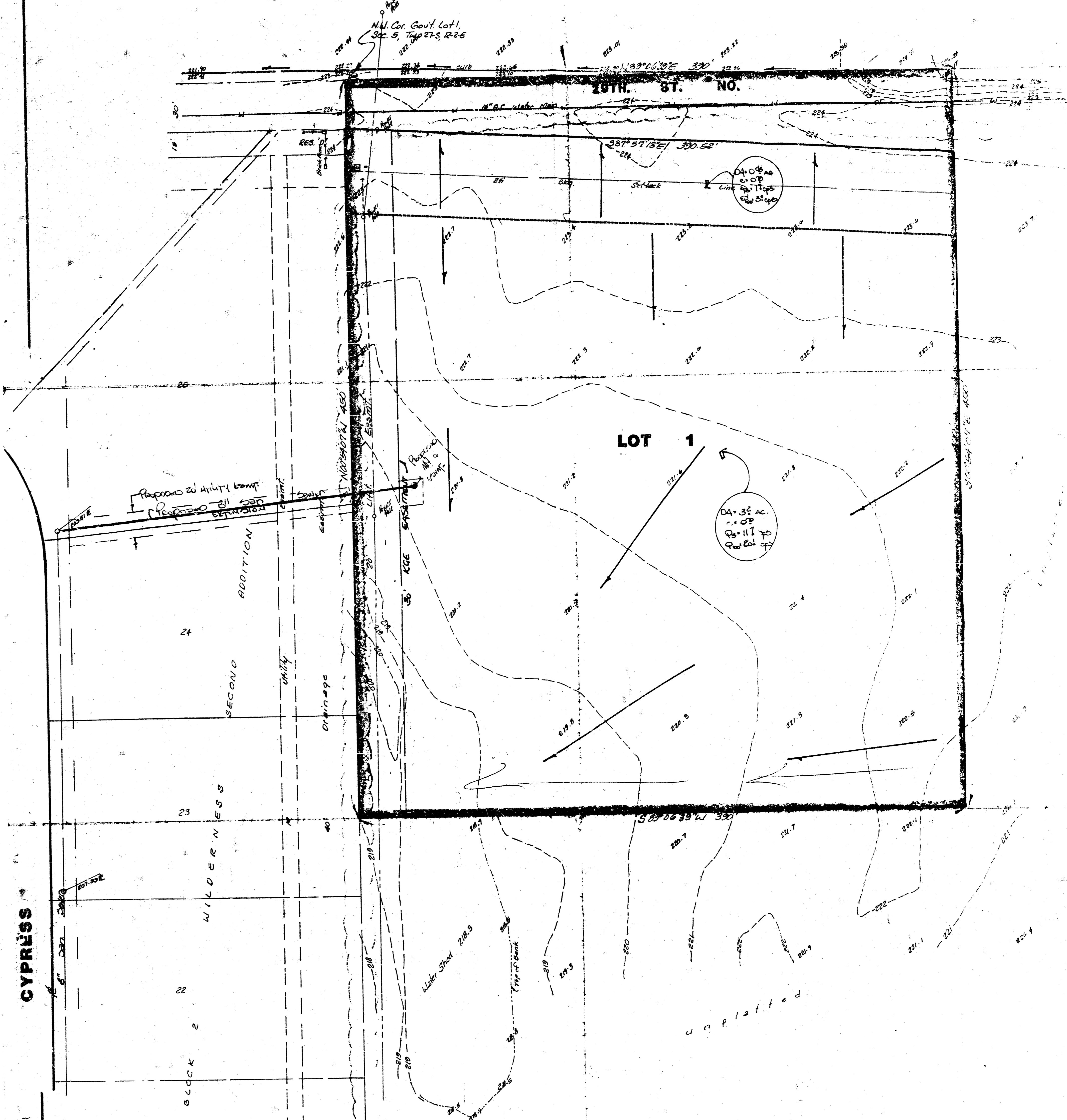


GENERAL NOTES

Lot 1 will be developed for a church site. The majority of the lot drains south into a drainage lake and pond located at the southwest corner of the plat. The general drainage pattern established here conforms to the areas and drainage plan designed for Wilderness Second Addition except that the north 50 feet will drain north to 29th St. No. and the small triangle at the southeast corner of the lot will drain west instead of east.



