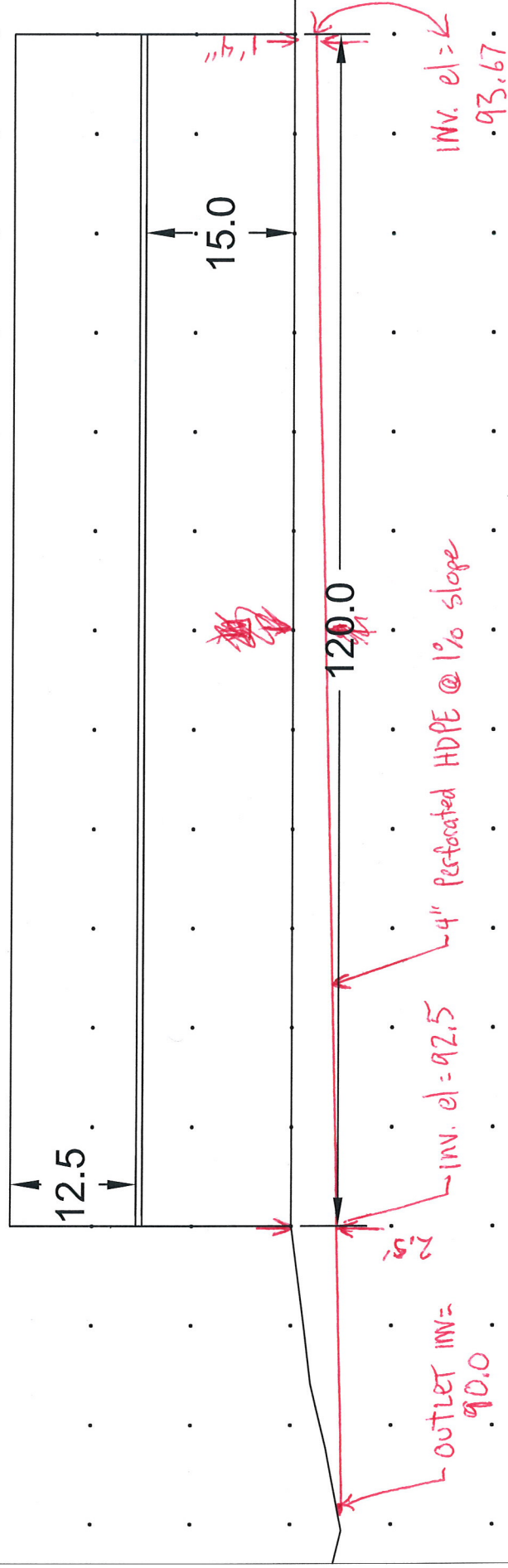


Trench xsection



NOT TO SCALE
DOT SPACING IS 10'X10'

ROOF RUNOFF STRUCTURE DESIGN					
Adapted from spreadsheet by NRCS Walton Area					
Client : Tim		Project: Drip Trench Exercise Possible Solutions			
County : Niagara		By: TC		Date: 1/15/2015	
Town : Smithville		Checked: TC		Date: 1/30/2015	
Field No: 4532					
Plan Roof Area =	3600	Only enter information into:		Cells	
Roof Slope (x/12) =	5				
Adjusted Area =	3780	Total Flow 0.567		Is project part of a manure management system. (If yes, design for a 25 yr, 5 min precipitation design capacity. If no, design for a 10 yr, 5 min precipitation)	
Length of Trench =	120	0.00473			
	ft ²	cfs			
	ft	cfs/LF			
Enter 5 min rainfall (inches):				0.54	0.15012 cfs/1000 ft ²
Step 1 Compute Total Runoff Volume from 5 Min Design Storm					
Volume = flow rate * 60s/min * 5 min		= 170.2 cubic ft			
Step 2 Compute Storage Per foot of Drip Trench					
Width =	2	feet			
Average Depth =	1.9	feet			
Depression =	0	feet (Optional design element)			
Void Ratio =	0.4	(Typically 0.4)			
Pipe Diameter =	4	inches (area is subtracted from available storage)			
Storage per foot = (width*depth - pipe)*void ratio + (depression*width)				= 1.5 cubic ft	
Total Storage = per foot storage * length of trench				= 178.2 cubic ft	
Can the trench store the 5 min rainfall?		YES			
Step 3 Size the Tile Drain Pipe					
Note: Ideally the trench will have a constant depth, match the ground slope, and allow the tile to be laid at a slope around 1%. If the ground slope is flat, raise the bottom at the upstream end and lower the bottom at the downstream end to achieve a reasonable slope. The designer may choose a smaller tile size for the first half/third/etc. of the trench.					
Tile Slope =	1	percent			
Flow in tile is based on 1 cfs/1000 feet for washed gravel (NYS Drainage Guide p. 60). Each foot produces 0.001 cfs of flow.					
Flow at End =	0.12	cfs	Using Figure 12	=	4 inches

The diagram shows a cross-section of a trench. A circle representing a pipe is at the bottom. The width of the trench is labeled 'Width' with a double-headed arrow. The depth from the bottom of the pipe to the top of the trench is labeled 'Depth' with a double-headed arrow. A 'Depression' is indicated by a downward arrow from the top surface of the trench.