

THE CITY OF WICHITA

OFFICE OF ENGINEERING

DATE OCTOBER 26, 1979

TO JACK GALBRAITH, CHIEF PLANNER - PLANNING DEPARTMENT

FROM YASH D. DESAI, DRAINAGE CHIEF ENGINEER

SUBJECT DRAINAGE PLAN: OVERBROOK 2ND  
ADDITION

Reiss and Goodness Engineers have submitted the drainage plan for the subject plat. The plan is satisfactory. The storm sewer outfall is the major drainage channel (presumably to be developed in future) being a tributary of the Four Mile Creek. The developer shall submit guarantees for the construction of the storm sewer and other drainage improvements. Engineer shall submit to Engineering Department the quantities to arrive at a preliminary project cost estimate before the submission of plat for City Commission approval.

I trust this is sufficient information to approve the subject plat. Please call me at Centrex 4235 if you need additional information.

---

Yash D. Desai, P.E.  
Drainage Chief Engineer

YDD/dla

cc: Max Greene, Flood Control & Landfill Director

10-19-79

①

OVERBROOK 2ND ADDN.  
REVERSED GRADING PLAN

$$DA \# 1 \quad 4.61 \text{ AC} \quad L = 820' = 0.16 \text{ MI.} \quad F = 36 - 28.5 = 7.5'$$

$$T_c = \left( \frac{11.9 \times 0.16^3}{7.5} \right)^{0.385} = .14 \text{ HRS} \quad 8.6 \text{ MIN} \quad \text{USE 15 MIN.}$$

$$Q_z = 4.06 \times 0.5 \times 4.61 = 9.4 \text{ cfs}$$

$$Q_{100} = 8.98 \times 0.5 \times 4.61 = 20.7 \text{ cfs}$$

$$20.7 - 9.4 = 11.3 \text{ cfs THRU SWALE}$$

$$DA \# 2 \quad 3.32 \text{ AC} \quad T_c = 15 \text{ MIN.}$$

$$Q_z = 3.32 \times 0.5 \times 4.06 = 6.7 \text{ cfs}$$

$$Q_{100} = 3.32 \times 0.5 \times 8.98 = 14.9 \text{ cfs}$$

CARRY  $Q_{100}$  IN STORM SEWER

$$DA \# 3 \quad 1.26 \text{ AC} \quad T_c = 15 \text{ MIN}$$

$$Q_z = 1.26 \times 0.5 \times 4.06 = 2.6 \text{ cfs}$$

$$Q_{100} = 1.26 \times 0.5 \times 8.98 = 5.7 \text{ cfs}$$

OVERBROOK SECOND

DRAINAGE COMPUTATIONS

DRAINAGE AREA	CURB INLET INTERCEPTING DRAINAGE AREA	ACCUM. AREA	C			T <sub>c</sub>	i <sub>2</sub>	i <sub>100</sub>	Q <sub>2</sub>	Q <sub>100</sub>	PIPE	
			C	C	(Ave)						SIZE	SLOPE
3 E	3.46	0.45	0.45	0.47	31	2.82	6.62	4.39	10.31			
4 E	0.68	0.6	0.6		15	4.06	8.98	1.66	3.66			
2 E	2.18	0.6	0.6	0.47	31	2.82	6.62	5.49	12.88	18"	0.32%	
5 E	0.55	0.6	0.6	0.60	31	2.82	6.62	3.68	8.66	15"	0.32%	
6 E	1.03	0.6	0.6	0.52	31	2.82	6.62	10.09	23.69	24"	0.22%	
7 E	2.17	0.45	0.45	0.6	33	2.68	6.30	1.66	3.89	15"	0.5%	
		10.07	0.51	0.51	33	2.68	6.30	13.84	32.55	24"	0.3%	
								13.84	32.55			
											DITCH TO POND 6' BOTTOM 4:1 S/S SLOPE = 0.1%	

RAINAGE AREA	CURB INLET INTERCEPTING DRAINAGE AREA	ACCUM. AREA	C			T <sub>c</sub>	i <sub>2</sub>	i <sub>100</sub>	Q <sub>2</sub>	Q <sub>100</sub>	PIPE	
			C	C	(Ave)						SIZE	SLOPE
1 S	2.02	0.45	0.45		19	3.70	8.19	3.4	7.4			
2 S	0.83	0.60	0.60		15	4.06	8.98	2.0	4.5			

OVERBROOK 2ND ADDN.

DRAINAGE PLAN 10-4-79

DA # 1

135 x 465 =	62775
(390 + 325) ÷ 2 x 100 =	35750
245 x 63 =	15435
100 x 80 ÷ 2 =	4000
250 + 130 ÷ 2 x 125 =	<u>23750</u>

141710 ÷ 43560 = 3.25 AC

L = 550' = 0.10 mi. F = 36 - 28 = 8'

T<sub>c</sub> = ( (11.9 x 0.10<sup>3</sup>) / 8 )<sup>0.385</sup> = .08 HRS = 4.9 MIN. USE 15 MIN.

Try T<sub>c</sub> = ( 1.8 (1.1 - C) √L ) / √S

S = (B / 550) x 100 = 1.45%

T<sub>c</sub> = ( 1.8 (1.1 - .5) √550 ) / √1.45 = ~~22.4 MIN.~~ 21 MIN.

i<sub>2</sub> = 4.06 i<sub>100</sub> = 8.98

Q<sub>2</sub> = 3.25 x 0.5 x 4.06 = 6.6 cfs

Q<sub>100</sub> = 3.25 x 0.5 x 8.98 = 14.6 cfs

USE 18" RCP @ 0.45% Q = 7 cfs V = 4.0 FPS

REMAINING 8 cfs FOR Q<sub>100</sub> TO BE CARRIED IN SWALE

DA #2

$$210 \times 375 - 80 \times 75 \div 2 = 75750 \div 43560 = 1.74 \text{ Ac}$$

$$T_c = 15 \text{ min} \quad \bar{v}_c = 4.06 \quad i_{100} = 8.98$$

$$Q_2 = 1.74 \times 0.5 \times 4.06 = 3.5 \text{ cfs}$$

$$Q_{100} = 1.74 \times 0.5 \times 8.98 = 7.8 \text{ cfs}$$

DA #3

$$80 \times 75 \div 2 = 3000$$

$$205 + 135 \div 2 \times 225 = 36250$$

$$235 \div 2 \times 80 = 9400$$

$$325 \times 75 \div 2 = 12187.5$$

$$335 \times 80 \div 2 = 13400$$

$$260 \times 45 \div 2 = 5950$$

$$190 \times 36 \div 2 = 3420$$

$$65507.5 \div 43560 = 1.96 \text{ Ac}$$



$$Q_2 = 1.96 \times 0.5 \times 4.06 = 4.0 \text{ cfs}$$

$$Q_{100} = 1.96 \times 0.5 \times 8.98 = 8.8 \text{ cfs}$$

DA #4

$$125 \times 58 \div 2 = 3625$$

$$240 \times 225 \div 2 = 31500$$

$$190 \times 118 \div 2 = 11210$$

$$46335 \div 43560 = 1.06 \text{ Ac}$$

$$Q_2 = 1.06 \times 0.5 \times 4.06 = 2.15 \text{ ctg}$$

$$Q_{100} = 1.06 \times 0.5 \times 8.98 = 4.76 \text{ ctg}$$

DA # 5

$175 \times 90 \div 2 =$	7875
$150 \times 70 \div 2 =$	5250
$170 + 205 \div 2 \times 202 =$	37675
$98 \times 10 \div 2 =$	290

$$51290 \div 43560 = 1.18 \text{ Ac}$$

$$Q_2 = 1.18 \times 0.5 \times 4.06 = 2.40 \text{ ctg}$$

$$Q_{100} = 1.18 \times 0.5 \times 8.98 = 5.30 \text{ ctg}$$

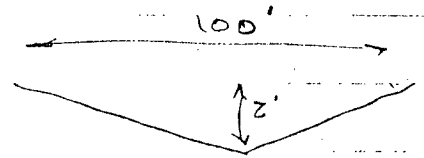
1-24-78

OVERBROOK ADDN. DRAINAGE THRU RESERVE A

D.A. = 186 AC.    L = 8850    F = 1382 - 1314 = 68'

$$T_c = \left( \frac{11.9 \times 1.64^3}{68} \right)^{0.345} = 0.93 \text{ HRS} = 56 \text{ MIN.} \quad i_w = 3.7$$

Q = 186 x 0.5 x 3.7 = 344 cfs



CROSS SECTION AT LATEST POINT

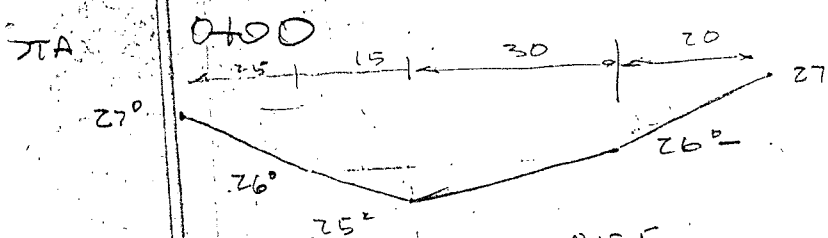
Q = 100 S.F.    R = 1    1328 - 1314 = 14    L = 1750 W RESERVE

$$S = \frac{14}{1750} = .008 \text{ FT/FT}$$

$$Q = 100 \frac{1.486}{.030} \left( .008 \right)^{2/3} = 443 \text{ cfs}$$

USE 100' WIDE FLOODWAY THRU RESERVE A WITH EXISTING DRAINAGE  $\phi$  AS  $\phi$  OF FLOODWAY

OVERBROOK ZND  
 DRAINAGE THRU RESERVE A  
 $Q_{100} = 344 \text{ cfs}$

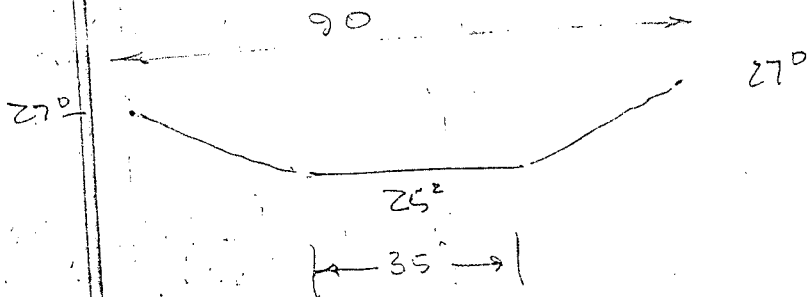


Ave. Slope STA 0+00 TO 3+35  
 .006

$Q = 85.5$       $R = \frac{85.5}{90} = .95$       $S = .006$

$Q = 85.5 \cdot \frac{1.486}{.035} \cdot .95^{2/3} \cdot .006^{1/2} = 271.7 \text{ cfs}$

CHANGE EXIST X-SEC.



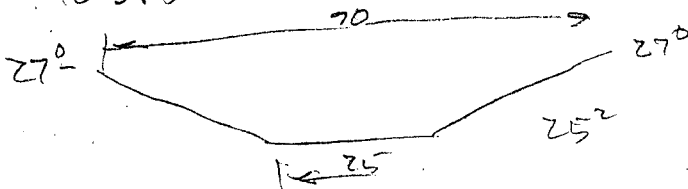
$Q = 112.5$       $R = \frac{112.5}{90} = 1.25$

$Q = 112.5 \cdot \frac{1.486}{.035} \cdot 1.25^{2/3} \cdot .006^{1/2} = 429.3 \text{ cfs}$

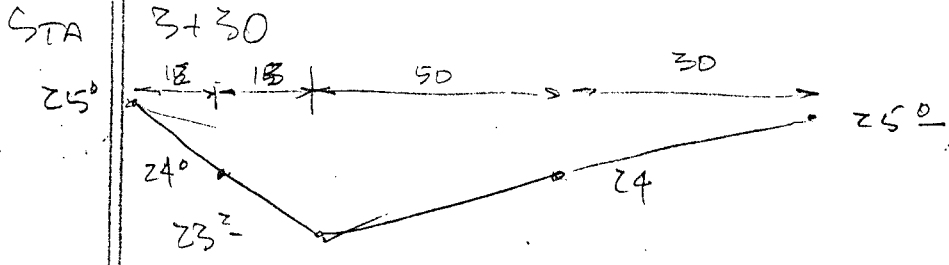
Try 25 BOT.

