Submittal item detail

#009M-2: Fire Sprinkler Shops and Calcs.

Status	Created on	Ball in court due date
Open Submitted	Aug 7, 2026	

ID	9
Ball in court	**Benjamin Porgesz** (AMBOY GC)
Manager	**Benjamin Porgesz** (AMBOY GC)
Responsible contractor	**Benjamin Porgesz** (AMBOY GC)
Watchers	**Benjamin Porgesz** (AMBOY GC)
Spec section	21 Fire Suppression
Spec sub section	
Type	Shop Drawings
Description	See attached Fire Sprinkler Shops and Calcs. for approval
Final Response	
Final Response Attachments	
Final Response Comments	
Package	

Ball in court	Sent	Due	Returned	Response/Action	Attachments
Submitted					
Benjamin Porgesz (AMBOY GC) Submitted by Benjamin Porgesz	Aug 20, 2026	Aug 20, 2026	Aug 20, 2026	**Submitted**	FP-MIKVAH-Calc(8.20.26).pdf FP-Mikvah(8.20.26).pdf
Comments	-				
Sent for review					
Benjamin Porgesz (AMBOY GC)	Aug 20, 2026	-	-	**Sent for review**	
Comments	-				

☑ REVIEWED ☐ REJECTED
☐ REVIEWED & NOTED ☐ RESUBMIT

Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with requirements of the drawings and specifications. This check is only for the review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selection fabrication processes and techniques of construction: Review shall be construed in strict accordance with AIA - A201 general conditions 1987 paragraph 3.12 and 4.2.7

DELTA G CONSULTING ENGINEERS, INC.

DATE: 8/25/2026 BY: JB

Notes For Automatic Sprinkler Installation

1. The equipment and installation shall be in conformity with all City, State and Federal codes, laws, and regulations as well as National Fire Protection Association Standard NFPA 13–2019, Installation of Sprinkler Systems.

2. Equipment, materials, devices shall be listed by Underwriters Laboratories, Inc. and Factory Mutual approved for use in automatic sprinkler systems.

3. Water Supply:
   1. Static pressure: 65 psi
   2. Residual pressure: 35 psi
   3. Flow:1149 gpm

A. Design Area:2
   Light Hazard
   .10/900 sq.ft.
   100 gpm hose

4. Pipe shall be new, designed for 175 psi working pressure, conforming to ASTM specifications and shall have the manufacturer's name or brand along with the applicable ASTM standard permanently marked on each length of pipe. Minimum pipe diameter is 1–inch.
   A. Pipe inside the building size 2½ inch and larger shall be steel, schedule 10 and in accordance with ASTM–A 135.
   B. Pipe inside the building size 2 inch and smaller where screwed joints are desired, shall be Sch.40 or Underwriters Laboratories listed pipe having a corrosion resistance rating (CRR) of not less that 1.00 and a pressure rating of 300 psi.
   C. All underground pipe shall be listed for fire protection service and comply with AWWA standards. Piping used in lead–in connections shall be designed to withstand a working pressure of not less than 150 psi. Piping shall be DR–14 from Backflow to Building.
   All Underground to be flushed as per NFPA 24 2019 Ed. & NFPA 13 2019 Ed. Sec. 10.10.2.1.3

5. Schedule 10 black steel ASTM–A 135 sprinkler pipe shall be joined by mechanically grooved couplings or push–on couplings, joined by NFPA No. 13 approved combination of couplings, gaskets and grooves. Grooves may be rolled, but not cut, and they shall be dimensionally compatible with the couplings. Sch.40 steel pipe or UL listed pipe specified in Note 4B, above, shall be joined by screwed joints and or grooved in accordance with ANSI/ASTM B1,20.1.

6. Grooved couplings and mechanical fittings shall be malleable iron, 250 psi working pressure, in accordance with ASTM–A 47. Screwed fittings shall be cast iron, 250 psi class, black and in accordance with ANSI–B 16.4 or malleable iron, 250 psi class, black and in accordance with ANSI–B 16.3.

7. Any exposed piping shall comply with NFPA 13 19 Edition Section 8–15.3.2. Whereas any corrosive conditions are known to exist piping shall be protected by a resistant coating to all exposed surfaces to protect against weather elements.

8. Riser Drain shall comply with NFPA 13 19 Edition Section 8–15.2.4.2. All drain runs shall be 2" with 2" Drain valve attached. Riser Drain to be 2" Sch 10 pipe.

