



Understanding the HydraCALC Printout

July 2018

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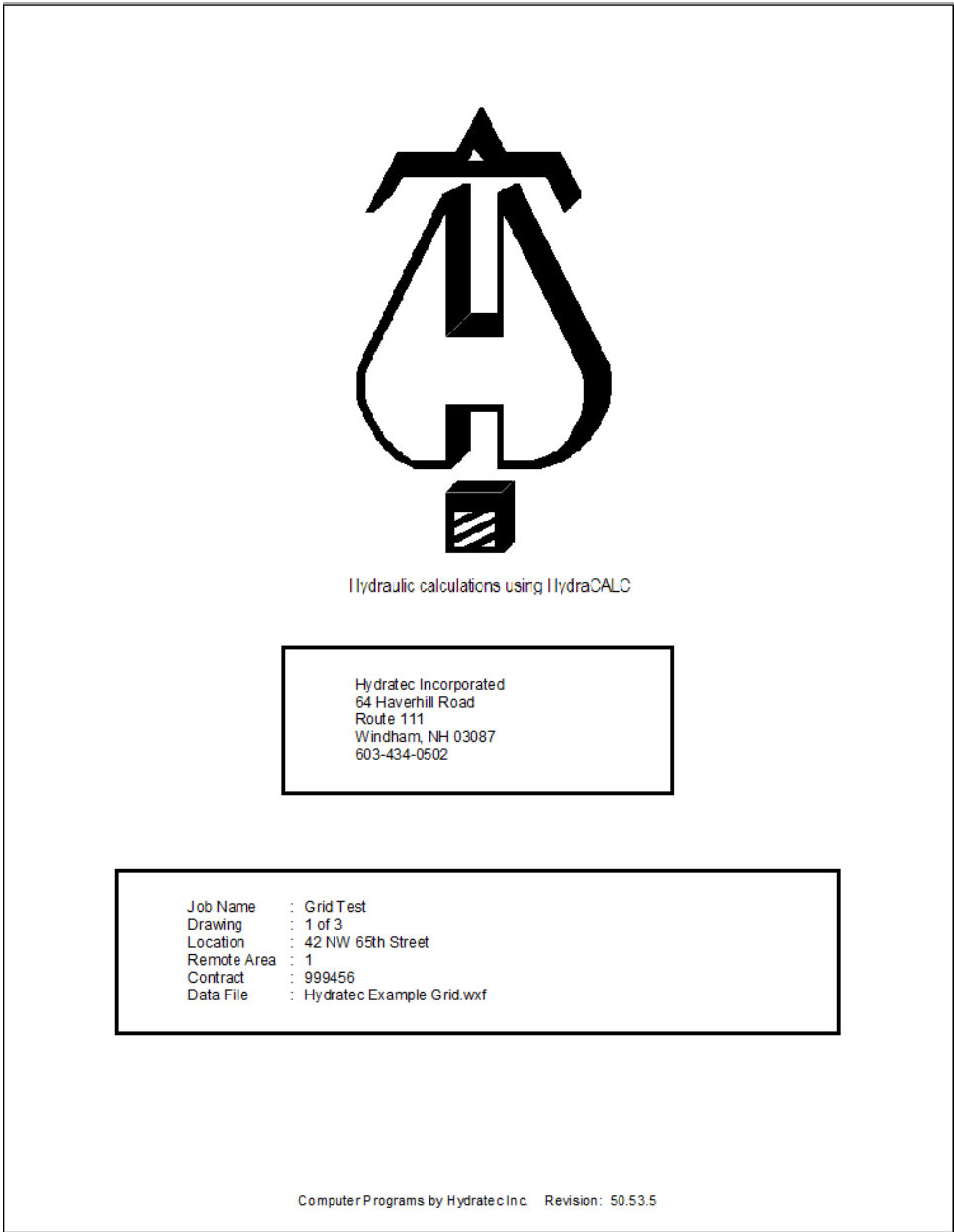
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Understanding the HydraCALC Printout

The standard HydraCALC printout conforms to NFPA13 specifications. There are alternate printout options available, but what follows are the standard sheets and their explanation.

Cover Sheet

The Cover Sheet begins the submittal calculations. It consists of a logo, your company information (if so configured) and some pertinent calculation information. The version number of HydraCALC used to produce the calculation is at bottom.