$Q = 103.5$       $R = \frac{103.5}{90} = 1.15$

$Q = 103.5 \cdot \frac{1.486}{.035} \cdot 1.15^{2/3} \cdot .006^{1/2} = 373.6 \text{ cfs}$

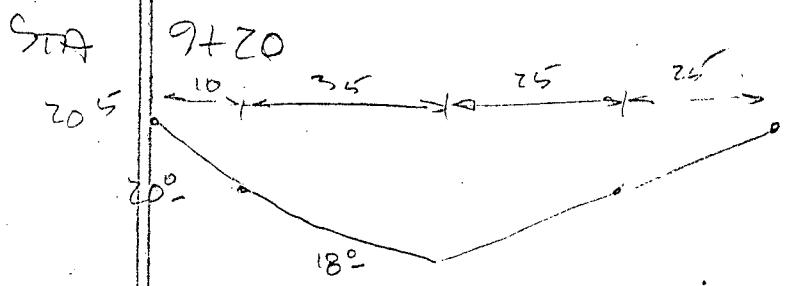


X-SEC OK  
 W.C. 1327.0



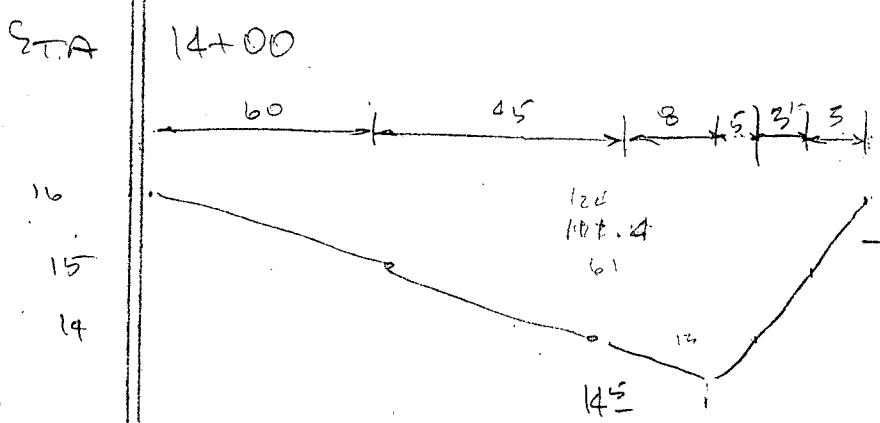
$a = 109.2$      $R = \frac{109.2}{105} = 1.04$      $\zeta = .006$

$Q = 109.2 \cdot \frac{1.446}{.035} \cdot 1.04^{2/3} \cdot .006^{1/2} = 368.6 \text{ cfs}$




$a = 98.8$      $R = \frac{98.8}{95} = 1$     AVE  $\zeta$  3+30 to 9+20 = .044

$Q = 98.8 \cdot \frac{1.446}{.035} \cdot 1^{2/3} \cdot .044^{1/2} = 393.5 \text{ cfs}$



$\zeta = .0073$

$a = 109$      $R = \frac{109}{111} = .98$      $Q = 109 \cdot \frac{1.446}{.035} \cdot .98^{2/3} \cdot .0073^{1/2} = 308.4 \text{ cfs}$

 **John G. York & Associates.**

architect

patrick d. huff · design job captain  
loyd d. wicker · production tracking

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**crestview country club estates**  
**OVERBROOK addition sketches**  
**for TOMLINSON OIL CO.**

GENERAL SKETCH PLAT LAYOUTS AND SPECIFICATIONS

FOR

OVERBROOK II ADDITION TO SEDGWICK COUNTY KANSAS

OWNERS:

Tomlinson Oil Co.

Wichita, Kansas

ARCHITECTS/ PLANNERS:

Ted Mason and Assocsts.

Wichita, Kansas

John G. York and Assocsts.

Norman, Oklahoma

Patrick D. Huff

Design Job Captain

Floyd D. Wicker

Production Tracking

Jack E. Leaver

Design Research

Rolan Monigold

Project Inspection

Ben Wallace

Engineering Consultant

Dallas, Texas

Robert Wagnon

Interior Design

Omaha, Nebraska

William F. Kalhorn

Consulting Structural

Engineer/ Special

Projects

Colorado Springs, Colorado

David Jones

Landscape Design

## INTRODUCTION

In review of the sketches represented in schemes A thru G, it should be realized that the schemes are ordered in their sequential development. Differences in each scheme are directly attributable to variations in spacial clustering, unit configuration and proposed plat design area.

The initial studies, or sketches A thru E represent a progressive analysis process and a summative proposal for the development of that parcel of property know as lot 19, Block 3, of Overbrook Addition to Crestview Country Club Estates, Sedgwick County, Kansas, containing approximately 10.2 acres.

Upon the conclusion of the initial sketches dealing with lot 19, an additional study represented in sketches F and G, considered ramifications and proposed plat development of a parcel lying east of lot 19, situated between said lot and an existing floodway. This parcel may be more particularly described as that beginning at the Northeast corner of lot 19, Block 3, Crestview Country Club Estates, Overbrook Addition to Sedgwick County, Kansas; thence S 00° 54' 01" E along the east line of said Lot 19 400 feet; thence N 45° 18' 28" E 96.97 feet; thence N 00° 54' 01" W 333.17 feet to a point on the North line of the said Lot 19 extended East; thence S 88° 52' 12" W 70.00 feet to the point of beginning containing 0.59 acres more or less.

It should be noted that suggested development schemes E and G are, and shall continue to be subject to variation until either acceptance by the proper metro-planning authority for final platting. Variations shall also be recognized in individual planned units

as acoustic, solar, visual amenities, spacial privacy, etc. are intergal to the structures synthesis with site. (In order to achieve a full preliminary appreciation of the gross probable success or failure of the coordination between architecture and site, this group would propose the construction of a massing model study).

Plat variations are typically inherent in the platting process. The success or failure of the final product here will be directly associated to the degree of communication, consistency and coordination between governmental planning authority, owner, developer, architect, and planner.

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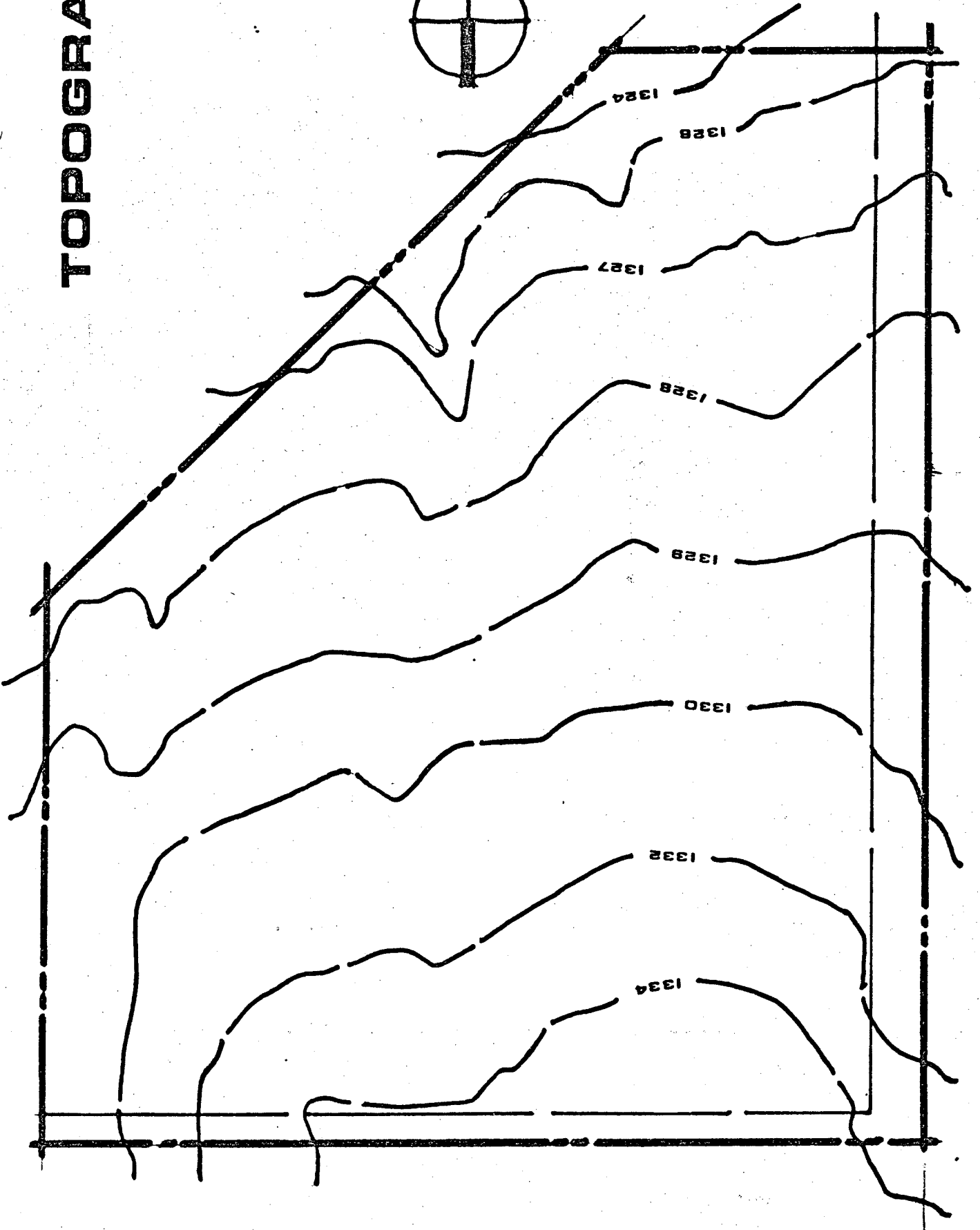
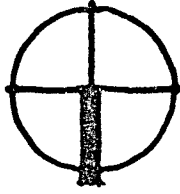
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19. SKETCH "G", upper cutoff preliminary w/ setbacks and sideyards.....	18.0