9. Hangers and Supports shall be as follows:
   A. All piping shall be supported by means of FM approved and/or UL listed hangers. Spacing and installation shall be in accordance with NFPA No. 13. For hanger assemblies under concrete decks use power driven pin type, threaded rod and pipe ring. Provide adjustable hangers as required for proper support of all pipe lines.

10. The system shall be Hydrostatically tested at 200psi for 2 hours conforming to NFPA 13 2019 sec 10.10.2.1., before final approval.

11. Above Ground and Below Ground certificates shall be signed and provided to owner upon approval of pressure test and final inspection. As per NFPA 13 2019 edition sec. 10.10.1

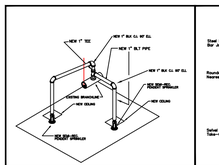
12. Attach properly lettered approved metal signs conforming to NFPA No. 13 to each valve and alarm device. Permanently affix hydraulic sprinkler design data nameplates to the riser of each system. See Sec. 7.6.1.5 NFPA 13 2019 Edition

13. A copy of NFPA 25 2019 edition shall be turned over to owner or his (her) representive upon final approval from Authority Having Jurisdiction.

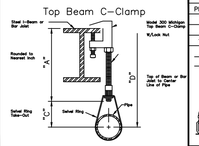
14. Additional sprinkler heads and sprinkler head wrenches shall be provided in a cabinet installed near the sprinkler riser. The additional heads shall consist of a minimum of 6 heads with the number of each type proportional to the number of each type furnished.

15. The building owner or occupants shall not make changes in the occupancy the use or process, or materials used or stored in the building without evaluation of the fire protection systems for their capability to protect the new occupancy,use,or materials. see NFPA 25 2019.

16. All Fire Sprinkler piping including underground piping to the point of service shall be installed by a Certified License Contractor as per Florida Administrative Code Chapter 69A).



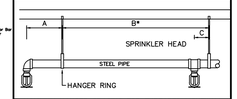
ARMOVER DETAIL 2–HEAD RELOCATE



HANGER DETAIL

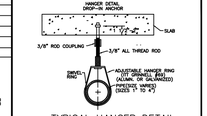
HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'–0" MAX.	12'–0" MAX.	3" MIN.
1¼"	4'–0" MAX.	12'–0" MAX.	3" MIN.
1½"–8"	5'–0" MAX.	15'–0" MAX.	3" MIN.



* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'–0" FOR ALL PIPE SIZES

HANGER DETAIL



TYPICAL HANGER DETAIL
N.T.S.

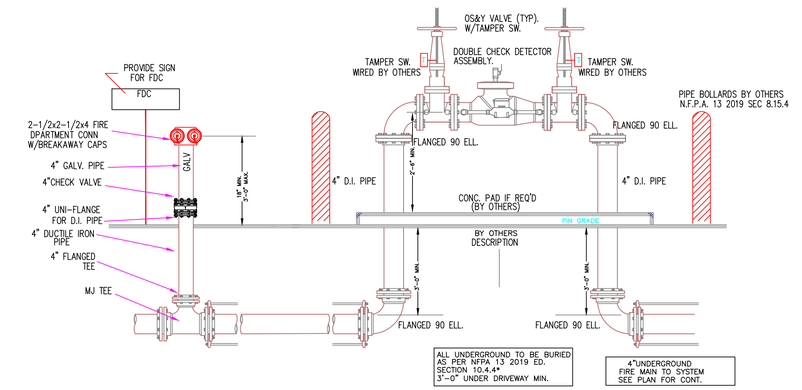
A1 4" TAPPING SLEEVE AND VALVE(BY OTHERS)

A2 4" D.D.C.V. W/TAMP.SW.

A3 FDC.W/CHECK VALVE TO BE WITHIN 150' OF NEAREST FIRE HYDRANT(FIELD VERIFY)

4" UNDERGROUND PIPING.

NODE POINTS ARE FOR CALCS. PURPOSES ONLY. SEE APPROVED CIVIL PLANS EXACT PIPE LOCATIONS AND SIZE.



4" D.D.C.V. DETAIL
NO SCALE

Notes For Underground and Owner

1A. Above Ground and Below Ground Items Shall be protected against Mechancial or Fire Damage as per NFPA 13 2019 Sec. 8.15.3.1 through 8.15.4 (By Owner)

Note: 1: Pipe Bollards shall be provided (by owner) In order to protect the Fire Sprinkler System Componets from possible damage.

