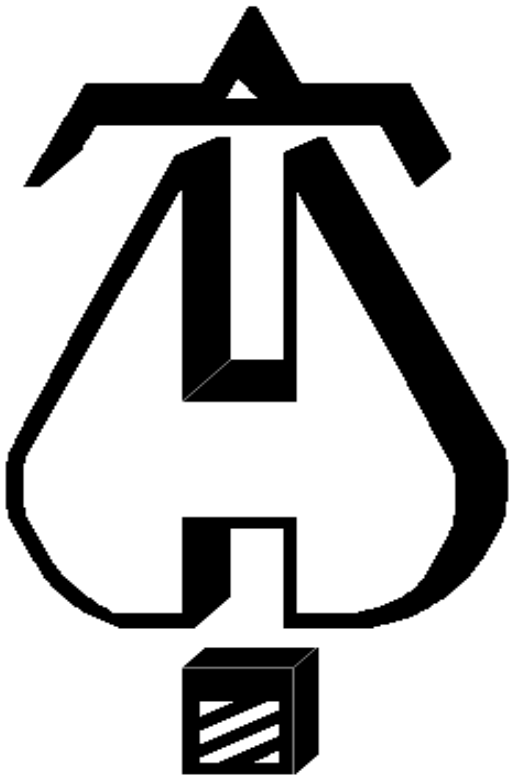


. . . Fire Protection by Computer Design

ABL FIRE PROTECTION
RALEIGH, NORTH CAROLINA

Job Name	:	SOLEIL HIGH ZONE STANDPIPE
Building	:	
Location	:	RALEIGH, NORTH CAROLINA
System	:	HIGH STANDPIP
Contract	:	
Data File	:	SOLEIL 260 PUMP STANDPIPE.WXF

HYDRAULIC DESIGN INFORMATION SHEET

Name - SOLEIL CENTER
Location - RALEIGH, NORTH CAROLINA
Building -
Contractor -
Calculated By - JSB
Occupancy - RESIDENTIAL

Date - 11-25-07
System No. - HIGH STANDPIP
Contract No. -
Drawing No. - FP-5

SYSTEM DESIGN

(X)NFPA 14 Number of Standpipes ( )1 (X)2 ( )3 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Flow at Top Most Outlet	- 500	Gpm	System Type	
Pres. at Top Most Outlet	- 125	Psi	(X) Wet	( ) Dry
Flow For Ea. Additional Standpipe	- 250	Gpm		
Total Additional Flow	- 250	Gpm		
Elevation at Highest Outlet	- 433	Feet		

Hose Valve Connection ( )1 1/2" (X)2 1/2"
Class Service ( )I ( )II (X)III
Note:

Calculation Summary
Gpm Required 750 Psi Required 315.653 AT PUMP DISCHARGE
C-Factor Used: Overhead 120 Underground 140

SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	-			Cap.
Time of Test	-	Rated Cap.	750	Elev.
Static (Psi)	- 106	@ Psi	260	
Residual (Psi)	- 92	Elev.	24.5	Well
Flow (Gpm)	- 1470			Proof Flow Gpm
Elevation	- 0			

Location:

