(1) CROSSROADS EVAN. CHURCH

4/25/22
D.L.G.

PROPOSED ADDITION (ROOF DRAINING TO WEST) - 2287SF.
NEW SIDEWALK - 725 SF.
EXISTING GROSS AREA - 580.80' X 225' = 130,680SF

EXISTING "C" = .20 (GRASS)

DESIGN FOR 2 YEAR STORM (24 HOUR)
i = 2.60 IN/HR. (20MIN.) TABLE OH-1 TR55 OH10

$$Q_{ALL.} = CiA = .20 \times 2.6 \text{ IN/HR.} \times 3 \text{ ACRES}$$

$$Q_{ALL} = 1.56 \text{ CFS.}$$

$$\text{NEW } C = \frac{[(725\text{SF.} + 2287\text{SF.}) \times .90] + [127{,}668\text{SF} \times .20]}{130{,}680\text{SF}}$$

NEW C = 0.216

$$Q_{2A} = .20 \times 2.60 \text{ IN/HR.} \times 3.0\text{A.} = 1.56 \text{ CFS.}$$
$$Q_{2B} = .216 \times 2.60 \text{ IN/HR.} \times 3.0\text{A.} = 1.69 \text{ CFS.}$$

$$\frac{Q_{2B} - Q_{2A}}{Q_{2A}} = \frac{1.69\text{CFS.} - 1.56\text{CFS.}}{1.56\text{CFS}}$$

$$= 8.3\%$$

CRITICAL STORM (FROM PAGE 19 OF NAPOLEON ENGINEERING DEPT. RULES & REGULATIONS)
* USE 2 YEAR STORM FREQUENCY (24 HOUR)

ALLOWABLE RUNOFF Q = 1.56CFS.

(2) CROSSROADS EVAN. CHURCH 4/28/22 DLG

FROM SITE PLAN APROX. 69,000 SF. OF EXIST. SITE FLOWS INTO WEST GRASS SWALE

$$Q_{ALL.} = CiA = .20 \times 2.6 \text{ IN./HR.} \times \frac{69{,}000 \text{ SF}}{43{,}560 \text{ SF/A.}}$$

$$Q_{ALL} = .82 \text{ CFS.}$$

VOLUME OF EXIST. SWALE - $V = 300'L. \times 20'w. \times .5'DP.$

$V = 3000$ C.F.

NEW VOLUME TO BE DETAINED - 281 CF.
(SEE ENCLOSED DETENTION CALC'S.)

* THE EXISTING GRASS SWALE ON WEST SIDE OF PROPERTY SHOULD BE ADEQUATE TO SLOW DOWN & DETAIN THE PROPOSED ADDITIONAL STORM WATER FROM THE NEW ADDITION. THE ADDITION IS GOING IN AN AREA THAT IS PRESENTLY CONCRETE PAVEMENT.

STATE OF OHIO
DAVID L. GERINGER
E-46739
REGISTERED PROFESSIONAL ENGINEER

David L. Geringer

(3) CROSSROADS EVAN. CHURCH

4/28/22
D.L.G.

Determination of Design Detention Volume

Data:

1. Gross Area (Sq. Ft.)	69000 sq. ft.			
2. Pavement Area (Sq. Ft.)	725 sq. ft.			
3. Building Area (Sq. Ft.)	2287 sq. ft.			
4. Other Impervious Areas (Sq. Ft.)	0 sq. ft.			
5. Total Impervious Area (Sq. Ft.)	3012 sq. ft.	(Runoff Co.)	0.90	2711 sq. ft.
6. Total Other Impervious Area (Sq. Ft.)	0 sq. ft.	(Runoff Co.)	0.65	0 sq. ft.
7. Net Pervious Area (Sq. Ft.)	65988 sq. ft.	(Runoff Co.)	0.20	13198 sq. ft.
8. Weighted Runoff coefficient	0.23			
9. Weighted Runoff coefficient x Area	0.37			
10.(Pre-Development) Rainfall Intensity	2.60 in/hr			
10. Quantity of Runoff (Qallow.)	0.82 c.f.s.	Pre-Development "C"		0.2
11. Maximum Flow (Qavg.) (Determined by Assumed Max. Head)	0.82 c.f.s.			

INTENSITY (IN/HOUR)

Time of Concentration (tc)	Rainfall Intensity (in/hr.)	CwA A = Acres	Runoff Quantity (Qin)	Runoff Quantity (Qout)	Qin - Qout	(Qin-Qout) x tc x 60 (cu. ft.)	
15.0	3.10	0.37	1.13	0.82	0.31	281	CONTROLS
20.0	2.60	0.37	0.95	0.82	0.13	155	
30.0	2.10	0.37	0.77	0.82	-0.05	-96	
45.0	1.60	0.37	0.58	0.82	-0.24	-636	
60.0	1.30	0.37	0.47	0.82	-0.35	-1243	
90.0	1.00	0.37	0.37	0.82	-0.45	-2456	
120.0	0.70	0.37	0.26	0.82	-0.56	-4063	
150.0	0.60	0.37	0.22	0.82	-0.60	-5408	
180.0	0.90	0.37	0.33	0.82	-0.49	-5306	
210.0	0.60	0.37	0.22	0.82	-0.60	-7571	
240.0	0.50	0.37	0.18	0.82	-0.64	-9179	