The **logo** of this sheet can be changed by the user



The **company name and address** can be changed by the user

Hydratec Incorporated
64 Haverhill Road
Route 111
Windham, NH 03087
603-434-0502

The bottom section is automatically filled out and gets its values from the Information Sheet, except for the last item - the **Data File**. That is the file name of the calculation.

Job Name : Grid Test
Drawing : 1 of 3
Location : 42 NW 65th Street
Remote Area : 1
Contract : 999456
Data File : Hydratec Example Grid.wxf

Summary (Information) Sheet

The Summary Sheet is based entirely on the Information Sheet that the user created in HydraCALC, if they in fact created one.

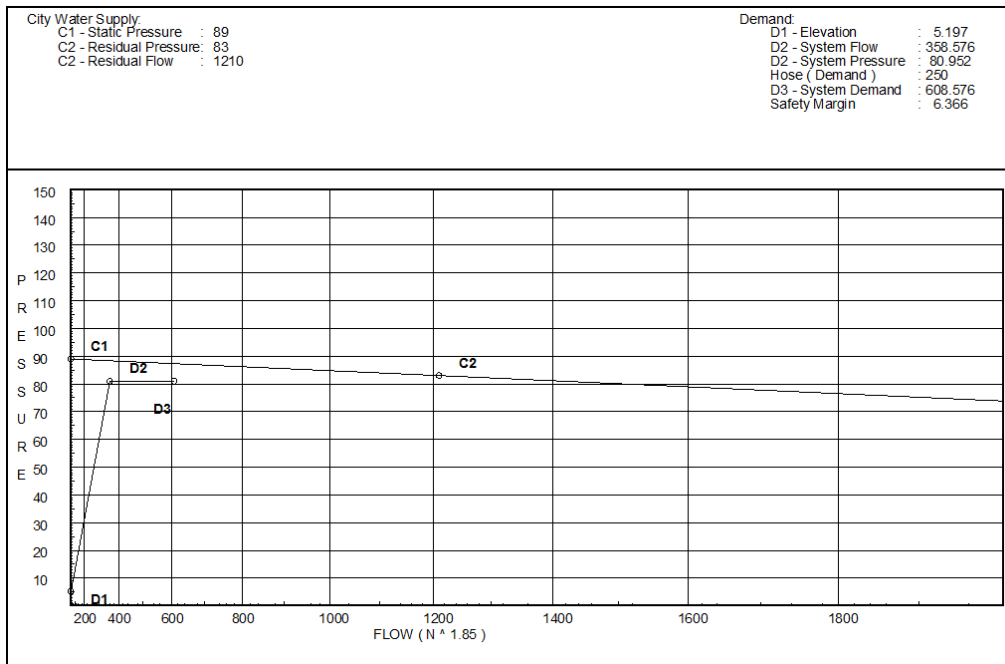
Hydratec Incorporated Grid Test	Page 1 Date
HYDRAULIC CALCULATIONS <i>for</i>	
Project name: Grid Test Location: 42 NW 65th Street Drawing no: 1 of 3 Date: 9/30/14	
Design	
Remote area number: 1 Remote area location: Warehouse Occupancy classification: OHI Density: .20 - Gpm/SqFt Area of application: 1500 - SqFt Coverage per sprinkler: 100 - SqFt Type of sprinklers calculated: Victaulic No. of sprinklers calculated: 13 In-rack demand: 0 - GPM Hose streams: 250 - GPM Total water required (including hose streams): 573.712 - GPM @ 4.27357 - Psi Type of system: Wet Volume of dry or preaction system: - Gal	
Water supply information	
Date: 7/7/97 Location: In Street Source: DPW	
Name of contractor: Hydratec Incorporated Address: 64 Haverhill Road / Route 111 / Windham NH 03087 Phone number: 603 434-0502 Name of designer: Fred Authority having jurisdiction: Local Notes: (Include peaking information or gridded systems here.)	
Computer Programs by Hydratec Inc. Revision: 50.53.5	

Water Supply (Hydraulic Graph)

The **Hydraulic Graph** sheet is generated from the data that was entered using the Water Supplies command along with data entered into the job itself. It shows curves based on city supplies and pumps, if any. This page prints in landscape mode.

