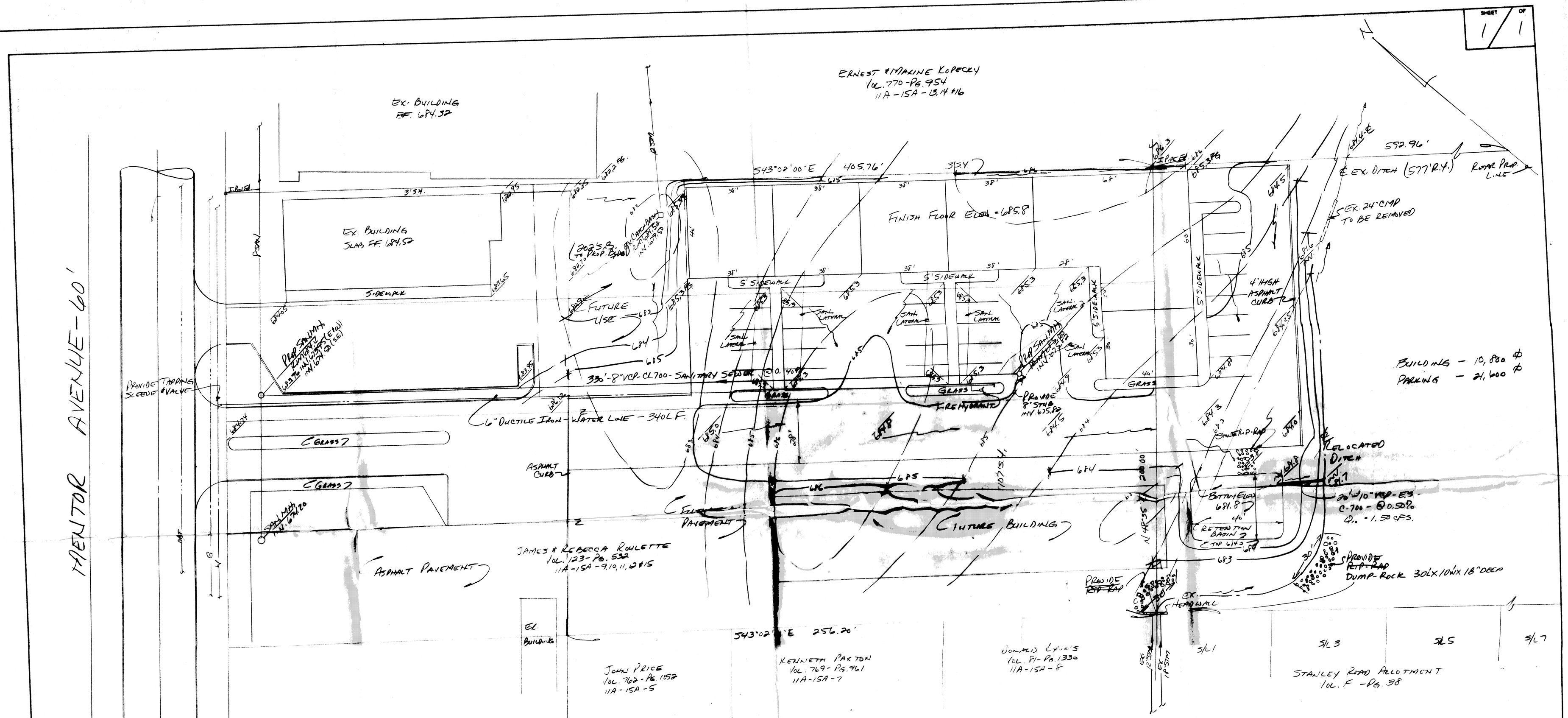
SHEET 1 OF 1




## DITCH CALCULATIONS

AREA SOUTH OF DITCH = 18 ACRES

$Q_{10} = CI_{10}A = (0.25)(4.86)(18)$

$Q_{10} = 21.9$ CFS

## CAPACITY OF DITCH

$Q = AV = \frac{1.49}{n} A R^{2/3} S^{1/2}$

$Q = \frac{1.49}{0.020}(14)(1.87^{2/3})(.004^{1/2})$

$Q = 100$ CFS. ∴ DITCH WILL HANDLE MORE THAN A 10 YEAR STORM. WATER = DITCH DOWN STREAM ACRESS KOPECKY NEEDS CLEANED. ALSO, EXISTING 12" & 18" CULVERTS GOING WEST TO SOUTH DOAN NEED FLUSHED.

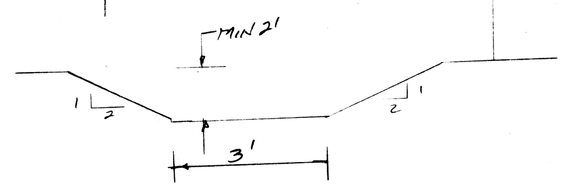
A = 14 ☐

S = 0.004

n = 0.020

$R = \frac{A}{P} = \frac{14}{3+21.5}$

R = 1.87




DITCH DETAIL
NO SCALE

## DRAINAGE CALCULATIONS

AREA OF DEVELOPMENT: 270' x 200' = 1.24 AC.

PRE DEVELOPMENT: $Q = CIA$, $t_c = 10$ MIN

$Q = (0.25)(4.86)(1.24)$

$Q_{10} = 1.50$ CFS

POST DEVELOPMENT: $Q = CIA$, $t_c = 10$ MIN.

$Q = (.95)(4.86)(1.24)$

$Q_{10} = 5.73$ CFS

FOR A STORM OF 10 MIN. DURATION

5.73 - 1.50 = 4.23 CFS

IN 10 MIN - NEED TO STORE 2500 CF OF WATER

∴ USE 30' x 40' x 2' RETENTION BASIN

NOTE: ALL DOWNSPOUTS TO BE TIED INTO RETENTION BASIN.

Grading Plan Approved as shown and/or noted
THOMAS P. GILLES, P.E.
Lake County Engineer
By _____ Date 7-20-87

T.B.M. - T.S.F.H. - 185' EAST OF ℄ S. DOAN AVE. ELEV. = 686.47

STATE OF OHIO
HARRY S. JONES, JR.
REGISTERED SURVEYOR

| REV NO. | DESCRIPTION | DATE | BY | CHK'D |
|---|---|---|---|---|
| 1 | ADDED STORM & RETENTION CALCULATIONS & DETAILS | 7-14-87 | HT | HT |

**BABCOCK, JONES AND ASSOCIATES, INC**
CIVIL ENGINEERS - SURVEYORS - LAND PLANNERS
PAINESVILLE OHIO 44077

| | |
|---|---|
| DATE | JUNE 1987 |
| DESIGN BY | HT |
| DRAWN BY | HT |
| APPROVED BY | HT |

SITE PLAN FOR
PROPOSED BUILDINGS
FOR
J.W. BETTELEY BUILDERS
PAINESVILLE TOWNSHIP LAKE COUNTY OHIO

| | |
|---|---|
| SCALE | 1" = 30' |
| JOB NO. | 85-178 |
| SHEET | 1 OF 1 |