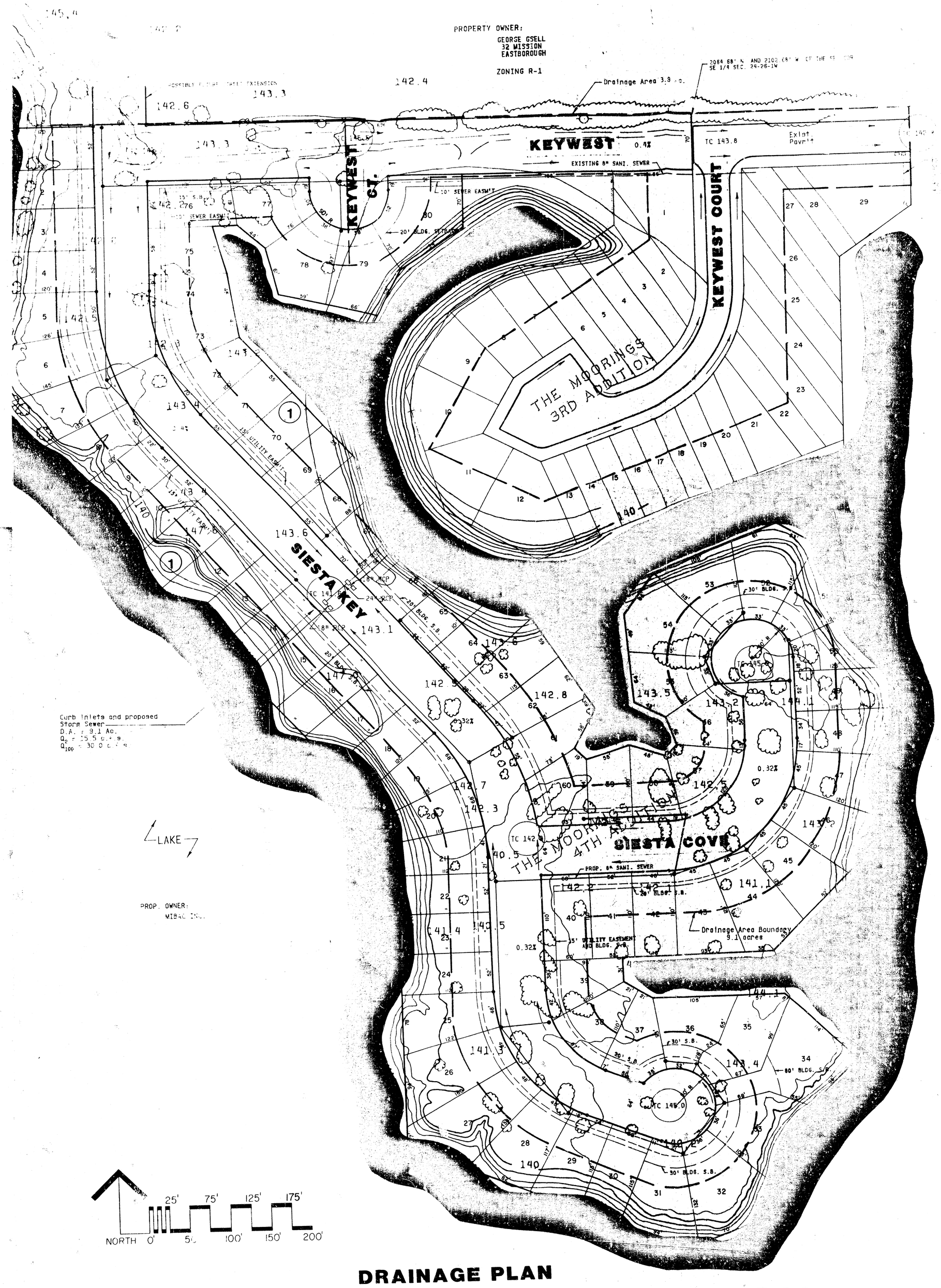
PROPERTY OWNER:
GEORGE GSELL
32 MISSION
EASTBOROUGH

ZONING R-1



Curb Inlets and proposed Storm Sewer
D.A. = 9.1 Ac.
Q_5 = 15.5 c.f.s.
Q_{100} = 30.0 c.f.s.

PROP. OWNER:
MIBAC INC.

PROP. OWNER:
MIBAC INC.