DESCRIPTION

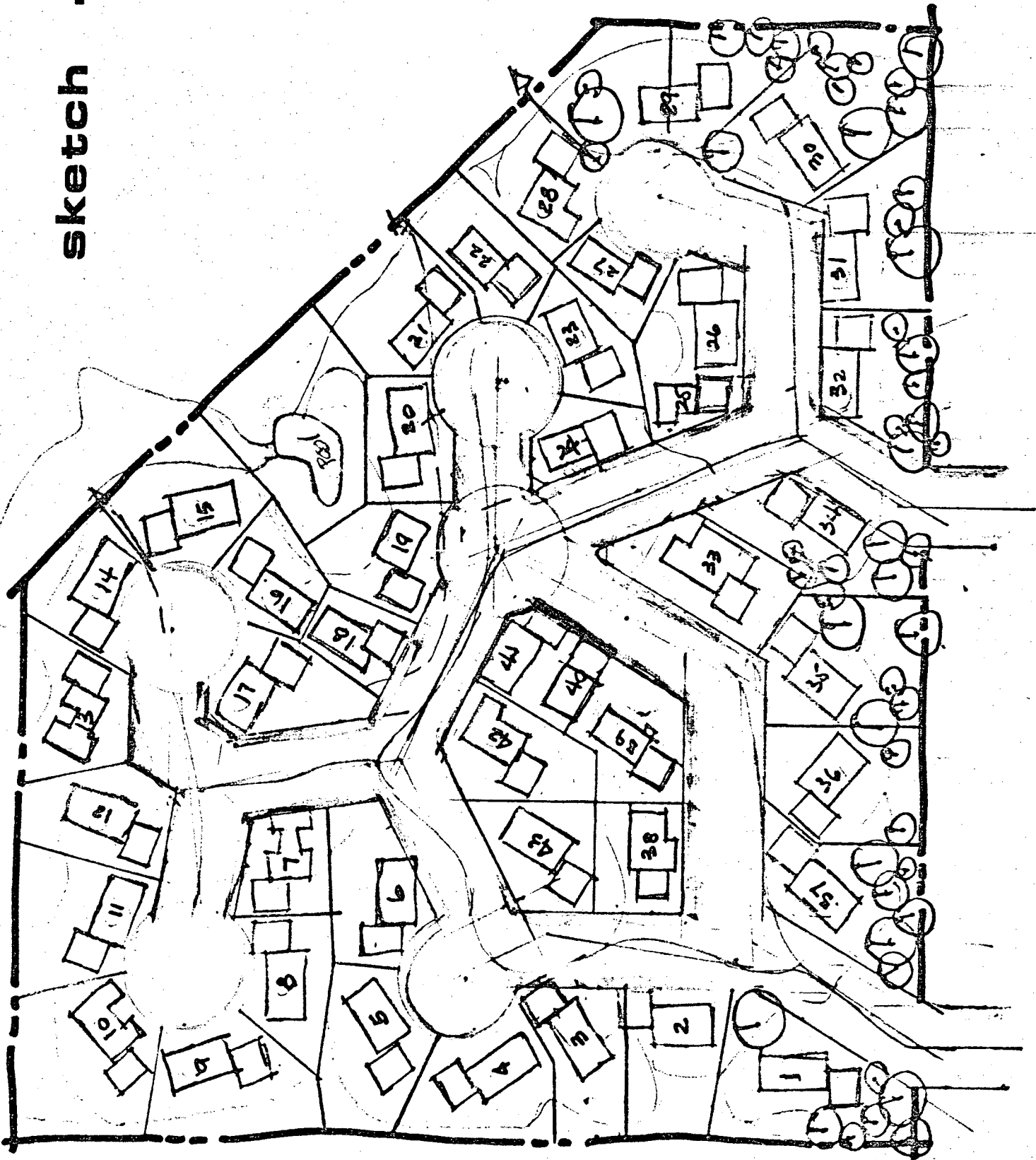
SHEET

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- 24. SKETCH "G", data sheet..... 23.0
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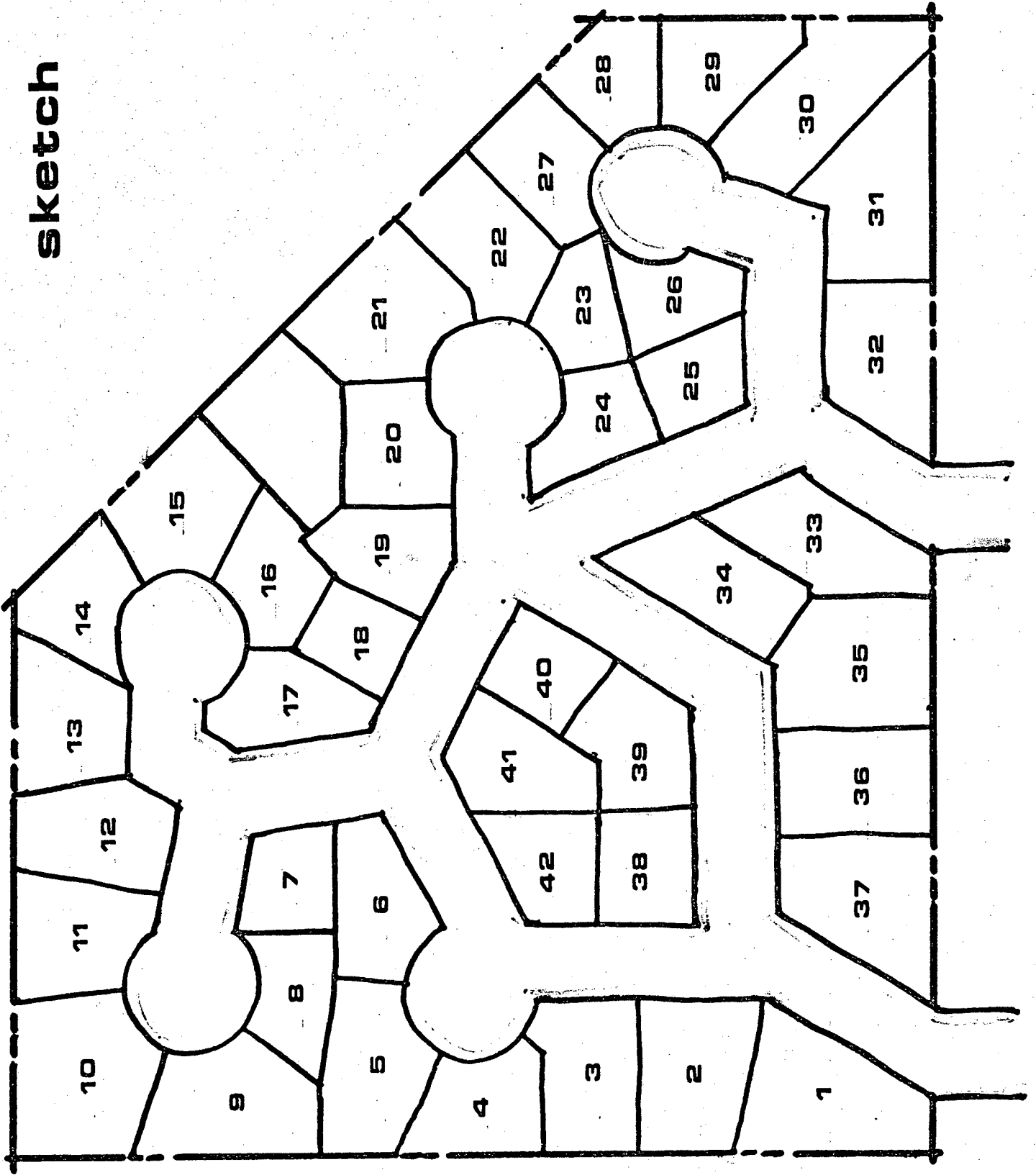
# TOPOGRAPHIC



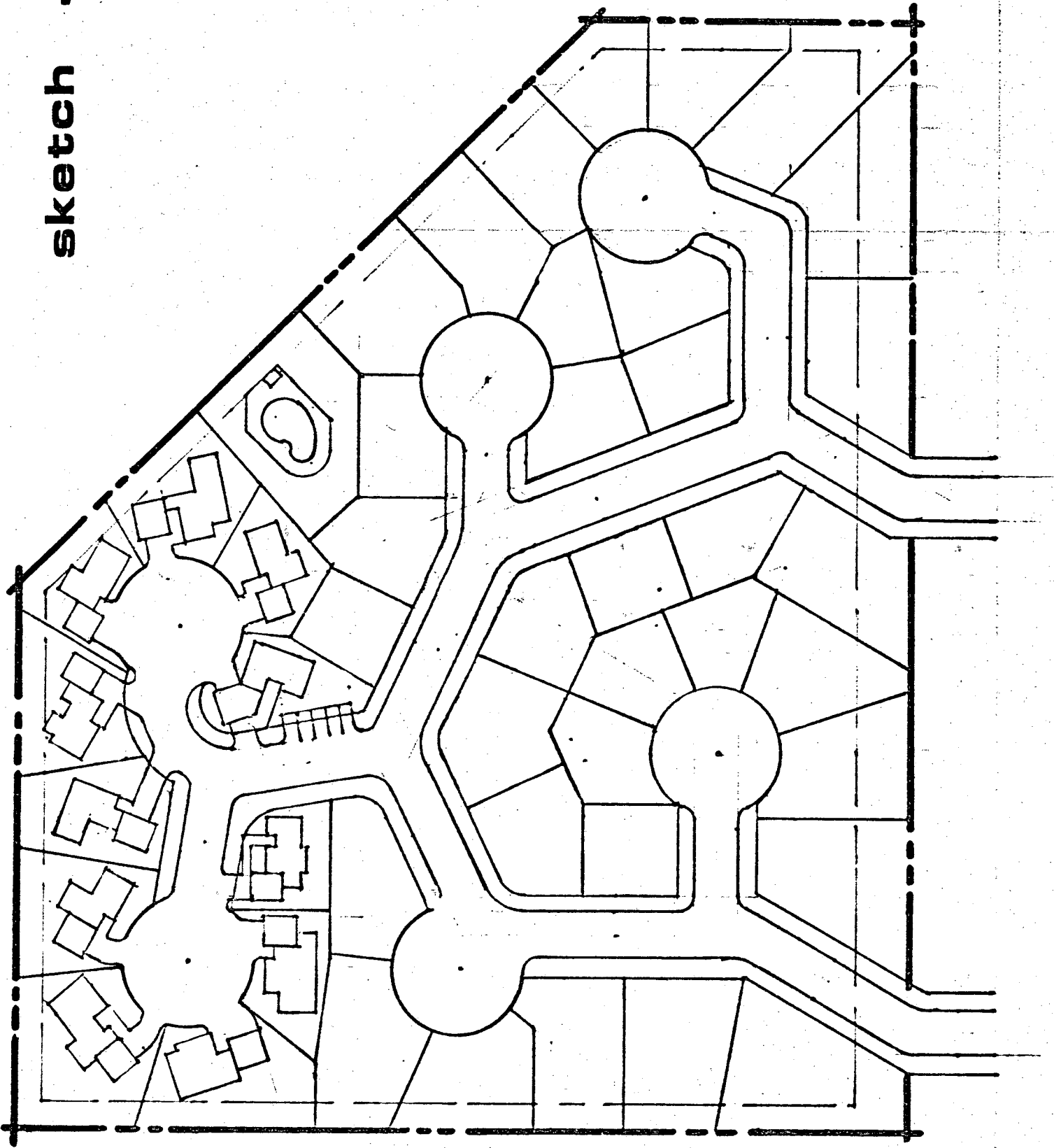
sketch .a.



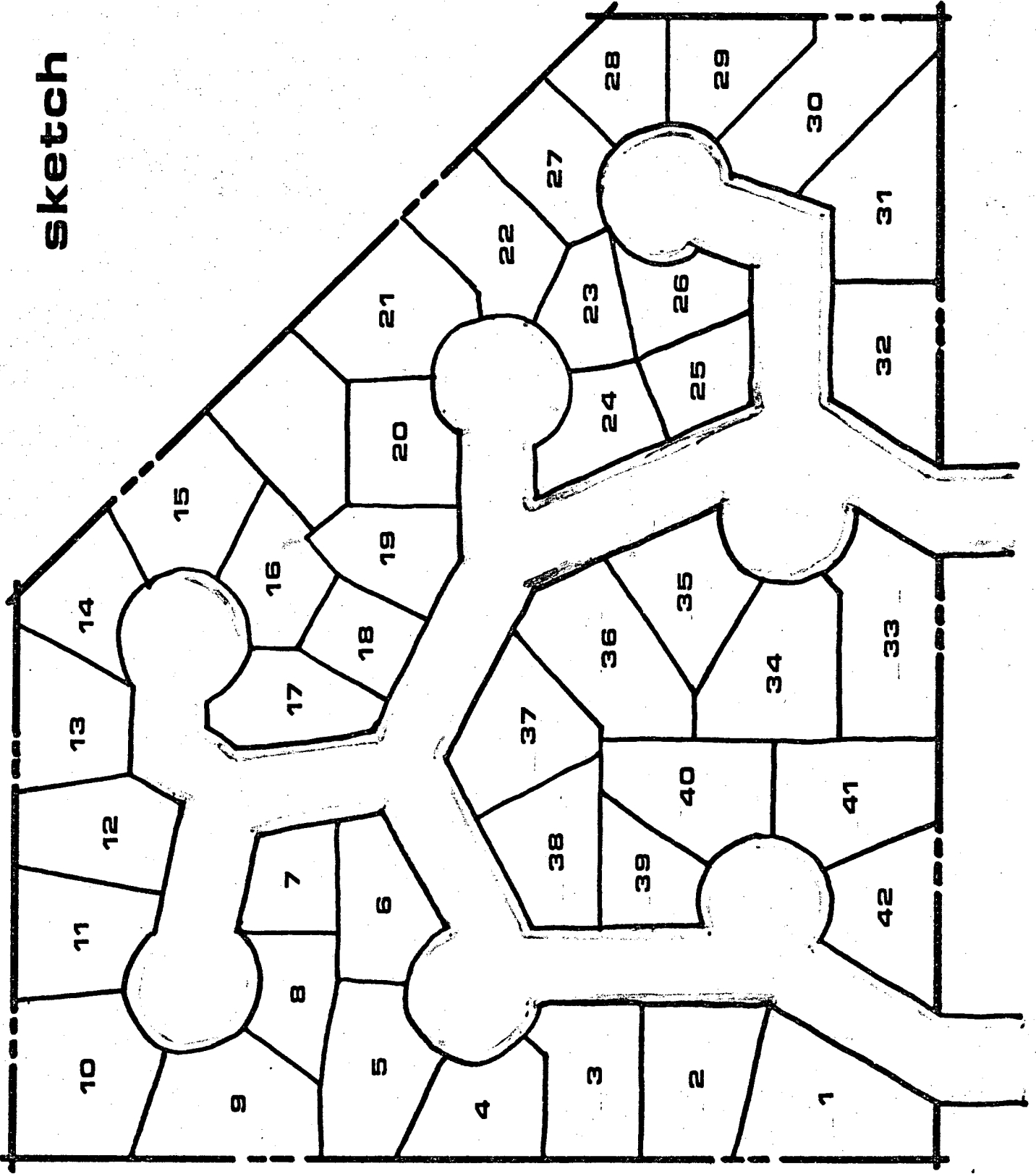
sketch .a.



