

HYDRAULIC CALCULATIONS

MODEL G5-56 MANUFACTURE SHEET

HE GIN LEE ARCHITECT
169-15 NORTHERN BLVD
FLUSHING, NY 11358
P: 718.461.9100

HYDRAULIC CALCULATIONS FOR
471 UTICA AVENUE
BROOKLYN, NEW YORK

DRAWING NUMBER: SP-001.00 JANUARY 31, 2019
-DESIGN DATA-

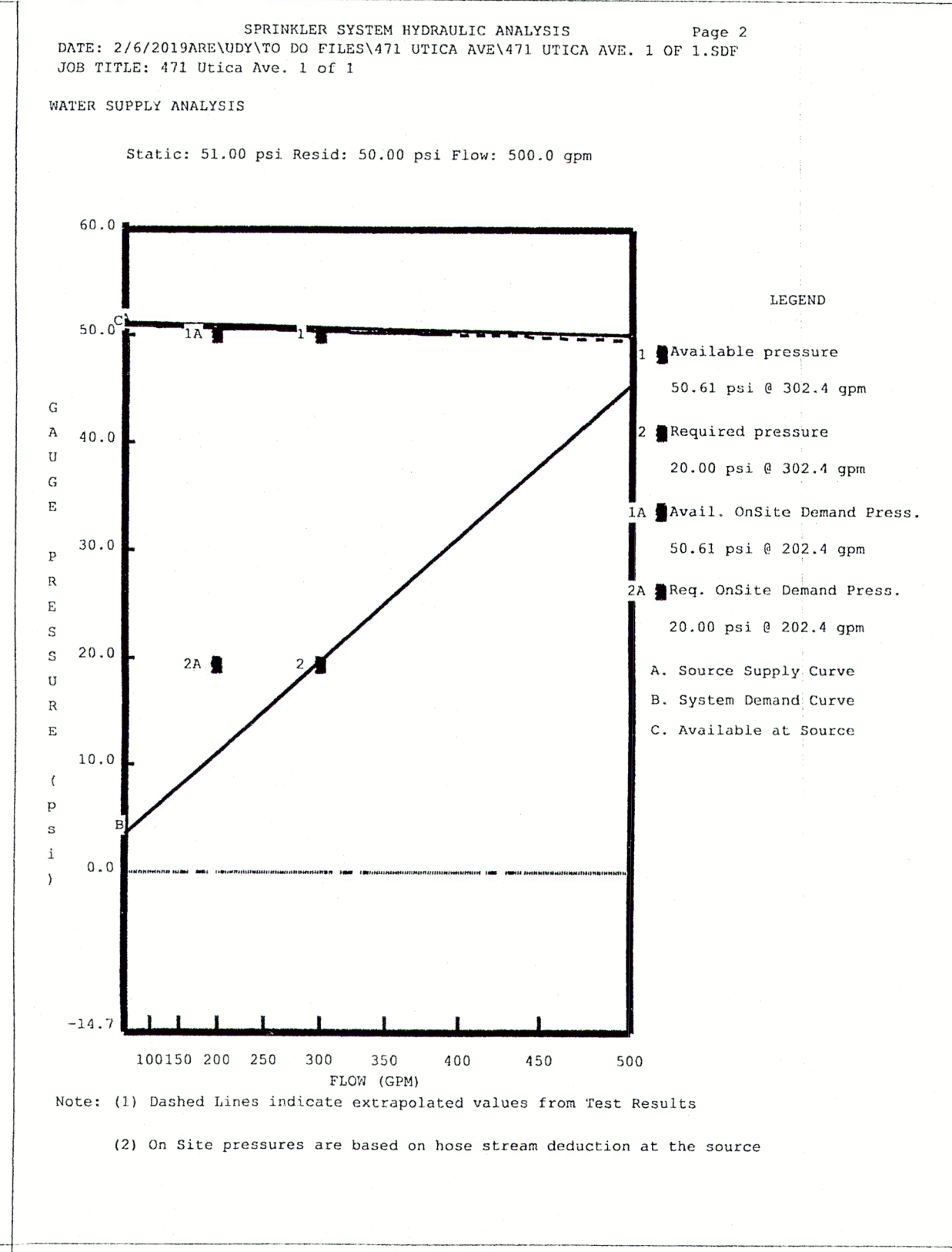
REMOTE AREA NUMBER: 1 OF 1 REMOTE AREA LOCATION: FIRST FLOOR
OCCUPANCY CLASSIFICATION: LIGHT HAZARD
DENSITY: .10 gpm/1500
AREA OF APPLICATION: 957 sq. ft.
HYDRAULIC CALCULATIONS I.A.W. NFPA 13

