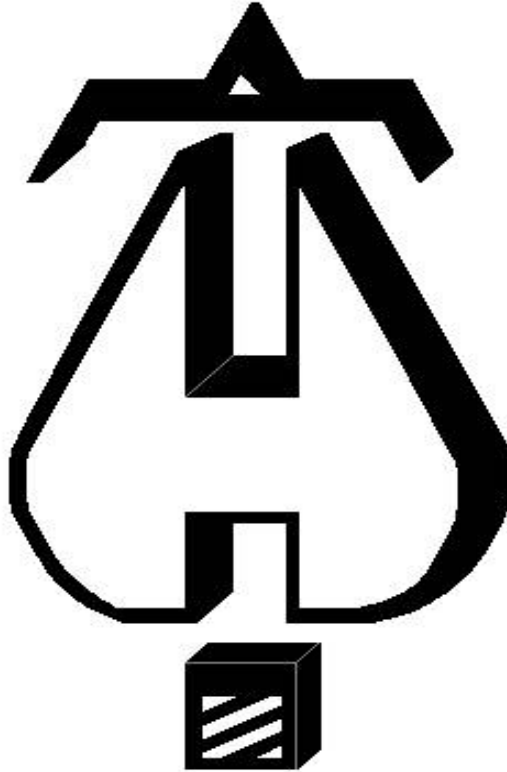
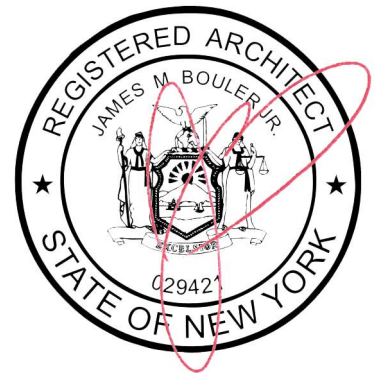




... Fire Protection by Computer Design

Bouler Pfluger Architects, P.C.
254 36th Street
Suite C257
Brooklyn, N.Y. 11232
347-796-8808



Job Name : APP-012383 - Two Head Calculation (H.2 & H.1)
Building : RESIDENCE
Location : 174 REID AVENUE QUEENS N.Y. 11697
System : --
Contract : --
Data File : APP-012383_RA1_CD_Vittorella_hydra.wx2

HYDRAULIC DESIGN INFORMATION SHEET

Name - APP-012383 Date - 01/10/17
Location - QUEENS N.Y. 11697
Building - RESIDENCE System No. - --
Contractor - -- Contract No. - --
Calculated By - NZ Drawing No. - --
Construction: (X) Combustible () Non-Combustible Ceiling Height 8.5
OCCUPANCY - RESIDENTIAL

S Type of Calculation: () NFPA 13 Residential () NFPA 13R (X) NFPA 13D
Y Number of Sprinklers Flowing: () 1 (X) 2 () 4 ()
S () Other
T () Specific Ruling Made by Date
E
M Listed Flow at Start Point - 13 Gpm System Type
Listed Pres. at Start Point - 9.14 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 16 x 16 () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make RELIABLE Model RFC43
I Elevation at Highest Outlet - 32.9 Feet Size 3/8 K-Factor 4.3
G Note: Temperature Rating 155
N

Calculation Gpm Required 26.197 Psi Required 44.87 At Ref Pt MTR
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - N/A Rated Cap. Cap.
T Time of Test - N/A @ Psi Elev.
E Static (Psi) - 50 Elev.
R Residual (Psi) - 47 Other Well
Flow (Gpm) - 500 Proof Flow Gpm
S Elevation - 5.8