Types of Hydraulic Graphs

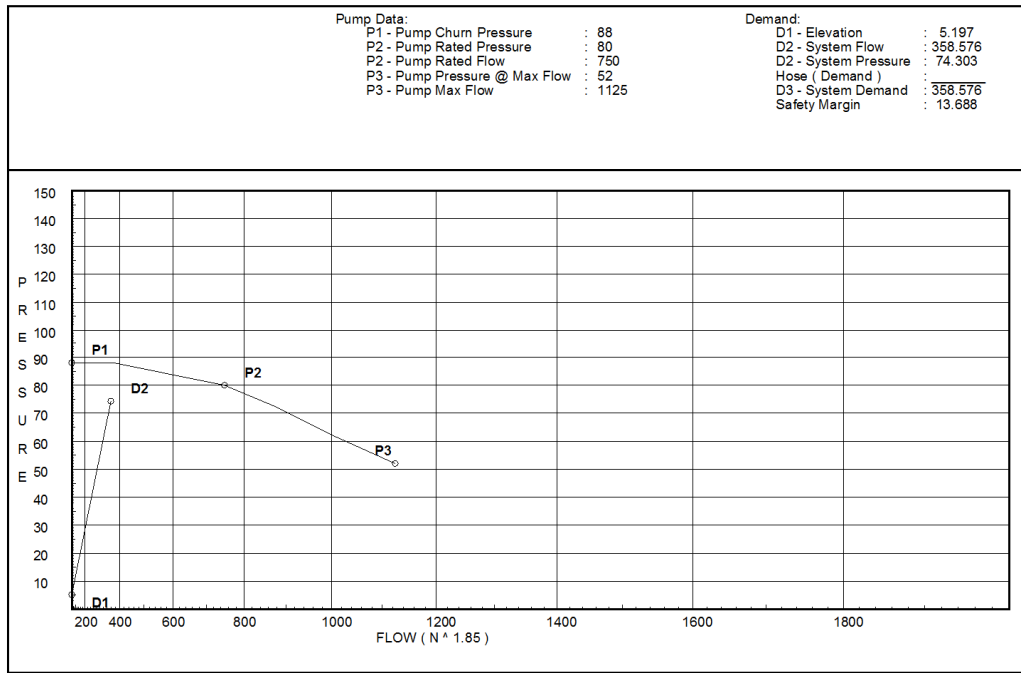
The following represent the three most common Hydraulic Graphs.



City Supply Only

This graph shows two curves, the **City** curve and the **Demand** curve. The demand curve (in this case) has two demand points at the same pressure – D2 and D3. This is because the exterior hose flow was added as an H250 flow. This allow this flow to be seen clearly. If the flow were entered as +250, the numerical result is the same, but the Demand curve is drawn directly from D1 to D2, where D2 takes the place of D3 and no D3 is shown.

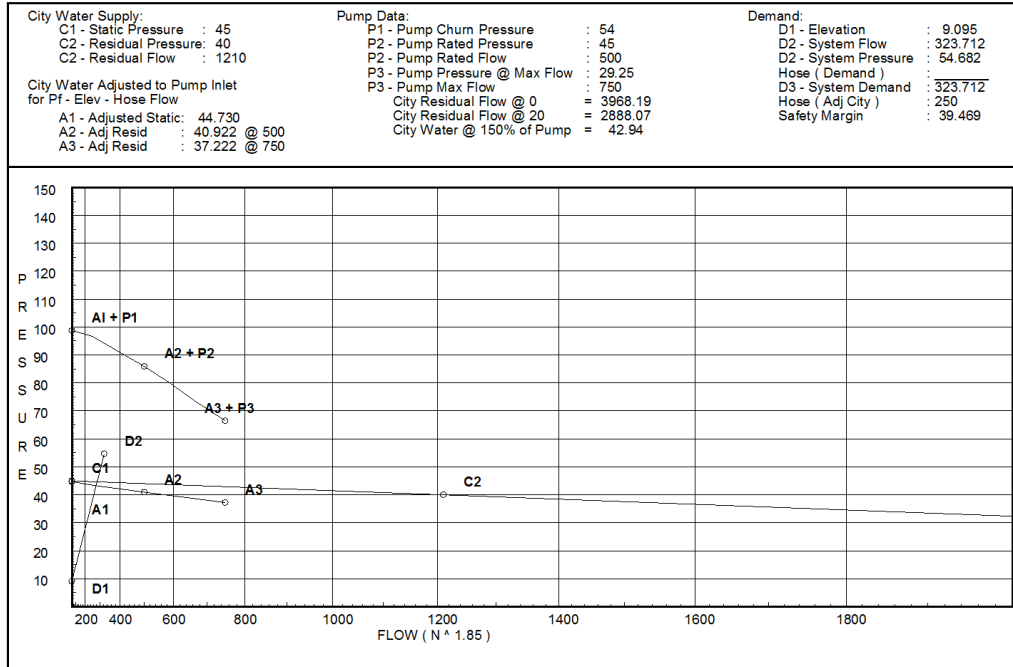
See below for a key to the points and what they represent.