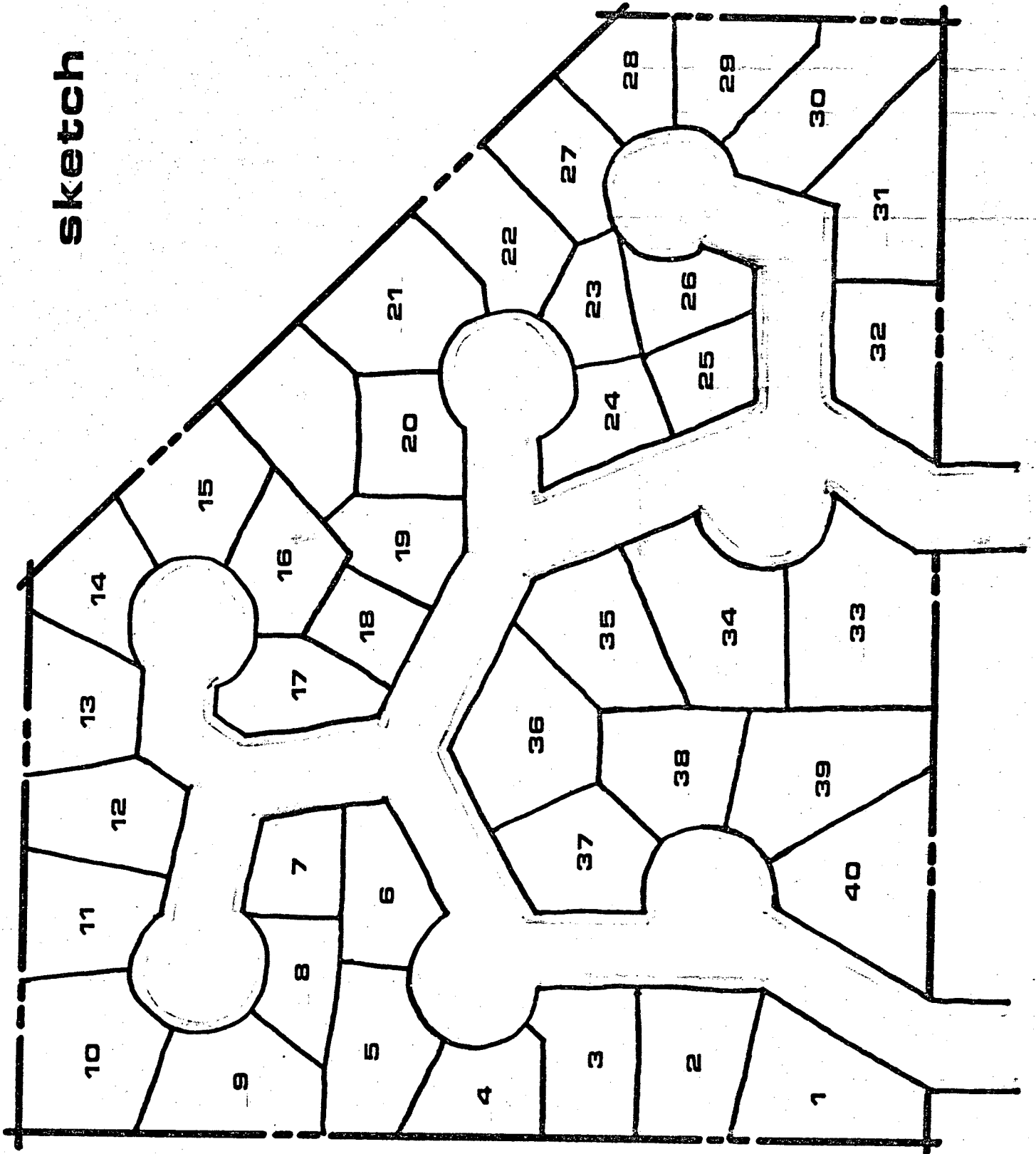
sketch .b.



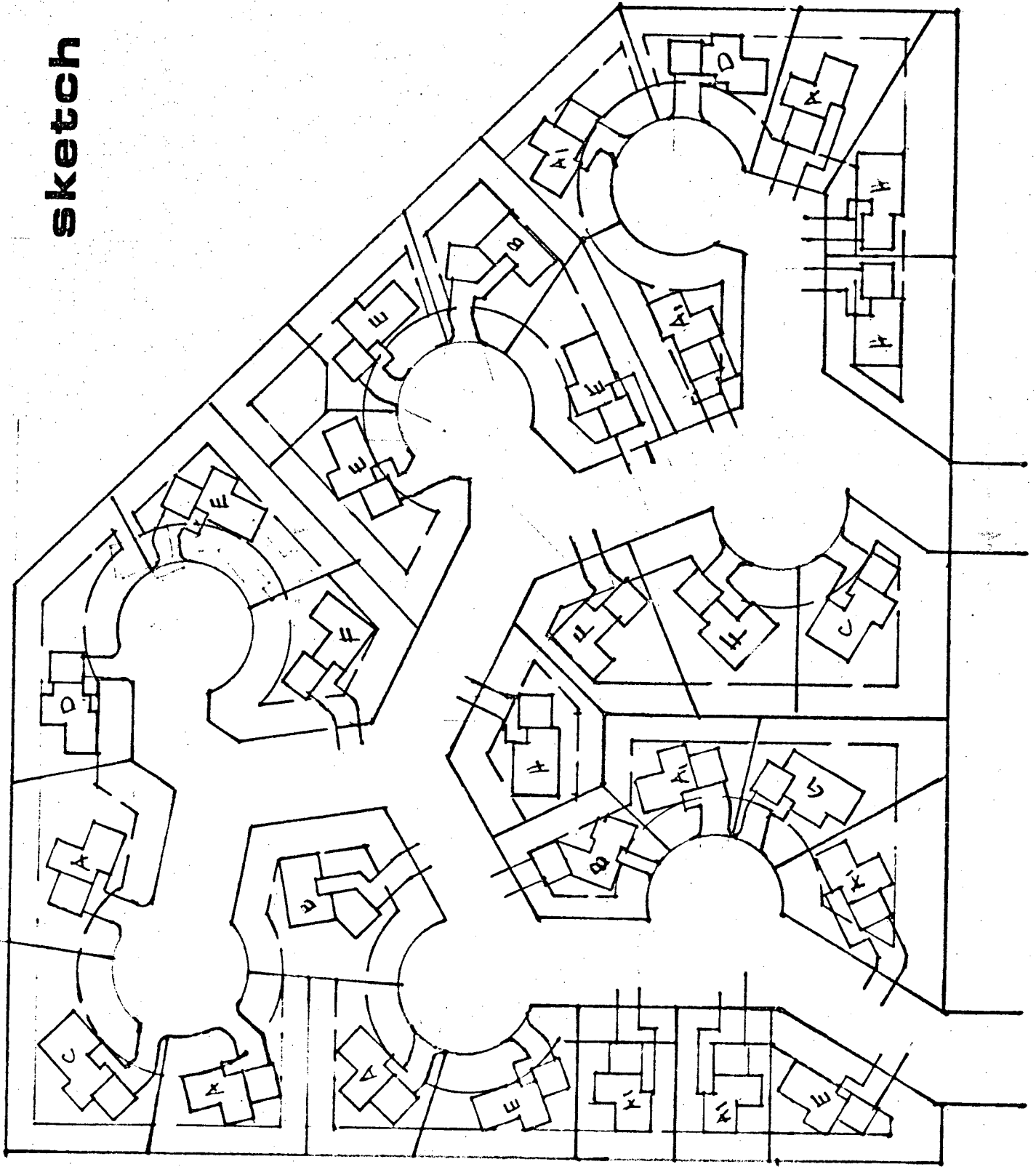
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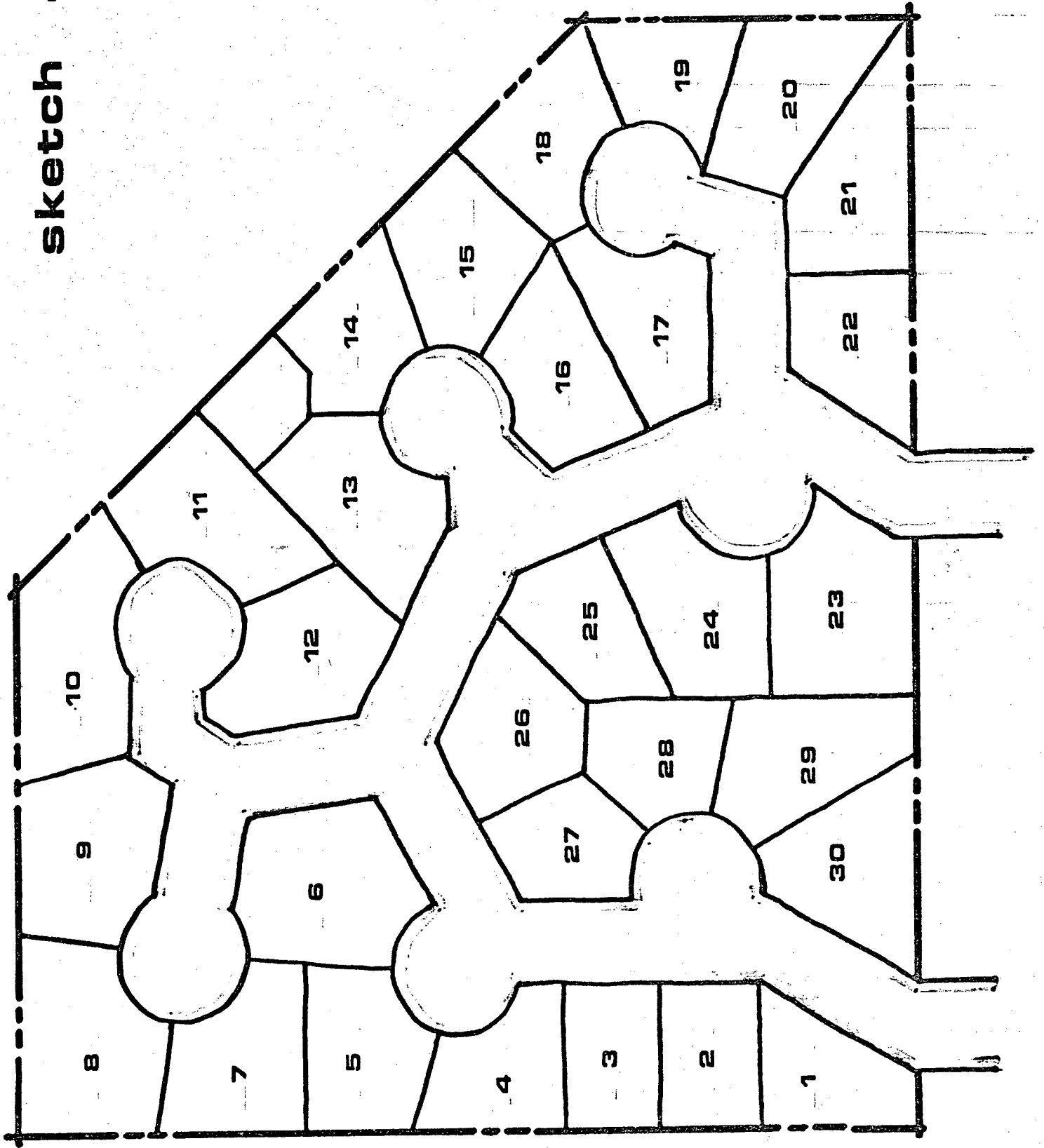
sketch .c.