P Location: REID AVENUE
P
L Source of Information: --
Y

Water Supply Curve C

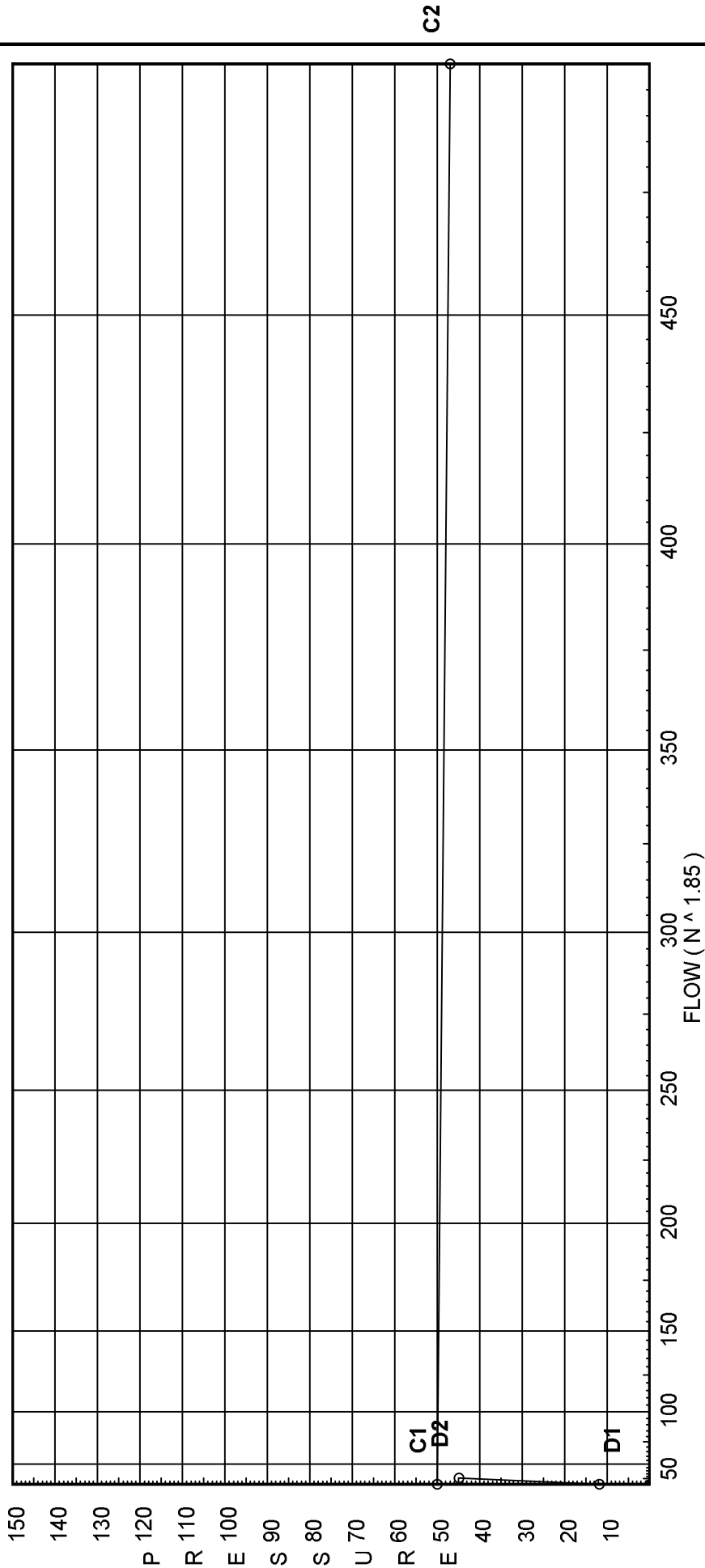
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APP-012383 - Two Head Calculation (H.2 & H.1)

City Water Supply:

C1 - Static Pressure : 50
C2 - Residual Pressure: 47
C2 - Residual Flow : 500

Demand:

D1 - Elevation : 11.737
D2 - System Flow : 26.197
D2 - System Pressure : 44.870
Hose (Demand) :
D3 - System Demand : 26.197
Safety Margin : 5.117



Fittings Used Summary

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APP-012383 - Two Head Calculation (H.2 & H.1)

Fitting Legend																
Abbrev.	Name															
Cel *	Copper 90' Ell	1	1	2	2	2	2.5	3.5	4	5	6	7	9	10	0	0
Ctb *	Copper Tee-Branch	1.5	2	2	3	3	3.5	5	6	7.5	9	10.5	13	15	0	0
Ctr *	Copper Cplg/Tee-Run	0.5	0.5	0.5	1	1	1	1	1.5	1.5	2	2	2.5	3	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	5	6	7	8	10	12	14	18	27
T	NFPA 13 90' Flow thru Tee	3	4	5	6	6	8	10	12	15	17	20	25	30	35	40
Zwa	Watts 007	Fitting generates a Fixed Loss Based on Flow														
															60	71
															81	91
															45	45
															50	50
															101	101
															121	121