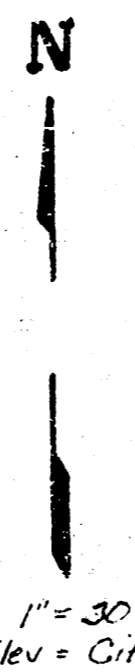
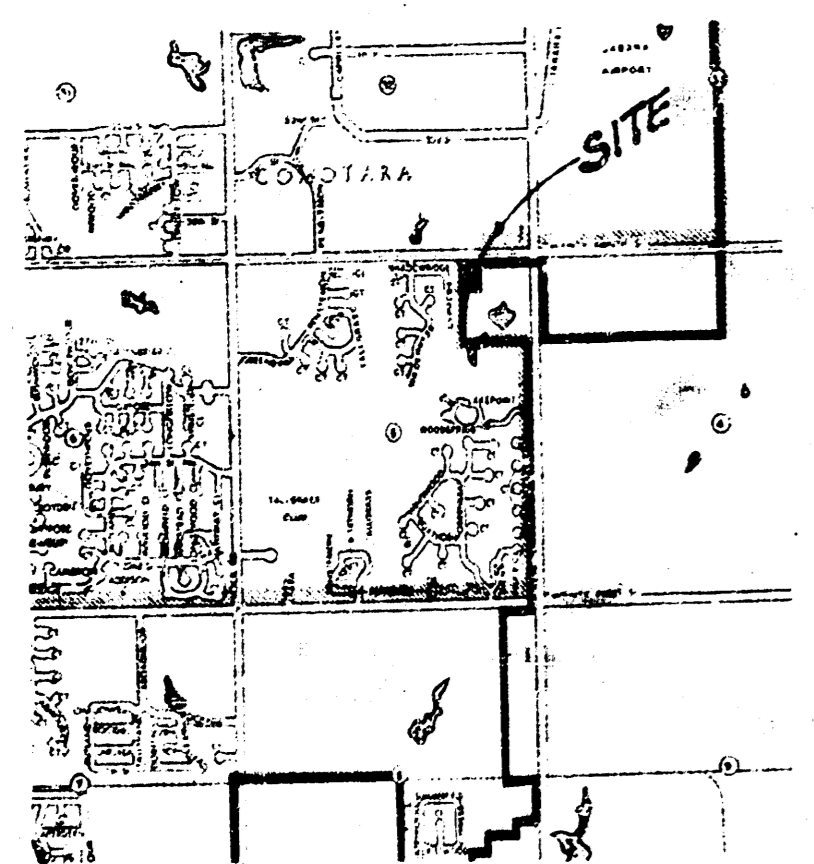
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DRAINAGE & UTILITY PLAN
PRELIMINARY PLAT
UNIVERSITY CONGREGATIONAL
CHURCH ADDITION

THE NORTH 450 FEET OF THE WEST 300 FEET OF GOVERNMENT LOT 1, IN SEC. 5, TWP. 27-S, R-2-E, OF THE 6TH P.M., SEDGWICK COUNTY, KANSAS.