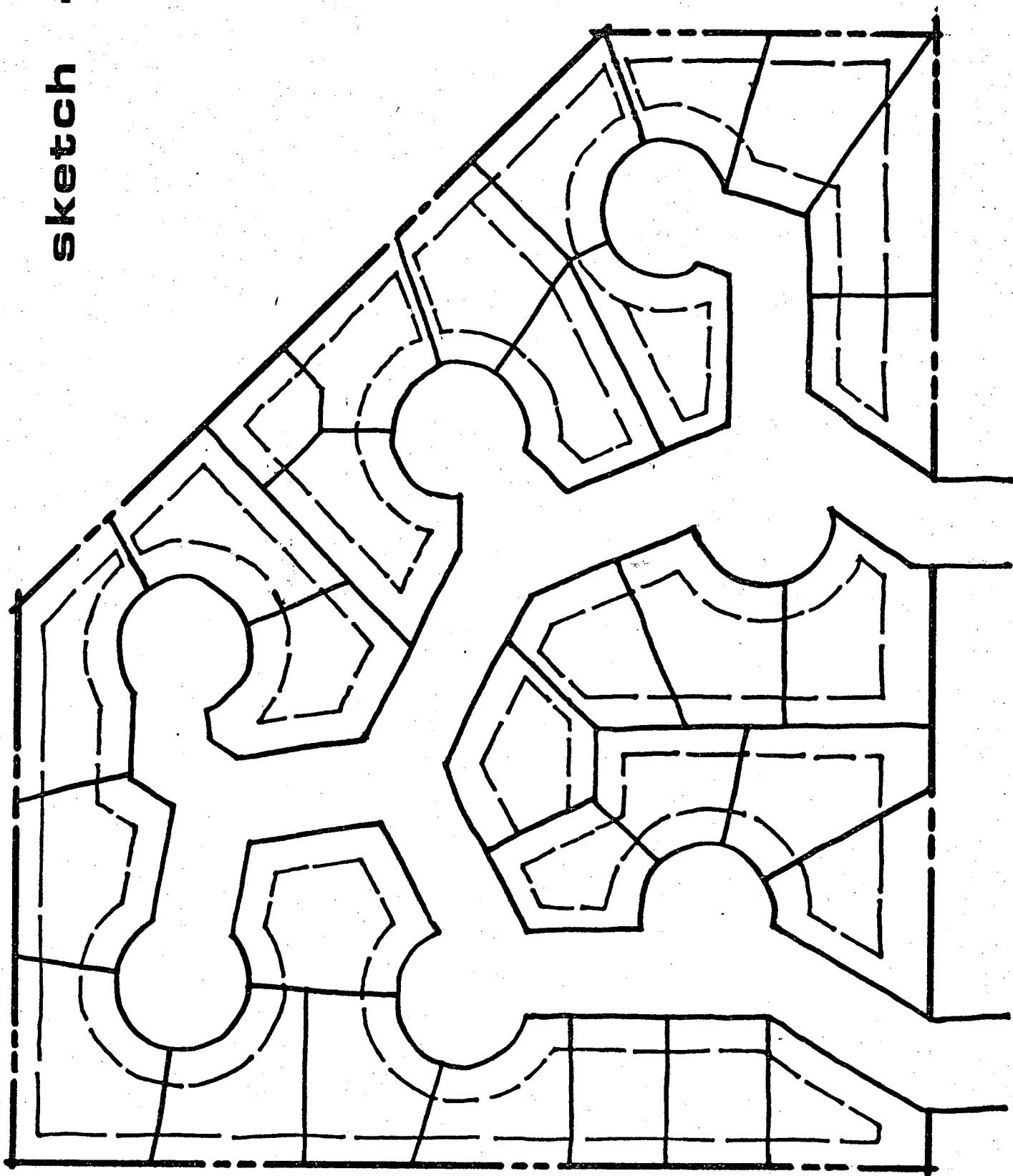
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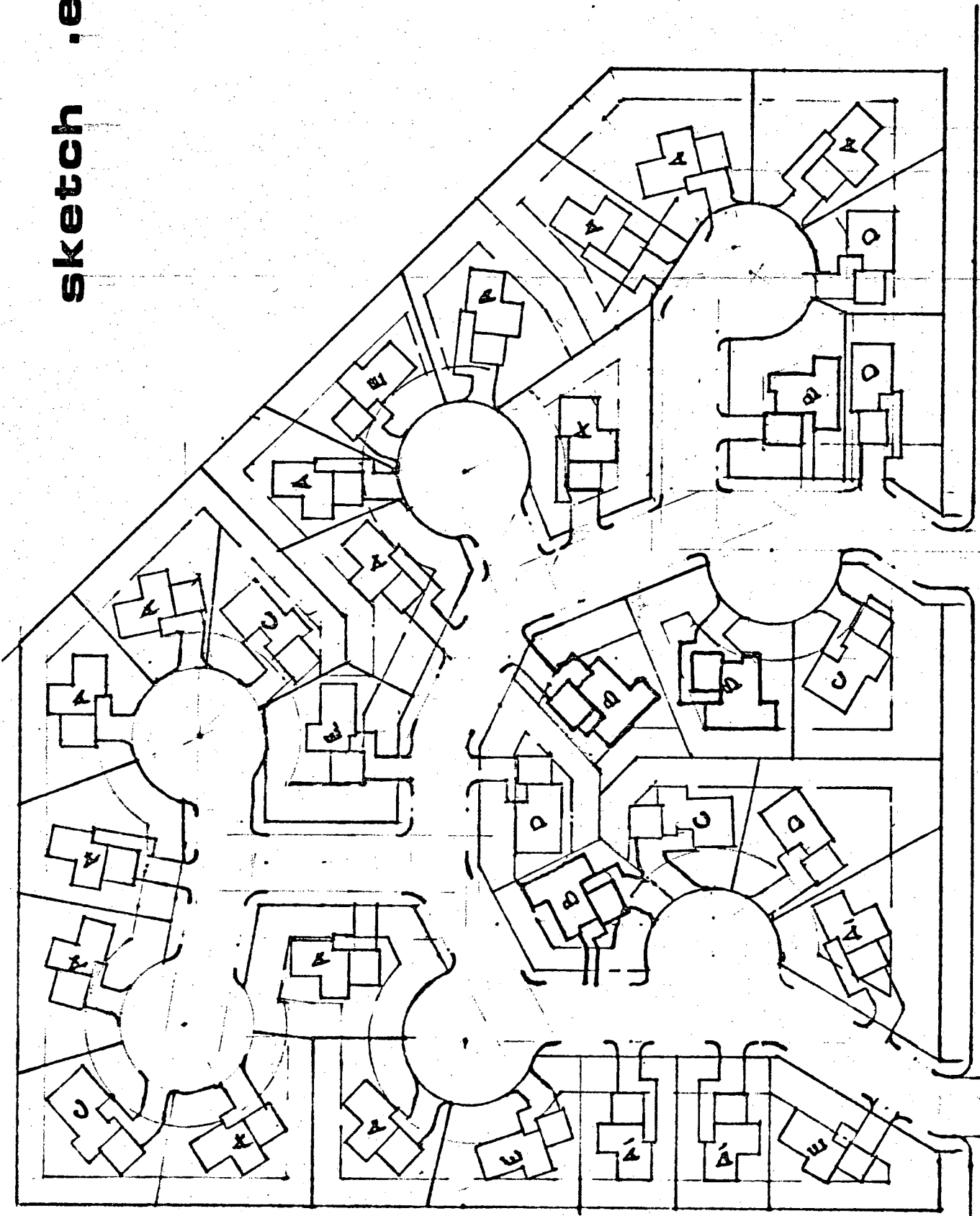
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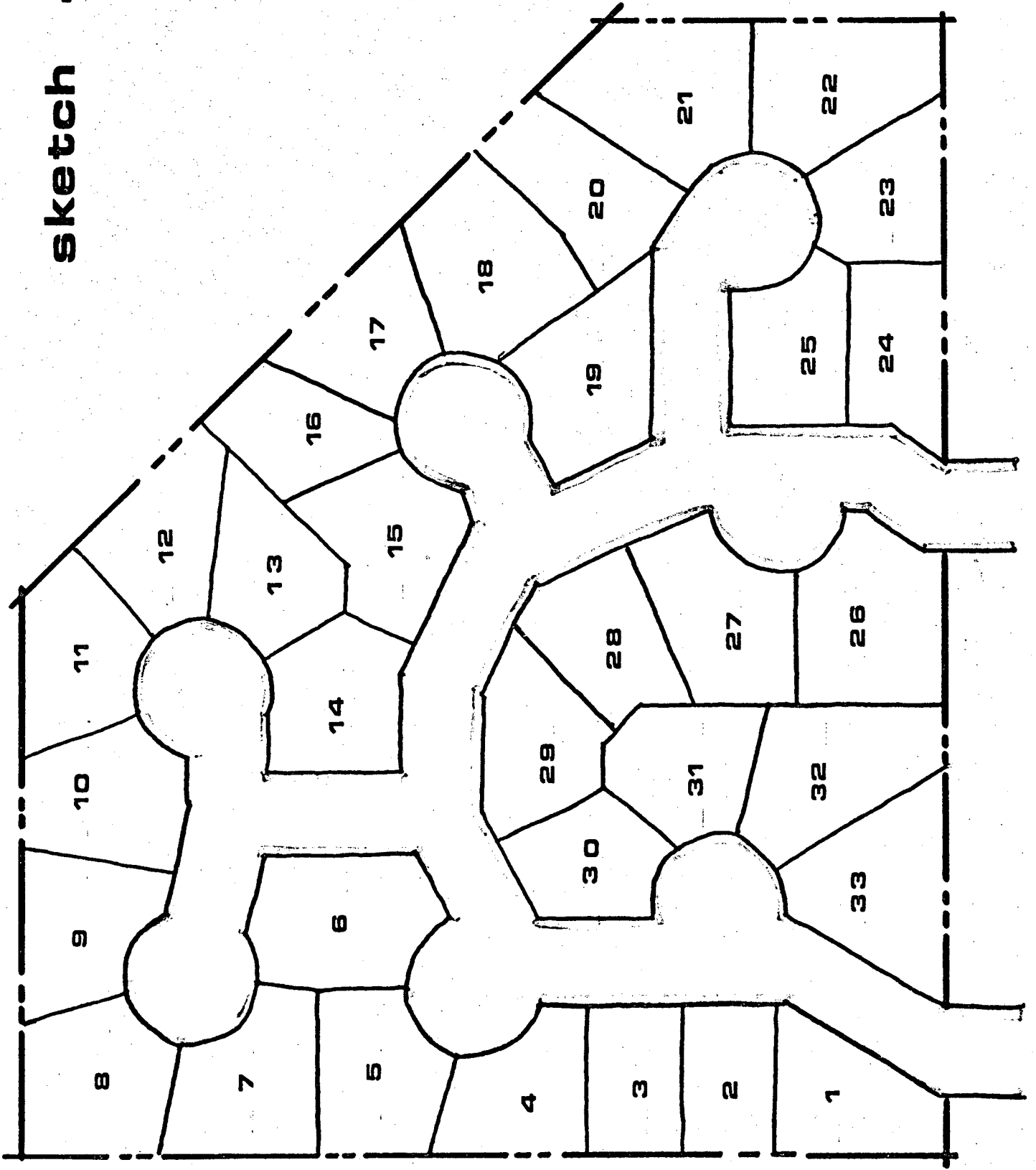
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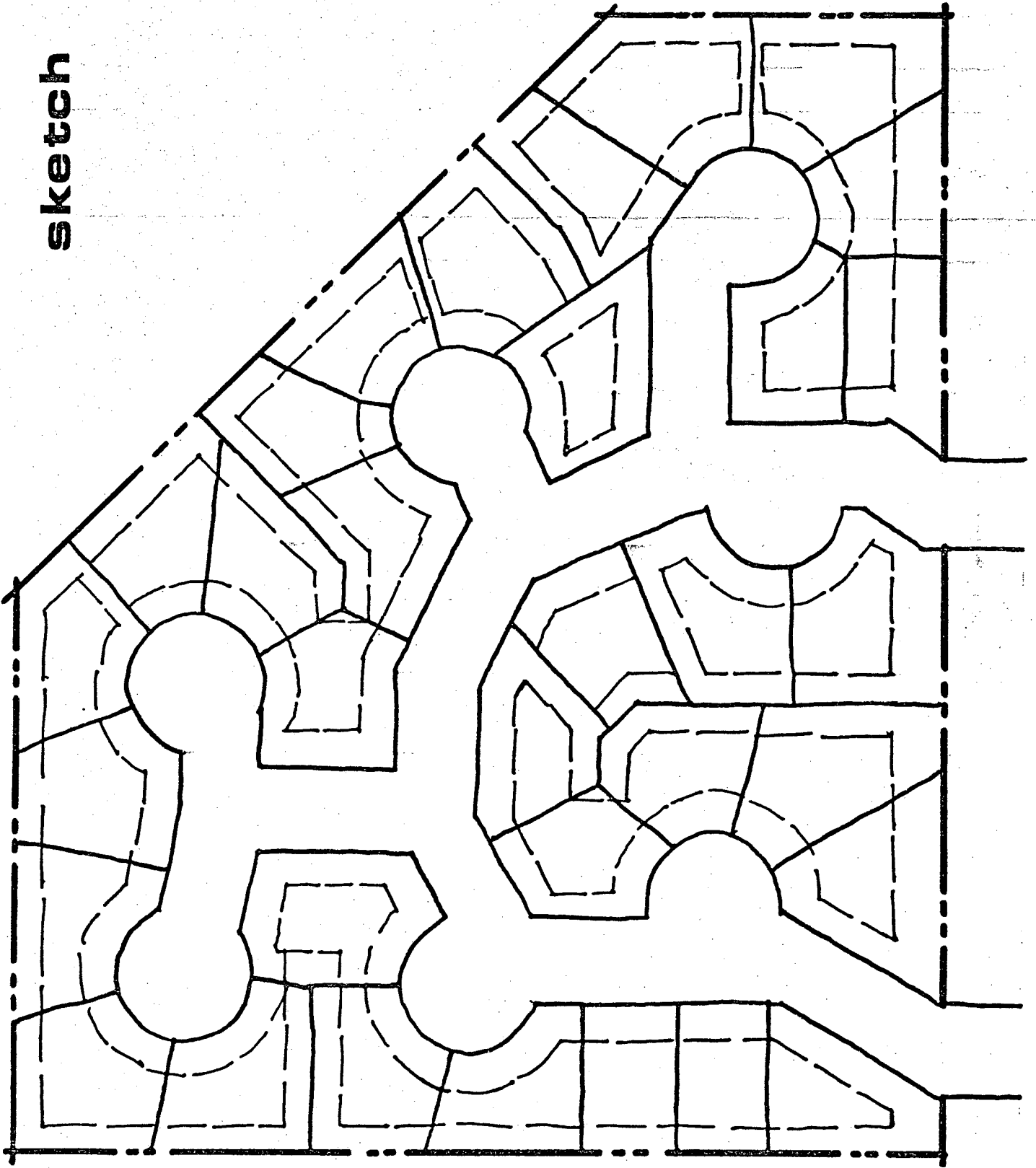
sketch .e.



sketch .e.

