

MEHANDS ENGINEERING
800 2ND AVENUE, SUITE 800
NEW YORK, NY 10017

HYDRAULIC CALCULATIONS FOR
1458 50 TH STREET, BROOKLYN



DRAWING NUMBER: SP 101

DATE: APR 24, 2014

-DESIGN DATA-

REMOTE AREA NUMBER: 2

REMOTE AREA LOCATION: 4TH FLOOR

OCCUPANCY CLASSIFICATION: LIGHT HAZARD/RESIDENTIAL

DENSITY: 0.10 gpm/sq. ft.

AREA OF APPLICATION: 324 sq. ft.

COVERAGE PER SPRINKLER: 81 sq. ft.

TYPE OF SPRINKLERS CALCULATED: CONCEALED RESIDENTIAL

NUMBER OF SPRINKLERS CALCULATED: 4 SPRINKLER HEADS

TOTAL WATER REQUIRED : 58.7 gpm @ 44.87 psi

FLOW AND PRESSURE (AT BOOSTER PUMP DISCHARGE): 58.7 gpm @ 80.64 psi

TYPE OF SYSTEM: WET SPRINKLER SYSTEM

Source: 16" CITY WATER MAIN Test Date: 4/10/2014 Test By: DEP, NYC

Location: 50 TH STREET & 15TH AVENUE , BROOKLYN

Static: 44 psi Residual: 43 psi Flow: 500 gpm

Source Elevation Relative to Finished Flow Level:

AUTHORITY HAVING JURISDICTION: NYC DEPARTMENT OF BUILDING

NOTES:

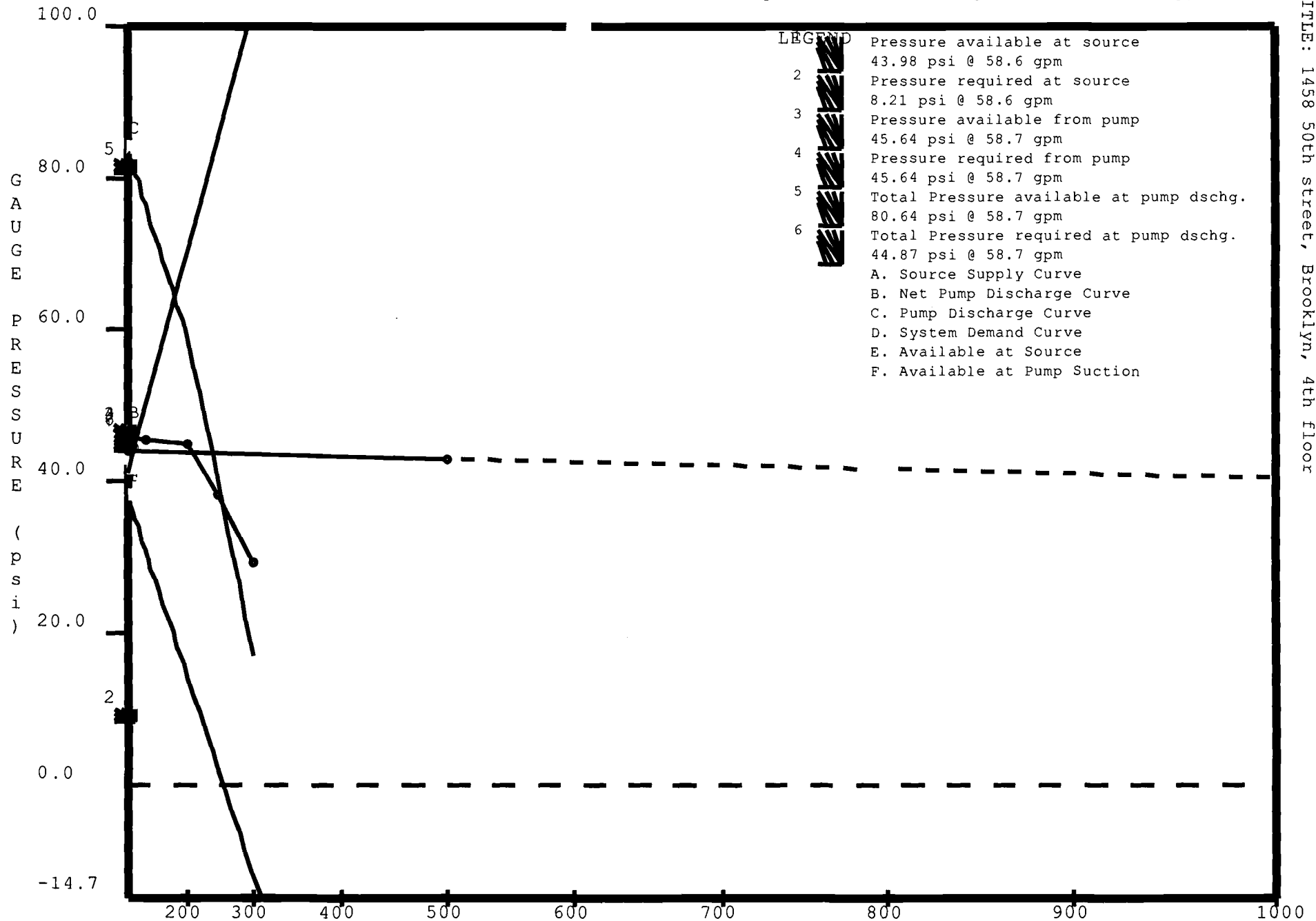
Calculations performed by HASS under license # 27031853 ,
granted by HRS SYSTEMS, INC.