COVERAGES PER SPRINKLER: 120 sq. ft.
TYPE OF SPRINKLERS CALCULATED: RELIABLE MODEL G5-56 CONCEALED SPRINKLER
K-F FACTOR: 5.6
NUMBER OF SPRINKLERS CALCULATED: 13

TOTAL WATER REQUIRED (INCLUDING HOSE): 302.4 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 202.4 gpm @ 12.7 psi

TYPE OF SYSTEM: WET

WATER SUPPLY
Source: CITY Test Date: 7/19/2014 Test By: NYCDP
Location: THE STATIC PRESSURE WAS TAKEN ON THE EAST SIDE OF UTICA AVENUE 1ST HYDRANT SOUTH OF MAPLE STREET. THE RESIDUAL PRESSURE WAS TAKEN WHEN 500 GPM WERE FLOWING FROM THE EAST SIDE OF UTICA AVENUE 1ST HYDRANT NORTH OF MAPLE STREET.
Static: 51 psi Residual: 50 psi Flow: 500 gpm



SPRINKLER SYSTEM HYDRAULIC ANALYSIS Page 3
DATE: 2/6/2019AREVUDVYTO DO FILES\471 UTICA AVE\471 UTICA AVE. 1 OF 1.SDF
JOB TITLE: 471 Utica Ave. 1 of 1

NFPA WATER SUPPLY DATA

SOURCE	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW (GPM)	AVAIL. PRESS. (PSI)	TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SOURCE	51.0	50.0	500.0	50.6	302.4	20.0

AGGREGATE FLOW ANALYSIS:
TOTAL FLOW AT SOURCE: 302.4 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE: 100.0 GPM
OTHER HOSE STREAM ALLOWANCES: 0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS: 202.4 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	10.5	---	9.2	---	
2	10.5	---	9.2	---	
3	10.5	---	9.3	---	
4	10.5	---	9.3	---	
5	10.5	---	9.6	---	
6	4.0	---	12.7	---	
7	2.0	---	14.2	---	
8	2.0	---	14.6	---	
9	2.0	---	15.6	---	
10	10.5	---	7.4	---	
11	10.5	---	7.4	---	
12	10.5	---	7.8	---	
13	10.5	---	8.2	---	
14	10.5	---	9.2	---	
15	10.5	---	7.4	---	
16	10.5	---	7.5	---	
17	10.5	---	7.8	---	
18	10.5	---	8.5	---	
19	10.5	---	9.2	---	
20	10.5	---	7.7	---	
21	10.5	---	8.1	---	
22	10.5	---	8.1	---	
10A	10.0	K= 5.60	7.1	15.0	
11A	10.0	K= 5.60	7.2	15.0	
12A	10.0	K= 5.60	7.9	15.4	
13A	10.0	K= 5.60	8.2	16.1	
14A	10.0	K= 5.60	8.9	16.7	
15A	10.0	K= 5.60	7.1	15.0	
16A	10.0	K= 5.60	7.2	15.0	
17A	10.0	K= 5.60	7.5	15.4	
18A	10.0	K= 5.60	8.2	16.1	
19A	10.0	K= 5.60	8.9	16.7	
20A	10.0	K= 5.60	7.4	15.2	
21A	10.0	K= 5.60	7.5	15.3	

SPRINKLER SYSTEM HYDRAULIC ANALYSIS Page 4
DATE: 2/6/2019AREVUDVYTO DO FILES\471 UTICA AVE\471 UTICA AVE. 1 OF 1.SDF
JOB TITLE: 471 Utica Ave. 1 of 1

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
22A	10.0	K= 5.60	7.8	15.7	
SOURCE	2.0	SOURCE	20.0	202.4	

Model G5-56 Standard Coverage, Concealed Pendent Sprinkler SIN RA3415

Technical Specifications
Style: Flat Concealed Pendent
Threads: 1/2" NPT or ISO 7-1 (R)
Nominal K-Factor: 5.6 (80 gales)
Max. Working Pressure: 175 psi (12 bar)
200 psi (17 bar) (cULus only)
Material Specifications
Fusible Link: Bismuth Nickel
Sprinkler Body: Brass Alloy
Lever: Bronze Alloy
Heat-Fusion Alloy
Sealing Washer: Nickel with PTFE
Load Bracket: Bronze Alloy
Towers: Copper Alloy
Pin: Stainless Steel
Deflector: Bronze Alloy
Cup: Steel

