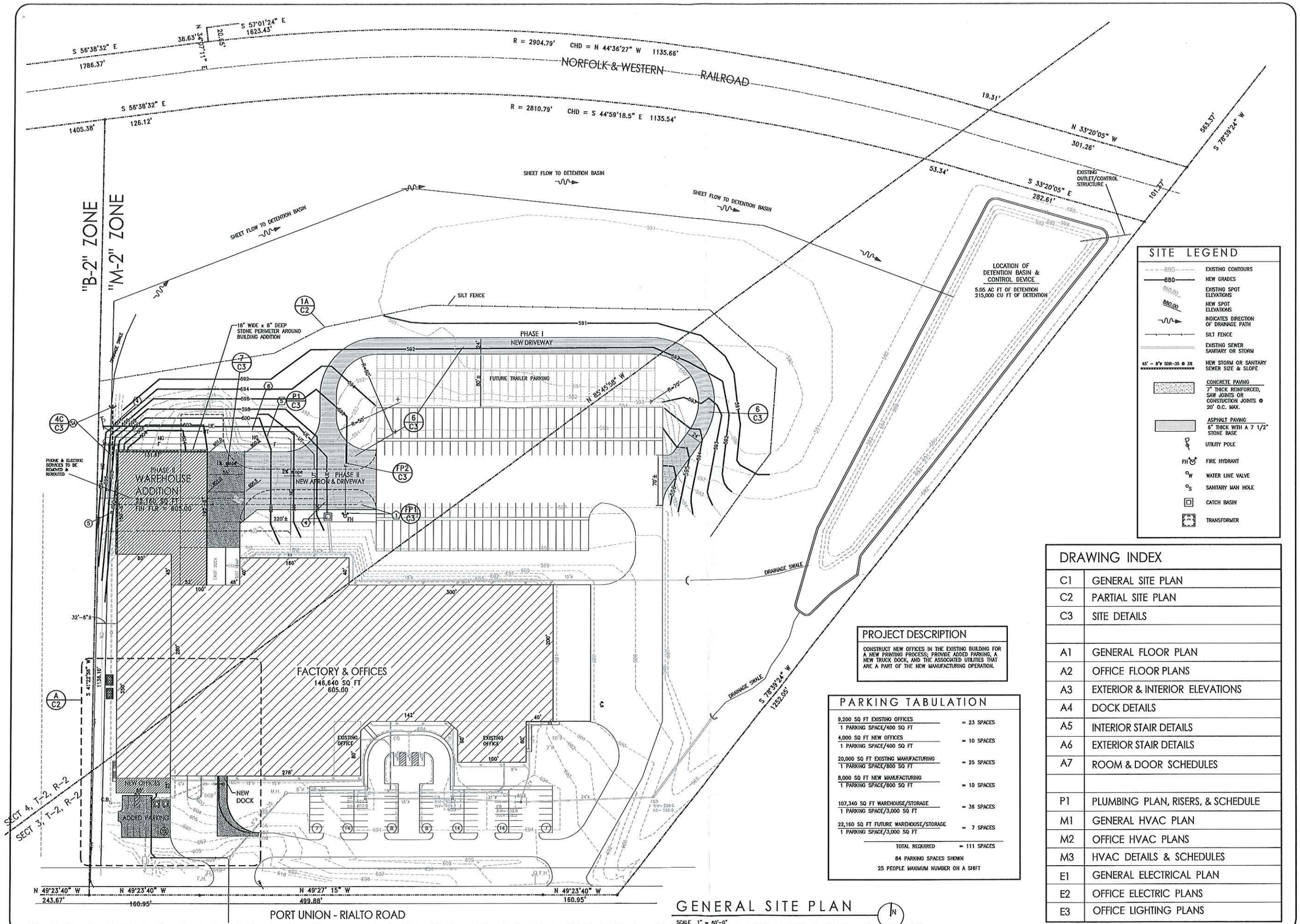

GENERAL SITE PLAN

SCALE 1" = 60'-0"

SITE LEGEND

- EXISTING CONTOURS
- NEW GRADES
- EXISTING SPOT ELEVATIONS
- NEW SPOT ELEVATIONS
- INDICATES DIRECTION OF DRAINAGE PATH
- SILT FENCE
- EXISTING SEWER SANITARY OR STORM
- NEW STORM OR SANITARY SEWER SIZE & SLOPE
- CONCRETE PAVING 7" THICK REINFORCED, SAW JOINTS OR CONSTUCTION JOINTS @ 20' O.C. MAX.
- ASPHALT PAVING 6" THICK WITH A 7 1/2" STONE BASE
- UTILITY POLE
- FIRE HYDRANT
- WATER LINE VALVE
- SANITARY MAN HOLE
- CATCH BASIN
- TRANSFORMER

PROJECT DESCRIPTION

CONSTRUCT NEW OFFICES IN THE EXISTING BUILDING FOR A NEW PRINTING PROCESS; PROVIDE ADDED PARKING, A NEW TRUCK DOCK, AND THE ASSOCIATED UTILITIES THAT ARE A PART OF THE NEW MANUFACTURING OPERATION.