(Notes continue after pipe calculations results.)



WATER SUPPLY ANALYSIS

Static: 44.00 psi Resid: 43.00 psi Flow: 500.0 gpm



DATE: 4/24/2014

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JOB TITLE: 1458 50th street, Brooklyn, 4th floor

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)
SOURCE	44.0	43.0	500.0	44.0	58.6	8.2

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	58.6 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	58.6 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
3	95.0	K= 4.90	8.0	13.9	
4	95.0	K= 4.90	8.4	14.2	
5	95.0	K= 4.90	9.5	15.1	
6	95.0	K= 4.90	10.0	15.5	
7	96.0	- - - -	8.4	- - -	
8	96.0	- - - -	10.0	- - -	
9	96.0	- - - -	13.5	- - -	
10	96.0	- - - -	15.7	- - -	
11	96.0	- - - -	20.6	- - -	
12	56.0	- - - -	39.5	- - -	
13	56.0	- - - -	40.8	- - -	
14	47.0	- - - -	44.9	- - -	
15	47.0	- - - -	-0.8	- - -	
16	48.0	- - - -	-0.9	- - -	
17	48.0	- - - -	6.1	- - -	
18	48.0	- - - -	6.4	- - -	
SOURCE	48.0	SOURCE	8.2	58.6	

