

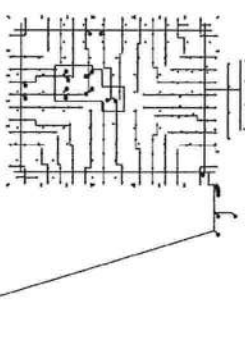
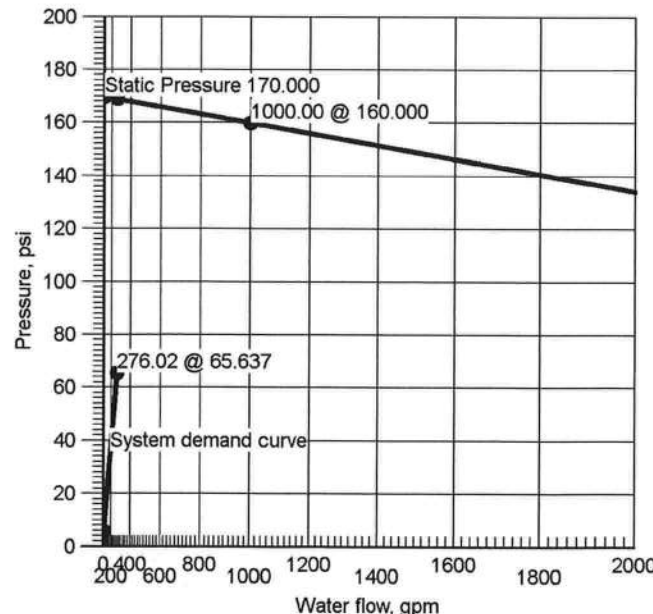


Hydraulic Overview

40136

Job Number: 1

Report Description: Light Hazard

Job					
Job Number 1		Design Engineer			
Job Name: Belmont Academy		Phone		FAX	
Address 1 1476 SW Walter Ave.		State Certification/License Number			
Address 2 Lake City, FL 32024		AHJ			
Address 3		Job Site/Building			
System					
Density 0.10gpm/ft²		Area of Application 1500ft² (Actual 1057ft²)			
Most Demanding Sprinkler Data 8 K-Factor 32.98 at 17.000		Hose Streams 100.00			
Coverage Per Sprinkler 120ft²		Number Of Sprinklers Calculated 5		Number Of Sprinklers Calculated 0	
System Pressure Demand 65.637		System Flow Demand 276.02			
Total Demand 276.02 @ 65.637		Pressure Result +103.439 (61.2%)			
Supplies		Check Point Gauges			
Node	Name	Flow(gpm)	Hose Flow(gpm)	Static(psi)	Residual(psi)
1	Water Supply	1000.00		170.000	160.000
Identifier	Pressure(psi)	K-Factor(K)	Flow(gpm)		
					
3D Design		Water Supply at Node 1 (1000.00, 0.00, 170.000, 160.000)			
					