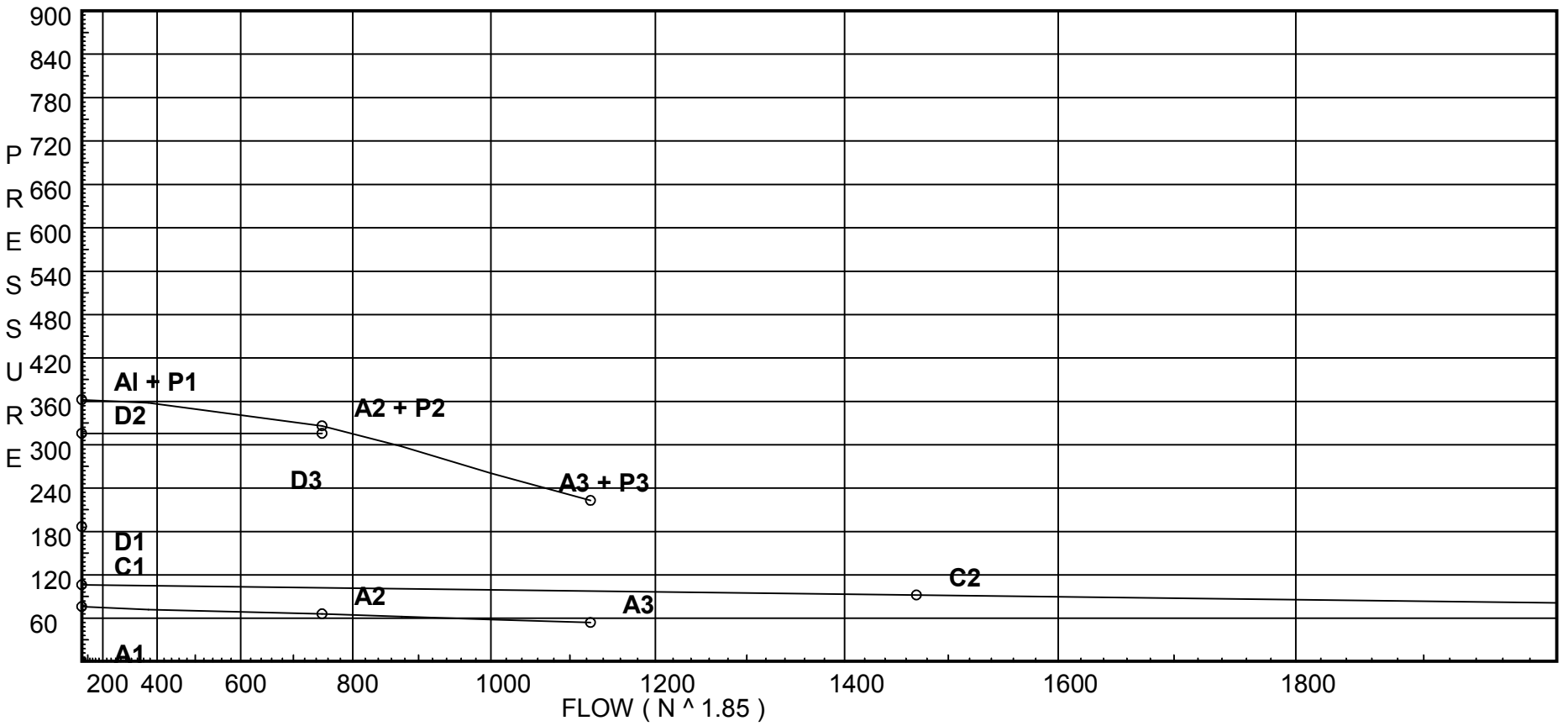
Source of Information:

City Water Supply:
- C1 - Static Pressure : 106
- C2 - Residual Pressure: 92
- C2 - Residual Flow : 1470

City Water Adjusted to Pump Inlet for Pf - Elev - Hose Flow
- A1 - Adjusted Static: 76.096
- A2 - Adj Resid : 65.835 @ 750
- A3 - Adj Resid : 53.864 @ 1125

Pump Data:
- P1 - Pump Churn Pressure : 286
- P2 - Pump Rated Pressure : 260
- P2 - Pump Rated Flow : 750
- P3 - Pump Pressure @ Max Flow : 169
- P3 - Pump Max Flow : 1125
- City Residual Flow @ 0 = 4390.85
- City Residual Flow @ 20 = 3921.60
- City Water @ 150% of Pump = 97.46

Demand:
- D1 - Elevation : 186.666
- D2 - System Flow :
- D2 - System Pressure : 315.653
- Hose (Adj City) : 720
- Hose (Demand) : 750
- D3 - System Demand : 750
- Safety Margin : 10.182