Pump Supply Only (No City Supply)

This graph shows two curves, the **Pump** curve and the **Demand** curve. The Pump curve is drawn using the Churn Pressure, the Rated Pressure and the Rated Flow.

See below for a key to the points and what they represent.



Pump and City Supply

This graph shows four curves, the **City** curve, the **Adjusted City** curve, the combined **Pump and Adjusted City** curve and the **Demand** curve. The straight pump curve is omitted for clarity. The Adjusted City curve is calculated by flowing the various points along the pump curve from the **Source** back to the **Pump Inlet**. Any elevation changes, hose flows or friction losses are accounted for, usually resulting in a lower water pressure being available at the Pump Inlet versus the Source point.

The Adjusted City curve plus the Pump curve adds together these two curves, resulting in the water actually available.

See below for a key to the points and what they represent.

Key to Hydraulic Graph

The following table presents where the values on the graph come from, along with notes explaining in detail, if necessary.

Some of these curves appear only if a pump is present, or a city supply is entered, or both.

Hydraulic Graph Key					
Point	Source	City	Pump	City and Pump	Notes
C1	Water Source	X			Static Pressure as specified in Water Source input
C2	Water Source	X			Residual Pressure as specified in Water Source input
C2	Water Source	X			Residual Flow as specified in Water Source input
A1	Calculated			X	Adjusted Static is calculated from the losses in elevation and friction between the pump inlet and the water source itself, resulting in, usually, a lower available pressure at the pump inlet. Hose flows between the source point and the pump inlet also affect this result
A2	Water Source			X	This is the Adjusted Residual at the pump rated flow
A3	Water Source			X	This is the Adjusted Residual at 150% of the pump rated flow
P1	Water Source		X	X	Pump Rated Pressure times the Churn Percentage
P2	Water Source		X	X	Pump Rated Pressure as specified in the Water Source input
P2	Water Source		X	X	Pump Rated Flow as specified in the Water Source input
P3	Water Source		X	X	Pump Pressure at 150% of Rated Flow
P3	Water Source		X	X	150% of Pump rated Flow
D1	Input	X	X		Calculated from input. Difference between highest and lowest elevations, converted to PSI/Bar
D2	Calculated	X	X		The flow required by the system as calculated. Does not include Hose (H) flows
D3	Calculated	X			This point only appears on graph if a flow is added using an 'H' before it, i.e. H250, H1000. The line between D2 and D3 represents the flow magnitude of the flow

These additional values appear on the Hydraulic Graph for information purposes:

Value	Notes
City Residual Flow @0	Flow from city curve at zero psi
City Residual Flow @20	Flow from city curve at 20 psi
City Water @ 150% of Pump	Flow from city curve at 150% of the pump rated flow
Hose (Demand)	Hose added at the demand point of the calculation
Hose (Adj City)	Hose figured into Adjusted City Curve calculations (Points A1 and A2)
Safety Margin	The 'cushion' resulting from the calculation. This number references the difference between D2 (or D3) and the city, pump or combined curve

Fittings Used Summary

This report shows detailed information concerning the **fittings** that are used in the calculation. In the image below, note five fittings – A, E, G, T and Zac, that were used somewhere in the calculation.

The **Name** of the fitting is printed after the **Fitting Abbreviation**. After that appear the equivalent lengths that are assigned to all the sizes possible in HydraCALC, from ½” (12mm) to 24” (600mm). These are the ‘**unadjusted**’ equivalent lengths. Certain NFPA standards require that the fittings lengths be **adjusted** based on the pipe type and c-factor used - a note to this effect appears at the bottom of this page. These adjusted lengths are used on the hydraulic calculation sheets (later in this chapter). This part of the report is useful in that it shows what the equivalent lengths were before those adjustments.

