

MEHANDS, P.C.
1150 AVENUE OF THE AMERICAS, 5th FLOOR
NEW YORK, NY 10036

HYDRAULIC CALCULATIONS FOR
196-198 SKILLMAN STREET

BROOKLYN, NY



DRAWING NUMBER: SP-104

DATE: 7/26/2012

-DESIGN DATA-

REMOTE AREA NUMBER: 2 REMOTE AREA LOCATION: ROOF

OCCUPANCY CLASSIFICATION: LIGHT
DENSITY: 0.10 gpm/sq. ft.
AREA OF APPLICATION: 135 sq. ft.

COVERAGE PER SPRINKLER: 34 sq. ft.
TYPE OF SPRINKLERS CALCULATED: CONCEALED
NUMBER OF SPRINKLERS CALCULATED: 4 SPRINKLER HEADS

TOTAL WATER REQUIRED : 58.9 gpm @ 47.85 psi
FLOW AND PRESSURE (AT BASE OF RISER): 59 gpm @ 60 psi

TYPE OF SYSTEM: WET

WATER SUPPLY

Source: SPRINKLER BOOSTER PUMP
Location: CELLAR
Static: 60 psi Residual: psi Flow: 250 gpm
Source Elevation Relative to Finished Flow Level: ft.

NAME OF DESIGNER: N.S.
AUTHORITY HAVING JURISDICTION: NYC DEPARTMENT OF BUILDING

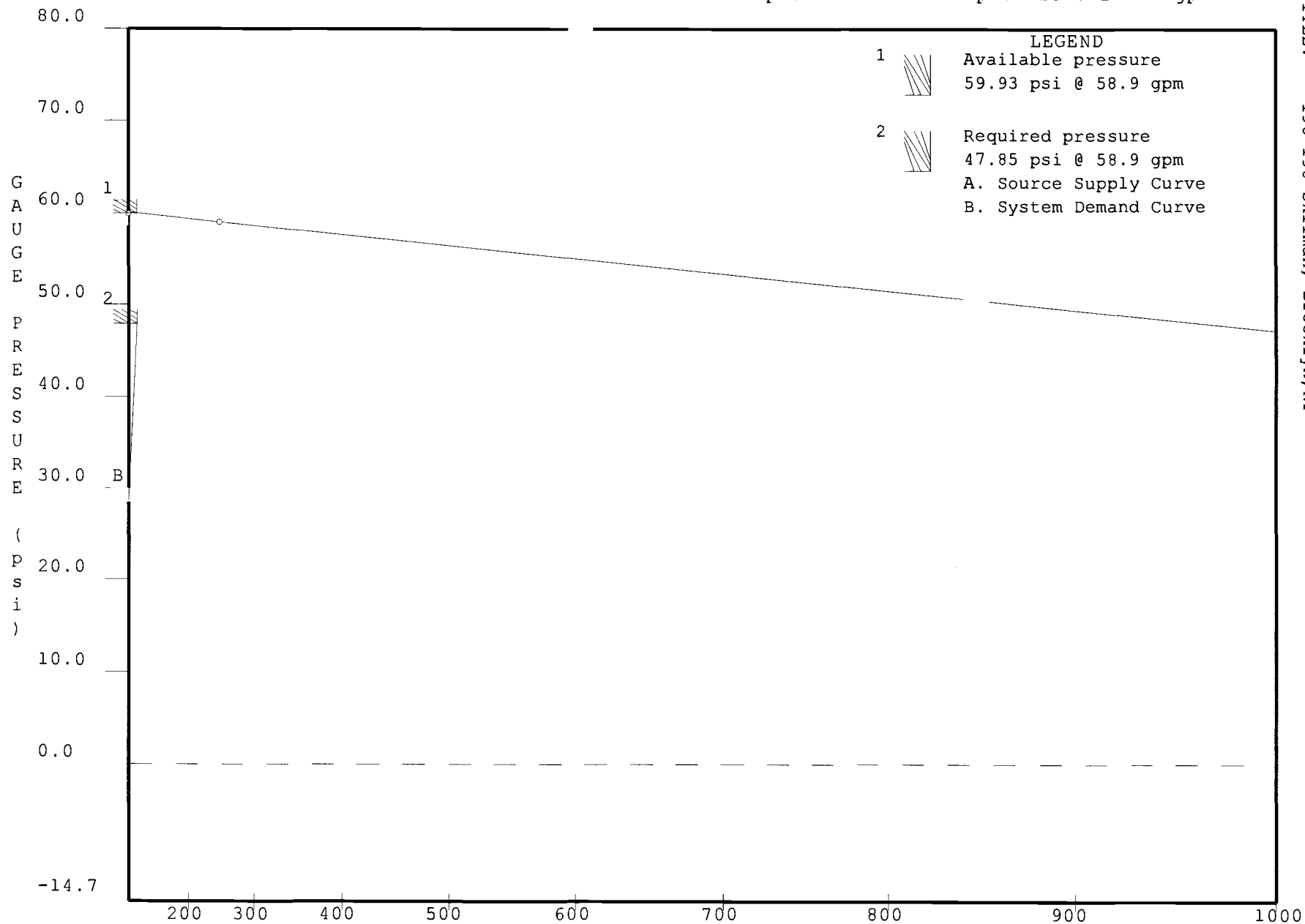
NOTES:

Calculations performed by HASS under license # 27031853 ,
granted by HRS SYSTEMS, INC.

(Notes continue after pipe calculations results.)

WATER SUPPLY ANALYSIS

Static: 60.00 psi Resid: 59.00 psi Flow: 250.0 gpm



SPRINKLER SYSTEM HYDRAULIC ANALYSIS

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JOB TITLE: 196-198 Skilman, Brooklyn,NY

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
15	60.0	59.0	250.0	59.9	58.9	47.8

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	58.9 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	58.9 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	69.0	K= 4.90	7.0	13.0	
2	69.0	K= 4.90	7.3	13.2	
3	69.0	K= 4.90	9.1	14.8	
4	69.0	K= 4.90	13.5	18.0	
5	70.0	- - - -	6.9	- - -	
6	70.0	- - - -	7.3	- - -	
7	70.0	- - - -	9.1	- - -	
8	70.0	- - - -	14.5	- - -	
9	70.0	- - - -	13.7	- - -	
10	65.0	- - - -	18.5	- - -	
11	65.0	- - - -	19.2	- - -	
12	57.0	- - - -	23.9	- - -	
13	9.0	- - - -	45.0	- - -	
14	65.0	- - - -	18.5	- - -	
15	3.0	SOURCE	47.8	58.9	

SPRINKLER SYSTEM HYDRAULIC ANALYSIS

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JOB TITLE: 196-198 Skilman, Brooklyn,NY