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	Generic Butterfly Valve	0	0	0	0	0	0	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
H	45' Grvd-Vic Elbow #11	0	0	1	1.5	2	2	3	3	3.5	3.5	4.5	5	6.5	8.5	10	18	20	23	25	30
I	90' Grvd-Vic Elbow #10	0	0	2	3	4	3.5	6	5	8	7	8.5	10	13	17	20	23	25	33	36	40
J	90'Tee-Branch Grv Vic #20	0	0	4.5	6	8	8.5	10.8	13	17	16	21	25	33	41	50	65	78	88	98	120
S	Generic Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
T	90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zaf	Ames 3000SS	Fitting generates a Fixed Loss Based on Flow																			
Zai	Ames 4000SS	Fitting generates a Fixed Loss Based on Flow																			

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
STD1	432.0		125.0	na	500.0			
STD2	432.0		128.21	na	250.0			
HZT	24.5		305.93	na				
CON	17.5		309.8	na				
HZD	24.5		315.65	na				
HZS	24.5		65.83	na				
RED	17.5		69.67	na				
MF4	3.0		76.23	na				
DI	1.0		87.2	na				
HDI	-3.0		89.39	na				
HD2	-3.0		90.03	na	720.0			
POC	1.0		92.0	na				

The maximum velocity is 7.58 and it occurs in the pipe between nodes HZT and CON

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
STD1	500.00	6.357	5I	62.867	497.000	125.000		Qa = 500
to		120	1B	12.573	75.440	176.488		
HZT	500.0	0.0078		0.0	572.440	4.443		Vel = 5.05
	0.0							
	500.00					305.931		K Factor = 28.59
STD2	250.00	6.357	5I	62.867	497.000	128.210		Qa = 250
to		120	1B	12.573	75.440	176.488		
HZT	250.0	0.0022		0.0	572.440	1.233		Vel = 2.53
HZT	500.00	6.357	1J	31.433	7.000	305.931		
to		120	1B	12.573	44.006	3.032		
CON	750.0	0.0164		0.0	51.006	0.838		Vel = 7.58
CON	0.0	6.357	1S	40.235	1.000	309.801		
to		120	1B	12.573	52.808	4.968		* Fixed loss = 8
HZD	750.0	0.0164		0.0	53.808	0.884		Vel = 7.58
	0.0							
	750.00					315.653		K Factor = 42.21
System Demand Pressure						315.653		
Safety Margin						10.182		
Continuation Pressure						325.835		
Pressure @ Pump Outlet						325.835		
Pressure From Pump Curve						-260.000		
Pressure @ Pump Inlet						65.835		
HZS	0.0	6.357	1I	12.573	1.000	65.835		
to		120	1G	3.772	47.778	3.032		
RED	750.0	0.0164	1J	31.433	48.778	0.801		Vel = 7.58
RED	0.0	8.249	1B	14.094	8.500	69.668		
to		120	1J	38.759	52.853	6.280		
MF4	750.0	0.0046		0.0	61.353	0.284		Vel = 4.50
MF4	0.0	8.249	1Zai	0.0	1.000	76.232		
to		120	1E	21.141	21.141	10.866		* Fixed loss = 10
DI	750.0	0.0046		0.0	22.141	0.102		Vel = 4.50
DI	0.0	8.27	1H	10.28	45.000	87.200		
to		140	1G	6.326	89.357	1.732		
HDI	750.0	0.0034	1J	52.191	134.357	0.462		Vel = 4.48
			1I	20.56				
HDI	0.0	10.28	2F	33.148	420.000	89.394		
to		140	1T	75.336	116.018	0.0		
HD2	750.0	0.0012	1G	7.534	536.018	0.637		Vel = 2.90
HD2	720.00	10.28	1F	16.574	131.000	90.031		Qa = 720
to		140	2G	15.067	31.641	1.298		* Fixed loss = 3.03
POC	1470.0	0.0041	1Zaf	0.0	162.641	0.671		Vel = 5.68
	0.0							

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes ******
	1470.00				92.000		K Factor = 153.26	