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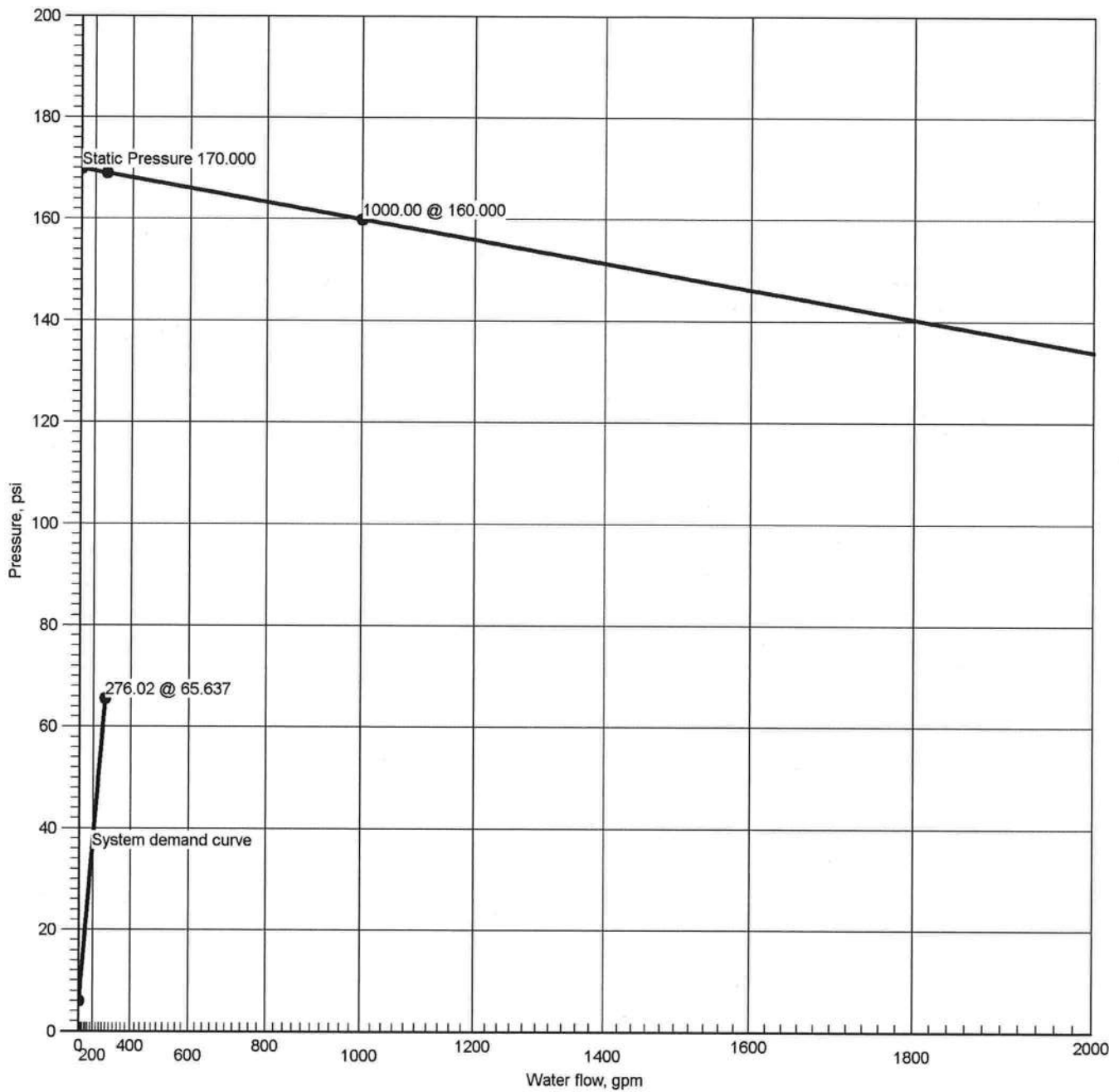
Hydraulic Summary