The **Zac** fitting’s values are based on a **loss curve** as opposed to a table, hence the note next to it.

Fittings Used Summary																		Page	3			
Hydratec Incorporated																		Date	6/12/12			
Example Tree																						
Fitting Legend																						
Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24	
A	Alarm Rel E1 & E3							7.7	21.5		17		27	29								
E	NFPA 13 90° Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13	
T	NFPA 13 90° Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121	
Zac	Ames 2000SS	Fitting generates a Fixed Loss Based on Flow																				

Units Summary	
Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

The units used in the calculation are stated in the Units Summary, below the Fitting Legend.

Flow Summary (Supply and Node Analysis Sheet)

This report lists all supply sources and nodes for the calculation.

The **Supply Analysis** shows both a **pump source** and a **city source**, if present. These are defined via the Water Source command. The **Available Pressure**, **Total Demand** and **Required Pressure** columns are filled out for both pump and city sources. **Static** and **Residual** pressures and residual **Flow** are displayed for city sources. A pump, if used, does not record a static and residual pressure, instead that information is displayed on the Hydraulic Graph.

Flow Summary - NFPA

Hydratec Incorporated
Example Tree with Pump

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Date 4/4/12

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
PO	See Information on Pump Curve			97.811	353.3	73.594
TEST	45.0	40	1210.0	43.62	603.3	43.62

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
H1	10.0	5.6	7.0	14.82	
H2	9.0		7.88		
1	12.0	5.6	19.93	25.0	
2	12.0	5.6	21.9	26.2	
3	12.0	5.6	23.84	27.34	
4	12.0	5.28	28.14	28.0	K=K @ H2
5	12.0	5.28	35.7	31.53	K=K @ H2
6	12.0		40.31		
11	12.0	5.6	19.98	25.03	
12	12.0	5.6	21.95	26.24	
13	12.0	5.6	23.9	27.38	
14	12.0	5.6	28.21	29.74	
15	12.0	5.6	36.01	33.61	
16	12.0		40.87		
24	12.0	5.6	42.22	36.39	
25	12.0	5.6	43.26	36.83	
26	12.0		44.68		
7	11.0		42.62		
17	11.0		43.28		
27	11.0		45.7		
TOR	11.0		63.99		
BASE	0.0		73.21		
PO	0.0		73.59		
PI	0.0		42.82		
HOSE	0.0		43.21	250.0	
TEST	0.0		43.62		

The **Node Analysis** lists all the nodes in the calculation. **Elevations** are listed for each node. The **Node Type** lists **K-Factors** added at the node point. The **Pressure at Node** is the pressure at that node, and the **Discharge at Node** is the flow calculated at the node. **Hose flows** appear in this column - note the 250.0 at node HOSE.

The **Notes** column is used for various information. The most common one concerns **Equivalent K-Factors**. Nodes **4** and **5**, above, list a note 'K=K @ H2'. This mean the k-factor used at both nodes resulted from the k-factor generated at node H2.

Hydraulic Calculation Sheets

The **Hydraulic Calculation Sheets** are, perhaps, the most iconic of the reports. There are many numbers and codes on this report, so explaining it will require a few pages. The item numbers in the table correspond to the item numbers found in **NFPA13** for this particular report. Certain items are added by HydraCALC for clarity when a **pump** is involved. These follow the required items.