PARKING TABULATION

9,200 SQ FT EXISTING OFFICES 1 PARKING SPACE/400 SQ FT	= 23 SPACES
4,000 SQ FT NEW OFFICES 1 PARKING SPACE/400 SQ FT	= 10 SPACES
20,000 SQ FT EXISTING MANUFACTURING 1 PARKING SPACE/800 SQ FT	= 25 SPACES
8,000 SQ FT NEW MANUFACTURING 1 PARKING SPACE/800 SQ FT	= 10 SPACES
107,340 SQ FT WAREHOUSE/STORAGE 1 PARKING SPACE/3,000 SQ FT	= 36 SPACES
22,160 SQ FT FUTURE WAREHOUSE/STORAGE 1 PARKING SPACE/3,000 SQ FT	= 7 SPACES
TOTAL REQUIRED	= 111 SPACES

84 PARKING SPACES SHOWN

25 PEOPLE MAXIMUM NUMBER ON A SHIFT

DRAWING INDEX

C1	GENERAL SITE PLAN
C2	PARTIAL SITE PLAN
C3	SITE DETAILS
A1	GENERAL FLOOR PLAN
A2	OFFICE FLOOR PLANS
A3	EXTERIOR & INTERIOR ELEVATIONS
A4	DOCK DETAILS
A5	INTERIOR STAIR DETAILS
A6	EXTERIOR STAIR DETAILS
A7	ROOM & DOOR SCHEDULES
P1	PLUMBING PLAN, RISERS, & SCHEDULE
M1	GENERAL HVAC PLAN
M2	OFFICE HVAC PLANS
M3	HVAC DETAILS & SCHEDULES
E1	GENERAL ELECTRICAL PLAN
E2	OFFICE ELECTRIC PLANS
E3	OFFICE LIGHTING PLANS

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3627 west fork road
cincinnati, oh 45247
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www.pda-ae.com

project

INTERIOR OFFICES & WAREHOUSE ALTERATION FOR:
GEORGIA PACIFIC CORPORATION
9048
PORT UNION - RIALTO RD.
WEST CHESTER, OHIO
45069

client

SCHUMACHER CONSTRUCTION MANAGEMENT
6355
CENTRE PARK DRIVE
WEST CHESTER, OHIO
45069

seal

STATE OF OHIO
JAMES THOMAS RITTER
5932
REGISTERED ARCHITECT
JAMES T. RITTER, LICENSE # 5932
EXPIRATION DATE: 12/31/2017

revisions

drawn / approved

HH,JDS,JTR/J.T.R.

date

25 OCTOBER 2016

file

16-244

sheet

C-1

of 3

P:\2016\16-244\16-244 C1,2,3.dwg, 11/5/2016 12:54:07 PM, SAVIN MP C2003 PCL 6

THE DESIGN OF THE STORM DETENTION FOR THIS SITE WAS DONE IN MAY OF 1995 BY DSD CONSULTANTS INC
CIVIL ENGINEERS 8319 CINCINNATI-COLUMBUS RD SUITE 22 WEST CHESTER, OHIO 45069

THE ORIGINAL ANALYSIS FOR ORIGINAL CONDITIONS USED THE FOLLOWING DATA:
31.1 ACRES
WEIGHTED "CN" = .81 (AN UNDEVELOPED SITE, ROWS OF CROPS IN GOOD CONDITION)
TIME OF CONCENTRATION "TC" = 18
ALLOWABLE RELEASE RATE Q_{10} =72.4 CFS

THE DESIGN FOR THE FUTURE PROJECT USED THE FOLLOWING DATA:
31.1 ACRES
WEIGHTED "CN" = .89 (A 31.1 ACRE SITE WITH 50% OF SITE WITH HARD SURFACE AREA DEVELOPED, CN=.98 PAVED SURFACESFOR 50% & CN=.79 FAIR GRASS COVER FOR 50%)

TIME OF CONCENTRATION "TC" = 11
ALLOWABLE RELEASE RATE =72.4 CFS

INFLOW RATE Q_{50} =165.1 CFS (50 YR STORM WAS 1995 STANDARD)

DETENTION VOLUME PROVIDED = 5.05 AC FT

151,861 CU FT = 3.48 ACRE FT
THE CURRENT FACILITY HAS 5.05 ACRE FR

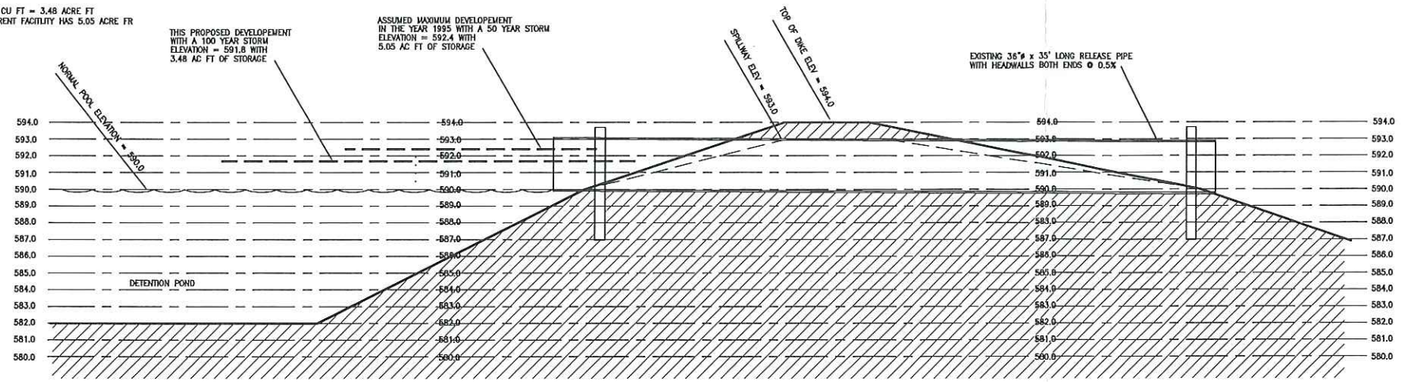
THE DESIGN FOR THE CURRENT PROJECT USES THE FOLLOWING DATA:

DESIGN/DRAINAGE AREA: 31.1 ACRES (1,354,716 SQ FT)
ORIGINAL IMPERVIOUS AREA: 0.00 ACRES
ORIGINAL "C" = 0.30

EXISTING CONDITIONS: 31.1 ACRES (1,354,716 SQ FT)
EXISTING IMPERVIOUS AREA: 9.14 ACRES (398,350 SQ FT)
EXISTING "C" = 0.476

PROPOSED CONDITIONS: 31.1 ACRES (1,354,716 SQ FT)
PROPOSED IMPERVIOUS AREA: 10.93 ACRES (476,110 SQ FT)
PROPOSED "C" =0.511

SOILTYPE: B/C



(A/C4) SECTION @ EXISTING CONTROL STRUCTURE FOR DETENTION BASIN

RAINFALL "Q"; PRE & POST DEVELOPMENT

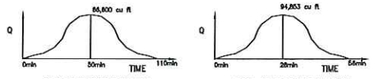
FREQUENCY IN YEARS	FORMULA	PREDEVELOPED "C"	POSTDEVELOPED "C"	FORMULA	PREDEVELOPED Tc PER OVERLAND CHART 1,200', .30 "n", 1.5% SLOPE	POSTDEVELOPED Tc PER OVERLAND CHART 1,200', .31 "n", 1% SLOPE	PREDEVELOPED "I"	POSTDEVELOPED "I"	AREA "A"	PREDEVELOPED "Q"	POSTDEVELOPED "Q"
1	Q = C x I x A	0.30	0.51	I = 80/(Tc + 17)	50 MIN	28 MIN	1.19	1.78	31.1	11.10	28.23
2	Q = C x I x A	0.30	0.51	I = 106/(Tc + 17)	50 MIN	28 MIN	1.58	2.36	31.1	14.74	37.42
5	Q = C x I x A	0.30	0.51	I = 131/(Tc + 17)	50 MIN	28 MIN	1.96	2.91	31.1	18.29	45.15
10	Q = C x I x A	0.30	0.51	I = 170/(Tc + 17)	50 MIN	28 MIN	2.54	3.78	31.1	23.70	59.95
25	Q = C x I x A	0.30	0.51	I = 230/(Tc + 17)	50 MIN	28 MIN	3.43	5.11	31.1	32.00	81.04
50	Q = C x I x A	0.30	0.51	I = 250/(Tc + 17)	50 MIN	28 MIN	3.73	5.56	31.1	34.80	88.18
100	Q = C x I x A	0.30	0.51	I = 300/(Tc + 17)	50 MIN	28 MIN	4.48	6.66	31.1	41.80	105.62

1yr Pre V = 11.1q (50min x 2 x 60 sec/min) = 66,600 cu ft
1yr Post V = 28.23q (28min x2 x 60 sec/min) = 94,853 cu ft

$\frac{94,853 \text{ cu ft}}{66,600 \text{ cu ft}}$ = 1.42 or GREATER THAN 20% INCREASE

A 40% INCREASE REQUIRES AN EVALUATION ON A 2 YEAR CRITICAL STORM
sys V = (Qin − Qout) x 30 min x 60 sec

V_{2yr} = (37.42 $Qpost_{2yr}$ − 11.10 $Qpre_{2yr}$) x 30 min x 60 sec = 47,376 cf
V_{5yr} = (45.15 $Qpost_{5yr}$ − 14.74 $Qpre_{2yr}$) x 30 min x 60 sec = 54,738 cf
V_{10yr} = (59.95 $Qpost_{10yr}$ − 18.29 $Qpre_{5yr}$) x 30 min x 60 sec = 74,988 cf
V_{25yr} = (81.04 $Qpost_{25yr}$ − 23.70 $Qpre_{10y}$) x 30 min x 60 sec = 103,212 cf
V_{50yr} = (88.14 $Qpost_{50yr}$ − 32.00 $Qpre_{25y}$) x 30 min x 60 sec = 101,052 cf
V_{100yr} = (105.62 $Qpost_{100yr}$ − 34.80 $Qpre_{50yr}$) x 30 min x 60 sec = 127,476 cf



PRE-DEVELOPMENT VOLUME

POST-DEVELOPMENT VOLUME

CALCULATE WATER QUALITY VOLUME (WQv)
WQv = C x P x A
C = RUNNOFF COEFFICIENT
P = 0.75 INCH PERCIPITATION DEPTH
A = DRAINAGE AREA

I = IMPERVIOUS AREA % NET TOTAL AREA
C = 0.858 I^3 − 0.78 I^2 + 0.774 I + 0.04

$I = \frac{10.93 \text{ ACRES } (476,110 \text{ SQ FT})}{31.1 \text{ ACRES } (1,354,716 \text{ SQ FT})}$ = .35

C = 0.858 $(.35)^3$ − 0.78 $(.35)^2$ + 0.774 (.35) + 0.04
C = 0.036 − 0.10 + 0.27 + 0.04 = 0.24

WQv = C x P x A
WQv = 0.24 C x 0.75 P x 31.1A (1ft/12") = 0.46 ac ft
0.46 ac ft = 20,320 cu ft
20,320 cu ft x 1.2 (20% OVERAGE REQ'D BY CODE) = 24,385 CU FT

REQUIRED DETENTION VOLUME = REQUIRED DETENTION + WATER QUALITY DETENTION

127,476 CU FT (100 YR STORM) + 24,385 (WATER QUALITY) = 151,861 CU FT

151,861 CU FT = 3.48 ACRE FT
THE CURRENT FACILITY HAS 5.05 ACRE FT

STORM DRAINAGE NOTES:

THE BOARD OF COUNTY COMMISSIONERS OF BUTLER COUNTY HAVE ADOPTED FLOOD DAMAGE PREVENTION REGULATIONS.