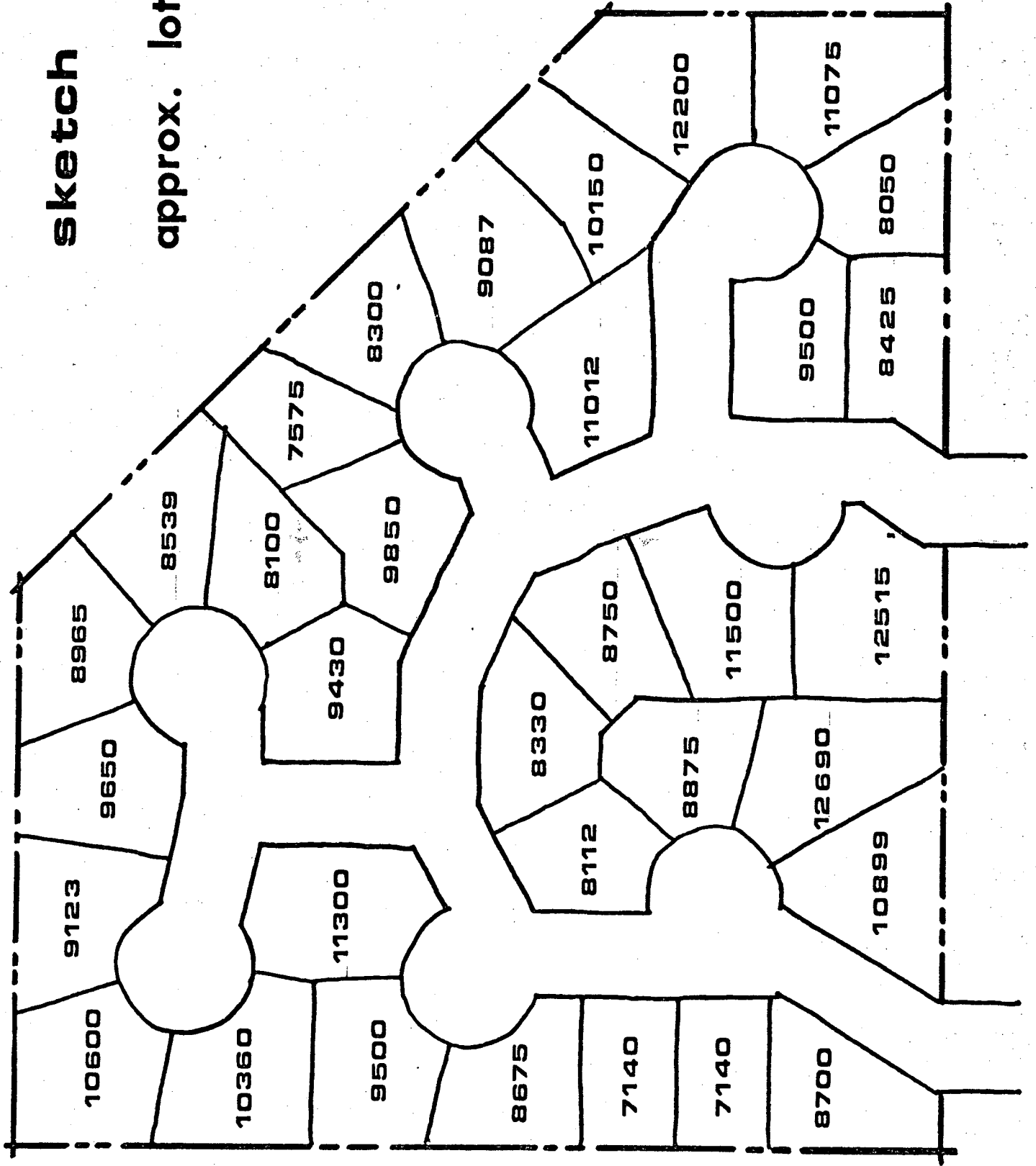


sketch .e.



sketch .e.

approx. lot areas



SKETCH "E" DATA SHEET

DESIGN SITE:

AREA 10.2 Acres  
ZONING SPECIFICATION AA, w/ preplanned units

PARKING per unit  
off-street type 5.0 P.u.

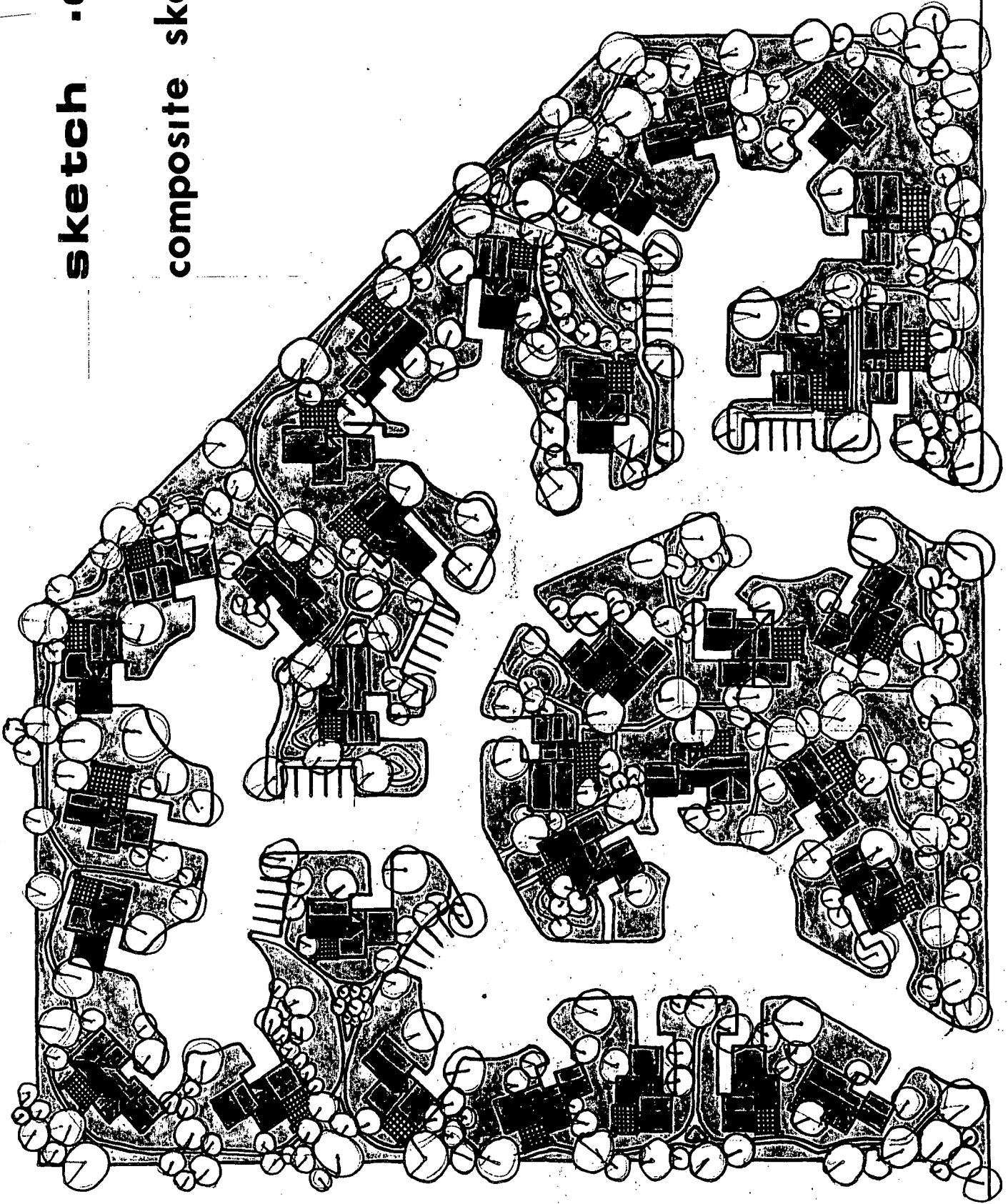
DESIGN UNIT AREAS:

UNIT A	ground floor	1225 sq. ft.
	upper floor	600 sq. ft.
UNIT B	ground floor	1750 sq. ft.
UNIT C	ground floor	1630 sq. ft.
UNIT D	ground floor	1530 sq. ft.
UNIT E	ground floor	1226 sq. ft.
	upper floor	594 sq. ft.

Note: See future development drawings  
for unit bedroom variations

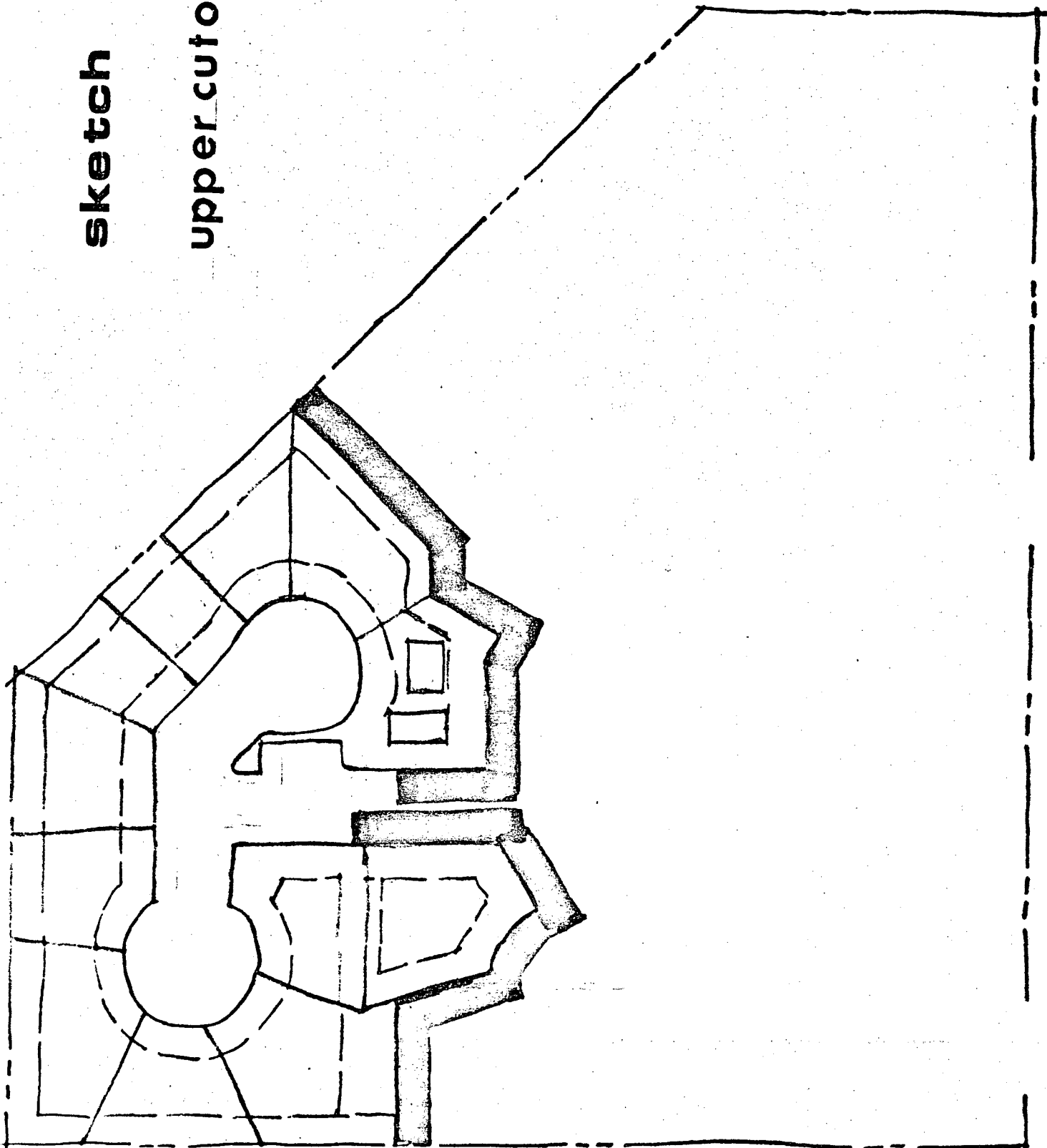
sketch .e.

