Pickett, Ray & Silver, Inc.
CIVIL ENGINEERS AND LAND SURVEYORS

349 MID RIVERS DR.
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(314) 441-1211
(314) 278-1211

PROJECT NAME GOLDEN OAKS PL 2
PROJECT #/JOB ORDER # 80-027
DATE 3/4/86 /REV 3/14/86
DESIGNER JTB
PAGE 1 of 5

CALCULATE RUNOFF

FROM USGS — OFFSITE

A= 70Ac C 1.7 CFS/Ac = Q15 Q100

119 CFS x 1.39 = 165 CFS

X 2.4 168 x 1.39 = 234 cfs

AREA OF DEVELOPMENT = 14 Ac

DIFFERENTIAL RUNOFF (14.0Ac)(2.4 CFS/Ac - 1.7 CFS/Ac) = 9.8 CFS

VOLUME REQUIRED = 9.8 CFS x 1800 SEC = 17,640 CF

PROVIDE REQUIRED VOLUME BY DISPLACEMENT OF DIRT OUTSIDE NORMAL CHANNEL TO STORE DIFFERENTIAL OF Q15 STORM. (119 CFS).

USING EXIST. CHANNEL @ SEC C, & MANNING EQUATION WATER LEVEL = 552.1

$$Q = VA = \frac{1.486\, R^{2/3} S^{1/2}}{n} (A)$$

A = 22 SF

WP = 13.7 FT

$$R = 22 / 13.7 = 1.60 FT$$

$$S = \frac{552 - 548}{285} = 1.40\%$$

$$= \frac{1.486\,(1.60^{2/3})(.014)^{1/2} \times 22}{.04}$$

n = .040

Q = 134 CFS

FROM GRADING PLAN & USING AVERAGE END AREA, THE VOLUME OF DISPLACEMENT WAS CALCULATED.

THE VOLUME IS 18,086 CF WHICH EXCEEDS REQUIRED.

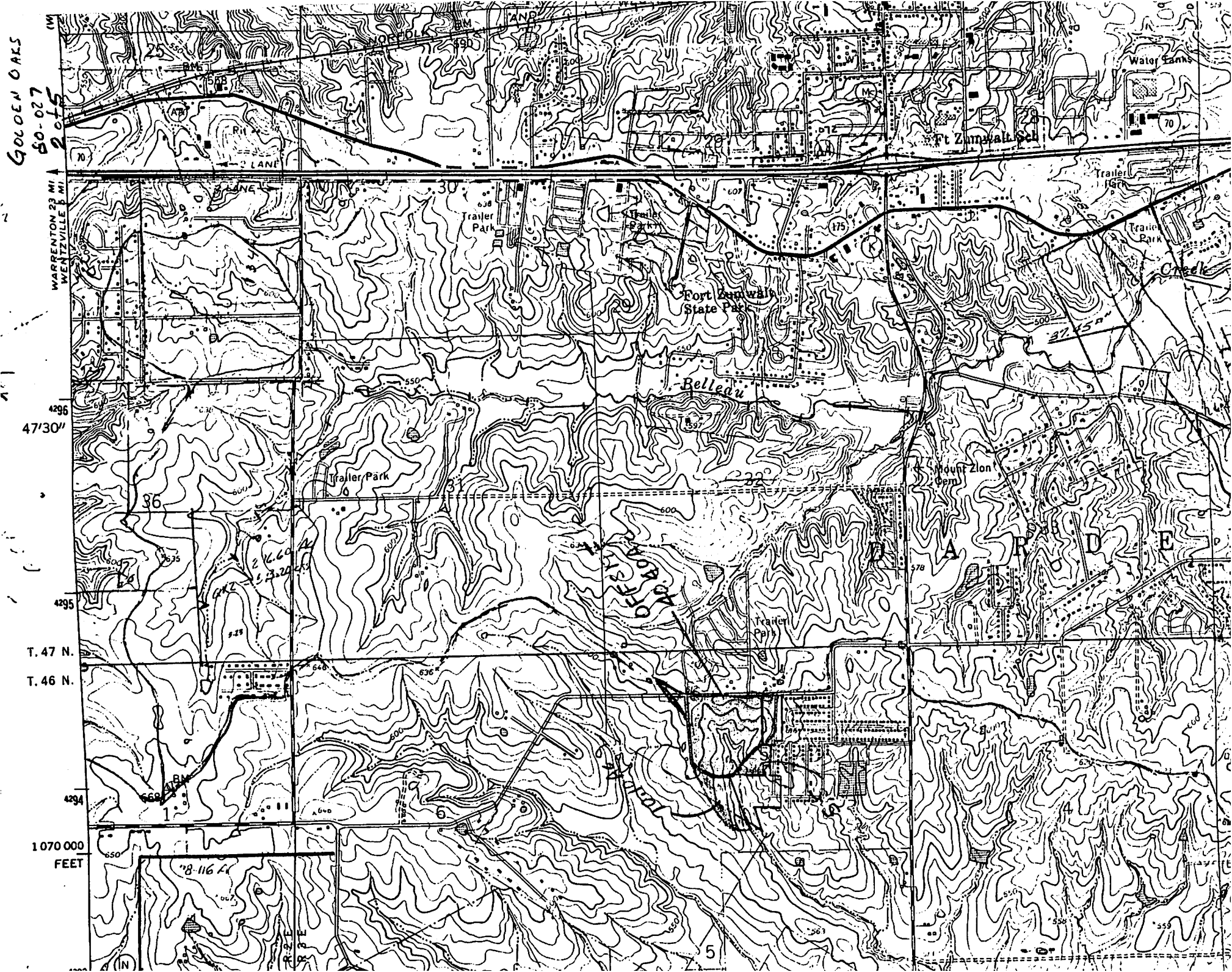
SEE SECTIONS ON SHEET 3.

