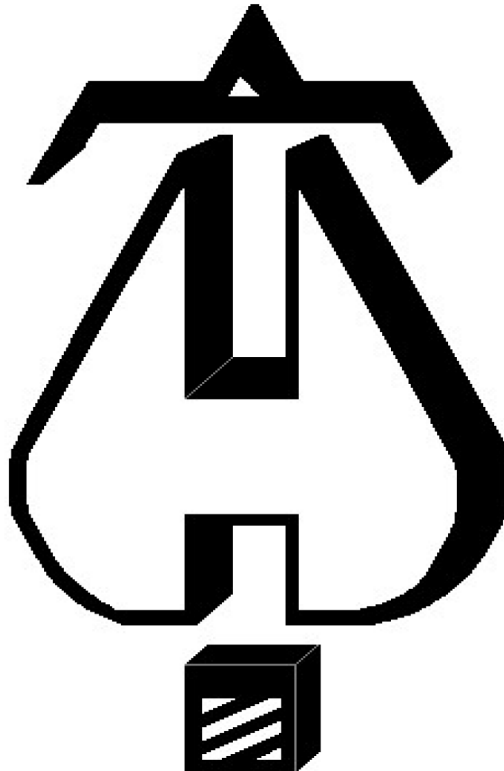




... Fire Protection by Computer Design

Bouler Pfluger Architects, P.C.
254 36th Street
Suite 257
Brooklyn, N.Y. 11232
347-796-8808

Job Name : APP-004137 - Two Head Calculation (H.19 & H.21)
Building : Residence
Location : 14 West 9th Road Queens N.Y. 11693
System : --
Contract : --
Data File : H2-APP-004137_Hydracad_NG_081616.wx2



HYDRAULIC DESIGN INFORMATION SHEET

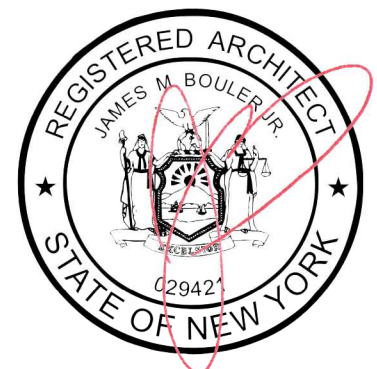
Name - APP-004137 Date - 08/16/16
Location - Queens N.Y. 11693
Building - Residence System No. - --
Contractor - -- Contract No. - --
Calculated By - NMG Drawing No. - --
Construction: (X) Combustible () Non-Combustible Ceiling Height 8.8
OCCUPANCY - RESIDENTIAL

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 - 34.1 Feet Size 3/8 K-Factor 4.3
G Note: Temperature Rating 155
N

Calculation Gpm Required 27.1126 Psi Required 37.2 At Ref Pt STR
Summary C-Factor Used: Overhead 150 Underground 150

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 12/19/14 Rated Cap. Cap.
T Time of Test - 12:15PM @ Psi Elev.
E Static (Psi) - 40 Elev.
R Residual (Psi) - 38 Other Well
Flow (Gpm) - 500 Proof Flow Gpm
S Elevation - 5.4