RICHARD J. HATTRUP
UNIVERSITY CONGREGATIONAL CHURCH

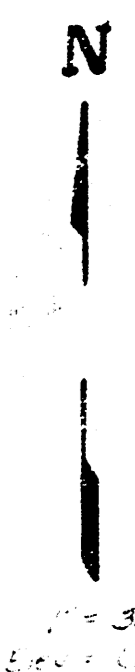
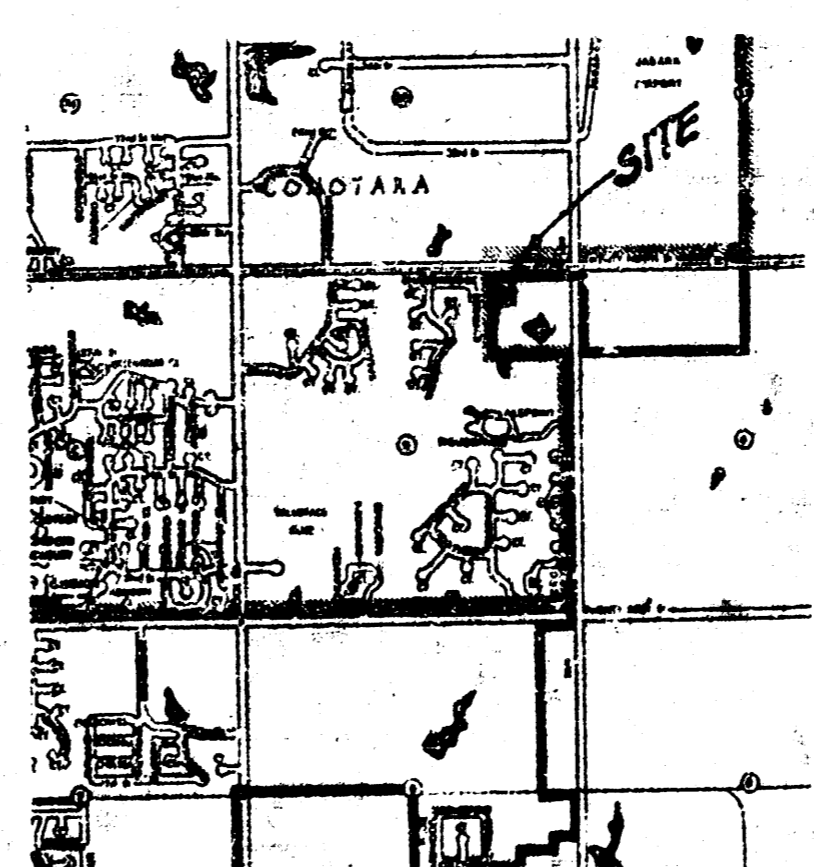


1" = 30'
 Elev. = City Datum
 BENCH MARK
 City Standard Elev. 441.83 at W of
 4500 & 23rd St. No.
 ELEVATION = 220.53 CITY DATUM

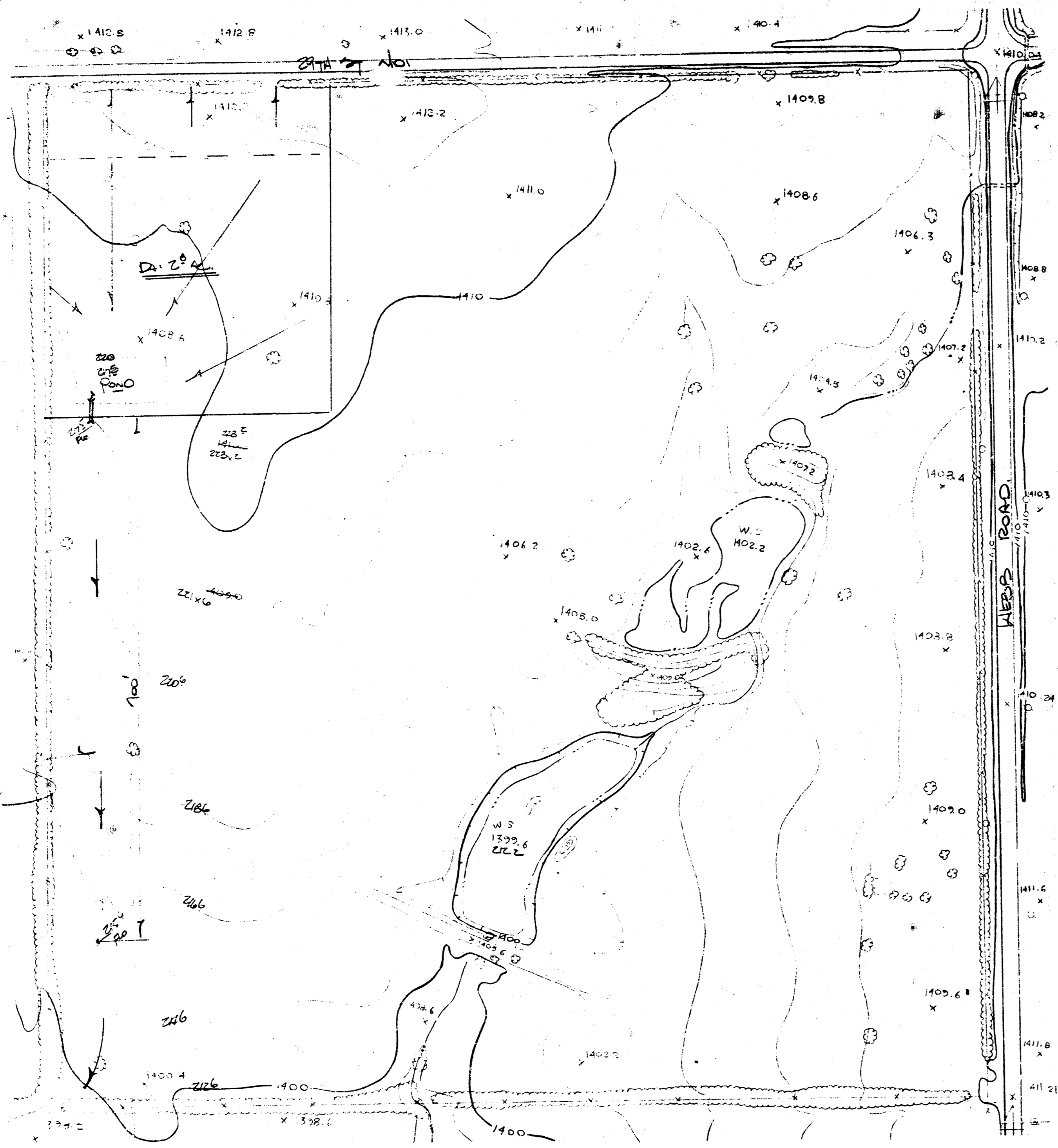
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N.E. 1/4, N.E. 1/4, SEC. 5
 T. 27 S. - R. 2 - E
 SEDGWICK COUNTY, KANSAS
 SCALE: 1" = 100' CONTOUR INTERVAL: 2'
 COMPILED FROM PHOTOGRAPHY TAKEN MARCH 3, 1968
 GROUND CONTROL — BAUGHMAN CO.
 TOPOGRAPHY BY KUCERA & ASSOCIATES, INC.