Job Number: 1
Report Description: Light Hazard

Job													
Job Number 1					Design Engineer								
Job Name: Belmont Academy					State Certification/License Number								
Address 1 1476 SW Walter Ave.					AHJ								
Address 2 Lake City, FL 32024					Job Site/Building								
Address 3					Drawing Name 3D Design								
System					Remote Area(s)								
Most Demanding Sprinkler Data 8 K-Factor 32.98 at 17.000					Occupancy Light Hazard			Job Suffix					
Hose Allowance At Source 0.00					Density 0.10gpm/ft²			Area of Application 1500ft² (Actual 1057ft²)					
Additional Hose Supplies					Number Of Sprinklers Calculated 5			Number Of Nozzles Calculated 0					
<table border="1"> <thead> <tr> <th>Node</th> <th>Flow(gpm)</th> </tr> </thead> <tbody> <tr> <td>Hydrant At Node 392</td> <td>100.00</td> </tr> </tbody> </table>					Node	Flow(gpm)	Hydrant At Node 392	100.00	Coverage Per Sprinkler 120ft²			AutoPeak Results: Pressure For Remote Area(s) Adjacent To Most Remote Area	
Node	Flow(gpm)												
Hydrant At Node 392	100.00												
Total Hose Streams 100.00													
System Flow Demand 276.02		Total Water Required (including Hose Allowance) 276.02											
Maximum Pressure Unbalance In Loops 0.000													
Maximum Velocity Above Ground 15.45 between nodes 388 and 358													
Maximum Velocity Under Ground													
Volume capacity of Wet Pipes 797.94gal		Volume capacity of Dry Pipes											
Supplies													
Node	Name	Hose Flow (gpm)	Static (psi)	Residual (psi)	@	Flow (gpm)	Available (psi)	@	Total Demand (gpm)	Required (psi)	Safety Margin (psi)		
1	Water Supply		170.000	160.000		1000.00	169.076		276.02	65.637	103.439		
Contractor													
Contractor Number FPC16-000001		Contact Name Garrett Treverton				Contact Title PM							
Name of Contractor: Davis-Ulmer Sprinkler dba Beach Lake Sprinkler		Phone 352-799-2990				Extension							
Address 1 19094 Treverton Ln.		FAX 352-799-6300											
Address 2 Brooksville, FL 34604		E-mail garrett.treverton@beachlakesprinkler.us											
Address 3		Web-Site beachlakesprinkler.com											



Water Supply at Node 1



Hydraulic Graph:

Water Supply at Node 1

Static: Pressure

170.000

Residual: Pressure

160.000 @ 1000.00

Available Pressure at Time of Test

169.076 @ 276.02

System Demand

65.637 @ 276.02

System Demand (Including Hose Allowance at Source)

65.637 @ 276.02



Summary Of Outflowing Devices

Job Number: 1

Report Description: Light Hazard

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)		
Hydrant	392	100.00	100.00	0	71.509		
Sprinkler	493	36.38	32.98	8	20.681		
⇒ Sprinkler	494	32.98	32.98	8	17.000		
Sprinkler	523	36.79	32.98	8	21.154		
Sprinkler	524	33.83	32.98	8	17.882		
Sprinkler	541	36.03	32.98	8	20.288		

⇒ Most Demanding Sprinkler Data



Node Analysis

Job Number: 1

Report Description: Light Hazard

Node	Elevation(Foot)	Fittings	Pressure(psi)	Discharge(gpm)
1	17'-0	S	65.637	276.02
392	1'-0	Hyd	71.509	100.00
493	31'-0	Spr(-20.681), fd(22'-0)	20.681	36.38
494	31'-0	Spr(-17.000), fd(22'-0)	17.000	32.98
523	31'-0	Spr(-21.154), fd(22'-0)	21.154	36.79
524	31'-0	Spr(-17.882), fd(22'-0)	17.882	33.83
541	31'-0	Spr(-20.288), fd(22'-0)	20.288	36.03
42	30'-6	PO(9'-11)	33.888	
44	30'-6	PO(9'-11)	34.183	
157	30'-6	PO(9'-11)	34.091	
160	32'-0	PO(5'-0)	25.432	
172	32'-0	PO(5'-0)	30.876	
178	30'-6	PO(9'-11)	34.283	
181	32'-0	PO(5'-0)	31.574	
192	32'-0		25.018	
214	32'-0	PO(5'-0)	30.295	
358	30'-6	T(12'-4)	45.953	
386	1'-0		71.419	
387	3'-0	CV(19'-3)	70.494	
388	30'-6	E(6'-2)	54.741	
389	-3'-0	T(38'-5)	73.383	
391	-3'-0	EE(7'-8)	73.636	



