

HYPOTHETICAL SOLUTION ONLY

ORIFICE DESIGN "Q" = C_d a T_c $\sqrt{2gh}$ $C_d = C_c$ x C_x $C_c = (sharp edge) = 0.62$ $C_x = (water) = 0.97$ $C_d = (.62)(.97) = 0.60$ "Q" = ALLOWABLE OUTFLOW = 1.73 (LOT 1) + 1.05 (LOT 2) $2.78 = (0.6)(a) \sqrt{2(32.2)(2)}$ 2.78 = 6.80(a) $a = 0.41 \text{ SF} = \pi r^2$ $x^2 = 0.13$ $r = 0.36 \text{ ft.} = 4\frac{1}{2}$ USE OPENING WITH 9" HOLE REDUCE 12" OUTFLOW PIPE TO A 9" OPENING BASIN GEOMETRY BASIN #1 (SWALE BETWEEN LOTS 1 & 2) AREA $\frac{22+272}{2} \times 1 = 147$ $272+896 \times 1 = 584$ 896 SF $896+1568 \times 1 = 1232$ 1963 CF/43,560 = 0.05 AC. FT. 1568 SF BASIN #2 (SWALES ON LOT 1) 447.25 172 SF $\frac{172+868}{2}$ x .75 = 390 CF/43,560 = 0.01 AC. FT. 868 SF

REQUIRED LOT 2 = $\frac{0.025}{0.072}$

Both projects, as noted, empty north to Rusher Creek. The developers of these two lots, referred to as Arbys Hwy. 41 North Minor Subdivision, plan to continue to allow this storm water to empty into Rusher Creek, but with no additional impact. The drainage improvements shown hereon will be used to detain storm runoff on-site. The 12 inch diameter outfall currently draining the sites will also be restricted by an orifice plate with a 9" diameter hole to further insure against any increase in storm water loading that would result from the development of these sites. The two basic design requirements have been met:

 $\frac{308+1140}{2}$ X .75 = 543 CF/43,560 = 0.01+ AC. FT.

1. The calculations show the need for 0.07 acre feet of storage and the three basins combined allow for that.

2. The allowable outflow (determined as the existing runoff) has been preserved by the insertion of a 9 inch diameter orifice at the outflow structure.

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