



**... Fire Protection by Computer Design**

DEAN AND ALLYN, INC.  
116 LEWISTON ROAD  
Your Street Address 2  
GRAY MAINE  
207 657 5646

Job Name : PAPI ROMANO  
Building :  
Location : 828 RIVERSIDE STREET PORTLAND MAINE  
System : ONE  
Contract : C151286  
Data File : PAPI ROMANO.WXF

Hydraulic Design Information Sheet

Name - PAPI RAMANO'S SHOP Date - 7-31-15  
 Location - 828 RIVERSIDE STREET PORTLAND MAINE  
 Building - System No. - ONE  
 Contractor - DEAN AND ALLYN, INC. Contract No. - C151286  
 Calculated By - H. KING Drawing No. - 1 OF 1  
 Construction: (X) Combustible ( ) Non-Combustible Ceiling Height - VARIES  
 Occupancy - GENERAL CONTRACTOR'S SHOP

S (X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. ( ) 1 (X) 2 ( ) 3 ( ) Ex.Haz.  
 Y ( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve

S Other

T Specific Ruling Made By Date

M	Area of Sprinkler Operation	- 1035	System Type	Sprinkler/Nozzle
	Density	- .20	(X) Wet	Make RELIABLE
D	Area Per Sprinkler	- 107	( ) Dry	Model F1FR
E	Elevation at Highest Outlet	- 15	( ) Deluge	Size 1/2"
S	Hose Allowance - Inside	- 0	( ) Preaction	K-Factor 5.6
I	Rack Sprinkler Allowance	- 0	( ) Other	Temp.Rat.155
G	Hose Allowance - Outside	- 250		

N Note CUSHION 20.4 PSI

Calculation Flow Required - 526.5 Press Required - 58.0 CITY  
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 10-17-14		Cap. -
T	Time of Test -	Rated Cap.-	Elev.-
E	Static Press - 79	@ Press -	
R	Residual Press - 75	Elev. -	Well
	Flow - 1491		Proof Flow
S	Elevation - 0		

P Location - RIVERSIDE STREET

P Source of Information - PWD

C	Commodity	Class	Location
O	Storage Ht.	Area	Aisle W.
M	Storage Method:	%	Palletized % Rack
	( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage ( ) Encap.
S	( ) Double Row	( ) Slave Pallet	( ) Solid Shelf ( ) Non
T	( ) Mult. Row		( ) Open Shelf

R K Flue Spacing Clearance:Storage to Ceiling  
 A Longitudinal Transverse

G Horizontal Barriers Provided:

# Final Calculations - Hazen-Williams

DEAN AND ALLYN, INC.  
PAPI ROMANO

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftn'g's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
1A	21.40	1.049	T	5.0	1.300	14.603		K Factor = 5.60	
to		120.0		0.0	5.000	0.433			
1	21.4	0.1476		0.0	6.300	0.930		Vel = 7.94	
	0.0								
	21.40					15.966		K Factor = 5.36	
1B	21.40	1.049		0.0	8.000	15.966		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
2	21.4	0.1474		0.0	8.000	1.179		Vel = 7.94	
2	22.18	1.049		0.0	8.000	17.145		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
3	43.58	0.5498		0.0	8.000	4.398		Vel = 16.18	
3	24.86	1.38		0.0	8.000	21.543		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
4	68.44	0.3331		0.0	8.000	2.665		Vel = 14.68	
4	26.35	1.61		0.0	8.000	24.208		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
5	94.79	0.2874		0.0	8.000	2.299		Vel = 14.94	
5	27.57	1.61	T	8.0	3.000	26.507		K Factor @ node 1	
to		120.0		0.0	8.000	0.0			
50	122.36	0.4608		0.0	11.000	5.069		Vel = 19.28	
	0.0								
	122.36					31.576		K Factor = 21.78	
6	21.47	1.049		0.0	8.000	16.070		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
7	21.47	0.1484		0.0	8.000	1.187		Vel = 7.97	
7	22.25	1.049		0.0	8.000	17.257		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
8	43.72	0.5529		0.0	8.000	4.423		Vel = 16.23	
8	24.94	1.38		0.0	8.000	21.680		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
9	68.66	0.3352		0.0	8.000	2.682		Vel = 14.73	
9	26.43	1.61		0.0	8.000	24.362		K Factor @ node 1	
to		120.0		0.0	0.0	0.0			
10	95.09	0.2890		0.0	8.000	2.312		Vel = 14.99	
10	27.66	1.61	T	8.0	3.000	26.674		K Factor @ node 1	
to		120.0		0.0	8.000	0.0			
51	122.75	0.4636		0.0	11.000	5.100		Vel = 19.34	
	0.0								
	122.75					31.774		K Factor = 21.78	
11	31.38	1.61	T	8.0	3.000	34.323		K Factor @ node 1	
to		120.0		0.0	8.000	0.0			
52	31.38	0.0372		0.0	11.000	0.409		Vel = 4.95	
	0.0								
	31.38					34.732		K Factor = 5.32	
50	122.36	3.26		0.0	13.300	31.576			
to		120.0		0.0	0.0	0.0			
51	122.36	0.0149		0.0	13.300	0.198		Vel = 4.70	
51	122.75	3.26	3E	28.223	8.000	31.774			
to		120.0	T	20.159	48.382	0.0			
53	245.11	0.0537		0.0	56.382	3.025		Vel = 9.42	