NFPA PIPE DATA

Pipe Tag	K-fac	Add Fl	Add Fl	To	Fit:	L	C	(Pt)	Notes
Frm Node	PT	(q)	Node/	Nom ID	Eq.Ln.	F		(Pe)	
To Node	PT	Tot.(Q)	Disch	Act ID	(ft.)	T	Pf/ft.	(Pf)	
El (ft)	El (ft)								
Pipe: 1	4.90	13.0	Disch			3.00	120	0.1	
5	70.0	6.9	0.0	1.000	E: 2.0	2.00		0.4	
1	69.0	7.0	13.0	1.049		5.00	0.058	0.3	
Pipe: 2	0.0	0.0				3.00	120	0.5	
6	70.0	7.3	13.0	1.000	T: 5.0	5.00		0.0	
5	70.0	6.9	13.0	1.049		8.00	0.058	0.5	
Pipe: 3	4.90	13.2	Disch			3.00	120	0.1	
6	70.0	7.3	0.0	1.000	T: 5.0	5.00		0.4	
2	69.0	7.3	13.2	1.049		8.00	0.060	0.5	
Pipe: 4	0.0	13.2	2			3.50	120	1.8	
7	70.0	9.1	13.0	1.000	T: 5.0	5.00		0.0	
6	70.0	7.3	26.2	1.049		8.50	0.214	1.8	
Pipe: 5	4.90	14.8	Disch			1.00	120	0.0	
7	70.0	9.1	0.0	1.000	T: 5.0	5.00		0.4	
3	69.0	9.1	14.8	1.049		6.00	0.075	0.4	
Pipe: 6	0.0	14.8	3			6.00	120	5.4	
8	70.0	14.5	26.2	1.000	T: 5.0	5.00		0.0	
7	70.0	9.1	41.0	1.049		11.00	0.491	5.4	
Pipe: 7	0.0	0.0				3.00	120	0.9	
8	70.0	14.5	18.0	1.000	T: 5.0	5.00		0.0	
9	70.0	13.7	18.0	1.049		8.00	0.107	0.9	
Pipe: 8	0.0	18.0	9			7.00	120	4.0	
10	65.0	18.5	41.0	1.500	T: 8.0	8.00		-2.2	
8	70.0	14.5	59.0	1.610		15.00	0.119	1.8	
Pipe: 9	0.0	0.0				2.00	120	0.7	
11	65.0	19.2	59.0	1.500	E: 4.0	4.00		0.0	
10	65.0	18.5	59.0	1.610		6.00	0.119	0.7	
Pipe: 10	0.0	0.0				10.00	120	4.7	
12	57.0	23.9	59.0	1.500	----	0.00		-3.5	
11	65.0	19.2	59.0	1.610		10.00	0.119	1.2	
Pipe: 11	0.0	0.0				1.00	120	0.0	
14	65.0	18.5	0.0	1.000	E: 2.0	2.00		0.0	
10	65.0	18.5	0.0	1.049		3.00	0.000	0.0	
Pipe: 12	0.0	0.0				57.00	120	21.1	
13	9.0	45.0	59.0	3.000	E: 7.0	7.00		-20.8	
12	57.0	23.9	59.0	3.068		64.00	0.005	0.3	

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JOB TITLE: 196-198 Skilman, Brooklyn, NY

Pipe Tag	K-fac	Add Fl	Add Fl	To	Fit:	L	C	(Pt)	
Frm Node	El (ft)	PT	(q)	Node/	Eq.Ln.	F		(Pe)	Notes
To Node	El (ft)	PT	Tot.(Q)	Disch	Act ID	(ft.)	T	Pf/ft.	(Pf)
Pipe: 13		Source	0.0				40.00	120	2.8
15	3.0	47.8	59.0	12	3.000	E: 7.0	7.00		-2.6
13	9.0	45.0	58.9		3.068		47.00	0.005	0.2
Pipe: 14		4.90	18.0	Disch			1.00	120	0.2
9	70.0	13.7	0.0		1.000	T: 5.0	5.00		0.4
4	69.0	13.5	18.0		1.049		6.00	0.107	0.6

NOTES (HASS):

(1) Calculations were performed by the HASS 8.2 computer program under license no. 27031853 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.012 gpm and a maximum imbalance at any node of 0.171 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 15.2 ft/sec at pipe 6.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) PIPE FITTINGS TABLE

Pipe Table Name: STANDARD.PIP

PAGE: A	MATERIAL: S40	HWC: 120							
Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	El1	Tee	LngEl1	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.049	2.00	5.00	2.00	5.00	6.00	1.00	10.00	10.00	5.00
1.610	4.00	8.00	2.00	9.00	6.00	1.00	10.00	10.00	8.00
3.068	7.00	15.00	5.00	16.00	10.00	1.00	13.00	13.00	15.00