Sprinkler Temperature Ratings
150°F (14°C)
212°F (100°C) (cULus, FM, LPCB, CE only)
Sensitivity
Cover Plate
Model G5 (Solid or Perforated)
Model G5 GR Gasket (cULus only)
Model G5 SR Gasket (cULus and FM only)
Cover Plate Finishes
(See Table 5)
Sprinkler Wrench
Model W1
Model FC
Listings and Approvals
cULus Listed (UL and Ordinary Hazard only)
FM Approved
LPCB Approved
VDS Approved [165°F (74°C) only]
CE Listed

Model G5-56 Sprinkler Components and Dimensions Figure 0

Model G5-56 Sensitivity Table 0

Cover Plate Model	Listing or Approval Agency		
	cULus	FM	LPCB, VDS, CE
G5	GR	SR	SR
G5 GR Gasket	GR	---	---
G5 SR Gasket	SR	SR	---

QR: Quick-response
SR: Standard-response

Reliable Bulletin 034 May 2019 Page 4 of 9 www.reliable-sprinkler.com

SPRINKLER SYSTEM HYDRAULIC ANALYSIS Page 5
DATE: 2/6/2019AREVUDVYTO DO FILES\471 UTICA AVE\471 UTICA AVE. 1 OF 1.SDF
JOB TITLE: 471 Utica Ave. 1 of 1

NFPA PIPE DATA

Pipe Tag	From Node	To Node	K-fac	Add Fl	Add Fl To	Eq. L.	Eq. L. F	Eq. L. C	Eq. L. (ft.)	Eq. L. (ft.)	Eq. L. (ft.)	Notes
Pipe 1	1	2	10.5	9.2	61.4	13	5.000	L:10.0	12.00	120	0.0	
Pipe 2	1	3	10.5	9.2	78.1	1	5.295	L:10.0	12.00	120	0.0	
Pipe 3	1	4	10.5	9.2	136.2	2	5.295	L:10.0	12.00	120	0.0	
Pipe 4	1	5	10.5	9.2	202.4	3	5.295	L:10.0	12.00	120	0.0	
Pipe 5	1	6	10.5	9.2	202.4	4	5.295	L:10.0	12.00	120	0.0	
Pipe 6	1	7	10.5	9.2	202.4	5	4.000	C:29.0	63.00	120	0.9	
Pipe 7	1	8	10.5	9.2	202.4	6	4.260	A:26.0	71.00	0.10	0.7	
Pipe 8	1	9	10.5	9.2	202.4	7	4.000	21:16.0	22.00	0.10	0.3	
Pipe 9	1	10	10.5	9.2	202.4	8	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 10	1	11	10.5	9.2	202.4	9	4.000	21:16.0	22.00	0.10	0.3	
Pipe 11	1	12	10.5	9.2	202.4	10	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 12	1	13	10.5	9.2	202.4	11	4.000	21:16.0	22.00	0.10	0.3	
Pipe 13	1	14	10.5	9.2	202.4	12	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 14	1	15	10.5	9.2	202.4	13	4.000	21:16.0	22.00	0.10	0.3	
Pipe 15	1	16	10.5	9.2	202.4	14	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 16	1	17	10.5	9.2	202.4	15	4.000	21:16.0	22.00	0.10	0.3	
Pipe 17	1	18	10.5	9.2	202.4	16	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 18	1	19	10.5	9.2	202.4	17	4.000	21:16.0	22.00	0.10	0.3	
Pipe 19	1	20	10.5	9.2	202.4	18	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 20	1	21	10.5	9.2	202.4	19	4.000	21:16.0	22.00	0.10	0.3	
Pipe 21	1	22	10.5	9.2	202.4	20	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 22	1	22A	10.5	9.2	202.4	21	4.000	21:16.0	22.00	0.10	0.3	
Pipe 22A	1	22	10.5	9.2	202.4	22	4.260	20: 6.0	28.00	0.10	0.3	
Pipe 10A	10A	10A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 11A	11A	11A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 12A	12A	12A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 13A	13A	13A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 14A	14A	14A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 15A	15A	15A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 16A	16A	16A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 17A	17A	17A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 18A	18A	18A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 19A	19A	19A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 20A	20A	20A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 21A	21A	21A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	
Pipe 22A	22A	22A	5.60	15.0	15.0	15.0	1.610	L:10.0	12.00	120	0.3	

