

Civil Engineers
Planners
Land Surveyors
333 Mid Rivers Mall Dr
St. Peters, MO 63376
441-1211
278-1211

PROJECT NAME SALVATION ARMY
PROJECT #/JOB ORDER # 91-215
DATE 10-21-92
DESIGNER KENDRICK
PAGE _____

TOTAL AREA OF DEVELOPMENT:	5.08 ACRES
AREA DRAINING TO BASIN (15YR):	
ONSITE: 2.66 AC @ 3.85 =	10.24 CFS
OFFSITE: 4.42 AC @ 1.87 =	8.26 CFS
	<u>TQ 18.50 CFS</u>
AREA DRAINING TO BASIN (25YR):	
ONSITE: 2.66 AC @ 4.75 =	12.64 CFS
OFFSITE: 4.42 AC @ 2.31 =	10.21 CFS
	<u>TQ 22.85 CFS</u>
AREA DRAINING TO BASIN (100YR):	
ONSITE: 2.66 AC @ 6.08 =	16.17 CFS
OFFSITE: 4.42 AC @ 2.95 =	13.04 CFS
	<u>TQ 29.21 CFS</u>
AREA TO PASS THRU SPILLWAY (100YR):	
ONSITE: 2.66 AC @ 6.08 =	16.17 CFS
OFFSITE: 4.42 AC @ 6.08 =	26.87 CFS
	<u>TQ 43.04 CFS</u>
DIFFERENTIAL RUNOFF: (25YR.)	
UNDEVELOPED: 5.08 AC @ 2.31 P.I. =	11.73 cfs
DEVELOPED: 5.08 AC @ 4.75 P.I. =	24.13 cfs
INCREASED RUNOFF: 5.08 AC @ 2.44 P.I. =	12.40 cfs
STORAGE REQUIRED (15YR.)	
5.08 AC x 3.85 = 19.56 CFS - (5.08 AC x 1.87) =	10.06 CFS
10.06 CFS x (30 MIN x 60 SEC)	= 18,108 CF
STORAGE REQUIRED: (25YR.)	
12.40 CFS x (30 MIN x 60 SEC)	= 22,320 CF
STORAGE REQUIRED (100YR.)	
5.08 AC x 6.08 = 30.89 CFS - (5.08 x 2.91) =	16.11 cfs
16.11 cfs x (30 MIN x 60 SEC)	= 28,998 CF

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ALLOWABLE RELEASE: (25YR.)	22.85 CFS - 12.40 CFS = 10.45 CFS
EXISTING FLOW TO DISCHARGE POINT: (25YR.)	7.38 AC @ 2.31 = 17.05 CFS
ADDITION SEDIMENT STORAGE REQUIRED:	115 x 5.08 AC x 2YR. = 1170 CU.FT.
MINIMUM STORAGE w/ SEDIMENT FACTOR:	22,320 CU.YD. + 1170 CU.YD. = 23,490 CU.YD.

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ELEV.	AREA	STORAGE	ACCUM. STORAGE
547.0	0 S.F.	0	0
548.0	4860 S.F.	$\frac{0 + 4860}{2} \times 1$	2430 Cu. Ft.
550.0	9122 S.F.	$\frac{4860 + 9122}{2} \times 2$	13,982 Cu. Ft.
551.75	14,868 S.F.	$\frac{9122 + 14868}{2} \times 1.75$	34,973 Cu. Ft.
552.00	15,689 S.F.	$\frac{14868 + 15689}{2} \times .25$	38,793 Cu. Ft.
554.00	23,230 S.F.	$\frac{15689 + 23230}{2} \times 2$	77,712 Cu. Ft.

15YR.

SALVATION ARMY	10-22-92	SUBMITTAL DATE: 10-22-92	
ELEVATION	AREA	VOLUME	CUM. VOLUME
547.00	0	2430	2430
548.00	4860	13982	16412
550.00	9122	20991	37403
551.75	14868	3819	41222
552.00	15689	38919	80141
554.00	23230		

* PIPE OUTLET
* 1 73 ft - 9 in pipe(s)
* UFL= 547 LFL= 541.82 n= .013

Tc = 4 MIN.

SALVATION ARMY	10-22-92	SUBMITTAL DATE: 10-22-92			
MIN	INFLOW	STORAGE	OUTFLOW	NET DET.	ELEV.
1	277.50	277.50	0.00	277.50	547.11
2	555.00	832.50	2.19	830.31	547.34
3	832.50	1662.81	18.09	1644.72	547.68
4	1110.00	2754.72	53.78	2700.94	548.04
5	1110.00	3810.94	105.72	3705.22	548.18
6	1110.00	4815.22	116.60	4698.62	548.32
7	1110.00	5808.62	126.44	5682.18	548.47
8	1110.00	6792.18	135.49	6656.70	548.60
9	1110.00	7766.70	143.89	7622.81	548.74
10	1110.00	8732.81	151.76	8581.05	548.88
11	1110.00	9691.05	159.18	9531.87	549.02
12	1110.00	10641.87	166.22	10475.65	549.15
13	1110.00	11585.65	172.92	11412.73	549.28
14	1110.00	12522.73	179.33	12343.40	549.42
15	1110.00	13453.40	185.47	13267.93	549.55
16	1110.00	14377.93	191.38	14186.55	549.68
17	1110.00	15296.55	197.07	15099.48	549.81
18	1110.00	16209.48	202.58	16006.90	549.94
19	1110.00	17116.90	207.90	16909.00	550.04
20	1110.00	18019.00	211.89	17807.11	550.12
21	832.50	18639.61	214.84	18424.77	550.17
22	555.00	18979.77	216.85	18762.92	550.20
23	277.50	19040.42	217.94	18822.48	550.20 ← 15YR. H.W.
24	0.00	18822.48	218.13	18604.35	550.18
25	0.00	18604.35	217.43	18386.92	550.16

PEAK OUTFLOW = 3.64 CFS AT 24 MINUTES