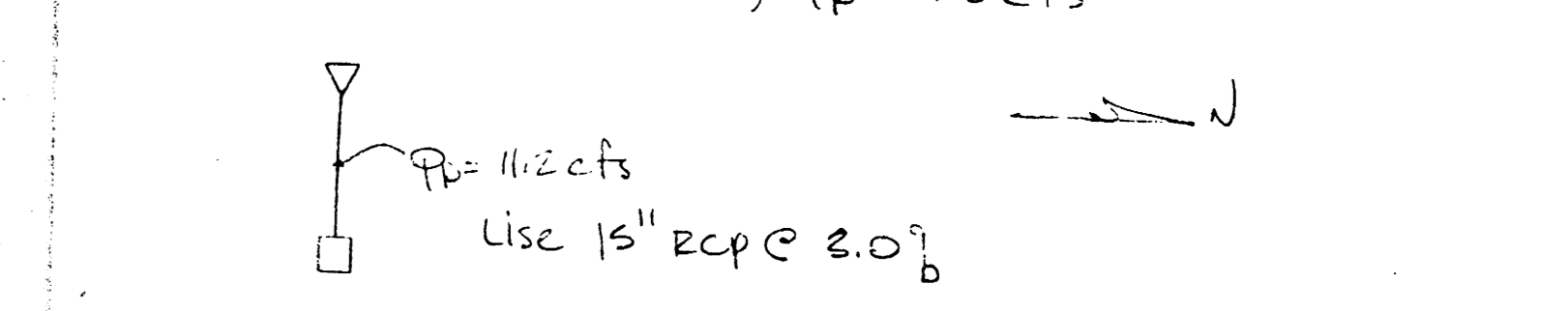
11/26/09 BAUGHMAN COMPANY, P.A.

From "Soil Sampling of Site & Surrounding Soil" reports indicate:
Co - Auto Sand S
Lo - Heavy Sand S
Rd - Heavy Sand S
Majority of the site is 20' deep in sand
Basin Use Area
1 Commercial 17.0 Ac 2.8 cfs 4.5 ft 112.0
2 Commercial 1.9 Ac 1.2 cfs 4.0 ft 11.2
3 Multi-Family 14.4 Ac 2.5 cfs 4.0 ft 112.0
4 Multi-Family 5.0 Ac 0.5 cfs 4.0 ft 11.2
5 Multi-Family 5.0 Ac 0.5 cfs 4.0 ft 11.2

Basin 1 19.0 Ac 2.8 cfs 4.5 ft 112.0
Assume 100% ramp condition, 100% slope, 1' parking area.
Assume loading of 20' x 20' x 20' in 10' inlets.
Orifice flow equation: $Q = 0.618 A \sqrt{2gh}$
City of Wichita Dept. of Public Works
Depth # 2423 = 181.53, in. 10.5 = 10.5 ft
For 1 inlet: $Q = 0.6 (1.28 \text{ ft}^2) \sqrt{2(32.2)(10.5)}$
 $Q = 9.7 \text{ cfs}$
For 112.0 cfs: $112.0 / 9.7 = 11.5 \rightarrow 12 \text{ inlets}$
Use 3 groups of 4 inlets



Basin #2 1.9 Ac 1.2 cfs 4.0 ft 11.2 cfs
Use Double Drop Inlet; $Q_p = 11.2 \text{ cfs}$



NOTE: Pipes sized from lots in "Design Sets 4"
Concrete Pipe Accretion

11/26/09 BAUGHMAN COMPANY, P.A.
Basin #3 Area = 14.4 Ac $Q_p = 21.6 \text{ cfs}$ $Q_{max} = 60.7 \text{ cfs}$
Flow thru Pavement Section - Check Street Capacity
Pmt. Slope = 0.7% 40' Fe-Ce
C.T.C. Elev A = $1/2(115.20) = 57.6 \text{ ft}$ (1/2 street)
 $WP = 20.25'$ $n = 0.016$ (conc. ASPH)
 $V = 1.49 / 0.016 (5.0 / 20.25)^{0.58} (0.016)^{1.49} = 3.65 \text{ ft/sec}$
 $Q = VA = 21.6 (3.65) = 78.8 \text{ cfs}$ Full Street = $120.1 (2) = 240.2 \text{ cfs}$
 $Q_{street} = 240.2 \text{ cfs} > 78.8 \text{ cfs}$ O.K.
C.R.W. Elev: A = $(115.20) / 2 + (0.88) (0.3) = 57.75 \text{ ft}$ (1/2 st.)
 $WP = 21.5'$ $n = 0.02$ (Grass Asphalt Conc)
 $V = 1.49 / 0.02 (5.0 / 21.5)^{0.58} (0.02)^{1.49} = 3.74 \text{ ft/sec}$
 $Q = VA = 3.74 (21.5) = 80.3 \text{ cfs} > 60.7 \text{ cfs}$ O.K.
Inlets need to be designed for low up stream

Both inlets in Sump Conditions
Inlet A 100' Sump Depth
4" depression 10.55' x 3' = 1.13 feet
Cooper of 11.2

11/26/09 BAUGHMAN COMPANY, P.A.
Basin #4 (cont)
Use 26" inlets at location A & B.
 $Q_{max} = 60.7 \text{ cfs}$
No Inlet
Use 26" RCP @ 14.7 ft
16" x 11.5" Inlet future labels will be included in stream to identify system and capacity.
Basin #4 In = 8.2 Ac $Q_p = 15.7 \text{ cfs}$ $Q_{max} = 45.7 \text{ cfs}$
NOTE: This Area has already been sized by the city to drain into the existing SWC along Beech.
Basin #5 In = 5.0 Ac $Q_p = 9.6 \text{ cfs}$ $Q_{max} = 26 \text{ cfs}$
Basin #5 will drain along Webb Road to a future SWC extended south from Mt. Vernon