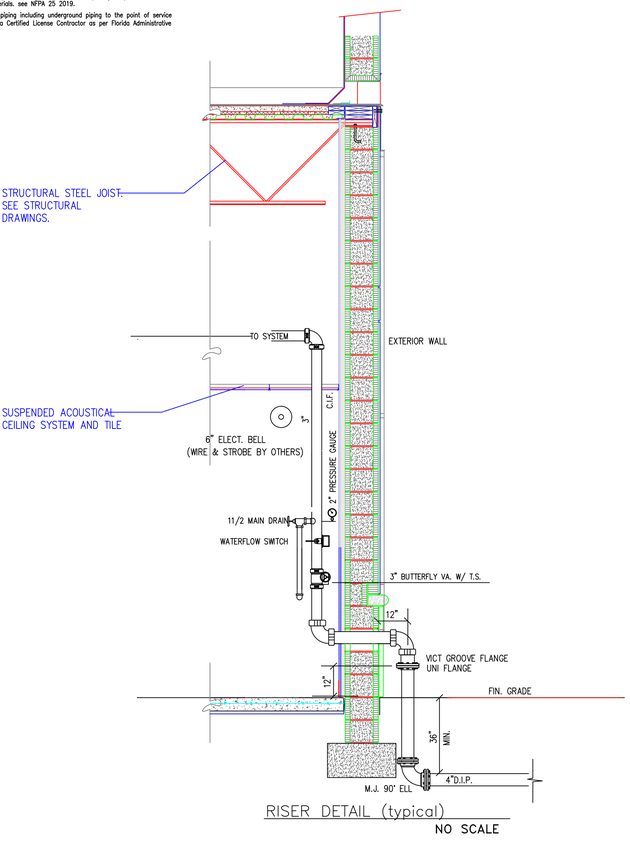
2A. Mega Lugs to be used per NFPA 24 2019
Then the following shall be observed:
10.8.3 Restrained Joint Systems: Fire mains utilizing restrained joint system Shall include the following:

(1) Locking mechanical or push–on joints
(2) Mechanical joints utilizing setscrew retainer glands
(3) Bolted flange joints
(4) Heat–fused or welded joints
(5) Pipe clamps and tie rods
(6) Other approved methods or devices

3A. After installation,rods,nuts,bolts,washers,clamps and others restraining devices shall be cleaned and throroughly coated with a bituminous or other acceptable corrosion retarding material NFPA 13 10.8.3.5

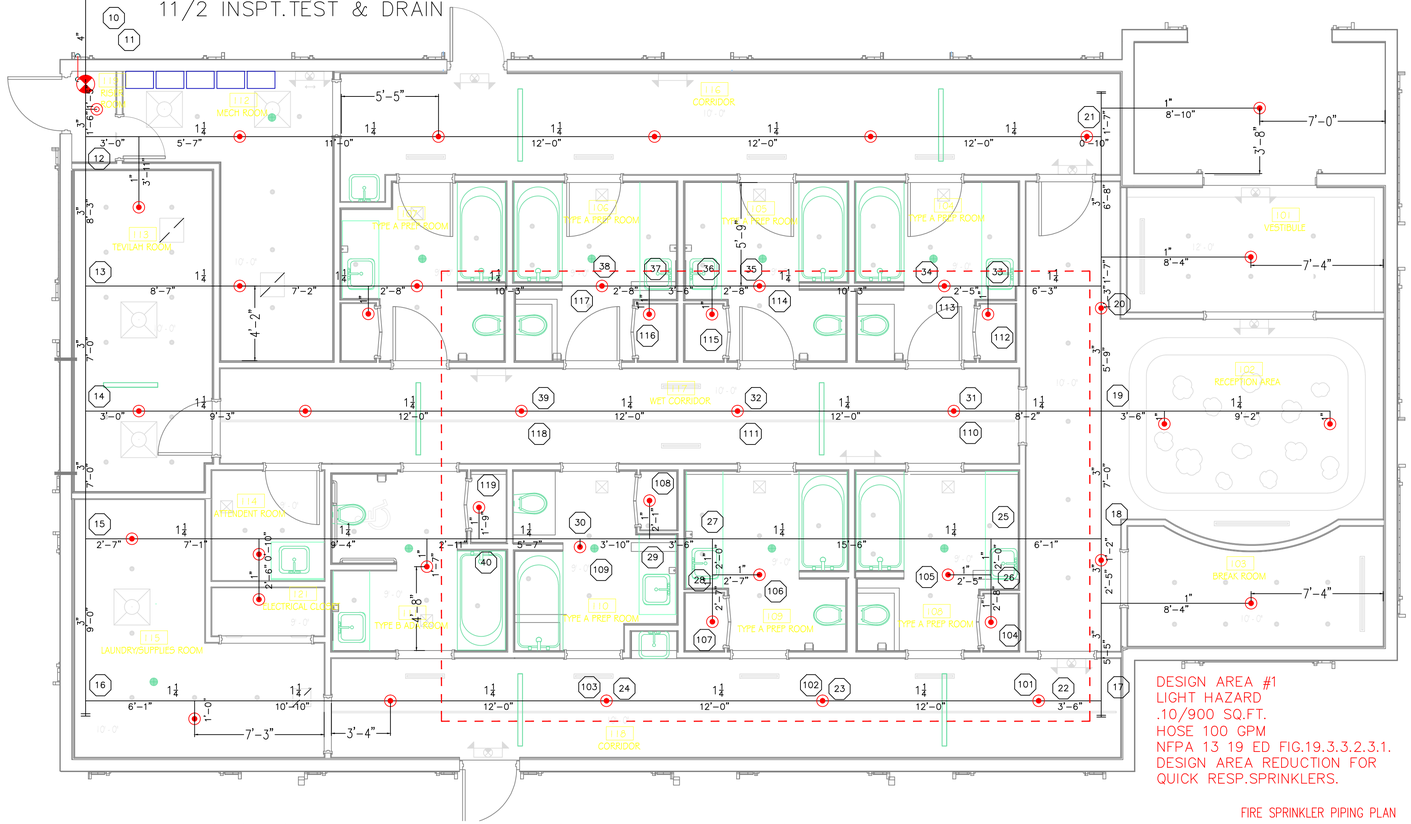
PER NFPA 25, 2019 EDITION SECTION 4.1.2 – THE RESPONSIBILITY FOR PROPERLY MAINTAINING A WATER BASED FIRE PROTECTION SYSTEM SHALL BE THAT OF THE OWNER OF THE PROPERTY