PROPOSED DISPLACEMENT SHOWN ON GRADING PLAN

JAMES T. BURKE NUMBER E-13317

James T. Burke

RECEIVED MAR 2 1 1986


GOLDEN OAKS
60-027
2015
WARRENTON 23 MI
WENTZVILLE 6 MI
Norfolk
Water Tanks
Ft Zumwalt Sch
Trailer Park
Fort Zumwalt State Park
Creek
Belleau
Mount Zion Cem
DEPARTURE
Canal
4296
47'30"
4295
4294
T. 47 N.
T. 46 N.
1 070 000 FEET
8-116 A

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INSTALL WEIR IN CHANNEL TO HOLD BACK RUNOFF IN DISPLACED VOLUME

SET WEIR ELEV @ 552.1

SIZE LOW FLOW PIPES

$Q = Ca\sqrt{2gh}$ TRY 18 OPENING

$Q = 0.6 \times 1.787 \times \sqrt{2 \times 32.2 \times 1.35}$

$Q = 10$ CFS PER OPENING

Q = DISCHARGE, CFS
C = CONSTANT 0.6
a = AREA, SQ FT
g = GRAVITY
h = HEAD, FT

USE 8-OPENING TO PASS 90 CFS

ASSUMING 20' WEIR CALCULATE HEAD FOR REMAINING Q's & REMAINING Q_{100}. ASSUME FLOW THRU OPENINGS DOES NOT INCREASE DUE TO ADDITIONAL HEIGHT.

$Q = CLH^{3/2}$

$(119-80) = 3 \times 20 \times H^{3/2}$

$\frac{39}{60} = H^{3/2}$

$H = 0.74'$

Q = DISCHARGE CFS
C = CONSTANT 3
L = WIER LENGTH = FT
H = HEAD, FT

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NORMAL HIGH WATER = 502.1
+ 0.74
502.84

Q_{100} = 165 CFS

$(165-80) = 3 \times 20 \times H^{3/2}$

$H^{3/2} = 1.42$

$H = 1.27'$

EXTREME HIGH WATER = 502.1
+ 1.27
503.37

RECEIVED MAR 2 1 1986