Hydraulic Analysis

Job Number: 1
Report Description: Light Hazard

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
Route 1							
DY	1.0490	32.98	12.24	120	0.328366	0'-0	Pf 8.866
494	31'-0	32.98	8	17.000	Sprinkler,	27'-0	Pe -0.434
160	32'-0			25.432	PO(5'-0), fd(22'-0)	27'-0	Pv
BL	1.6820	66.81	9.65	120	0.121587	34'-6	Pf 7.806
160	32'-0	33.83		25.432	Flow (q) from Route 2	29'-8	Pe 0.650
42	30'-6			33.888	2E(4'-11), T(9'-11), PO(9'-11)	64'-2	Pv
CM	2.1570	14.57	1.28	120	0.002164	81'-2	Pf 0.202
42	30'-6			33.888		12'-4	Pe
157	30'-6			34.091	C(12'-4)	93'-6	Pv
CM	2.1570	50.95	4.47	120	0.021930	8'-9	Pf 0.192
157	30'-6	36.38		34.091	Flow (q) from Route 4		Pe
178	30'-6			34.283		8'-9	Pv
CM	2.1570	87.75	7.70	120	0.059948	182'-4	Pf 11.671
178	30'-6	36.79		34.283	Flow (q) from Route 5	12'-4	Pe
358	30'-6			45.953	T(12'-4)	194'-8	Pv
CM	2.1570	176.02	15.45	120	0.217325	15'-10	Pf 8.788
358	30'-6	88.28		45.953	Flow (q) from Route 3	24'-7	Pe
388	30'-6			54.741	T(12'-4), 2E(6'-2)	40'-5	Pv
FM	2.6350	176.02	10.36	120	0.081989	27'-6	Pf 3.831
388	30'-6			54.741		19'-3	Pe 11.922
387	3'-0			70.494	CV(19'-3)	46'-9	Pv
FR	3.2600	176.02	6.77	120	0.029080	2'-0	Pf 0.058
387	3'-0			70.494			Pe 0.867
386	1'-0			71.419		2'-0	Pv
CM	4.2300	176.02	4.02	150	0.005413	23'-4	Pf 0.230
386	1'-0			71.419		19'-3	Pe 1.734
389	-3'-0			73.383	E(19'-3)	42'-7	Pv
CM	4.2300	276.02	6.30	150	0.012441	12'-8	Pf 0.253
389	-3'-0	100.00		73.383	Flow (q) from Route 6	7'-8	Pe
391	-3'-0			73.636	EE(7'-8)	20'-4	Pv
CM	6.0900	276.02	3.04	150	0.002109	275'-4	Pf 0.672
391	-3'-0			73.636		43'-2	Pe -8.671
1	17'-0			65.637	2E(21'-7), S	318'-6	Pv
		0.00			Hose Allowance At Source		
1		276.02					
Route 2							
DY	1.0490	33.83	12.56	120	0.344089	0'-0	Pf 7.570
524	31'-0	33.83	8	17.882	Sprinkler,	22'-0	Pe -0.434
192	32'-0			25.018	, fd(22'-0)	22'-0	Pv
BL	1.6820	33.83	4.88	120	0.034520	12'-0	Pf 0.414
192	32'-0			25.018			Pe
160	32'-0			25.432		12'-0	Pv
Route 3							
DY	1.0490	36.03	13.38	120	0.386707	0'-0	Pf 10.441
541	31'-0	36.03	8	20.288	Sprinkler,	27'-0	Pe -0.434
214	32'-0			30.295	PO(5'-0), fd(22'-0)	27'-0	Pv
BL	1.6820	36.03	5.20	120	0.038796	53'-9	Pf 3.237
214	32'-0			30.295		29'-8	Pe 0.650
44	30'-6			34.183	2E(4'-11), T(9'-11), PO(9'-11)	83'-5	Pv
CM	2.1570	88.28	7.75	120	0.060621	169'-7	Pf 11.770
44	30'-6	52.24		34.183	Flow (q) from Route 7	24'-7	Pe
358	30'-6			45.953	C(12'-4), T(12'-4)	194'-2	Pv
Route 4							
DY	1.0490	36.38	13.51	120	0.393635	0'-0	Pf 10.628
493	31'-0	36.38	8	20.681	Sprinkler,	27'-0	Pe -0.434
172	32'-0			30.876	PO(5'-0), fd(22'-0)	27'-0	Pv
BL	1.6820	36.38	5.25	120	0.039491	35'-3	Pf 2.565
172	32'-0			30.876		29'-8	Pe 0.650
157	30'-6			34.091	2E(4'-11), T(9'-11), PO(9'-11)	64'-11	Pv
Route 5							
DY	1.0490	36.79	13.66	120	0.401962	0'-0	Pf 10.853
523	31'-0	36.79	8	21.154	Sprinkler,	27'-0	Pe -0.434
181	32'-0			31.574	PO(5'-0), fd(22'-0)	27'-0	Pv
BL	1.6820	36.79	5.31	120	0.040326	31'-3	Pf 2.059
181	32'-0			31.574		19'-10	Pe 0.650
178	30'-6			34.283	T(9'-11), PO(9'-11)	51'-1	Pv