UNDERGROUND DESIGN NOTES:
1. ALL MATERIAL AND INSTALLATION TO BE IN ACCORDANCE WITH NFPA 24 AND LOCAL AUTHORITY.
2. ALL JOINTS TO BE RESTRAINED IN ACCORDANCE WITH NFPA 24 AND LOCAL AUTHORITY.
3. ALL PIPING TO HAVE A 36" MINIMUM DEPTH OF BURY FROM TOP OF PIPE.
4. ALL PIPING TO BE HYDROSTATICALLY TESTED AND FLUSHED IN ACCORDANCE WITH NFPA 24 AND LOCAL AUTHORITY.



RISER DETAIL (typical)
NO SCALE

3" RISER
3" CONT.VA.W/TAMP.SW
11/2 INSPT.TEST & DRAIN



DESIGN AREA #1
LIGHT HAZARD
.10/900 SQ.FT.
HOSE 100 GPM
NFPA 13 19 ED FIG.19.3.3.2.3.1.
DESIGN AREA REDUCTION FOR QUICK RESP.SPRINKLERS.

FIRE SPRINKLER PIPING PLAN

WATER SUPPLY		ABBREVIATIONS	DESIGN CRITERIA			HYDRAULICALLY DESIGNED SYSTEM	K–FAC	SIN #	TYPES OF SPRINKLERS							NO.	DATE	REVISION DESCRIPTION	BY
FLOW TEST	FIRE PUMP	℄ = CENTERLINE	SYSTEM NO.			LOCATION			SYMBOLS	QUAN.	ORIF.	TEMP.	MAKE & MODEL	TYPE	FINISH	ESC.			
DATE OF TEST:	RATED CAPACITY:	EL = ELEVATION	HAZARD			NO. OF SPRINKLERS	5.6	TY3531	◉	43	1/2"	155	TYCO	CONC.	WHITE		1	8/20/26	RELEASE FOR PERMITTING	GG
TIME OF TEST:	RATED PRESSURE:	TOS = TOP OF STEEL	SPACING			DENSITY													
STATIC PRESSURE:	PUMP TYPE:	G = GROOVED PIPE END	K FACTOR			DESIGN AREA													
RESIDUAL PRESSURE:	WELL PUMP	T = THREADED PIPE END	INSIDE HOSE			GPM DISCHARGE													
GALLONS FLOWING:	GPM AVAILABLE:	F = FLANGED PIPE END	OUTSIDE HOSE			RESIDUAL PSI AT													
TESTED BY:	PSI AVAILABLE:	C–C = CENTER TO CENTER	RACK GPM						TOTAL HEADS THIS SHEET=43										