GENERAL NOTES:

1. Topographic Survey Dated 5-21-87
2. B.M. "+" Cut in S. Head of Culvert at 45TH St. North and Meridian 141.07 City of Wichita Datum
3. Minimum Lot Area 5500 S.F.
4. 50' Min. Front Yard or Setback Line
5. Reserve A is reserved for open space and a lake to be owned and maintained by a ownership association.
6. Utilities are to be installed in front lot easements and street right-of-way.
7. Total Number of Lots 80 Single Family Residential
8. Total Acreage in Plat 18.6 More or Less
9. All Lots Shall Have A Continuous High Point Ground Elevation of 143.5 City Datum
10. Normal Pond Surface Elevation 138.0

NORTH 0' 50' 100' 150' 200'
25' 75' 125' 175'

DRAINAGE PLAN
THE MOORINGS 4TH ADDITION

DATE: 7-28-87

OWNER-DEVELOPER:
MIBAC INC.
C. BILL BACHMAN, PRES.

THE MOORINGS 3RD ADDN

DA = 7.55 TO EXIT INLETS BETWEEN LOTS 20 AND 21 (S. SIDE ONLY)

L = 1600 @ 2 ft/s = 13.3 MIN

OVERLAND FLOW

$T_C = 1.5\left[\frac{1.4\,(1600)}{4\sqrt{1.02}}\right] = 11.3$ TOTAL T_C = 24.6

Q_{100} = 7.55 x 0.5 x 3.35 = 12.6 cfs DEPTH OF FLOW 0.55' 17.6' WIDE

NOT ENOUGH STREET CAPACITY

TRY INTERCEPTING FLOW AT TWO INLETS LOCATED BETWEEN LOT AND 3RD ADDITION.

DRAINAGE FROM THE MOORINGS 4TH ADDITION

JUL 27 1987 ENGINEERING DIVISION

9-28-83

THE MOORINGS 3RD ADDN.

D.A. = 8.05 Ac. TO INLETS @ STA 8+03 ON HELMHOLT (BETWEEN LOT 4 & 3RD ADD.)

OVERLAND FLOW - 80' @ 2% - GRASS

$T_C = 1.5\sqrt{\frac{1.4\,(80)}{4\sqrt{1.02}}} = 11.3$ MIN

STREET FLOW

980' @ 2 ft/s = 7.3 MIN. TOTAL T_C = 18.6 MIN.

Q_2 = 8.05 x 0.5 x 3.75 = 9.7 cfs

DEPTH IN STREET 0.6' W = 12.8' q = 2.6' V = 2.2 ft/s

$F_W = \frac{.042}{.016}\left[(12.8-2)\,.03125\right]^{1/6} .0032^{1/2} = 0.77$

L_1 = 2.49 x .03125$^{.3}$ x .77 x 12.8 = 8.7'

L_2 = 3.27 x .03125$^{.5}$ x .77 x 12.8 = 5.7'

L_3 = 1.65 x .77 x 12.8 = 16.2'

L = 8.6' (TWO TYPE I-A INLETS)

$\frac{Q_1}{9.7} = \left(\frac{8.6}{10.2}\right)^{.4}$ Q_1 = 4.4 cfs 1.3 cfs BY PASS

Q_{100} = 8.05 x 0.5 x 8.20 = 12.6 cfs

DEPTH IN STREET 0.56' W = 17.9'

$F_W = \frac{.042}{.016}\left[(17.9-2)\,.03125\right]^{1/6} .0032^{1/2} = .82$

L_1 = 2.49 x .03125$^{.3}$ x .82 x 17.9 = 12.9'

L_2 = 3.27 x .03125$^{.5}$ x .82 x 17.9 = 8.5'

L_3 = 1.65 x .82 x 17.9 = 24.2'

L = 8.6'

$\frac{Q_1}{12.6} = \left(\frac{8.6}{24.2}\right)^{.4}$ Q_1 = 8.3 cfs

DESIGN STORM SEWER FOR 8.3 cfs

POE & ASSOCIATES OF KANSAS INC.
CONSULTING ENGINEERS
434 N. Oliver, Suite 110 • Wichita, KS 67208 • 316/685-4314

THE MOORINGS 4TH ADDITION
(Drainage)

July 30, 1987

Mr. Carl Gipson
City of Wichita
Engineering
7th Floor
City Hall
455 North Main
Wichita, Kansas 67202

Re: The Moorings 4th Addition

Dear Carl:

Enclosed is a drainage plan and drainage runoff calculations for the above captioned addition. Please review and inform me if any additional information will be required.

Yours truly,

POE & ASSOCIATES OF KANSAS, INC.

Kenny E. Hill, P.E.
Project Manager

KEH:crb

Encls.

JUL 27 1987 ENGINEERING DIVISION

7-30-87 ①

THE MOORINGS 4TH ADDN - DRAINAGE PLAN

DRAINAGE TO INLETS LOCATED BETWEEN LOTS 66 AND 67

D.A. = 5.72 AC S. OF INLETS

D.A. = 3.38 AC N. OF INLETS

80' OF LOT DRAINAGE TO STREET CURB @ 2% GRADE OVER AVERAGE GRASS

960' ST. FLOW @ 2 ft/s = 8 MIN.

