NEW DIMENSIONS

DRAFTING, DESIGN,
CONSTRUCTION & PLANNING ASSISTANCE

~ LETTER OF TRANSMITTAL ~

ATTENTION: *Joe Kleiner*

FROM: *Ron Sonnenberg*

COMPANY: *City of Napoleon, Ohio*

DATE: *10.22.03*

ENCLOSED PLEASE FIND THE FOLLOWING:

☐ SHOP DRAWINGS ☐ PRINTS ☐ PLANS ☐ SAMPLES ☐ SPECIFICATIONS ☐ COPY OF LETTER ☐ CHANGE ORDER X OTHER

DESCRIPTION:

Copy of drainage and proposed pavement information for 1ST Church of Christ, Glenwood Avenue.

THESE ARE TRANSMITTED AS FOLLOWS:

☐ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ REVISE & SUBMIT___COPIES FOR APPROVAL
☐ FOR INFORMATION ☐ APPROVED AS NOTED ☐ SUBMIT___COPIES FOR DISTRIBUTION
☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RETURN___CORRECTED PRINTS
X FOR REVIEW & COMMENT ☐ ITEMS RETURNED AFTER LOAN TO US
☐ FOR BIDS DUE_____,___ 20___. ☐ OTHER_____

REMARKS:

Mr. Kleiner,

Please review the attached and let me know if it meets with your approval so that I can finish the plans for this project. I have allowed drainage areas 1, 2 and 3a to flow unrestricted in the same fashion as they currently drain. The existing basin in area 3a is noted to be rebuilt with a 4" perf. tile SE added to pick up an existing downspout drain. The balance of the parcel "Area 3b" would be re-graded to 3 new catch basins and drained through a 10" pipe to restrict flow to under 1.0 cfs.. The areas around the 3 new basins would provide surface storm water detention.

P.O. BOX 174, 1445 N. SCOTT ST.
NAPOLEON, OHIO 43545

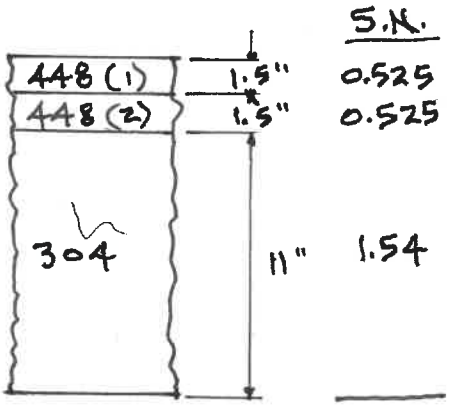
Please note that I have included a larger area of pavement in the drainage calc's. to allow for future added pavement for additional parking. This was done so that the future work would not require additional calc's. and drainage work since the future areas would drain to the existing basins and the detention areas would remain as is.

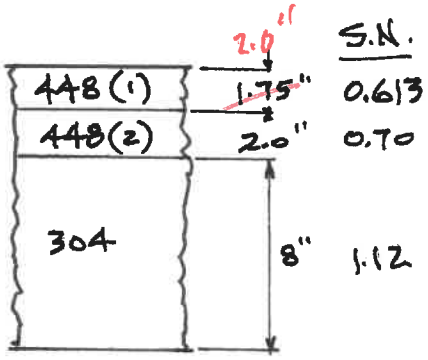
The new basins would be connected by 10" perforated pipe that would provide subsurface drainage as well. Additional 6" & 4" perforated pipe is proposed at the south end of new basin "C" both as subsurface drainage and also for the connection of 2 existing downspout drains now flowing onto the lot.

Regarding concrete pavements, the existing concrete parking spaces will not be disturbed, the new concrete additions to the drive approaches would be a minimum of 6" concrete on a min. 4" compacted 304.

With regard to asphalt pavement construction we are proposing a pavement consisting of 1 ¾" type 1 O.D.O.T. Item 448 on 2" type 2 O.D.O.T. Item 448 on 8" compacted O.D.O.T. Item 304. We realize that the structural number (see S.N. calc's. below) of this section is slightly less than that of the city recommended minimum of 3" asphalt on 11" aggregate. However, we feel that the increased asphalt thickness of this section would make it just as durable, if not more so. We also note the very light loading this pavement is likely to experience and ask for your approval of this alternate section.

Mr. Richard Bertz, P.E. has reviewed and approved of the information submitted and will approve the final plans if you so required. Please let us know if these items are acceptable as soon as possible as we would like to begin construction yet this fall and possibly get at least the type 2, 448 down before winter.