ATEAM FIRE SPRINKLER,INC
2338 N.W. 151 STREET
OPA LOCKA, FL 33054
Phone: 305.948.3473
Fax: 888.637.7504
LIC#22217600012011

MIKVAH
28020 FL-78
OJKEECHOBEE, FL 34974

DRAWN BY: GG	DATE: 8/20/26
SPRKS. ON JOB: 43	SCALE: 1/4"=1'0"
APPROVALS:	
DRAWING NAME:	
CONTRACT NO.	SHEET NO. FP 1 OF 1

HYDRAULIC CALCULATIONS

MIKVAH
28020 FL-78
OKEECHOBEE,FL 34974

DESIGN AREA #1

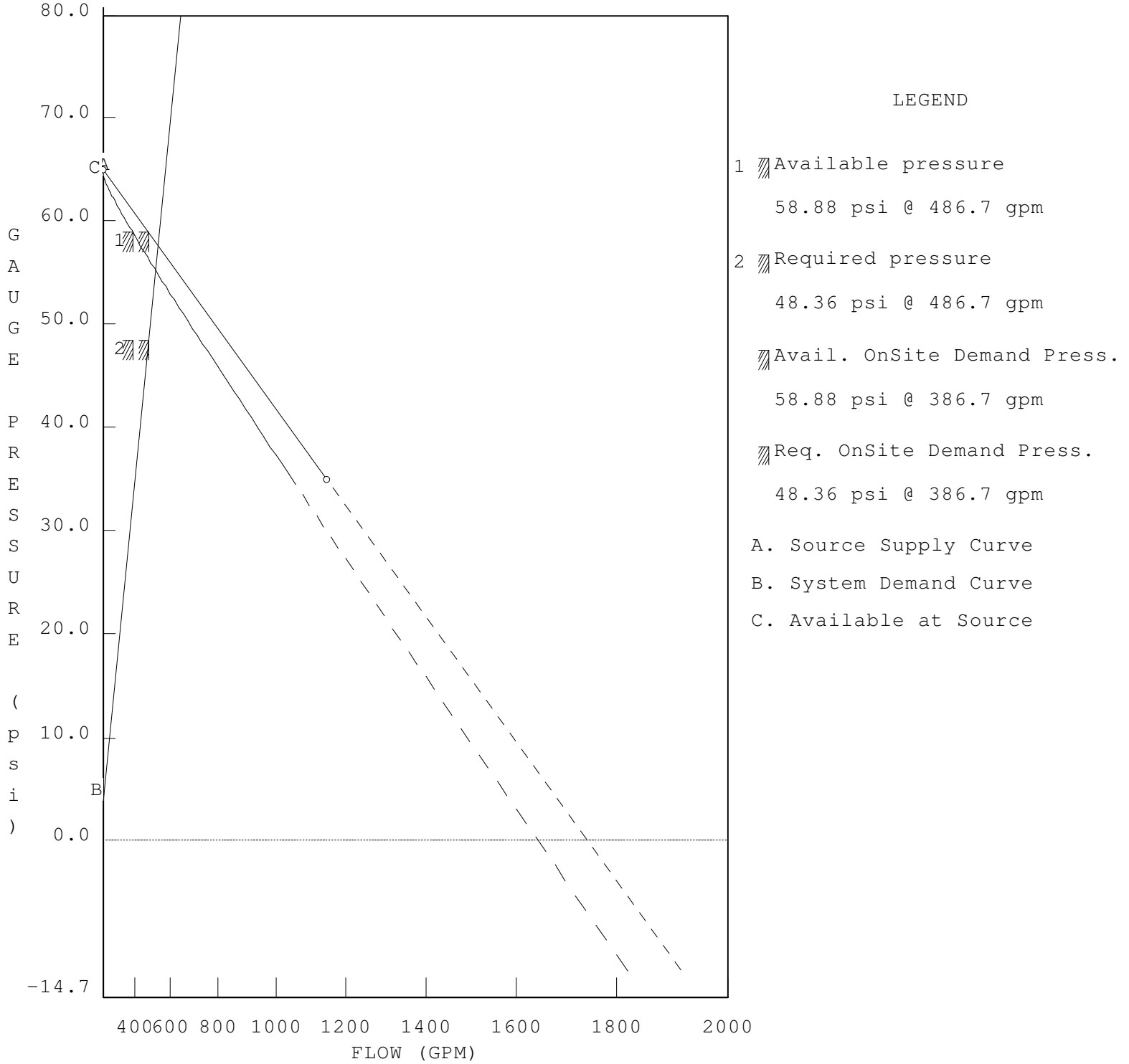
-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	LIGHT HAZARD
DENSITY:	.10 gpm/sq. ft.
AREA OF APPLICATION:	900 SQ..FT.
COVERAGE PER SPRINKLER:	15'X15'
NUMBER OF SPRINKLERS CALCULATED:	19sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	486.7 gpm
REQUIRED FLOW AND PRESSURE:	486.7 gpm @ 48.36 psi
SPRINKLER ORIFICE SIZE:	1/2 inch