ALL PLANS & CONSTRUCTION WITHIN THE COUNTY SHALL COMPLY W/ THE CURRENT "RULES & REGULATIONS" OF THE PUBLIC WORKS DEPARTMENT OF THE CITY OF FAIRFIELD, GOVERNING THE DESIGN, CONSTRUCTION, & OPERATION.

ALL PROPOSED STORM SEWERS & SURFACES OR OTHER DRAINAGE FACILITIES ARE TO BE PRIVATE & MAINTAINED BY THE OWNER.

THE DEVELOPER/OWNER IS TO CONSTRUCT CURBS, CATCH BASINS, DOWNSPOUTS, PIPING & CONNECTIONS ETC. AS REQUIRED TO CONVEY THE ROOF & PAVED SURFACE DRAINAGE TO THE NEW DETENTION BASIN.

ALL INTERNAL DRAINAGE SYSTEMS ARE TO BE DESIGNED FOR A TWO (2) YEAR STORM & GIVE PROTECTION FOR ONE HUNDRED (100) YEAR STORM. FOR STORM DRAINAGE SYSTEMS THAT OUTLET INTO DETENTION FACILITIES, A HYDRAULIC GRADIENT STUDY MAY BE REQUIRED.

ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION & ARE TO FINAL GRADE & ARE TO REMAIN SO, SHALL BE SEEDED & MULCHED AS SOON AS PRACTICAL IN ACCORDANCE W/ STATE OF OHIO SPECIFICATIONS ITEM 659 OR WITHIN 7 DAYS.

ALL NEW STORM SEWER, SURFACE DRAINAGE CONSTRUCTION, STORM WATER DETENTION FACILITY CONSTRUCTION & CONSTRUCTION OF TEMPORARY EROSION CONTROL MEASURES ARE TO BE UNDER THE INSPECTION & SUPERVISION OF THE BUTLER COUNTY ENGINEER'S OFFICE.

IF STORM WATER DETENTION FACILITY CONSTRUCTION IS PERFORMED WITHOUT CALLING FOR CONSTRUCTION INSPECTION & SUPERVISION BY THE BUTLER COUNTY DEPARTMENT OF PUBLIC WORKS, THE PUBLIC WORKS DEPARTMENT WILL INVOICE FOR THE INSPECTION/SUPERVISION TIME PRIOR TO ACCEPTANCE, BASED ON THE BUTLER COUNTY PUBLIC WORKS ESTIMATE OF THE TIME THAT WOULD HAVE BEEN EXPENDED BY THE PUBLIC WORKS INSPECTOR.

CERTIFICATION OF STORAGE VOLUME & AN "AS-BUILT" SURVEY OF THE DETENTION FACILITY, BY A REGISTERED PROFESSIONAL SURVEYOR (OHIO), MUST BE SUBMITTED FOR THE PROPOSED DETENTION FACILITY PRIOR TO THE RECORDING OF THE PRIVATE STORM DRAINAGE LIMITS RECORD PLAT.

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project

INTERIOR OFFICES & WAREHOUSE ALTERATION FOR:
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SCHUMACHER CONSTRUCTION MANAGEMENT
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seal

STATE OF OHIO
JAMES THOMAS RITTER
5932
REGISTERED ARCHITECT

JAMES T. RITTER, LICENSE # 5932
EXPIRATION DATE: 12/31/2017

revisions

drawn / approved

HH,JDS,JTR/J.T.R.

date

25 OCTOBER 2016

file

16-244

sheet

C-4

of 4

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b.—Runoff curve numbers for cultivated agricultural lands[1]

Cover description			Curve numbers for hydrologic soil group—			
Cover type	Treatment[2]	Hydrologic condition[3]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T + CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T + CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1]Average runoff condition, and $I_a = 0.2S$.
[2]*Crop residue cover* applies only if residue is on at least 5% of the surface throughout the year.
[3]Hydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.
Poor: Factors impair infiltration and tend to increase runoff.
Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

16-244

SCHUMACHER DUGAN CONSTRUCTION, INC

SD

COVER PAGE

FROM

SCHUMACHER DUGAN CONSTRUCTION, INC.

FAX NUMBER: (513) 777-2642

Date: 6/15/95 Time: 10:45 AM Job Number: _____

Total number of pages 15 including cover sheet.

To: GREG WILKENS

Firm's Name: Butler County Engineer - Dev.

Fax Number: 867-5849

Telephone number to confirm material: 867-5744

From: CHRIS WUNNENBERG

Re: Troy Corr.

Comments: Greg —

I THINK WE ARE GOING TO USE A Dry DETENTION in LIEU of Wet Retention POND —

THE CLIENT IS CONCERNED ABOUT LIABILITY and we don't need the dirt.