Hydraulic Analysis

Job Number: 1

Report Description: Light Hazard

Pipe Type	Diameter	Flow	Velocity	HWC	Friction Loss	Length	Pressure
Downstream	Elevation	Discharge	K-Factor	Pt	Pn	Eq. Length	Summary
Upstream					Fittings	Total Length	
Route 6							
CM	4.2300	100.00	2.28	150	0.001901	16'-0"	Pf 0.140
392	1'-0"	100.00		71.509	Hydrant,	57'-8"	Pe 1.734
389	-3'-0"			73.383	E(19'-3), T(38'-5)	73'-8"	Pv
Route 7							
CM	2.1570	52.24	4.59	120	0.022970	12'-10"	Pf 0.295
42	30'-6"	14.57		33.888	Flow (q) from Route 1		Pe
44	30'-6"			34.183		12'-10"	Pv

Equivalent Pipe Lengths of Valves and Fittings (C=120 only)				C Value Multiplier			
$\left(\frac{\text{Actual Inside Diameter}}{\text{Schedule 40 Steel Pipe Inside Diameter}} \right)^{4.87} = \text{Factor}$				Value Of C	100	130	140
				Multiplying Factor	0.713	1.16	1.33
						150	1.51

Pipe Type Legend	Units Legend	Fittings Legend
AO Arm-Over	Diameter Inch	ALV Alarm Valve
BL Branch Line	Elevation Foot	AngV Angle Valve
CM Cross Main	Flow gpm	b Bushing
DN Drain	Discharge gpm	BaIV Ball Valve
DR Drop	Velocity fps	BFP Backflow Preventer
DY Dynamic	Pressure psi	BV Butterfly Valve
FM Feed Main	Length Foot	C Cross Flow Turn 90°
FR Feed Riser	Friction Loss psi/Foot	cplg Coupling
MS Miscellaneous	HWC Hazen-Williams Constant	Cr Cross Run
OR Outrigger	Pt Total pressure at a point in a pipe	CV Check Valve
RN Riser Nipple	Pn Normal pressure at a point in a pipe	DeIV Deluge Valve
SP Sprig	Pf Pressure loss due to friction between points	DPV Dry Pipe Valve
ST Stand Pipe	Pe Pressure due to elevation difference between indicated points	E 90° Elbow
UG Underground	Pv Velocity pressure at a point in a pipe	EE 45° Elbow
		Ee1 11¼° Elbow
		Ee2 22½° Elbow
		f Flow Device
		fd Flex Drop
		FDC Fire Department Connection
		fE 90° FireLock(TM) Elbow
		fEE 45° FireLock(TM) Elbow
		flg Flange
		FN Floating Node
		fT FireLock(TM) Tee
		g Gauge
		GloV Globe Valve
		GV Gate Valve
		Ho Hose
		Hose Hose
		HV Hose Valve
		Hyd Hydrant
		LtE Long Turn Elbow
		mecT Mechanical Tee
		Noz Nozzle
		P1 Pump In
		P2 Pump Out
		PIV Post Indicating Valve
		PO Pipe Outlet
		PRV Pressure Reducing Valve
		PrV Pressure Relief Valve
		red Reducer/Adapter
		S Supply
		sCV Swing Check Valve
		Spr Sprinkler
		St Strainer
		T Tee Flow Turn 90°
		Tr Tee Run
		U Union
		WirF Wirfsbo
		WMV Water Meter Valve
		Z Cap