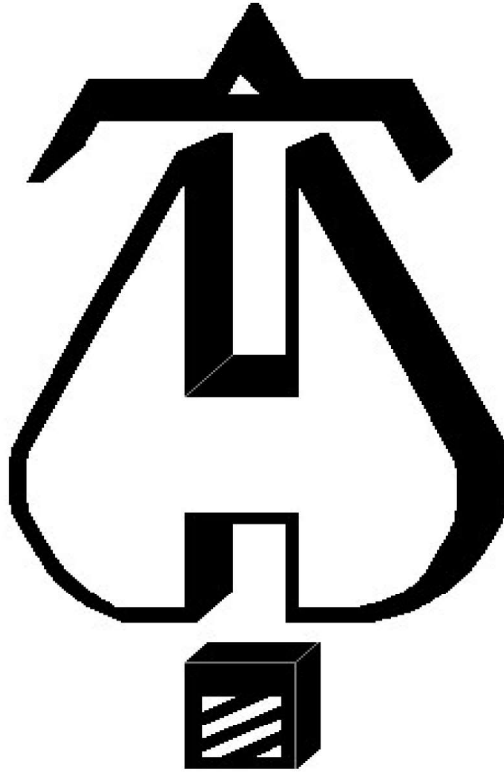
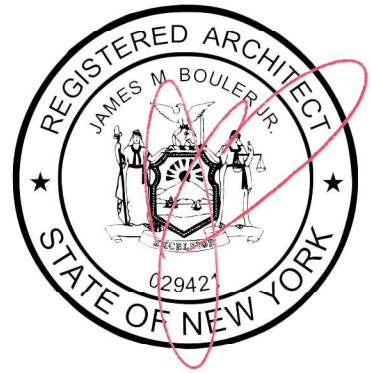




... Fire Protection by Computer Design

Bouler Pfluger Architects, P.C.
12 West Main Street

Bay Shore, NY 11706
6319693335



Job Name : APP-002268 - Two Head Calculation (H.8 & H.10)
Building : Residential
Location : 216-27 12 Avenue Queens NY 11697
System : --
Contract : --
Data File : S6_NG_APP-002268_HC_100818.wx2

HYDRAULIC DESIGN INFORMATION SHEET

Name - APP-002268 Date - 10/8/18
Location - Queens NY 11697
Building - Residential System No. - --
Contractor - -- Contract No. - --
Calculated By - NMG 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 - 9.6 Psi (X) Wet () Dry
D MAXIMUM LISTED SPACING 12 x 12 () Deluge () PreAction
E Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
S Additional Flow Added - Gpm Make RELIABLE Model RFS42->
I Elevation at Highest Outlet - 32.7 Feet Size 3/8 K-Factor 4.2
G Note: Temperature Rating 155
N

Calculation Gpm Required 26.4849 Psi Required 42.27 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 - -- Rated Cap. Cap.
T Time of Test - -- @ Psi Elev.
E Static (Psi) - 50 Elev.
R Residual (Psi) - 46 Other Well
Flow (Gpm) - 500 Proof Flow Gpm
S Elevation - 8