$T_C = 1.5\sqrt{\frac{.4\,(80)}{4\sqrt{1.02}}} = 11.3$ MIN. i_2 = 3.4 i_{100} = 6.6

$\frac{8}{19.3}$ MIN ATC (15 MIN) I 3.3

Q_{100} FROM D.A. S. OF INLETS = 5.72 x 0.5 x 6.6 = 18.9 cfs

DEPTH OF FLOW IN ST. 0.55' Q = 12.9 cfs/SIDE 100 YR DISCHARGE IN ST. OK.

TOTAL FLOW TO INLETS Q_{100} = 9.1 x 0.5 x 6.6 = 30 cfs

USE 4 INLETS @ 8 cfs EA.

USE 30" RCP @ 8.6% GRADE @ 32 cfs

100 YR FLOWS WILL DISCHARGE THROUGH STORM SEWER.

8 cfs/INLET - USE 18" RCP @ 0.6% BETWEEN INLETS

6 cfs ACROSS STREET - USE 24" RCP @ 0.5%

Q_2 = 9.1 x 0.5 x 3.4 = 15.5 cfs

JUL 27 1987 ENGINEERING DIVISION

7-30-87 ②

DRAINAGE TO STORM SEW. ON THE E. SIDE OF THE 3RD ADDN.

D.A. = 3.9 Ac OVERLAND FLOW 11.3 MIN GAMEWELL ON PG L

775' ST. FLOW @ 2 ft/s = 6.5 MIN.

11.3 + 6.5 = 17.8 MIN ATC i_2 = 3.5 i_{100} = 6.9

Q_2 = 3.9 x 0.5 x 3.5 = 6.8 cfs 5.2 cfs ORIG. CALC.

Q_{100} = 3.9 x 0.5 x 6.9 = 13.5 cfs - 12.6 cfs ORIG. CALC.

ORIGINAL CALCS. WERE FOR Q_{100} = 12.6 cfs (SEE ATTACHED)

INCREASE IN FLOW INSIGNIFICANT - NO IMPROVEMENTS NECESSARY

5-10-88

THE MOORINGS 4TH ADDN - DRAINAGE PLAN REVISED

D.A. 5.72 AC S. OF INLETS

D.A. 3.38 AC N. OF INLETS

80' OVERLAND FLOW @ 2% 0.45 ft/s 2.96 MIN.

960' STREET FLOW 1.53 ft/s = 10.13 MIN. T_C = 13 MIN. 2YR.

960 STREET FLOW 2.14 ft/s = 7.48 MIN. T_C = 10.5 MIN 100 YR

USE GRADE C 1/8 AC LOTS C = 0.55 2YR C = 0.73 100 YR

$Q_2 = {}^{A}_{\checkmark}3.38 \times {}^{C}_{\checkmark}0.55 \times {}^{I}4.08 = 7.58$ cfs = 3.8 cfs/SIDE

$Q_2 = {}^{A}_{\checkmark}5.72 \times {}^{C}_{\checkmark}0.55 \times 4.08 = 12.84$ cfs = 6.4 cfs/SIDE

$Q_{100} = 3.38 \times 0.73 \times 8.41 = 20.75$ cfs 10.4 cfs/SIDE

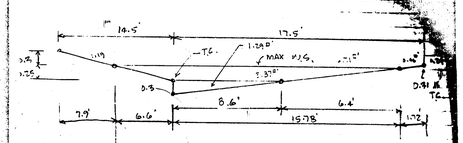
$Q_{100} = 5.72 \times 0.73 \times 8.41 = 35.12$ cfs 17.6 cfs/SIDE

STREET CAPACITY WILL WORK BUT IT WILL PROBABLY BE BEST TO TAKE SOME DRAINAGE SOUTH THROUGH ANOTHER STORM SEWER.

IF TOTAL D.A. DRAINS TO THIS POINT A SWALE MUST BE PROVIDED TO DISCHARGE THE Q_{100} STORM AT THE STORM SEWER.

5-10-88

STREET CAPACITY 36' B/B 11.74 ROLL CG



Q_1 = 3.87 + 1.29 = 5.16 $R = \frac{5.16}{22.53} = 0.23$

$Q_1 = 5.16 = \frac{1.486}{.020}\,.23^{2/3}\,.0032^{1/2}$ = 3.14 cfs/SIDE FOR 2YR STORM (0.55' ABOVE F.L.) V = 1.53 ft/s

Q_1 = 5.16 + 8.56 = 13.52 $R = \frac{13.52}{32} = 0.42$

17.5' @ n = .016 280
14.5' @ n = .030 435
.715 ÷ 32 = .022 COMPOSITE n

$Q_1 = 13.52 = \frac{1.486}{.022}\,.42^{2/3}\,.0032^{1/2}$ = 29.0 cfs/SIDE (0.85' ABOVE F.L.) V = 2.14 ft/s 100 YR STORM