Hazen Williams Calculation with or without a Pump

Final Calculations : Hazen-Williams

Hydratec Incorporated
Example Tree with Pump

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Date 4/4/12

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact PI/Ft	Pt Pe Pf	*****	Notes	*****
(2) H1 to H2	(3) 10 9	(4) 5.60	(5) 14.82 14.82	(7) 1 1.049	T	5.0	1.000 5.000 6.000	(13) 120 (16) 0.433 (14) 0.0747	7.000 0.433 0.448		Vel = 5.50	
H2			0.0 14.82						7.881		K Factor = 5.28	
1 to 2	12 12	5.60	25.00 25.0	1 1.049		0.0	10.000 0.0 10.000	120 0.0 0.1966	19.930 0.0 1.966		Vel = 9.28	
2 to 3	12 12	5.60	26.20 51.2	1.25 (8) 1.38		0.0	10.000 0.0 10.000	120 (15) 0.0 0.1948 (17)	21.896 0.0 1.948		Vel = 10.98	
3 to 4	12 12	5.60	27.35 78.55	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.4300	23.844 0.0 4.300		Vel = 16.85	
4 to 5	12 12	5.28	28.00 106.55	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.7558	28.144 0.0 7.558		K = K @ H2 (19e) Vel = 22.86	
5 to 6	12 12	5.28	31.53 138.08	1.5 1.61	E	4.0	4.000 0.0 8.000	120 0.0 0.5764	35.702 0.0 4.611		K = K @ H2 Vel = 21.76	
6 to 7	12 11		0.0 138.08	2 2.067	T (9)	10.0	(10) 1.000 (11) 10.000 (12) 11.000	120 0.433 0.1707	40.313 0.433 1.878		Vel = 13.20	
7			0.0 138.08						42.624		K Factor = 21.15	
11 to 12	12 12	5.60	25.03 25.03	1 1.049		0.0	10.000 0.0 10.000	120 0.0 0.1971	19.978 0.0 1.971		Vel = 9.29	
12 to 13	12 12	5.60	26.24 51.27	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.1953	21.949 0.0 1.953		Vel = 11.00	
13 to 14	12 12	5.60	27.37 78.64	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.4309	23.902 0.0 4.309		Vel = 16.87	
14 to 15	12 12	5.60	29.75 108.39	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.7801	28.211 0.0 7.801		Vel = 23.25	
15 to 16	12 12	5.60	33.60 141.99	1.5 1.61	E	4.0	4.000 0.0 8.000	120 0.0 0.6069	36.012 0.0 4.855		Vel = 22.38	
16 to 17	12 11		0.0 141.99	2 2.067	T	10.0	1.000 0.0 10.000	120 0.433 0.1798	40.867 0.433 1.978		Vel = 13.58	
17			0.0 141.99						43.278		K Factor = 21.58	
24 to 25	12 12	5.60	36.39 36.39	1.25 1.38		0.0	10.000 0.0 10.000	120 0.0 0.1036	42.222 0.0 1.036		Vel = 7.81	

Final Calculations : Hazen-Williams

Hydratec Incorporated
Example Tree with Pump

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
25 to 26	12 12	5.60	36.83 73.22	1.5 1.61	E	4.0 0.0	4.000 4.000	120	43.258 0.0			
											Vel = 11.54	
26 to 27	12 11		0.0 73.22	2 2.067	T	10.0 0.0	1.000 11.000	120	44.684 0.433			
											Vel = 7.00	
27			0.0 73.22						45.698		K Factor = 10.83	
7 to 17	11 11		138.08 138.08	2.5 2.635		0.0 0.0	12.500 12.500	120	42.624 0.0			
											Vel = 8.12	
17 to 27	11 11		142.00 280.08	2.5 2.635		0.0 0.0	12.500 12.500	120	43.278 0.0			
											Vel = 16.48	
27 to TOR	11 11		73.22 353.3	2.5 2.635	2E	16.474 0.0	45.000 61.474	120	45.698 0.0			
											Vel = 20.79	
TOR to BASE	11 0		0.0 353.3	3 3.26	A G Zac	28.895 1.344 0.0	12.000 30.239 42.239	120	63.987 8.324 4.457		** Fixed Loss = 3.56 (19f)	
											Vel = 13.58	
BASE to PO	0 0		0.0 353.3	6 6.357	3E T	52.808 37.72	4.000 90.528	120	76.768 0.0			
											Vel = 3.57	
PO			0.0 353.30						77.154		K Factor = 40.22	
System Demand Pressure									77.154	(A)		
Safety Margin									20.657	(B)		
Continuation Pressure									97.811	(C)		
Pressure @ Pump Outlet									97.811	(C)		
Pressure From Pump Curve									-54.991	(D)		
Pressure @ Pump Inlet									42.820	(E)		
PI to HOSE	0 0		0.0 353.3	6 6.16	E T	20.084 43.037	45.000 63.121	140	42.820 0.0			
											Vel = 3.80	
HOSE to TEST	0 0	H250	250.00 603.3	8 8.27	T	55.354 0.0	125.000 55.354	140	43.207 0.0			
											Vel = 3.60	
TEST			0.0 603.30						43.621		K Factor = 91.35	