P Location: 12th Avenue
P
L Source of Information: --
Y

Water Supply Curve C

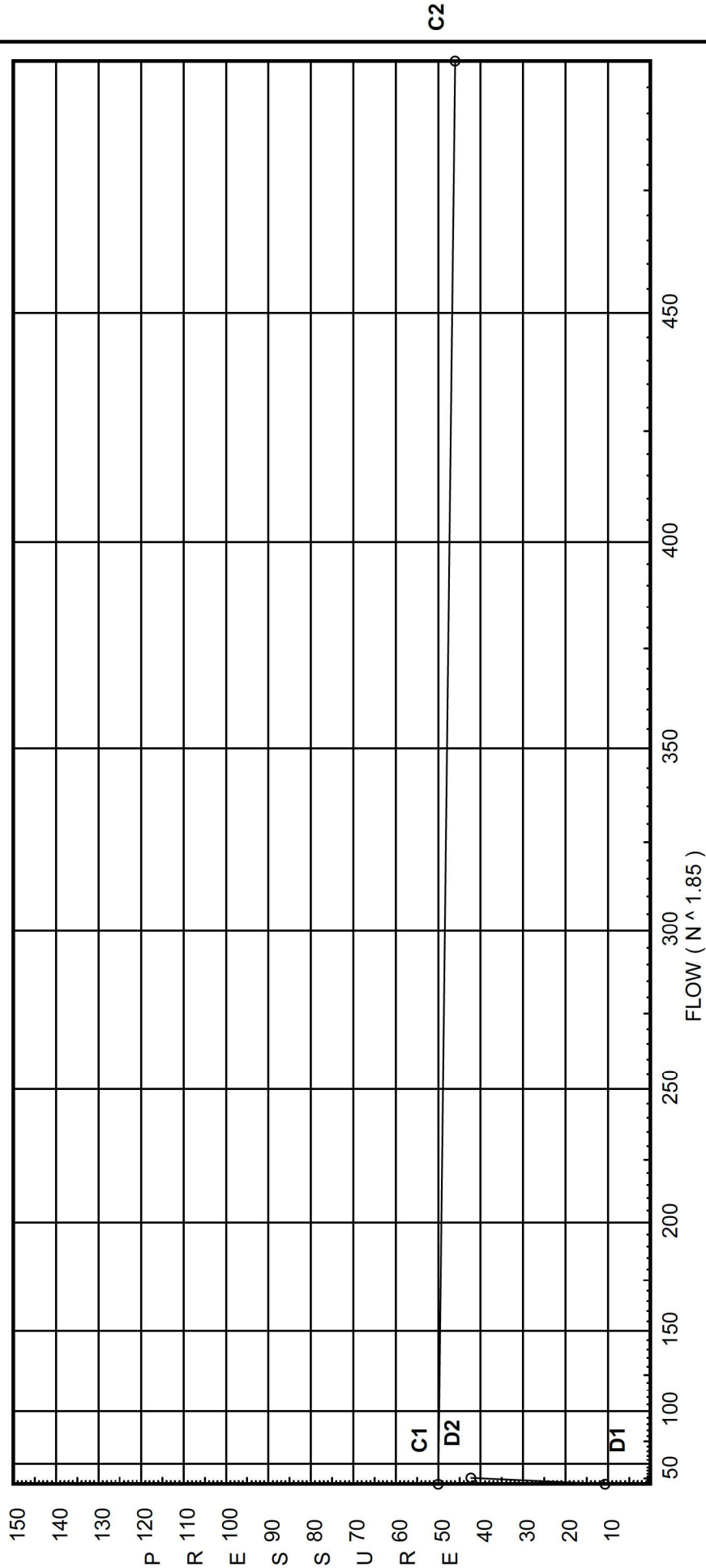
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City Water Supply:

C1 - Static Pressure : 50
C2 - Residual Pressure: 46
C2 - Residual Flow : 500

Demand:

D1 - Elevation : 10.698
D2 - System Flow : 26.485
D2 - System Pressure : 42.265
Hose (Demand) :
D3 - System Demand : 26.485
Safety Margin : 7.717



Fittings Used Summary

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APP-002268 - Two Head Calculation (H.8 & H.10)

Fitting Legend																						
Abbrev.	Name	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61	
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	
Pel *	CPVC 90'Eil Harvel-Spears	7	7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0	
Ptb *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0	
Ptr *	CPVC Coupling Tee - Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	
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	
Zrs	Tyco RSV-1 Shut off Vlv	Fitting generates a Fixed Loss Based on Flow																				
Zwa	Watts 007	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

Flow Summary - NFPA 2007

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APP-002268 - Two Head Calculation (H.8 & H.10)

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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	46	500.0	49.983	26.48	42.265

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.8	32.7	4.2	9.6	13.01	
T.33	32.7		9.63		
H.7	32.7		10.06		
T.32	32.7		10.4		
T.34	32.7		10.49		
T.35	32.7		10.58		
T.36	32.7		10.81		
T.37	32.7		11.61		
T.40	32.7		11.96		
T.45	32.7		12.41		
T.46	32.7		12.87		
T.48	32.7		13.21		
T.47	23.8		19.8		
T.55	23.8		22.2		
T.54	23.8		23.69		
T.53	23.8		24.61		
T.50	23.8		25.41		
T.49	23.8		25.87		
T.44	23.8		26.55		
S.1	16.5	4.2	32.52	13.47	
MTR	8.0		42.26		
H.10	32.7		10.29		

Final Calculations - Hazen-Williams

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APP-002268 - Two Head Calculation (H.8 & H.10)