Thanks,

Storm Water Calculations

Project: FIRST CHURCH OF CHRIST, NAPOLEON, OHIO

Runoff flows & Coefficients, Pre & Post development

By:RDS Date: October, 2003

1) Existing (Pre-development) runoff:

Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
0.344	Lawn area	0.35	2.60	0.313
0.213	Building roof	0.90	2.60	0.498
0.492	Gravel pavement	0.55	2.60	0.704
0.047	Concrete pavement	0.90	2.60	0.110
		Total Existing Runoff		1.625

2) Proposed (Post-development) runoff:

Project Description:

Calculations are based on an existing 1.096 Ac.site with 9,286 s.f. of existing building roof area, 27,717 square feet of asphalt & concrete pavement with the balance in lawns. Proposal is to pave most existing gravel areas w/Asphalt. Calculations provide for the addition of approx. 400 s.f. of Conc. pavement and 3,650 s.f. of asphalt pavement in the future, all draining to proposed basins.

Area(Ac.)	Land use description		"C"	"CA"
0.213	Building roof		0.90	0.192
0.580	Asphalt pavement		0.85	0.493
0.057	Concrete pavement		0.90	0.051
0.246	Grassed/Agri area		0.35	0.086
1.096	TOTAL AREA		TOTAL	0.822

Weighted "C" = TOTAL "CA" **0.822**

TOTAL "A" **1.096**

Weighted "C" = **0.750**

3) Proposed (Post-development) runoff:

Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
1.096	See "2" Above	0.750	2.60	2.137
		Total Proposed Runoff		2.137

4) Critical Storm Determination:

(2.137-1.625)/(1.625)=0.315 or 31.5% therefore : Critical Storm = 5 Year

Storm Water Calculations

Project: FIRST CHURCH OF CHRIST, NAPOLEON, OHIO

Storm Water Detention Calculations

By:RDS Date: October, 2003

Maximum discharge allowable per City of Napoleon @ Q2 = 1.625 cfs.

EXISTING STORM OUTLETS: (at 5 yr. Storm flows)

1) Area #1, surface runoff south to basin on Kenilworth = 0.100 cfs. (estimated)
2) Area #2, surface runoff to existing front yard basin = 0.340 cfs. (estimated)
3) Area #3a, surface runoff to existing front yard basin = 0.184 cfs. (estimated)

PROPOSED STORM OUTLETS:

1) Area #3b, 10" PVC outlet to existing basin North= 0.980 cfs. (estimated)

TOTAL STORM OUTLET CAPACITY: = 1.604 cfs. (estimated)

Site Area: 1.096

Weighted "C' 0.750

"T"(min.) Time of Concentration	"I"(in/hr) Intensity 5 Year Storm	"CA"	"Q" in (cfs)	"Q" out (cfs)	"Q"in-"Q"out (cfs)	Detention Volume(c.f.)
20	***3.15***	***0.8221***	***2.59***	***1.604***	***0.99***	***1183***
30	2.50	0.8221	2.06	1.604	0.45	812
40	2.07	0.8221	1.70	1.604	0.10	235
50	1.78	0.8221	1.46	1.604	-0.14	-422
60	1.58	0.8221	1.30	1.604	-0.31	-1098
70	1.25	0.8221	1.03	1.604	-0.58	-2421
80	1.18	0.8221	0.97	1.604	-0.63	-3043
90	1.06	0.8221	0.87	1.604	-0.73	-3956
100	1.00	0.8221	0.82	1.604	-0.78	-4691
110	0.96	0.8221	0.79	1.604	-0.81	-5378
120	0.89	0.8221	0.73	1.604	-0.87	-6281

Minimum Detention Volume Required = 1183 Cubic Feet

Area required for 1' depth of storage = 0.027 Acres
Area required for 1.5' depth of storage = 0.018 Acres
Area required for 2' depth of storage = 0.014 Acres
Area required for 2.5' depth of storage = 0.011 Acres

Expected Detention Areas & Volumes =

Ponding @ New C.B. "A" (approx 1200 s.f.) = 165.00 c.f.
Ponding @ New C.B. "B" (approx 2700 s.f.) = 375.00 c.f.
Ponding @ New C.B. "C" (approx 4800 s.f.) = 670.00 c.f.
Misc. pipe & basin storage capacities = 160.00 c.f.
Total Detention Volume = 1370.00 c.f.

