

FORM 800

This form must be completed and submitted with all drainage plans
 Project Truck Pro Detention Facility Design Return Period 25 yrs.

Designer DG Hartman Release Rate Return Period 10 yrs.

Watershed Area .849 acres A_d

Time of Concentration (undeveloped watershed) 2.3 minutes 18.58

Rainfall Intensity (i_U) 2.078 inches/hr

Undeveloped Runoff Coefficient (C_U) .22

Undeveloped Runoff Coefficient ($O = C_U i_U A_U$) .388 cfs

Developed Runoff Coefficient (C_D) .686
 $.686 \times 7.208 \times .849 = .22 \times 2.078 \times .849$

5
10
15
30

Storm Duration t_d (hrs.)	Rainfall Intensity i_d (inches/hr)	Inflow Rate $I(t_d)$ $(C_D i_d A_D)$ (cfs)	Outflow Rate O $(C_U i_U A_U)$ (cfs)	Storage Rate $I(t_d) - O$ (cfs)	Required Storage $I(t_d) - O \frac{t_d}{12}$ (acre-ft)
.0833	7.208	4.198	.388	3.810	.0264
.1667	5.925	3.451	.388	3.063	.043
.25	5.033	2.931	.388	2.543	.053
.50	3.646	2.123	.388	1.735	.0723
1.0	2.078	1.210	.388	.822	.068
2.0	1.400	.815	.388	.427	.071
3.0	1.019	.593	.388	.205	.051
4.0	.836				
5.0	.684				
6.0	.589				
7.0	.516				
8.0	.463				
9.0	.415				
10.0	.379				
11.0	.351				
12.0	.331				

$3.810 \times \frac{.0833}{12} =$

$= 3150 \text{ cf}$
 $= 56^2 \times 1'$

2
12

Total Watershed Area = $185 \times 200 \div 43560 = .849 \text{ Ac}$

Slope = say $3' \div 200' = .015$

1) x Find $t_c = .0073 \times k^{.777} = .0073 \times 1960^{.777} = 2.638 \text{ min}$ $k = \frac{L}{\sqrt{S}} = \frac{240}{\sqrt{.015}}$

2) use kirby $t_c = .827 \left(\frac{NL}{\sqrt{S}} \right)^{.467} = .827 \left(\frac{.4 \times 240}{\sqrt{.015}} \right)^{.467} = 18.58 \text{ min}$

3) Table $t_c = 2.3 \text{ min}$

Outflow Rate = $C_u(i_u)A_c$

$A_u = \text{Watershed Area} =$	$= .849 \text{ Ac}$	C_d	
Proposed Bldg = $12000 \div 43560$	$= .276 \text{ Ac}$	$\times .88 =$	$.243$
22 Park = $(185 + 78)50 \div 43560$	$= .301$	$\times .88 =$	$.265$
Side Walk = $(145 + 78)5' \div 43560$	$= .026$	$\times .88 =$	$.023$
Loading D. = $80' \times 14' \div 43560$	$= .025$	$\times .88 =$	$.002$
Grass Area =	$= .221$	$\times .22 =$	$.049$
		$.849$	$\underline{.582}$
			$.686 = C_d$

Find Outflow

$Q = C_u i_u A_c$

$= .22 \times 2.078 \times .849 = .388 \text{ cfs}$

Find Dia of PVC pipe @ $\frac{1/4''}{ft} = .0208 \text{ ft/ft}$
 $\text{@ } \frac{1/8''}{ft} = .0104 \text{ ft/ft}$

$\text{Dia} = \left(\frac{1630 \times .388 \text{ cfs} \times .01}{\sqrt{.0104}} \right)^{.38} = 4.70'' \phi$

use

Try Dia = $\left(\frac{1630 \times .388 \times .01}{\sqrt{.0208}} \right)^{.38} = 4.13'' \phi$ use

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9334