DRAINAGE PLAN

Lot 1 will drain generally as indicated on the plan. The usage of the lot is to be for a church site. The runoff factor for the development planned will be 0.60.

Approximately 0.45 acres will drain north to 29th Street. The remaining 3.2 acres will drain south and be contained by a retention pond site which will be located at the southwest corner of the lot as indicated. This area will receive runoff from the 3.2 acres and will have an overflow release either to the west and south in the existing drainage easement or back to the east into a proposed street which will convey the discharge on the south via storm sewers and street pavement.

Runoff calculations are indicated below for this site. The typical soil type (SCS) for the plot is Rd (Rowlesill), Group D, which is a silty clay. Water typically moves slowly thru these soils.

The maximum runoff discharge to be anticipated from the 100 year storm is:

$$Q_{100} = CIA = 0.70 (3.98) (3.2 \text{ ac.}) = 20 \text{ CFS.}$$

The undeveloped runoff amount as the ground drains today will be:

$$Q_{100} = 3.25 (8.98) (3.2 \text{ ac.}) = 7.2 \text{ CFS.}$$

The difference between the developed runoff and the existing undeveloped runoff is what will be stored on the site in the form of a retention pond. The detention pond will discharge slowly to the south either to the south thru off-site drainage easements or to the west to a proposed street and storm sewer system to be constructed in the future. Fill the ground to the south and east-developes or plates, the direction of discharge from this lot will not be determined but it will be controlled to only discharging the undeveloped runoff amount.

Revised sheets off

UNIVERSITY CONGREGATIONAL CHURCH ADDITIONAL ACCORDION TO THE FINAL DRAINAGE REPORT AND PLAN.

The drainage area to be considered within this plan for detention on-site is 2.8 acres. The runoff factor to be used in the calculations is 0.70 for the proposed church site. The time of concentration to be used will be 15 min.

The maximum storm is considered for the design of the pond size in order to allow the passage of the undeveloped existing runoff amount. The soil within this plot is Rowlesill Type which typically is a deep, well-drained but slowly permeable soil. The average slope for this ground is 1 to 2 percent. The existing runoff factor for this Group D soil will be considered to be 0.60.