— CW —

RETENTION CALCULATIONS

FOR

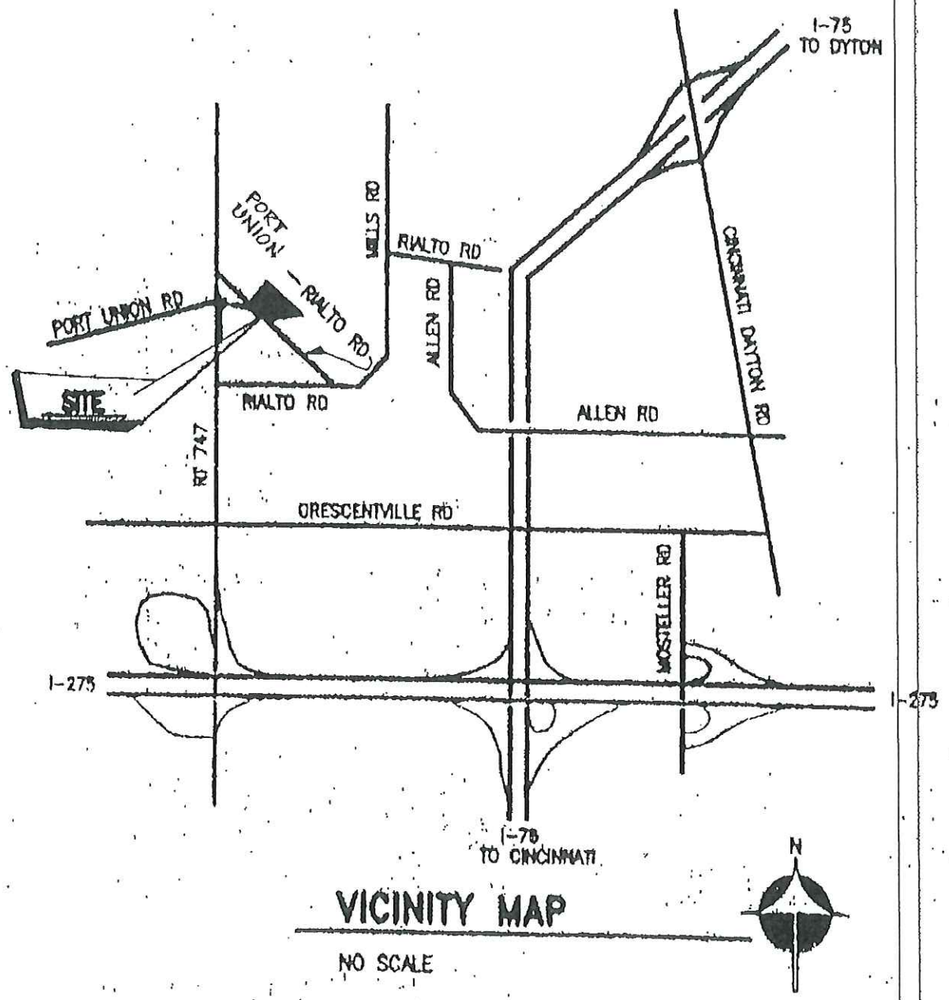
30.9 AC. Property
PORT UNION-RIALTO ROAD
SEC. 3 & 4, T2, R2
UNION TOWNSHIP
BUTLER COUNTY, OHIO

TREY CORRIGATED
developed by: Schumacher Dugan Const., Inc.

DATE: May, 1995

DSD CONSULTANTS, INC.
Civil Engineering
9319 Cincinnati-Columbus Road • Suite 22
West Chester, Ohio 45069
(phone 513-777-9111)