Hydraulic Calculation Key (Required)	
Item #	Name
(2)	Hydraulic Reference Point (Node)
(3)	Elevation
(4)	Sprinkler K Factor
(5)	Flow (Qa)
(6)	Total Flow (Qt)
(7)	Nominal Pipe Size
(8)	Actual Pipe Size
(9)	Quantity and Length of each Type of Fitting and Device
(10)	Pipe Length
(11)	Equiv. Pipe Length
(12)	Total of Pipe plus Equiv Length
(13)	C-Factor
(14)	Friction Loss per Unit Pipe (Pf/ft)
(15)	Sum of Pressures from Previous Step (Pt)
(16)	Elevation Head (Pe)
(17)	Total Friction Loss (Pf)
(19a)	Velocity Pressure/Normal Pressure
(19e)	Combined K-factor Calculations
(19f)	Pressure Assigned to Backflow Device

Hydraulic Calculation Key (Pump Info)		
Item	Name	Note
(A)	System Demand Pressure	Pressure required by the system up to the pump outlet (PO)
(B)	Safety Margin	This can be a positive or negative – A cushion or a deficit
(C)	Continuation Pressure / Pressure @ Pump Outlet	Demand Pressure plus Safety Margin
(D)	Pressure from Pump Curve	Contribution Pump is making. Negative designator indicates pump is removing pressure required by system
(E)	Pressure from Pump Inlet	Pressure city supply is delivering to pump inlet (PI)

Velocity Pressure Calculations

Final Calculations : Hazen-Williams

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FIRE_PROTECTION_#48

Page 7
Date

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqiv	Len	Pipe Ftngs Total	Pt Pe Pf	Pt Pv (19a) Pn	*****	Notes	*****
124 to 125	0.0 17.16	1.049 120.0 0.0978	E	2.0 0.0	0.790 2.000 2.790	9.129 0.0 0.273			Vel = 6.37	
125 to 120	0.0 17.16	1.38 120.0 0.0258		0.0 0.0	10.000 0.0 10.000	9.402 0.371 0.258			* Vel Press = 0.371 Vel = 3.68	
	0.0 17.16					10.031			K Factor = 5.42	
126 to 127	26.47	1.049 120.0 0.2186	E	2.0 0.0	1.380 2.000 3.380	22.337 -0.598 0.739			K Factor = 5.60 Vel = 9.83	
127 to 105	0.0 26.47	1.38 120.0 0.0576	T	6.0 0.0	2.280 6.000 8.280	22.478 2.591 0.477			* Vel Press = 2.591 (19a) Vel = 5.68	
	0.0 26.47					25.546			K Factor = 5.24	
128 to 129	28.64	1.049 120.0 0.2528	E	2.0 0.0	1.370 2.000 3.370	26.153 -0.593 0.852			K Factor = 5.60 Vel = 10.63	
129 to 106	0.0 28.64	1.38 120.0 0.0664	T	6.0 0.0	2.280 6.000 8.280	26.412 1.439 0.550			* Vel Press = 1.443 Vel = 6.14	
	0.0 28.64					28.401			K Factor = 5.37	
108 to 139	-59.36	3.26 120.0 -0.0038		0.0 0.0	0.260 0.0 0.260	34.722 -0.154 -0.001	34.722 (19a) 0.035 34.687		* Vel Press = -0.154 Vel = 2.28	
	0.0 -59.36					34.567			K Factor = -10.10	

Velocity Pressure calculations have additional information, as needed. Some items in the report have been moved around to make room for the required column.

Hydraulic Calculation Key (Required)	
Item #	Name
(19a)	Velocity Pressure/Normal Pressure

Darcy-Weisbach Calculations

Final Calculations - Darcy-Weisbach

Hydratec Inc.
Antifreeze Loop Example - 1 - Using Darcy Weisbach & Hazen-Williams

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Date 04/16/08

Darcy Weisbach Summary Info
Fluid Density = 67.7 lbs/ft³
Fluid Viscosity = 180 centipoise

Abbreviation Summary
E = Absolute Roughness = In.
Re = Reynolds Number
E/D = Relative Roughness
Ff = Friction Factor
1E+3 = 1 x 10³ = 1000