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
H.8 to T.33	13.01	1.101 150.0 0.0310		0.0 0.0 1.000	9.600 0.0 0.031			K Factor = 4.20 Vel = 4.38	
T.33 to H.7	0.0	1.101 150.0 0.0307	Pel Ptr	7.0 1.0 0.0	6.000 8.000 14.000	9.631 0.0 0.430		Vel = 4.38	
H.7 to T.32	0.0	1.101 150.0 0.0307	Ptb	5.0 0.0 0.0	6.000 5.000 11.000	10.061 0.0 0.338		Vel = 4.38	
T.32 to T.34	0.0	1.101 150.0 0.0307	Ptr	1.0 0.0 0.0	2.000 1.000 3.000	10.399 0.0 0.092		Vel = 4.38	
T.34 to T.35	0.0	1.101 150.0 0.0307	Ptr	1.0 0.0 0.0	2.000 1.000 3.000	10.491 0.0 0.092		Vel = 4.38	
T.35 to T.36	13.47	1.101 150.0 0.1145	Ptr	1.0 0.0 0.0	1.000 1.000 2.000	10.583 0.0 0.229		Vel = 8.92	
T.36 to T.37	0.0	1.101 150.0 0.1144	Ptr	1.0 0.0 0.0	6.000 1.000 7.000	10.812 0.0 0.801		Vel = 8.92	
T.37 to T.40	0.0	1.101 150.0 0.1143	Ptr	1.0 0.0 0.0	2.000 1.000 3.000	11.613 0.0 0.343		Vel = 8.92	
T.40 to T.45	0.0	1.101 150.0 0.1145	Ptr	1.0 0.0 0.0	3.000 1.000 4.000	11.956 0.0 0.458		Vel = 8.92	
T.45 to T.46	0.0	1.101 150.0 0.1142	Ptr	1.0 0.0 0.0	3.000 1.000 4.000	12.414 0.0 0.457		Vel = 8.92	
T.46 to T.48	0.0	1.101 150.0 0.1143	Ptr	1.0 0.0 0.0	2.000 1.000 3.000	12.871 0.0 0.343		Vel = 8.92	
T.48 to T.47	0.0	1.101 150.0 0.1144	Ptb	5.0 0.0 0.0	18.900 5.000 23.900	13.214 3.855 2.734		Vel = 8.92	
T.47 to T.55	0.0	1.101 150.0 0.1144	Ptr Pel	1.0 7.0 0.0	13.000 8.000 21.000	19.803 0.0 2.402		Vel = 8.92	
T.55 to T.54	0.0	1.101 150.0 0.1144	Ptb	5.0 0.0 0.0	8.000 5.000 13.000	22.205 0.0 1.487		Vel = 8.92	
T.54 to T.53	0.0	1.101 150.0 0.1145	Ptb	5.0 0.0 0.0	3.000 5.000 8.000	23.692 0.0 0.916		Vel = 8.92	
T.53 to T.50	0.0	1.101 150.0 0.1143	Ptr	1.0 0.0 0.0	6.000 1.000 7.000	24.608 0.0 0.800		Vel = 8.92	

Final Calculations - Hazen-Williams

Bouler Pfluger Architects, P.C.
APP-002268 - Two Head Calculation (H.8 & H.10)

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
T.50 to T.49	0.0 26.48	1.101 150.0 0.1145	Ptr	1.0 0.0 0.0	3.000 1.000 4.000	25.408 0.0 0.458			Vel = 8.92	
T.49 to T.44	0.0 26.48	1.101 150.0 0.1143	Ptr	1.0 0.0 0.0	5.000 1.000 6.000	25.866 0.0 0.686			Vel = 8.92	
T.44 to S.1	0.0 26.48	1.101 150.0 0.1144	Ptb T	5.0 9.563 0.0	10.000 14.563 24.563	26.552 3.162 2.810			Vel = 8.92	
S.1 to MTR	0.0 26.48	1.959 150.0 0.0069	5E Zwa Zrs	29.089 0.0 0.0	72.200 29.089 101.289	32.524 9.041 0.700			** Fixed Loss = 5.36 Vel = 2.82	
	0.0 26.48					42.265			K Factor = 4.07	
H.10 to T.35	13.47 13.47	1.101 150.0 0.0328	Ptb	5.0 0.0 0.0	4.000 5.000 9.000	10.288 0.0 0.295			K Factor = 4.20 Vel = 4.54	
	0.0 13.47					10.583			K Factor = 4.14	