Units Summary

Diameter Units
Length Units
Flow Units
Pressure Units

Inches
Feet
US Gallons per Minute
Pounds per Square Inch

Flow Summary - NFPA 2007

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APP-012383 - Two Head Calculation (H.2 & H.1)

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SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
MTR	50.0	47	500.0	49.987	26.2	44.87

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
H.2	32.9	4.3	9.14	13.0	
T.20	32.9		9.53		
T.22	32.9		10.88		
T.23	32.9		12.23		
T.25	32.9		12.63		
T.28	32.9		13.82		
T.29	24.0		20.36		
T.31	24.0		21.07		
T.33	24.0		21.47		
T.35	24.0		22.34		
T.36	24.0		23.3		
S.1	18.2		28.79		
MTR	5.8		44.87		
H.1	32.9	4.3	9.42	13.2	

Final Calculations - Hazen-Williams - 2007

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APP-012383 - Two Head Calculation (H.2 & H.1)

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
H.2 to T.20	32.9 32.9	4.30	13.00 13.0	1 1.025		0.0 0.0	9.000 0.0	150	9.140 0.0			
						0.0	9.000	0.0434	0.391	Vel =	5.05	
T.20 to T.22	32.9 32.9		13.20 26.2	1 1.025	Ctr Ctb	0.5 2.0	6.000 2.500	150	9.531 0.0			
						0.0	8.500	0.1588	1.350	Vel =	10.19	
T.22 to T.23	32.9 32.9		0.0 26.2	1 1.025	Ctr	0.5 0.0	8.000 0.500	150	10.881 0.0			
						0.0	8.500	0.1588	1.350	Vel =	10.19	
T.23 to T.25	32.9 32.9		0.0 26.2	1 1.025	Ctr	0.5 0.0	2.000 0.500	150	12.231 0.0			
						0.0	2.500	0.1588	0.397	Vel =	10.19	
T.25 to T.28	32.9 32.9		0.0 26.2	1 1.025	Ctr	0.5 0.0	7.000 0.500	150	12.628 0.0			
						0.0	7.500	0.1588	1.191	Vel =	10.19	
T.28 to T.29	32.9 24		0.0 26.2	1 1.025	2Ctb	4.0 0.0	12.900 4.000	150	13.819 3.855			
						0.0	16.900	0.1588	2.684	Vel =	10.19	
T.29 to T.31	24 24		0.0 26.2	1 1.025	Ctr	0.5 0.0	4.000 0.500	150	20.358 0.0			
						0.0	4.500	0.1587	0.714	Vel =	10.19	
T.31 to T.33	24 24		0.0 26.2	1 1.025	Ctr	0.5 0.0	2.000 0.500	150	21.072 0.0			
						0.0	2.500	0.1592	0.398	Vel =	10.19	
T.33 to T.35	24 24		0.0 26.2	1 1.025	Ctr	0.5 0.0	5.000 0.500	150	21.470 0.0			
						0.0	5.500	0.1587	0.873	Vel =	10.19	
T.35 to T.36	24 24		0.0 26.2	1 1.025	Ctb	2.0 0.0	4.000 2.000	150	22.343 0.0			
						0.0	6.000	0.1588	0.953	Vel =	10.19	
T.36 to S.1	24 18.2		0.0 26.2	1 1.025	Cel T	2.0 6.75	10.000 8.750	150	23.296 2.512			
						0.0	18.750	0.1588	2.978	Vel =	10.19	
S.1 to MTR	18.2 5.8		0.0 26.2	2 1.959	4E Zwa	23.271 0.0	77.900 23.271	150	28.786 15.398		** Fixed Loss = 10.028	
						0.0	101.171	0.0068	0.686	Vel =	2.79	
MTR			0.0 26.20						44.870	K Factor =	3.91	
H.1 to T.20	32.9 32.9	4.30	13.20 13.2	1 1.025	Ctr	0.5 0.0	2.000 0.500	150	9.419 0.0			
						0.0	2.500	0.0448	0.112	Vel =	5.13	
T.20			0.0 13.20						9.531	K Factor =	4.28	