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NFPA PIPE DATA

Pipe Tag	K-fac	Add F1	Add F1	To	Fit:	L	C	(Pt)	Notes
Frm Node	El (ft)	PT	(q)	Node/	Nom ID	Eq.Ln.	F	(Pe)	
To Node	El (ft)	PT	Tot. (Q)	Disch	Act ID	(ft.)	T	Pf/ft.	
Pipe: 1		4.90	13.9	Disch			11.00	120	0.4
7	96.0	8.4	0.0		1.000	E: 2.0	2.00		0.4
3	95.0	8.0	13.9		1.049		13.00	0.066	0.9
Pipe: 2		4.90	14.2	Disch			1.00	120	0.0
7	96.0	8.4	0.0		1.000	T: 5.0	5.00		0.4
4	95.0	8.4	14.2		1.049		6.00	0.069	0.4
Pipe: 3		0.0	0.0				19.00	120	5.1
9	96.0	13.5	28.1		1.000	E: 2.0	2.00		0.0
7	96.0	8.4	28.1		1.049		21.00	0.244	5.1
Pipe: 4		0.0	0.0				9.00	120	2.2
10	96.0	15.7	28.1	7	1.000	----	0.00		0.0
9	96.0	13.5	28.1		1.049		9.00	0.244	2.2
Pipe: 5		4.90	15.1	Disch			11.00	120	0.6
8	96.0	10.0	0.0		1.000	E: 2.0	2.00		0.4
5	95.0	9.5	15.1		1.049		13.00	0.077	1.0
Pipe: 6		4.90	15.5	Disch			1.00	120	0.1
8	96.0	10.0	0.0		1.000	T: 5.0	5.00		0.4
6	95.0	10.0	15.5		1.049		6.00	0.081	0.5
Pipe: 7		0.0	15.1	5			15.00	120	5.7
10	96.0	15.7	15.5	6	1.000	T: 5.0	5.00		0.0
8	96.0	10.0	30.6		1.049		20.00	0.285	5.7
Pipe: 8		0.0	30.6	8			41.00	120	4.8
11	96.0	20.6	28.1	9	1.500	----	0.00		0.0
10	96.0	15.7	58.7		1.610		41.00	0.118	4.8
Pipe: 10		0.0	0.0				40.00	120	18.9
12	56.0	39.5	58.7	10	2.000	E: 5.0	5.00		-17.3
11	96.0	20.6	58.7		2.067		45.00	0.035	1.6
Pipe: 11		0.0	0.0				32.00	120	1.3
13	56.0	40.8	58.7	11	2.000	E: 5.0	5.00		0.0
12	56.0	39.5	58.7		2.067		37.00	0.035	1.3
Pipe: 12		0.0	0.0				12.00	120	4.1
14	47.0	44.9	58.7	12	3.000	E: 7.0	22.00		-3.9
13	56.0	40.8	58.7		3.068	T:15.0	34.00	0.005	0.2
Pipe: 13		0.0	0.0		Fire Pump Rating		Avail.	Req'd.	
15	47.0	-0.8	58.7	13	gpm: 200.0		58.7	58.7	
14	47.0	44.9	58.7		psi: 45.0		45.0	45.0	

DATE: 4/24/2014

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JOB TITLE: 1458 50th street, Brooklyn, 4th floor

Pipe Tag	K-fac	Add Fl	Add Fl To	Fit:	L	C	(Pt)	
Frm Node	El (ft)	PT	(q)	Node/	Nom ID	Eq.Ln.	F	(Pe)
To Node	El (ft)	PT	Tot.(Q)	Disch	Act ID	(ft.)	T	Pf/ft.
Pipe: 14		0.0	58.6	14			16.00	120
16	48.0	-0.9	0.1		3.000	E: 7.0	37.00	0.4
15	47.0	-0.8	58.7		3.068	2T:30.0	53.00	0.005
Pipe: 15			0.0		Fixed Pressure Loss Device			
17	48.0	6.1	58.7	15		7.0 psi,	58.7	gpm
16	48.0	-0.9	58.7					
Pipe: 17		0.0	0.0				4.00	120
18	48.0	6.4	58.7	16		2.000	E: 5.0	5.00
17	48.0	6.1	58.7		2.067		9.00	0.035
Pipe: 18		Source	0.0				50.00	120
SOURCE	48.0	8.2	58.7	17		2.000	2G: 2.0	2.00
18	48.0	6.4	58.6		2.067		52.00	0.035

NOTES (HASS):

- Calculations were performed by the HASS 8.4 computer program under license no. 27031853 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760
- The system has been calculated to provide an average imbalance at each node of 0.004 gpm and a maximum imbalance at any node of 0.062 gpm.
- Total pressure at each node is used in balancing the system. Maximum water velocity is 11.3 ft/sec at pipe 7.
- The Minimum pump suction pressure under maximum calculated demand is -0.77 (psi)
- Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.
- Available pressure at source node SOURCE under full flow conditions is 43.96 psi compared to the minimum required pressure of 0.00 psi.
- PIPE FITTINGS TABLE

Pipe Table Name: STANDARD.PIP