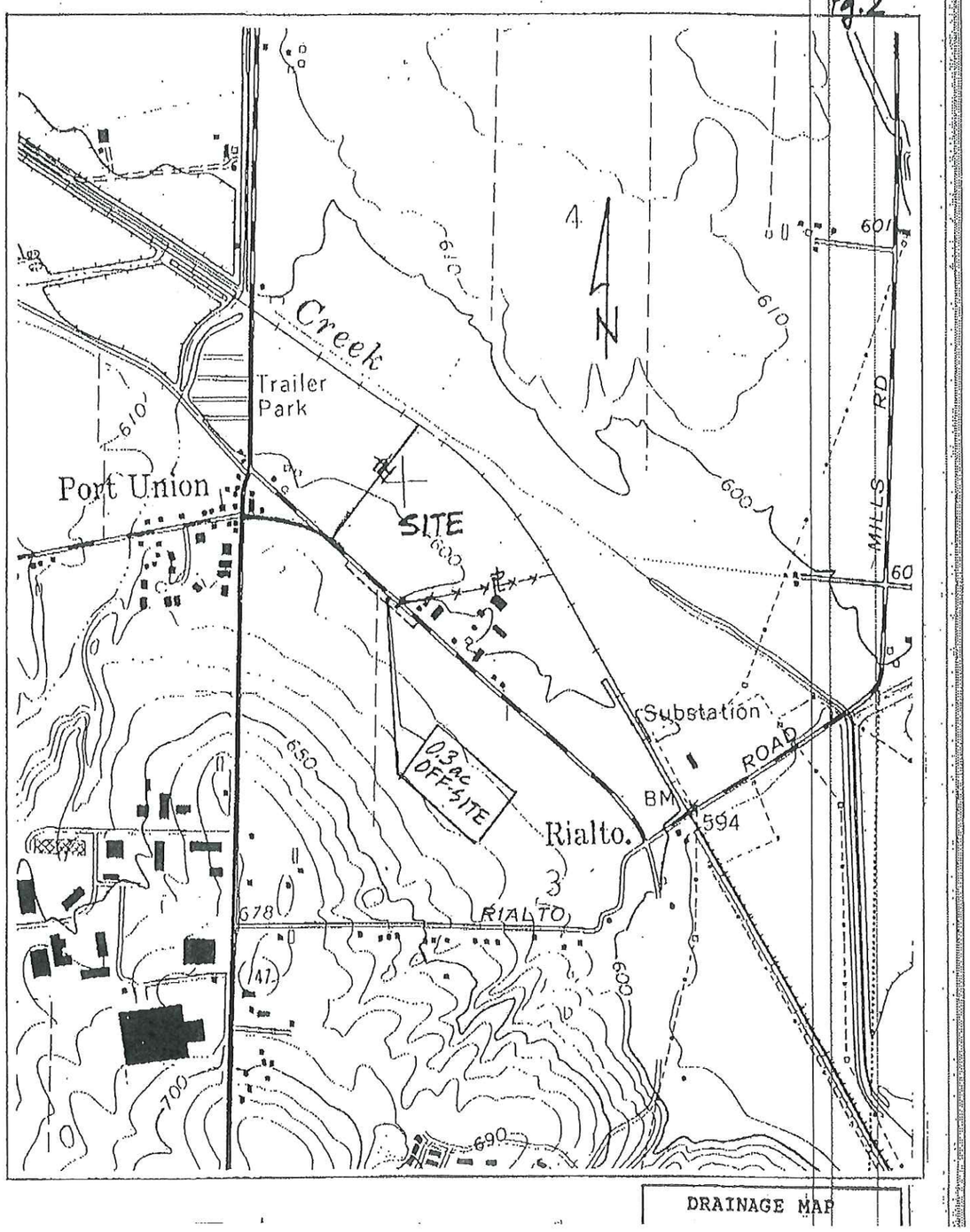
Pg. 1



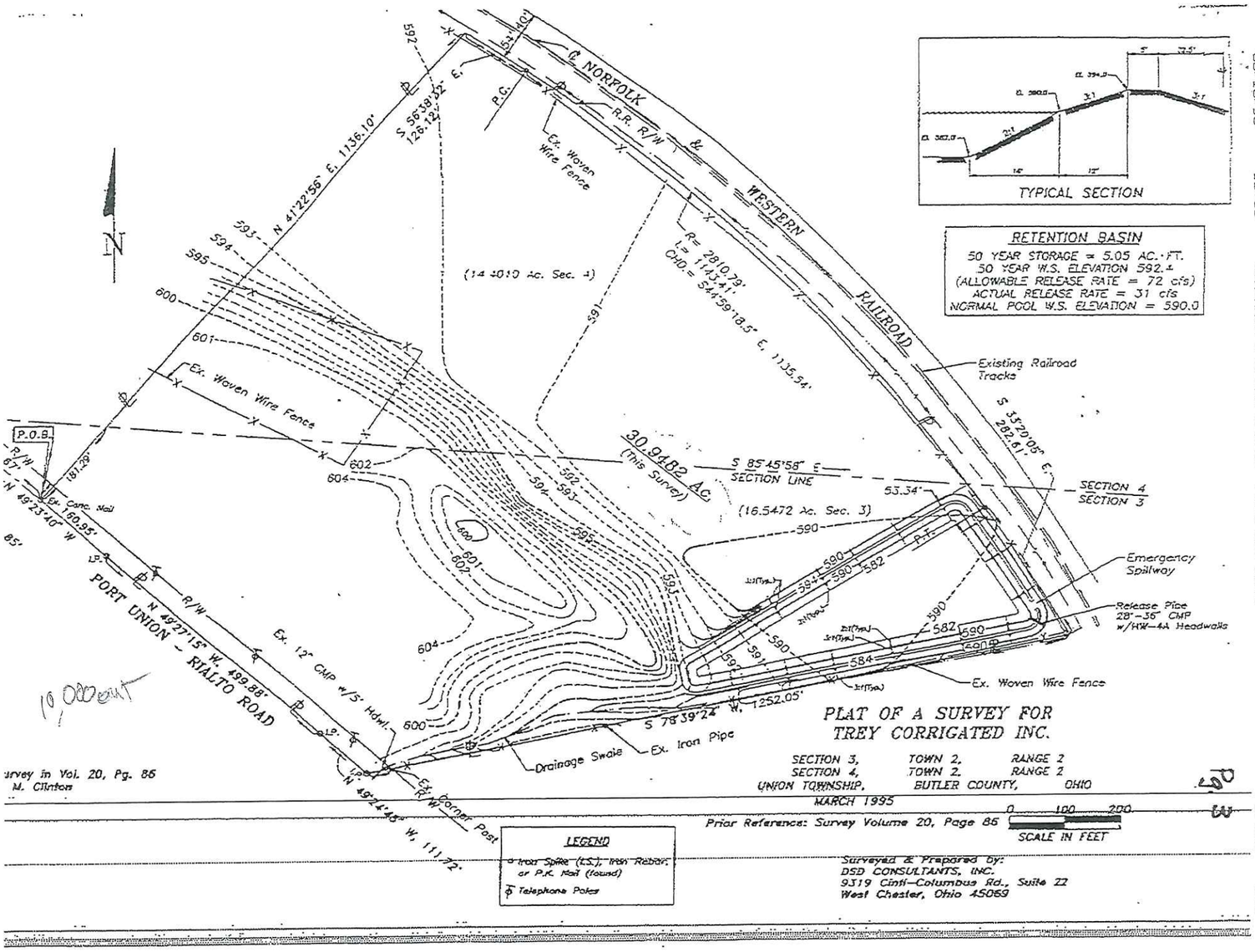
VICINITY MAP

NO SCALE

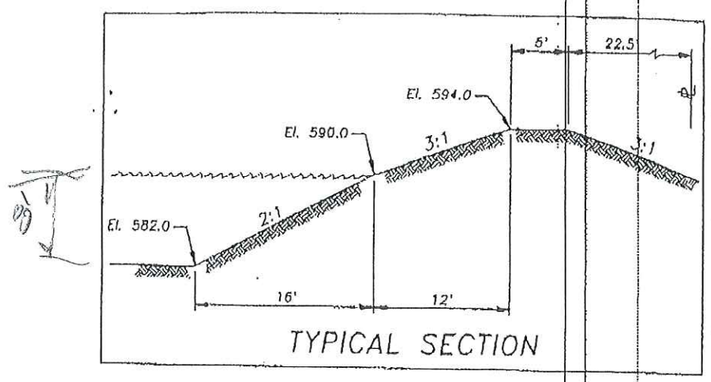
Pg.2



DRAINAGE MAP



Pg. 3-A



TYPICAL SECTION

RETENTION BASIN

50 YEAR STORAGE = 5.05 AC.-FT.
50 YEAR W.S. ELEVATION 592.4
(ALLOWABLE RELEASE RATE = 72 cfs)
ACTUAL RELEASE RATE = 31 cfs
NORMAL POOL W.S. ELEVATION = 590.0

DSD CONSULTANTS
Civil Engineering

JOB
SHEET NO. Pg. 4 OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

DISCHARGE CALCULATIONS

PRE-DEVELOPED CONDITION

PROJECT LOCATION

Roadway :

OFF-SITE = 0.3 Ac.