DATE: 8/20/2026 C:\USERS\ANANC\ONEDRIVE\DOCUMENTS\HASSDATA\FP-MIKVAH.SDF
JOB TITLE: Design Area #1

WATER SUPPLY ANALYSIS

Static: 65.00 psi Resid: 35.00 psi Flow: 1149.0 gpm



Note: (1) Dashed Lines indicate extrapolated values from Test Results

(2) On Site pressures are based on hose stream deduction at the source

DATE: 8/20/2026 C:\USERS\ANANC\ONEDRIVE\DOCUMENTS\HASSDATA\FP-MIKVAH.SDF
JOB TITLE: Design Area #1

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)
A1	65.0	35.0	1149.0	58.9	486.7	48.4

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	486.7 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	100.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	386.7 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE TOTAL (PSI)	PRESSURE NORMAL (PSI)	DISCHARGE (GPM)
A2	-3.0	- - - -	49.3	49.3	- - -
A3	-3.0	- - - -	46.3	46.3	- - -
10	1.0	- - - -	43.3	42.8	- - -
11	11.0	- - - -	36.4	34.9	- - -
12	11.0	- - - -	35.9	34.4	- - -
13	11.0	- - - -	35.2	34.2	- - -
14	11.0	- - - -	34.9	34.5	- - -
15	11.0	- - - -	34.8	34.7	- - -
16	11.0	- - - -	10.0	10.0	- - -
17	11.0	- - - -	13.2	13.2	- - -
18	11.0	- - - -	13.3	13.2	- - -
19	11.0	- - - -	13.3	13.1	- - -
20	11.0	- - - -	13.3	13.3	- - -
21	11.0	- - - -	13.4	11.8	- - -
22	11.0	- - - -	11.2	10.4	- - -
23	11.0	- - - -	10.2	9.9	- - -
24	11.0	- - - -	10.0	9.9	- - -
25	11.0	- - - -	12.5	12.2	- - -
26	11.0	- - - -	11.6	11.2	- - -
27	11.0	- - - -	12.5	12.0	- - -
28	11.0	- - - -	11.7	11.3	- - -
29	11.0	- - - -	13.0	11.9	- - -
30	11.0	- - - -	13.9	12.0	- - -
31	11.0	- - - -	14.1	13.5	- - -
32	11.0	- - - -	15.8	14.5	- - -
33	11.0	- - - -	12.9	12.8	- - -
34	11.0	- - - -	12.9	12.8	- - -
35	11.0	- - - -	13.2	12.8	- - -
36	11.0	- - - -	13.4	12.5	- - -
37	11.0	- - - -	14.2	12.5	- - -
38	11.0	- - - -	15.1	12.4	- - -
39	11.0	- - - -	19.2	16.9	- - -
40	11.0	- - - -	16.4	13.4	- - -
101	10.0	K= 5.60	11.5	11.5	19.0
102	10.0	K= 5.60	10.6	10.6	18.2
103	10.0	K= 5.60	10.3	10.3	18.0

DATE: 8/20/2026 C:\USERS\ANANC\ONEDRIVE\DOCUMENTS\HASSDATA\FP-MIKVAH.SDF
JOB TITLE: Design Area #1

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE TOTAL (PSI)	PRESSURE NORMAL (PSI)	DISCHARGE (GPM)
104	10.0	K= 5.60	11.1	11.1	18.6
105	10.0	K= 5.60	11.7	11.7	19.1
106	10.0	K= 5.60	11.7	11.7	19.2
107	10.0	K= 5.60	11.7	11.7	19.2
108	10.0	K= 5.60	12.8	12.8	20.0
109	10.0	K= 5.60	13.4	13.4	20.5
110	10.0	K= 5.60	14.4	14.4	21.3
111	10.0	K= 5.60	16.1	16.1	22.5
112	10.0	K= 5.60	12.7	12.7	20.0
113	10.0	K= 5.60	13.2	13.2	20.4
114	10.0	K= 5.60	13.5	13.5	20.6
115	10.0	K= 5.60	13.2	13.2	20.4
116	10.0	K= 5.60	13.9	13.9	20.9
117	10.0	K= 5.60	15.4	15.4	22.0
118	10.0	K= 5.60	19.5	19.5	24.7
119	10.0	K= 5.60	15.6	15.6	22.1
A1	1.0	SOURCE	48.4	48.4	386.7