Hyd. Ref. Point	Qa Qt	Dia. "E" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Re E/D Ff (19g)	*****	Notes	*****
*ANTIFREEZE LOOP LINE 1									
1	15.00	1.61		10.000	7.716	1.773E+2		K Factor = 5.40	
to		0.00400		0.0	0.000000	0.00248			
2	15.0	0.1097		10.000	1.097	0.36072		Vel = 2.36	
2	16.03	1.61		10.000	8.813	3.668E+2 (19g)		K Factor = 5.40	
to		0.00400		0.0	0.000000	0.00248			
3	31.03	0.2269		10.000	2.269	0.17432 (19g)		Vel = 4.89	
3	17.98	1.61		10.000	11.082	5.793E+2		K Factor = 5.40	
to		0.00400		0.0	0.000000	0.00248			
4	49.01	0.3585		10.000	3.585	0.11040		Vel = 7.72	
4	20.68	2.067	1T	10.0	9.000	6.416E+2		K Factor = 5.40	
to		0.00400		0.0	10.000	0.00193			
5	69.69	0.1876		19.000	3.564	0.09968		Vel = 6.66	
	0.0								
	69.69				18.231			K Factor = 16.32	
7	22.12	1.61	1T	8.0	1.000	2.614E+2		K Factor = 5.40	
to		0.00400		0.0	8.000	0.000000	0.00248		
5	22.12	0.1618		9.000	1.456	0.24467		Vel = 3.49	
5	69.69	2.067	1T	10.0	1.000	8.453E+2			
to		0.00400		0.0	10.000	0.471	0.00193		
6	91.81	0.2472		11.000	2.719	0.07568		Vel = 8.78	
	0.0								
	91.81				21.421			K Factor = 19.84	
*ANTIFREEZE LOOP LINE 2									
11	15.22	1.61		10.000	7.942	1.799E+2		K Factor = 5.40	
to		0.00400		0.0	0.000000	0.00248			
12	15.22	0.1113		10.000	1.113	0.35555		Vel = 2.40	

Darcy-Weisbach Calculations use different formulas than Hazen-Williams. Additional information is included in the printout.

Hydraulic Calculation Key (Required)	
Item #	Name
(19g)	Friction factor and Reynold's number

AutoPeaking Summary

NFPA requires peaking information if a computer program performed the peaking. The following report contains that information.

AutoPeaking Summary

Hydratec Incorporated
Grid Test

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Auto Peaking Summary - List of Pipes for Area Calculated

Left Side			Right Side		
From	To	Length	From	To	Length
2	3	38.170	25	26	30.830
41	42	38.170	45	46	30.830
47	48	38.170	51	52	30.830
53	54	38.170	54	55	66.830

	Flow Required	Safety Margin	Pressure Differential
Left	12.000 573.651	39.501	-0.032
Area Calculated	573.712	39.469	0.000
Right	12.000 573.752	39.708	-0.239

Typical Distance Between Heads = 12.000

Split Point Used in Worst Area Peaked = 1

This report tells the user where the remote area is to be found in a **gridded system**. The **List of Pipes for Area Calculated** section reports where the remote area ended up after it was shifted automatically in the calculation. This is so the user can mark the remote area properly on their plan. The designations **Left Side** and **Right Side** are somewhat arbitrary, as they correspond to the L and R markers used in the setting up of the gridded calculation, not necessarily the physical orientation of the system 'on paper'.

In the report above, the distance between reference points 2 and 3 is listed at 38.170 (feet). In this example, 2 is the branch line connection at the cross main and 3 is the first flowing head in the remote area. The other side is 30.830 ft. The fourth line, right side, from 54 to 55 is 66.830 ft due to that line having less flowing heads operating.

The next section of this report shows the demands associated with the remote area. The **most** remote area is the one listed as **AREA CALCULATED**. This area is the one referenced in the List of Pipes for Area Calculated. The **Flow Required** and **Safety Margin** are reported for this location. The **LEFT** listing reports on the demands of the area if shifted one head left, at the distance seen (12.000). The one head **RIGHT** listing is also reported. These directions are consistent with the note above. If the remote area calculation had to 'move' the remote area more than one head in a given direction, you will see multiple **LEFT** entries, each one one head further along the grid line, until the pressure starts to drop, and the peak is found.

The Typical Distance Between Heads is reported. The Split Point Used in Area Calculated refers to the reference point name designated to the most remote head.