Storm Water Calculations						
Project: FIRST CHURCH OF CHRIST, NAPOLEON, OHIO						
Drainage Area Flow Calculations (at 5 yr. Storm flows)						
R.D.S.		Date: October, 2003				
				Design Storm "I" in./hr.=		**3.15**
				Time/Concentration "T" m		**20**
Area 1	Description:					
		2,774 s.f. existing area - no change in drainage patterns.				
					5 Yr. Stm.	
		Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
		0.017	Building roof	0.9	3.15	0.048
		0.000	Concrete pavement	0.90	3.15	0.000
		0.000	Gravel pavement	0.45	3.15	0.000
		0.047	Lawn-grassed area	0.35	3.15	0.052
				Total Flow ~ Area 1		0.100
Area 2	Description:					
		7,777 s.f. existing area - no change in drainage patterns.				
					5 Yr. Stm.	
		Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
		0.073	Building roof	0.90	3.15	0.207
		0.000	Asphalt pavement	0.85	3.15	0.000
		0.010	Concrete pavement	0.90	3.15	0.027
		0.096	Lawn-grassed area	0.35	3.15	0.106
				Total Flow ~ Area 2		0.340
Area 3a	Description:					
		3,124 s.f. of Area #3 draining to exist. basin @ Glenwood				
					5 Yr. Stm.	
		Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
		0.021	Building roof	0.90	3.15	0.060
		0.040	Asphalt pavement	0.85	3.15	0.106
		0.003	Concrete pavement	0.90	3.15	0.009
		0.008	Lawn-grassed area	0.35	3.15	0.009
				Total Flow ~ Area 3a		0.184
Area 3b	Description:					
		34100 s.f. of Area #3 draining to NEW basins in parking lot.				
					5 Yr. Stm.	
		Area(Ac.)	Land use description	"C"	"I"in/hr	"Q"cfs
		0.103	Building roof	0.90	3.15	0.292
		0.540	Asphalt pavement	0.85	3.15	1.446
		0.044	Concrete pavement	0.90	3.15	0.125
		0.096	Lawn-grassed area	0.35	3.15	0.106
				Total Flow ~ Area 3b		1.968

Storm Water Calculations
Project: FIRST CHURCH OF CHRIST, NAPOLEON, OHIO
Storm Water Detention Calculations by Drainage Area