NFPA PIPE DATA 5

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT / PT	Vel / PN / PN	Add Fl (q) / Tot.(Q)	Add Fl Node/ Disch	To Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / (Pv) / Pf/ft.	(Pt) / (Pe) / (Pf)
Pipe: 1		Source	8.9	0.0				10.00	140	-0.9
A1	1.0	48.4	48.4	386.7		A3 D4.000	E:17.0	20.00	0.5	-1.7
A2	-3.0	49.3	49.3	386.7		4.220	G: 3.0	30.00	0.027	0.8
Pipe: 2				0.0		Fixed Pressure Loss Device				
A2	-3.0	49.3	49.3	386.7	10	3.0 psi, 386.7 gpm				
A3	-3.0	46.3	46.3	386.7						
Pipe: 3		0.0	8.9	0.0				30.00	140	3.6
A3	-3.0	46.3	46.3	386.7		11 D4.000	E:17.0	17.00	0.5	1.7
10	1.0	43.3	42.8	386.7		4.220		47.00	0.027	1.3
Pipe: 4		0.0	14.9	0.0				10.00	120	7.6
10	1.0	43.3	42.8	386.7		12 B3.000	E:10.0	11.00	1.5	4.3
11	11.0	36.4	34.9	386.7		3.260	G: 1.0	21.00	0.125	2.6
Pipe: 5		0.0	14.9	77.9	21			4.00	120	0.5
11	11.0	36.4	34.9	308.8		13 B3.000	----	0.00	1.5	-0.0
12	11.0	35.9	34.4	386.7		3.260		4.00	0.125	0.5
Pipe: 6		0.0	11.9	103.3	38			8.25	120	0.7
12	11.0	35.9	34.4	205.4		14 B3.000	----	0.00	0.9	-0.0
13	11.0	35.2	34.2	308.8		3.260		8.25	0.082	0.7
Pipe: 7		0.0	7.9	96.4	39			7.00	120	0.3
13	11.0	35.2	34.2	109.0		15 B3.000	----	0.00	0.4	-0.0
14	11.0	34.9	34.5	205.4		3.260		7.00	0.039	0.3
Pipe: 8		0.0	4.2	0.0				9.00	120	0.1
14	11.0	34.9	34.5	109.0		40 B3.000	----	0.00	0.1	-0.0
15	11.0	34.8	34.7	109.0		3.260		9.00	0.012	0.1
Pipe: 9		0.0	2.1	0.0				9.00	120	0.0
18	11.0	13.3	13.2	55.3		22 B3.000	----	0.00	0.0	-0.0
17	11.0	13.2	13.2	55.3		3.260		9.00	0.003	0.0
Pipe: 10		0.0	3.3	29.7	25			7.00	120	0.1
19	11.0	13.3	13.1	55.3		17 B3.000	----	0.00	0.1	-0.0
18	11.0	13.3	13.2	85.0		3.260		7.00	0.008	0.1
Pipe: 11		0.0	2.2	85.0	18			7.00	120	0.0
20	11.0	13.3	13.3	-28.0		B3.000	----	0.00	0.0	-0.0
19	11.0	13.3	13.1	57.0		3.260		7.00	0.004	0.0
Pipe: 12		0.0	3.0	20.9	33			8.25	120	0.1
21	11.0	13.4	11.8	57.0		19 B3.000	----	0.00	0.1	-0.0
20	11.0	13.3	13.3	77.9		3.260		8.25	0.006	0.1
Pipe: 13		0.0	15.1	0.0				56.00	120	22.5
12	11.0	35.9	34.4	77.9		20 C1.250	E: 4.0	12.00	1.5	-0.0
21	11.0	13.4	11.8	77.9		1.452	T: 8.0	68.00	0.331	22.5