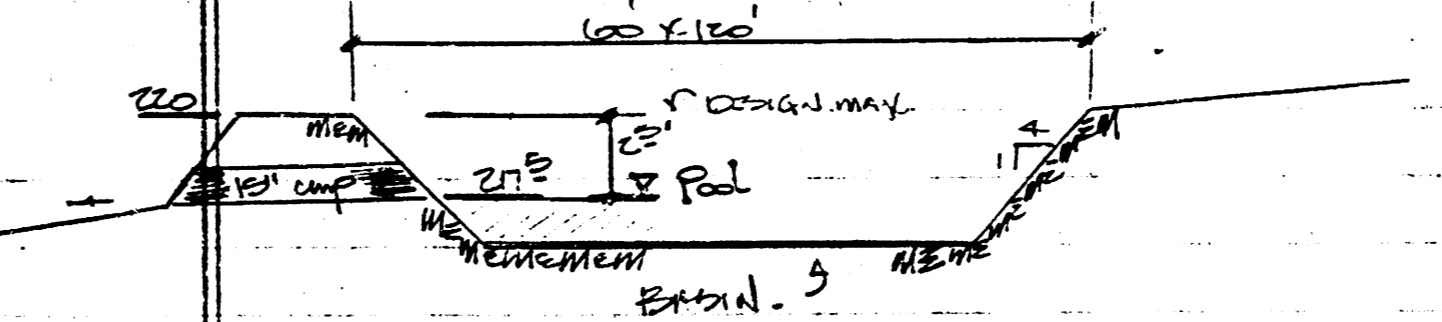
The maximum runoff amount allowed for this plot is $Q = CIA = 0.60 (3.98) (3.2 \text{ ac.}) = 15.0 \text{ cfs.}$

Peak inflow conditions will be C.I.F. 17.6 cfs.

Off-site drainage system to be proposed.

Approved 3/21/68

The outflow device will be a 15" pipe with an outflow elevation of 217.5. The maximum top of the pond will be 220.0. Using the basic data here, the storm will be routed thru the proposed pond site located below and considered as to its impact.



Proposed pond size = 100 x 60
 Bottom of retention structure 5'-6" below design max. water level.

The property to the south of this church site will need to be graded out for a swales for a distance to allow any discharge from the pond to drain into the drainage area or storm sewer already established in this area lying south of the plot.

STORM STORAGE CURVE

Water Level	Surf Area	Vol	ic Vol
0' 21.5'	4500 sq	2355 cf	0
0.5' 21.5'	5040 "	2655 "	3000 cf
1.0' 21.5'	5580 "	3125 "	5040 "
1.5' 21.5'	6120 "	3725 "	7080 "
2.0' 21.5'	6660 "	4325 "	9120 "
2.5' 21.5'	7200 "	4925 "	11160 "

STORM-DISCHARGE CURVE

Water Level	Height	CF
0	0	0
0.5	.4	1.0
1.0	.8	4.0
1.5	1.2	9.0
2.0	1.6	16.0
2.5	2.0	25.0

Inflow Hydrograph — $I_p = 10 \text{ min. Sp. 11.5}$

Time	Inflow	Storage	Outflow
0	0	0	0
5	4	10	0
10	10	15	0.2
15	17.6	20	3.0
20	20	25	5.5
25	30	30	6.0
30	35	35	6.0
35	40	40	5.8
40	35	45	5.5
45	30	50	5.0
50	25	55	4.5
55	20	60	4.0
60	15	65	3.5
65	10	70	3.0
70	5	75	2.5
75	0	80	2.0
80	0	85	1.5
85	0	90	1.0
90	0	95	0.5
95	0	100	0

Time	Inflow	Storage	Outflow
0	0	0	0
5	4	10	0
10	10	15	0.2
15	17.6	20	3.0
20	20	25	5.5
25	30	30	6.0
30	35	35	6.0
35	40	40	5.8
40	35	45	5.5
45	30	50	5.0
50	25	55	4.5
55	20	60	4.0
60	15	65	3.5
65	10	70	3.0
70	5	75	2.5
75	0	80	2.0
80	0	85	1.5
85	0	90	1.0
90	0	95	0.5
95	0	100	0

From the calculations it can be seen that the outflow is somewhat oversized. Erosion should not be a problem to the property to the south.