SPRINKLER SYSTEM HYDRAULIC ANALYSIS Page 6
DATE: 2/6/2019AREVUDVYTO DO FILES\471 UTICA AVE\471 UTICA AVE. 1 OF 1.SDF
JOB TITLE: 471 Utica Ave. 1 of 1

NFPA PIPE DATA

Pipe Tag	From Node	To Node	K-fac	Add Fl	Add Fl To	Eq. L.	Eq. L. F	Eq. L. C	Eq. L. (ft.)	Eq. L. (ft.)	Eq. L. (ft.)	Notes
Pipe 13A	13A	13A	5.60	16.1	13A	13A	1.610	---	5.50	120	0.7	
Pipe 14A	14A	14A	5.60	16.7	14A	14A	1.610	---	3.00	120	0.0	
Pipe 15A	15A	15A	5.60	15.0	15A	15A	1.610	---	8.00	120	0.1	
Pipe 16A	16A	16A	5.60	15.0	16A	16A	1.610	---	10.00	120	0.3	
Pipe 17A	17A	17A	5.60	15.4	17A	17A	1.610	---	10.00	120	0.3	
Pipe 18A	18A	18A	5.60	16.1	18A	18A	1.610	---	5.50	120	0.7	
Pipe 19A	19A	19A	5.60	16.7	19A	19A	1.610	---	3.00	120	0.0	
Pipe 20A	20A	20A	5.60	15.0	20A	20A	1.610	---	8.00	120	0.1	
Pipe 21A	21A	21A	5.60	15.0	21A	21A	1.610	---	10.00	120	0.3	
Pipe 22A	22A	22A	5.60	15.7	22A	22A	1.610	---	15.50	120	1.2	
Pipe 10A	10A	10A	5.60	15.0	10A	10A	1.610	---	10.00	120	0.2	
Pipe 11A	11A	11A	5.60	15.0	11A	11A	1.610	---	10.00	120	0.2	
Pipe 12A	12A	12A	5.60	15.4	12A	12A	1.610	---	10.00	120	0.3	
Pipe 13A	13A	13A	5.60	15.4	13A	13A	1.610	---	10.00	120	0.3	
Pipe 14A	14A	14A	5.60	16.7	14A	14A	1.610	---	3.00	120	0.0	
Pipe 15A	15A	15A	5.60	15.0	15A	15A	1.610	---	8.00	120	0.1	
Pipe 16A	16A	16A	5.60	15.0	16A	16A	1.610	---	10.00	120	0.3	
Pipe 17A	17A	17A	5.60	15.4	17A	17A	1.610	---	10.00	120	0.3	
Pipe 18A	18A	18A	5.60	16.1	18A	18A	1.610	---	5.50	120	0.7	
Pipe 19A	19A	19A	5.60	16.7	19A	19A	1.610	---	3.00	120	0.0	
Pipe 20A	20A	20A	5.60	15.0	20A	20A	1.610	---	8.00	120	0.1	
Pipe 21A	21A	21A	5.60	15.0	21A	21A	1.610	---	10.00	120	0.3	
Pipe 22A	22A	22A	5.60	15.7	22A	22A	1.610	---	15.50	120	1.2	

SPRINKLER SYSTEM HYDRAULIC ANALYSIS Page 7
DATE: 2/6/2019AREVUDVYTO DO FILES\471 UTICA AVE\471 UTICA AVE. 1 OF 1.SDF
JOB TITLE: 471 Utica Ave. 1 of 1

NFPA PIPE DATA

Pipe Tag	From Node	To Node	K-fac	Add Fl	Add Fl To	Eq. L.	Eq. L. F	Eq. L. C	Eq. L. (ft.)	Eq. L. (ft.)	Eq. L. (ft.)	Notes
Pipe 13A	13A	13A	5.60	16.1	13A	13A	1.610	---	5.50	120	0.7	
Pipe 14A	14A	14A	5.60	16.7	14A	14A	1.610	---	3.00	120	0.0	
Pipe 15A	15A	15A	5.60	15.0	15A	15A	1.610	---	8.00	120	0.1	
Pipe 16A	16A	16A	5.60	15.0	16A	16A	1.610	---	10.00	120	0.3	
Pipe 17A	17A	17A	5.60	15.4	17A	17A	1.610	---	10.00	120	0.3	
Pipe 18A	18A	18A	5.60	16.1	18A	18A	1.610	---	5.50	120	0.7	
Pipe 19A	19A	19A	5.60	16.7	19A	19A	1.610	---</				