composite sketch

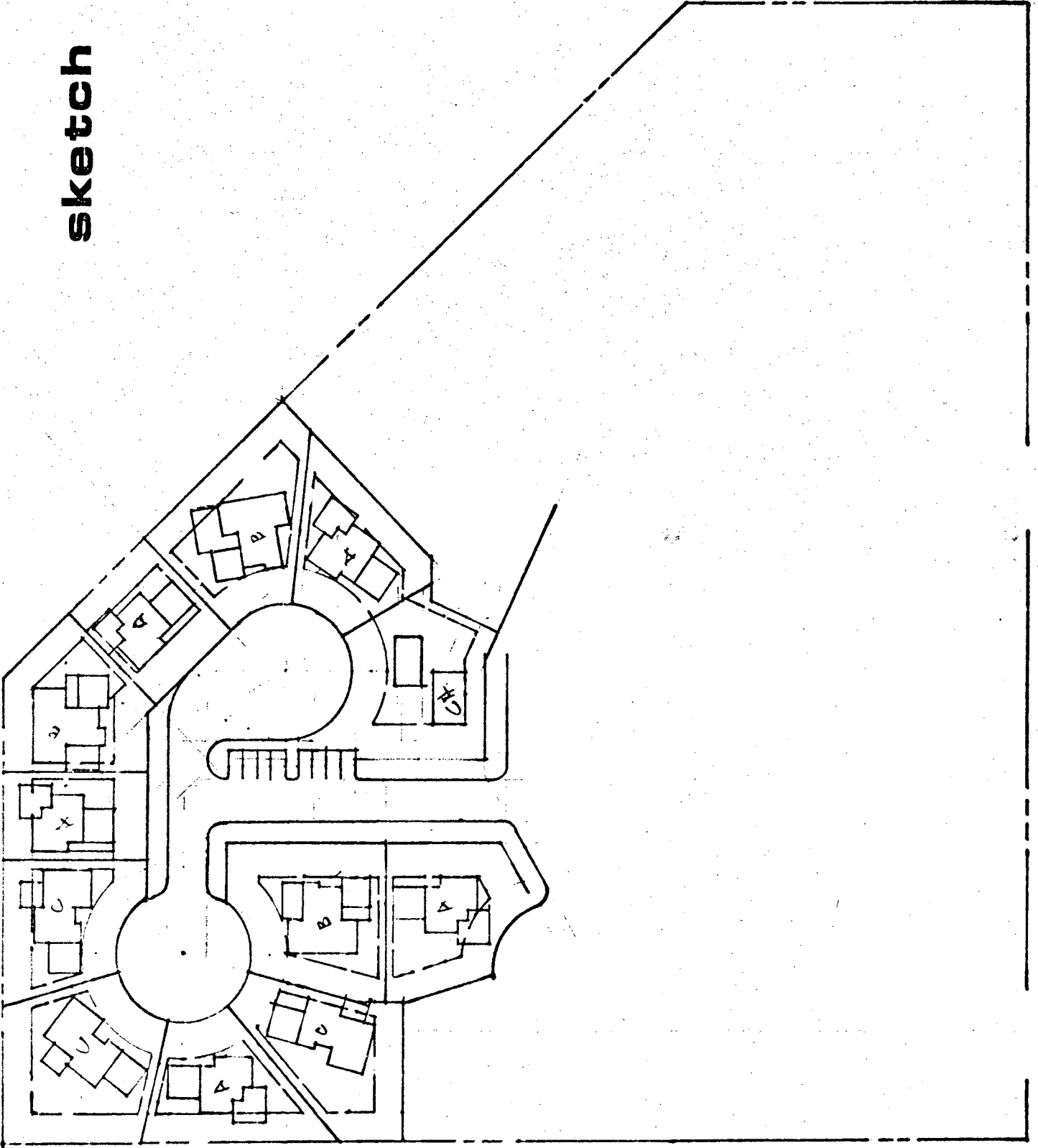


sketch . f.

upper cutoff

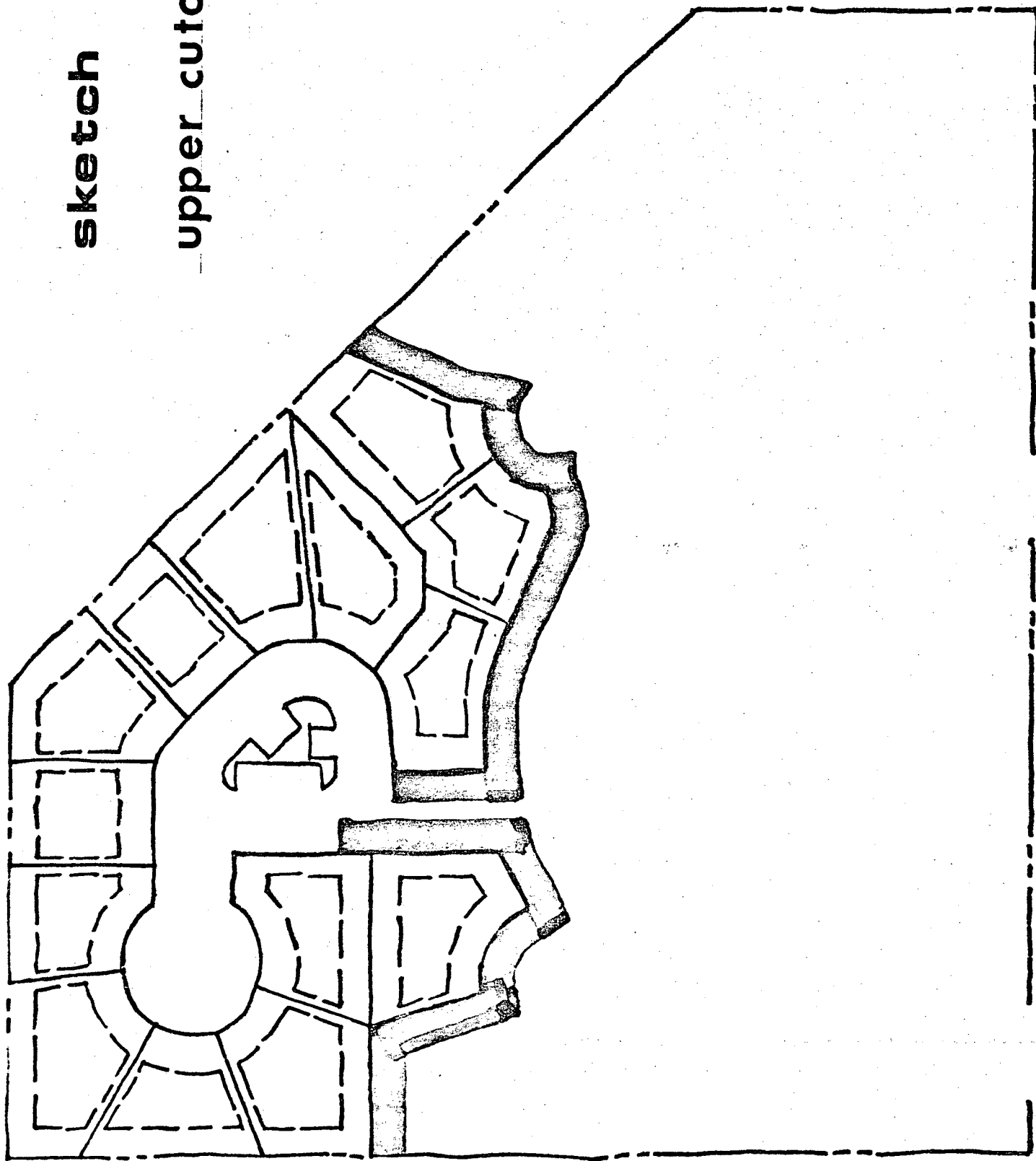


sketch . f .

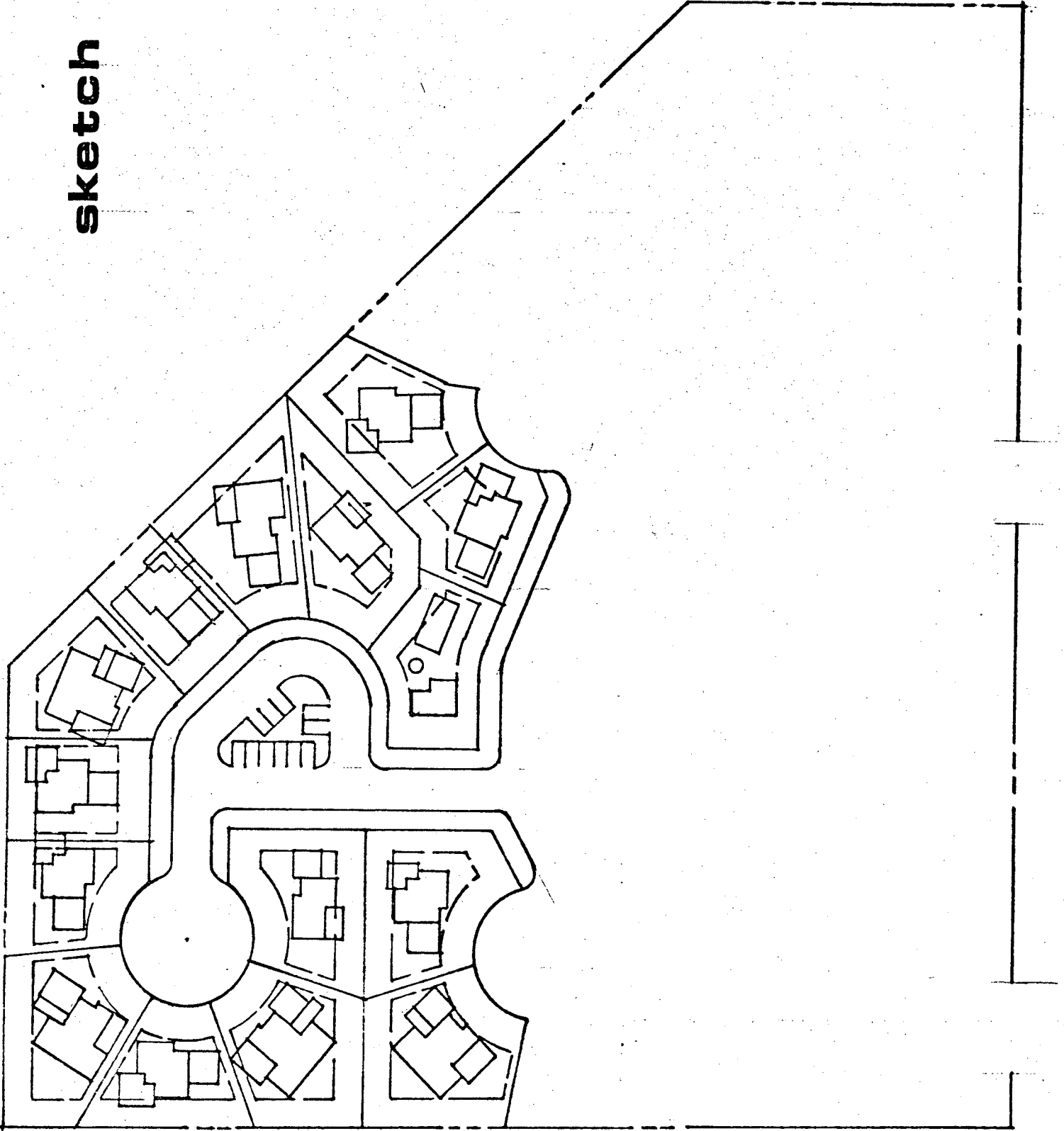


sketch .g.