SITE DRAINAGE AREA = 30.9 } 31.2 acres = 0.049 sq.mi.

Weighted "CN" = 81 Woods-grass (Good)

TIME OF CONCENTRATION :

OVERLAND FLOW	CHL FLOW	CHANNEL FLOW
L =	L = 500'	L = 1200
H =	H = 3' ±	H = 600 - 590 = 10
Slope =		
% = Min.	t_1 = 6	t_2 = 12 Min.

$T_c = t_1 + t_2$

T_c = 6 + 12

T_c = 18 Min. = 0.3 hr.

↑ use for Q_p

SCS METHOD II

Q_p = 670

Soil Group = ____

County : Butler

Pg. 5

```
*********************************************************
  SCS METHOD II  TR-55
*********************************************************
 BY:  DSD CONSULTANTS                    04-25-1995
PRE-DEVELOPED CONDITION
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
         INPUT DATA
DRAINAGE AREA (SQ.MI)________  =  .049
SOIL GROUP (A,B,C OR D)______  = B&C
WEIGHTED CN (CURVE NO.)______  =  81
TIME OF CONCENTRATION (TC)___  =  18
PEAK DISCHARGE FROM FIG. 5-2   =  670
NAME OF COUNTY_______________  = BUTLER
*********************************************************
THE 24 HOUR RAINFALL FOR YOUR COUNTY AS ASSIGNED
P1 = 2.5
P2 = 2.9
P5 = 3.6
P10= 4.1
P25= 4.7
P50= 5.2
P100= 5.6
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
THE DIRECT RUNOFF IN INCHES
  R1 = .9423898  INCHES
  R2 = 1.237108
  R5 = 1.789872
 R10 = 2.205819
 R25 = 2.721827
 R50 = 3.162713
R100 = 3.521115
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~


                    OUTPUT  VALUES
*****************************************************
      DISCHARGE VALUES
*****************************************************

   Q0 ——  Q1 = 30.93865 CFS — ALT. #2 RELEASE RATE
          Q2 = 40.61426
          Q5 = 58.76148    (ALLOWABLE
Q0 ——    Q10 = 72.41704 ←— RELEASE RATE)
         Q25 = 89.35757
         Q50 = 103.8319
        Q100 = 115.5982
```

DSD CONSULTANTS
Civil Engineering

JOB
SHEET NO. OF Pg. 6
CALCULATED BY DATE
CHECKED BY DATE
SCALE

DISCHARGE CALCULATIONS

POST-DEVELOPED CONDITION

PROJECT LOCATION

Roadway :

OFF-SITE = 0.3 ac.
SITE DRAINAGE AREA = 30.9 } = 31.2 ac.
Weighted "CN" = 89 acres = 0.049 sq.mi.
50% WOODS & 50% GRASS

TIME OF CONCENTRATION :

OVERLAND FLOW
L =
H =
Slope =
t_1 = Min.

CH'L FLOW
L = 500
H = 3'
t_1 = 6

CHANNEL FLOW
L = 600
H = 600 - 590 = 10
S = 1.67%
t_2 = 5 Min.

$T_c = t_1 + t_2$
T_c = 6 + 5
T_c = 11 Min. = 0.18 hr.
↳ use for Q_p

SCS METHOD II

Q_p = 850

Soil Group =
County : Butler

Pg. 7

****
SCS METHOD II TR-55
****
BY: DSD CONSULTANTS 04-25-1995
POST-DEVELOPED CONDITION

INPUT DATA

DRAINAGE AREA (SQ.MI)_____	= .049
SOIL GROUP (A,B,C OR D)_____	= B &C
WEIGHTED CN (CURVE NO.)_____	= 89
TIME OF CONCENTRATION (TC)___	= 11
PEAK DISCHARGE FROM FIG. 5-2	= 850
NAME OF COUNTY_____	= BUTLER

****
THE 24 HOUR RAINFALL FOR YOUR COUNTY AS ASSIGNED
P1 = 2.5
P2 = 2.9
P5 = 3.6
P10= 4.1
P25= 4.7
P50= 5.2
P100= 5.6

THE DIRECT RUNOFF IN INCHES
R1 = 1.454712 INCHES
R2 = 1.809674
R5 = 2.449751
R10 = 2.917042
R25 = 3.485381
R50 = 3.963686
R100 = 4.348701

OUTPUT VALUES
****
DISCHARGE VALUES
****

Q1 = 60.58877 CFS
Q2 = 75.37293
Q5 = 102.0321
Q10 = 121.4948
Q25 = 145.1661
DESIGN —— Q50 = 165.0875 — MAX INFLOW RATE
Q100 = 181.1234

Figure 7-2.--Approximate single-stage structure routing for weir flow structures over 150 csm release rate and pipe flow structures over 300 csm release rate.

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JOB .....
SHEET NO. ..... OF ..... 9 & 10
CALCULATED BY ..... DATE .....
CHECKED BY ..... DATE .....
SCALE .....

AREA = 31.2 Ac.