P Location: West 9th Road
P
L Source of Information: --
Y



Water Supply Curve C

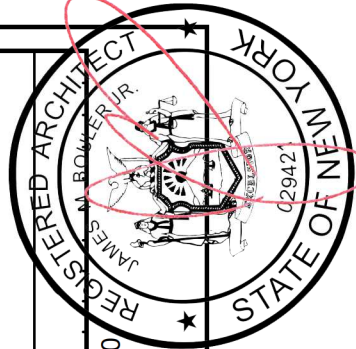
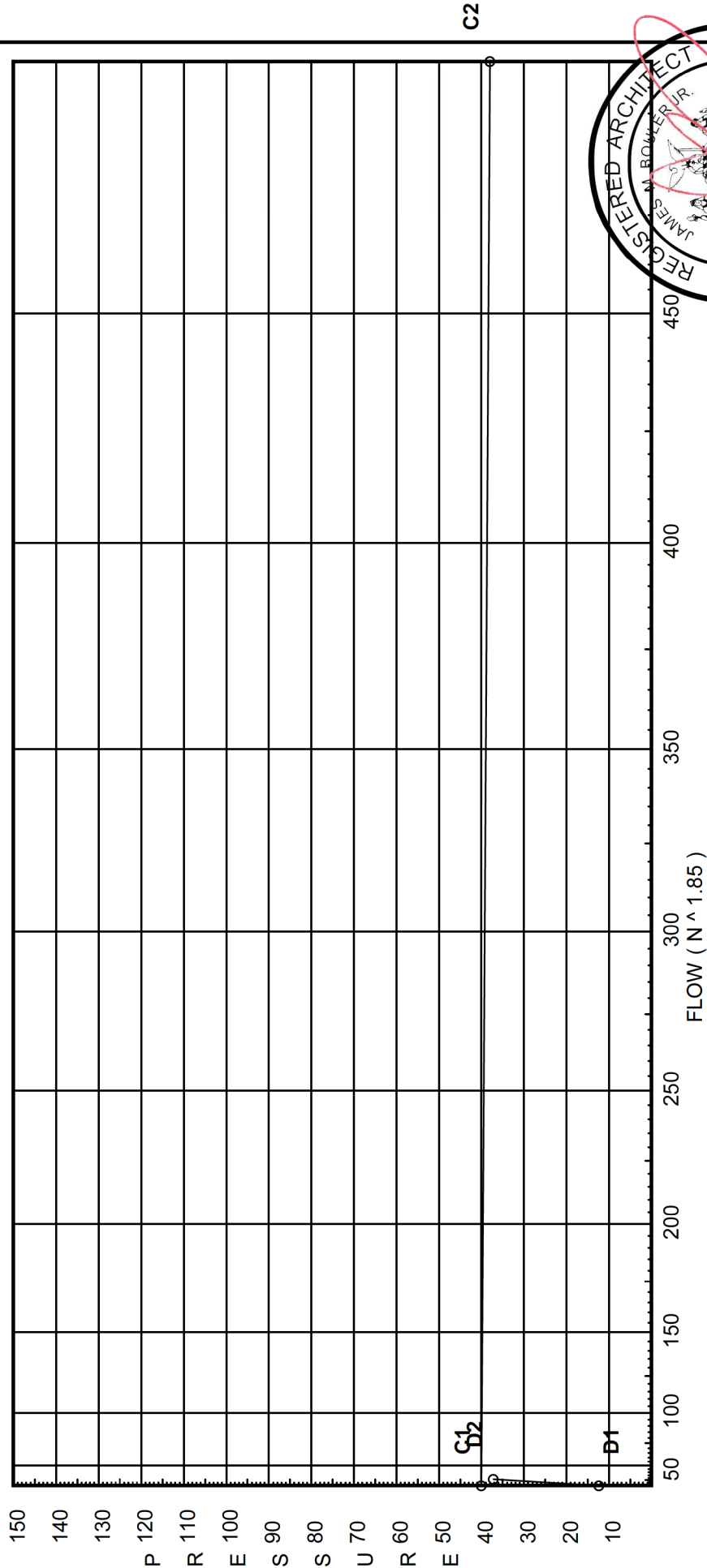
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APP-004137 - Two Head Calculation (H.19 & H.21)

City Water Supply:

C1 - Static Pressure : 40
C2 - Residual Pressure: 38
C2 - Residual Flow : 500

Demand:

D1 - Elevation : 12.430
D2 - System Flow : 27.113
D2 - System Pressure : 37.202
Hose (Demand) :
D3 - System Demand : 27.113
Safety Margin : 2.789



Fittings Used Summary

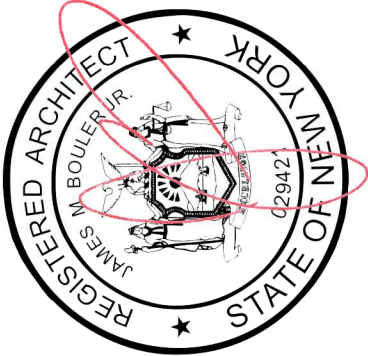
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APP-004137 - Two Head Calculation (H.19 & H.21)