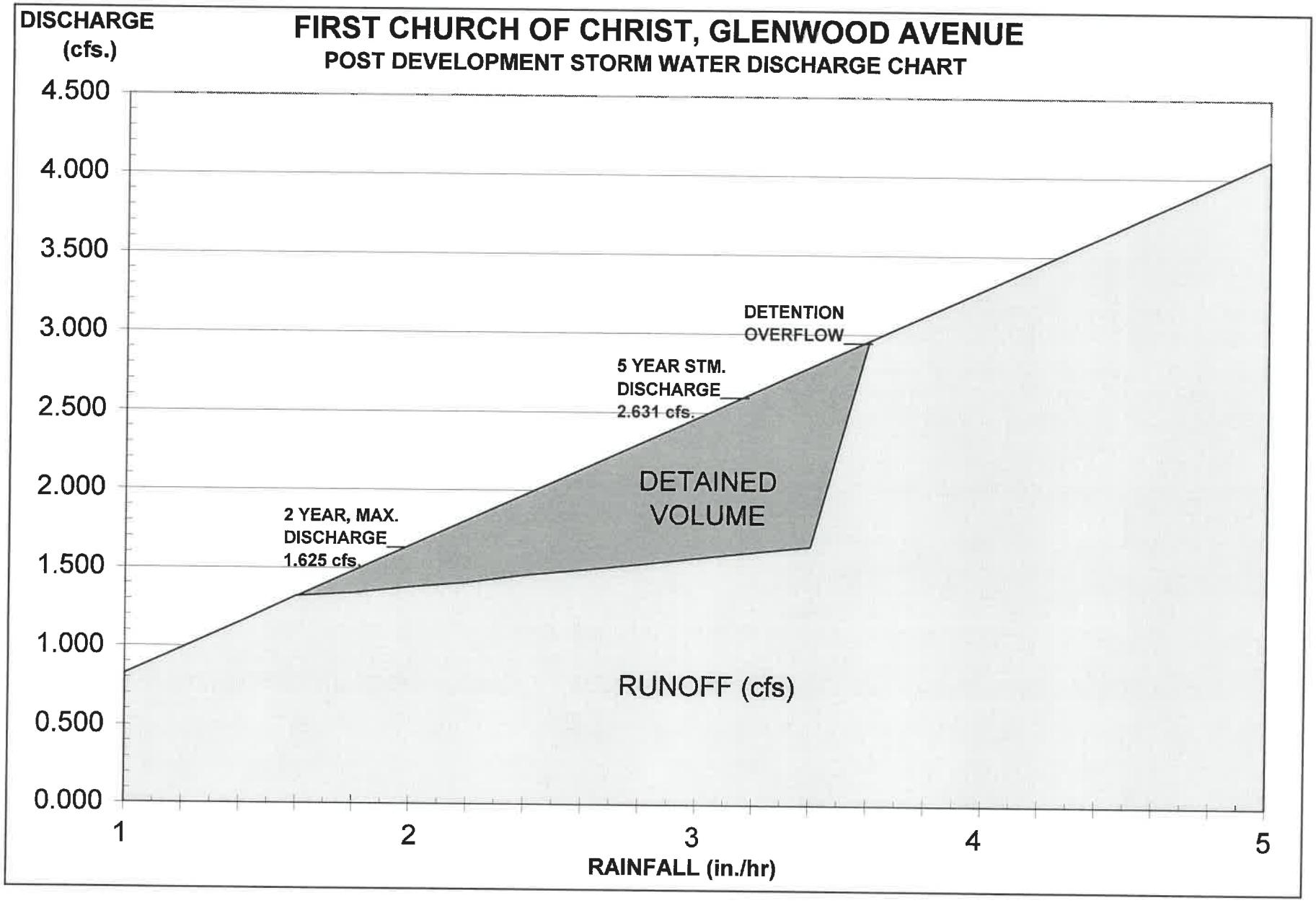
By:RDS Date: October, 2003

DRAINAGE AREA #3b
Site Area: 0.783
Weighted "C' 0.798

"T"(min.) Time of Concentration	"I"(in/hr) Intensity 5 Year Storm	"CA"	"Q" in (cfs)	"Q" out (cfs)	"Q"in-"Q"out (cfs)	Detention Volume(c.f.)
20	***3.15***	***0.6248***	***1.97***	***0.980***	***0.99***	***1186***
30	2.50	0.6248	1.56	0.980	0.58	1048
40	2.07	0.6248	1.29	0.980	0.31	752
50	1.78	0.6248	1.11	0.980	0.13	396
60	1.58	0.6248	0.99	0.980	0.01	26
70	1.25	0.6248	0.78	0.980	-0.20	-836
80	1.18	0.6248	0.74	0.980	-0.24	-1165
90	1.06	0.6248	0.66	0.980	-0.32	-1716
100	1.00	0.6248	0.62	0.980	-0.36	-2131
110	0.96	0.6248	0.60	0.980	-0.38	-2509
120	0.89	0.6248	0.56	0.980	-0.42	-3052

DRAINAGE AREA #__
Site Area: 0.000
Weighted "C' 0.000

"T"(min.) Time of Concentration	"I"(in/hr) Intensity 5 Year Storm	"CA"	"Q" in (cfs)	"Q" out (cfs)	"Q"in-"Q"out (cfs)	Detention Volume(c.f.)
20	3.15	0.0000	0.00	0.000	0.00	0
30	2.50	0.0000	0.00	0.000	0.00	0
40	2.07	0.0000	0.00	0.000	0.00	0
50	1.78	0.0000	0.00	0.000	0.00	0
60	1.58	0.0000	0.00	0.000	0.00	0
70	1.25	0.0000	0.00	0.000	0.00	0
80	1.18	0.0000	0.00	0.000	0.00	0
90	1.06	0.0000	0.00	0.000	0.00	0
100	1.00	0.0000	0.00	0.000	0.00	0
110	0.96	0.0000	0.00	0.000	0.00	0
120	0.89	0.0000	0.00	0.000	0.00	0


DISCHARGE
(cfs.)
FIRST CHURCH OF CHRIST, GLENWOOD AVENUE
POST DEVELOPMENT STORM WATER DISCHARGE CHART
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
DETENTION
OVERFLOW
5 YEAR STM.
DISCHARGE
2.631 cfs.
DETAINED
VOLUME
2 YEAR, MAX.
DISCHARGE
1.625 cfs.
RUNOFF (cfs)
1
2
3
4
5
RAINFALL (in./hr)