ALT. #2

(CONDITIONS)

	PRE-DEVELOPED	POST-DEVELOPED
Storm frequency	~~1 yr.~~ / ~~50 yr.~~	50 yrs.
Rainfall depth = (table OH-1)	2.5, 5.2	
Runoff depth = (table 2-1)	0.9424	3.9637
	X	
Unit Peak Discharge = (figure 5-2)	670	850
	X	
Drainage Area (in sq. miles) =	0.049	
	=	
Runoff = (c.f.s.)	31	165

STORAGE REQUIRED
(50 YEAR)

$\frac{Qo}{Qi} = \frac{Vs}{Vr}$

Qo = release rate (never greater than existing 10 yr. runoff) c.f.s.
Qi = peak inflow rate, c.f.s.
Vs = volume of storage, ac./ft.
Vr = volume of runoff or runoff depth of future storm.

Calculate $\frac{Qo}{Qi} = \frac{31}{165} = 0.19$, use figure 7.2 to find $\frac{Vs}{Vr}$

$\frac{Vs}{Vr} = \frac{0.49}{3.9637}$ -(From fig. 7.2 Copy on page 9)

Vs = Vr x 0.49 + 12 x 31.2 acres

Vs = 5.05 Ac./ft. x (43560) = [ ] cu. ft.

STORAGE REQUIRED ALT. #2

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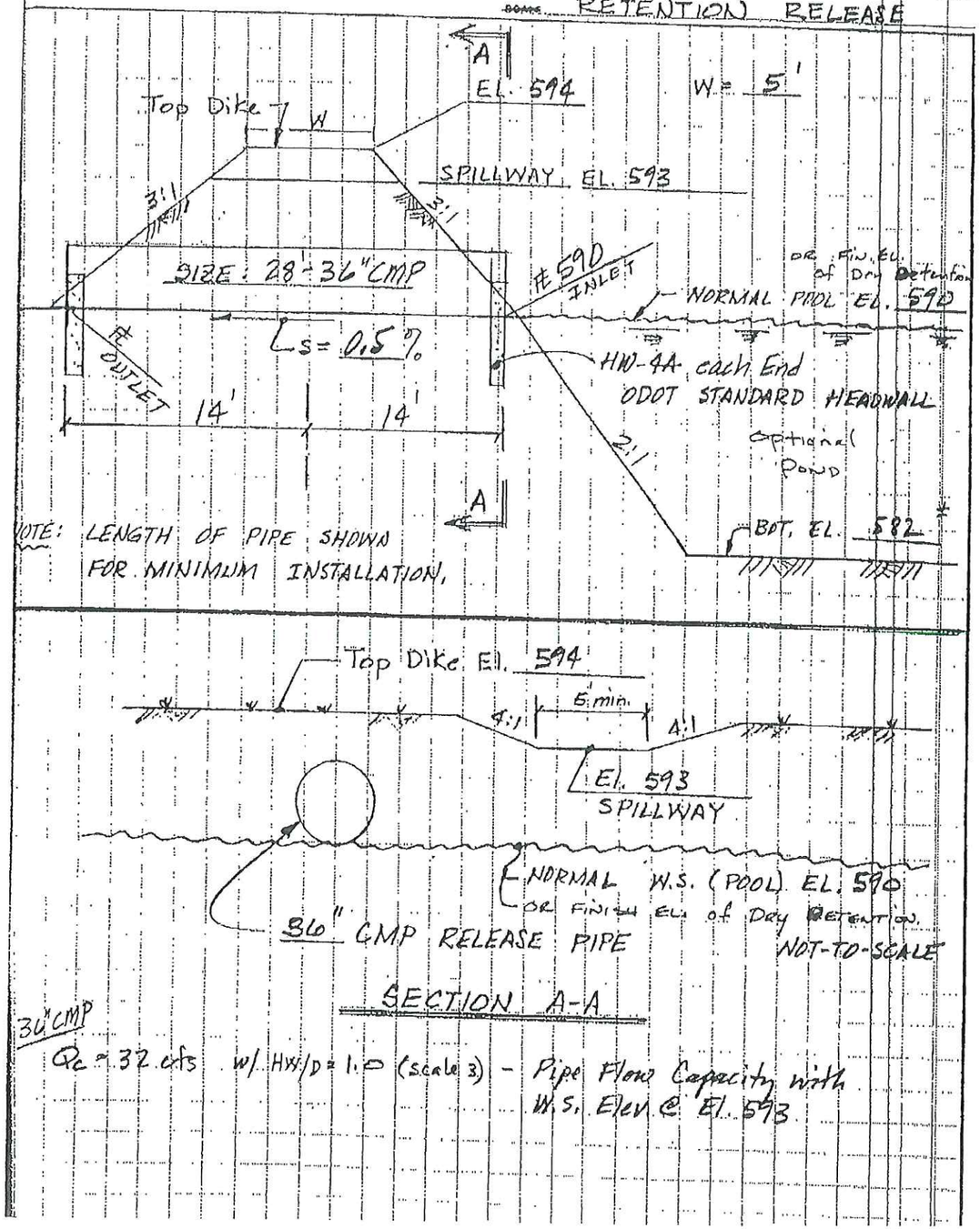
JOB
SHEET NO. OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

Pg. 12

DUGAN CONSULTANTS Civil Engineering

JOB
SHEET NO. ..... OF
CALCULATED BY ..... DATE Pg. 13
CHECKED BY ..... DATE
SUBJ. RETENTION RELEASE



SECTION A-A

36" CMP

Q_c = 32 cfs w/ HW/D = 1.0 (scale 3) - Pipe Flow Capacity with W.S. Elev @ El. 593.