upper cutoff

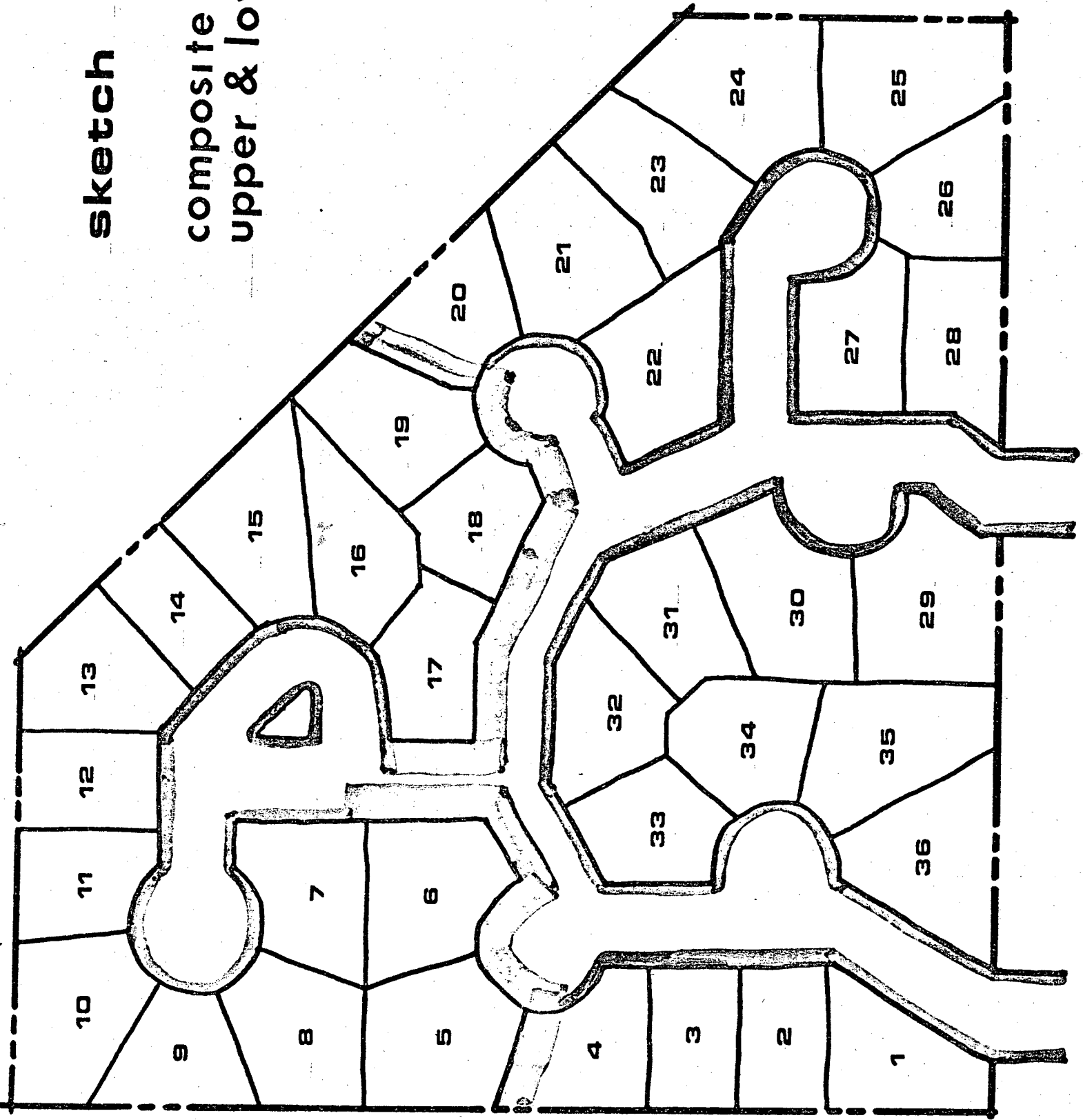


**sketch .9.**



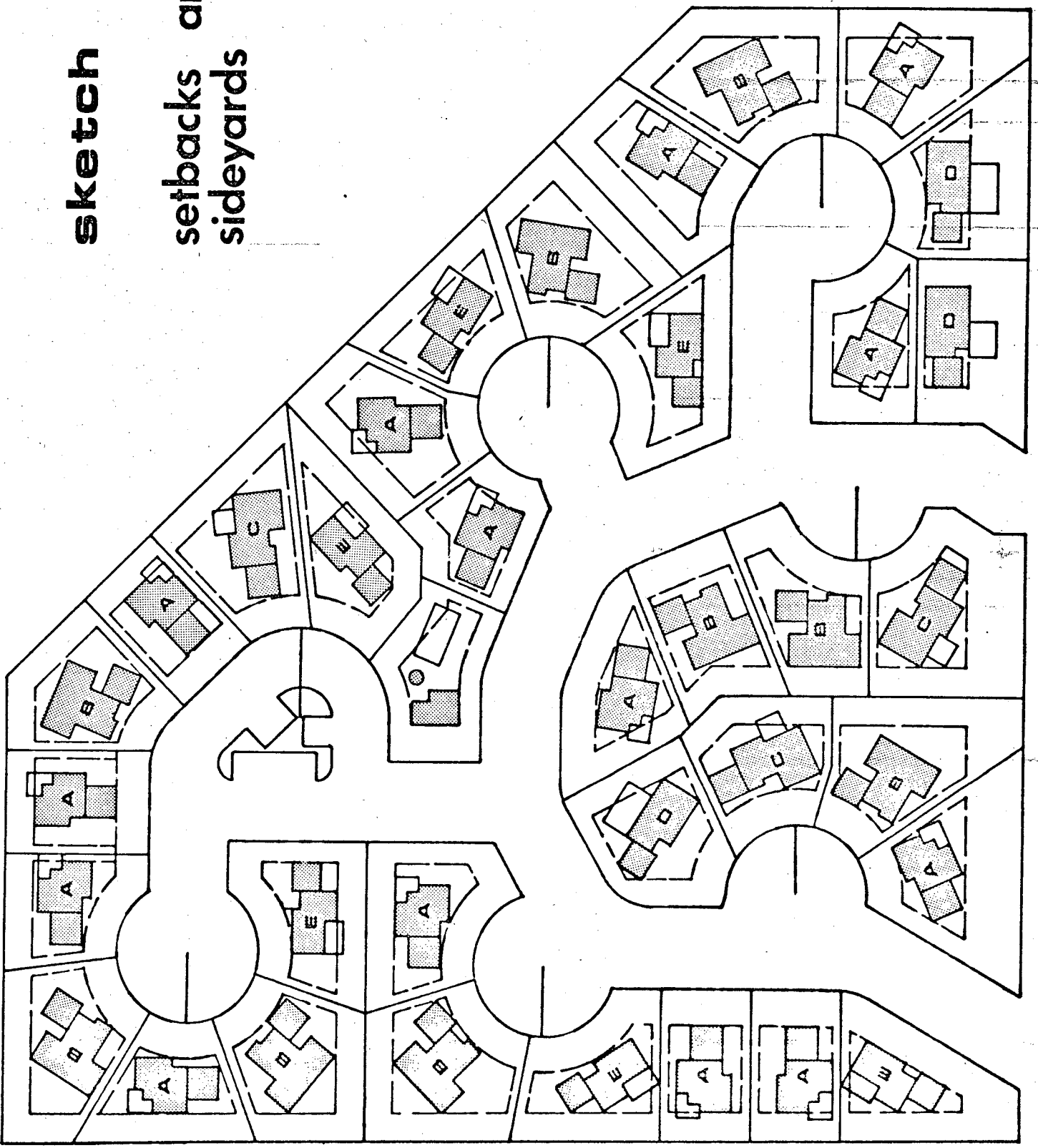
sketch .g.

composite  
upper & lower



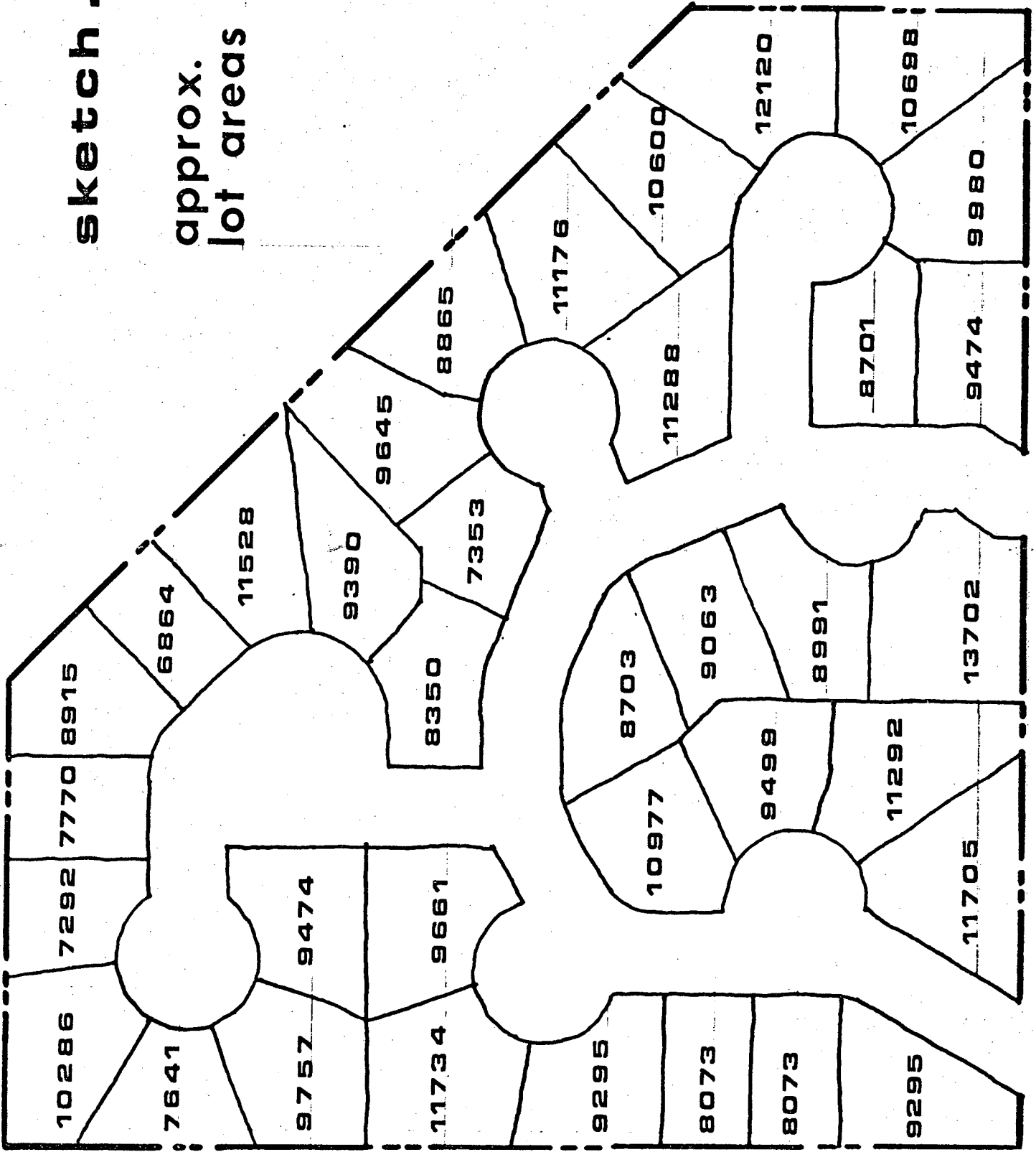
**sketch -g-**

**setbacks and  
sideyards**



# sketch .g.

approx.  
lot areas



SKETCH "G" DATA SHEET

DESIGN SITE:

AREA 10.79 Acres  
ZONING SPECIFICATION AA, w/ preplanned units

PARKING per unit 4.48 p.u.  
off-street type

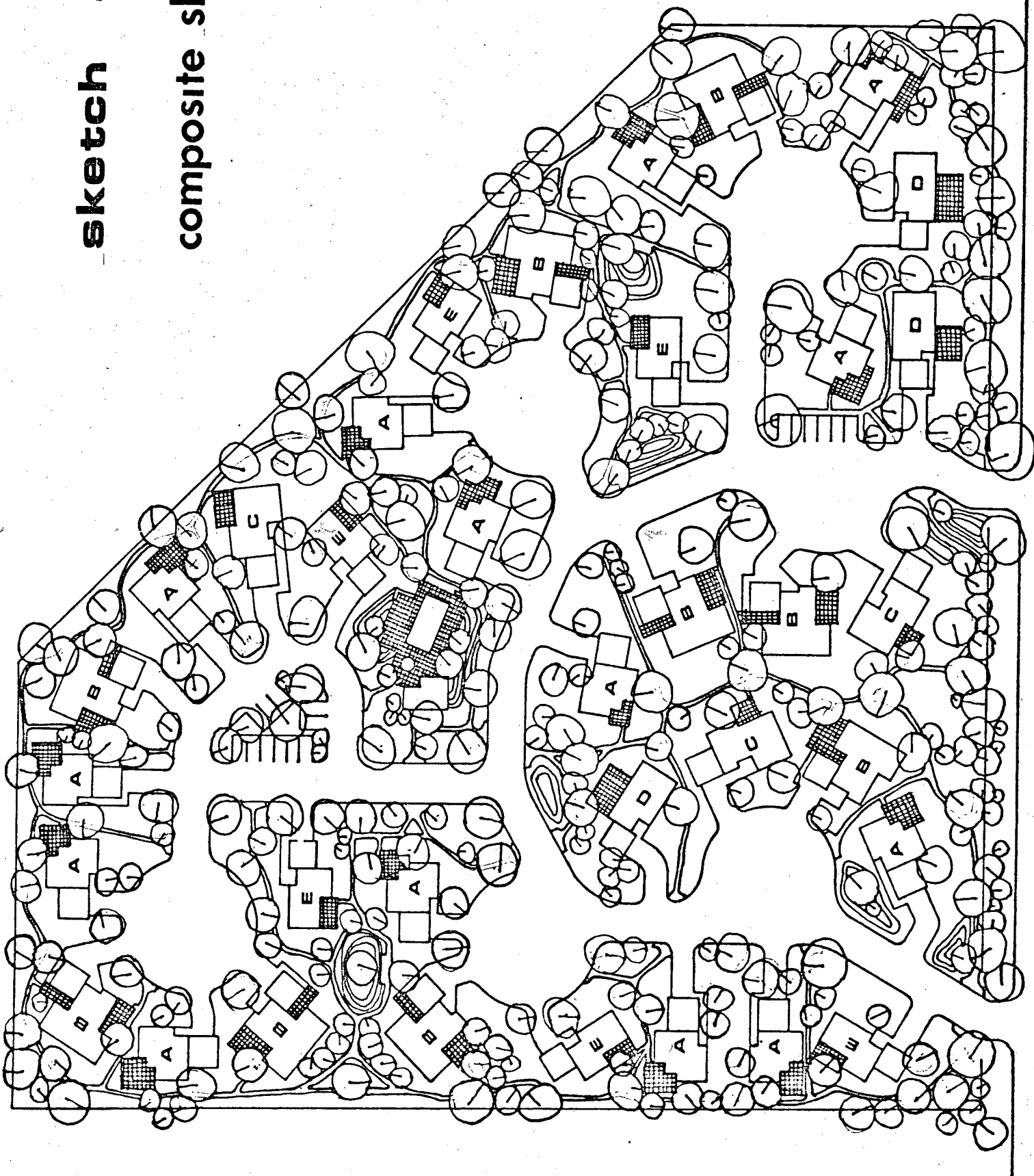
DESIGN UNIT AREAS:

UNIT A	ground floor	1114 sq. ft.
	upper floor	543 sq. ft.
UNIT B	ground floor	1828 sq. ft.
UNIT C	ground floor	1692 sq. ft.
UNIT D	ground floor	1540 sq. ft.
UNIT E	ground floor	1216 sq. ft.
	upper floor	594 sq. ft.

Note: See future development drawings  
for unit bedroom variations.

sketch -g-

composite sketch



sketch .g.

composite sketch