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	0
Ctb *	Copper Tee-Branch	1.5	2	2	3	3	3.5	5	6	7.5	9	10.5	13	15	0	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	0
T	NFPA 13 90' Flow thru Tee	3	4	5	6	6	8	10	12	15	17	20	25	30	35	50	60
Zwa	Watts 007	Fitting generates a Fixed Loss Based on Flow															
															71	81	91
																	101
																	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-004137 - Two Head Calculation (H.19 & H.21)

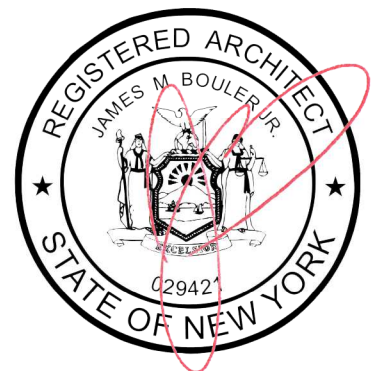
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SUPPLY ANALYSIS

<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>
STR	40.0	38	500.0	39.991	27.11	37.202

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.19	34.1	4.3	9.14	13.0	
T.40	34.1		9.36		
T.39	34.1		9.61		
T.35	34.1		10.54		
T.36	34.1		11.9		
T.37	34.1		12.15		
S.1	16.5		21.93		
MTR	5.4	4.9	36.35	14.11	
STR	5.4		37.2		
H.21	34.1		8.3		
T.42	34.1		8.6		
T.43	34.1		9.05		



Final Calculations - Hazen-Williams

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APP-004137 - Two Head Calculation (H.19 & H.21)

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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.19 to T.40	13.00 13.0	1.025 150.0 0.0434	Ctb 2.0 0.0 0.0	3.000 2.000 5.000	9.140 0.0 0.217		K Factor = 4.30 Vel = 5.05
T.40 to T.39	14.11 27.11	1.025 150.0 0.1693	Ctr 0.5 0.0 0.0	1.000 0.500 1.500	9.357 0.0 0.254		Vel = 10.54
T.39 to T.35	0.0 27.11	1.025 150.0 0.1693	Ctr 0.5 0.0 0.0	5.000 0.500 5.500	9.611 0.0 0.931		Vel = 10.54
T.35 to T.36	0.0 27.11	1.025 150.0 0.1693	Ctb 2.0 0.0 0.0	6.000 2.000 8.000	10.542 0.0 1.354		Vel = 10.54
T.36 to T.37	0.0 27.11	1.025 150.0 0.1693	Ctr 0.5 0.0 0.0	1.000 0.500 1.500	11.896 0.0 0.254		Vel = 10.54
T.37 to S.1	0.0 27.11	1.025 150.0 0.1692	T 6.75 0.0 0.0	6.000 6.750 12.750	12.150 7.623 2.157		Vel = 10.54
S.1 to MTR	0.0 27.11	1.505 150.0 0.0261	2Zwa 0.0 0.0 0.0	14.500 0.0 14.500	21.930 14.040 0.378		** Fixed Loss = 9.233 Vel = 4.89
MTR to STR	0.0 27.11	1.481 150.0 0.0282	0.0 0.0 0.0	30.300 0.0 30.300	36.348 0.0 0.854		Vel = 5.05
	0.0 27.11				37.202		K Factor = 4.44
H.21 to T.42	14.11 14.11	1.025 150.0 0.0507	Cel 2.0 0.0 0.0	4.000 2.000 6.000	8.295 0.0 0.304		K Factor = 4.90 Vel = 5.49
T.42 to T.43	0.0 14.11	1.025 150.0 0.0506	0.0 0.0 0.0	9.000 0.0 9.000	8.599 0.0 0.455		Vel = 5.49
T.43 to T.40	0.0 14.11	1.025 150.0 0.0505	Ctb 2.0 0.0 0.0	4.000 2.000 6.000	9.054 0.0 0.303		Vel = 5.49
	0.0 14.11				9.357		K Factor = 4.61