# Final Calculations - Hazen-Williams

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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	*****
	0.0 245.11					34.799		K Factor = 41.55	
52 to 53	31.38	3.26 120.0	3E T	28.223 20.159	7.300 48.382	34.732 0.0			
	31.38	0.0012		0.0	55.682	0.067		Vel = 1.21	
53 to 54	245.11	3.26 120.0	T	20.159 0.0	29.000 20.159	34.799 0.0			
	276.49	0.0670		0.0	49.159	3.296		Vel = 10.63	
54 to TR	0.0	3.26 120.0	E	9.408 0.0	16.000 9.408	38.095 0.0			
	276.49	0.0670		0.0	25.408	1.703		Vel = 10.63	
TR to BR	0.0	3.26 120.0	T	20.159 0.0	15.000 20.159	39.798 5.630			
	276.49	0.0671		0.0	35.159	2.358		Vel = 10.63	
BR to FF	0.0	4.26 120.0	E	13.167 0.0	6.000 13.167	47.786 5.000		** Fixed Loss = 5	
	276.49	0.0182		0.0	19.167	0.349		Vel = 6.22	
FF to CTY	0.0	4.1 140.0	2E G	29.067 2.907	180.000 61.041	53.135 0.866			
	276.49	0.0165	T	29.067	241.041	3.979		Vel = 6.72	
	250.00 526.49					57.980		Qa = 250.00 K Factor = 69.14	

# Pressure / Flow Summary - STANDARD

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1A	16.0	5.6	14.6	na	21.4	0.2	107	7.0
1	15.0		15.97	na				
1B	15.0	K = K @ 1	15.97	na	21.4			
2	15.0	K = K @ 1	17.15	na	22.18			
3	15.0	K = K @ 1	21.54	na	24.86			
4	15.0	K = K @ 1	24.21	na	26.35			
5	15.0	K = K @ 1	26.51	na	27.57			
6	15.0	K = K @ 1	16.07	na	21.47			
7	15.0	K = K @ 1	17.26	na	22.25			
8	15.0	K = K @ 1	21.68	na	24.94			
9	15.0	K = K @ 1	24.36	na	26.43			
10	15.0	K = K @ 1	26.67	na	27.66			
11	15.0	K = K @ 1	34.32	na	31.38			
50	15.0		31.58	na				
51	15.0		31.77	na				
52	15.0		34.73	na				
53	15.0		34.8	na				
54	15.0		38.09	na				
TR	15.0		39.8	na				
BR	2.0		47.79	na				
FF	2.0		53.14	na				
CTY	0.0		57.98	na	250.0			

The maximum velocity is 19.34 and it occurs in the pipe between nodes 10 and 51

# Water Supply Curve C

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City Water Supply:  
C1 - Static Pressure : 79  
C2 - Residual Pressure: 75  
C2 - Residual Flow : 1491

Demand:  
D1 - Elevation : 6.496  
D2 - System Flow : 276.49  
D2 - System Pressure : 57.980  
Hose ( Demand ) : 250  
D3 - System Demand : 526.49  
Safety Margin : 20.437