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT / PT	Vel / PN / PN	Add Fl (q) / Tot.(Q)	Add Fl Node/ Disch	To Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / (Pv) / Pf/ft.	(Pt) / (Pe) / (Pf)
Pipe: 14		0.0	20.0	22.0	117			28.00	120	20.1
13	11.0	35.2	34.2	81.3	37	C1.250	T: 8.0	8.00	2.7	-0.0
38	11.0	15.1	12.4	103.3		1.452		36.00	0.557	20.1
Pipe: 15		0.0	15.8	20.9	116			2.66	120	1.0
38	11.0	15.1	12.4	60.4	36	C1.250	----	0.00	1.7	-0.0
37	11.0	14.2	12.5	81.3		1.452		2.66	0.358	1.0
Pipe: 16		0.0	11.7	20.4	115			3.50	120	0.7
37	11.0	14.2	12.5	40.1	35	C1.250	----	0.00	0.9	-0.0
36	11.0	13.4	12.5	60.4		1.452		3.50	0.207	0.7
Pipe: 17		0.0	7.8	20.6	114			2.66	120	0.3
36	11.0	13.4	12.5	19.5	34	C1.250	----	0.00	0.4	-0.0
35	11.0	13.2	12.8	40.1		1.452		2.66	0.097	0.3
Pipe: 18		0.0	3.8	20.4	113			10.25	120	0
35	11.0	13.2	12.8	-0.9		C1.250	----	0.00	0.1	-0.0
34	11.0	12.9	12.8	19.5		1.452		10.25	0.025	0.3
Pipe: 19		0.0	0.2	20.4	113			2.52	120	0
33	11.0	12.9	12.8	-19.5		C1.250	----	0.00	0.0	-0.0
34	11.0	12.9	12.8	0.9		1.452		2.52	0.000	0.0
Pipe: 20		0.0	4.0	20.0	112			6.25	120	0.4
20	11.0	13.3	13.3	0.9	34	C1.250	T: 8.0	8.00	0.1	-0.0
33	11.0	12.9	12.8	20.9		1.452		14.25	0.029	0.4
Pipe: 21		5.60	7.4	22.0	Disch			1.00	120	-0.3
38	11.0	15.1	12.4	0.0		C1.000	----	0.00	0.4	-0.4
117	10.0	15.4	15.4	22.0		1.104		1.00	0.121	0.1
Pipe: 22		5.60	7.0	20.9	Disch			3.00	120	0.2
37	11.0	14.2	12.5	0.0		C1.000	E: 3.0	3.00	0.3	-0.4
116	10.0	13.9	13.9	20.9		1.104		6.00	0.110	0.7
Pipe: 23		5.60	6.8	20.4	Disch			3.00	120	0.2
36	11.0	13.4	12.5	0.0		C1.000	E: 3.0	3.00	0.3	-0.4
115	10.0	13.2	13.2	20.4		1.104		6.00	0.105	0.6
Pipe: 24		5.60	6.9	20.6	Disch			1.00	120	-0.3
35	11.0	13.2	12.8	0.0		C1.000	----	0.00	0.3	-0.4
114	10.0	13.5	13.5	20.6		1.104		1.00	0.107	0.1
Pipe: 25		5.60	6.8	20.4	Disch			1.00	120	-0.3
34	11.0	12.9	12.8	0.0		C1.000	----	0.00	0.3	-0.4
113	10.0	13.2	13.2	20.4		1.104		1.00	0.105	0.1
Pipe: 26		5.60	6.7	20.0	Disch			3.00	120	0.2
33	11.0	12.9	12.8	0.0		C1.000	E: 3.0	3.00	0.3	-0.4
112	10.0	12.7	12.7	20.0		1.104		6.00	0.101	0.6

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT / PT	Vel / PN / PN	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	To Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / (Pv) / Pf/ft.	(Pt) / (Pe) / (Pf)
Pipe: 27		0.0	18.7	24.7	118			24.00	120	15.7
14	11.0	34.9	34.5	71.7	32	C1.250	T: 8.0	8.00	2.3	-0.0
39	11.0	19.2	16.9	96.4		1.452		32.00	0.491	15.7
Pipe: 27A		0.0	13.9	22.5	111			12.00	120	3.4
39	11.0	19.2	16.9	49.2	31	C1.250	----	0.00	1.3	-0.0
32	11.0	15.8	14.5	71.7		1.452		12.00	0.284	3.4
Pipe: 28		0.0	9.5	21.3	110			12.00	120	1.7
32	11.0	15.8	14.5	28.0	19	C1.250	----	0.00	0.6	-0.0
31	11.0	14.1	13.5	49.2		1.452		12.00	0.141	1.7
Pipe: 29		0.0	5.4	85.0	18			8.17	120	0.8
31	11.0	14.1	13.5	-57.0		C1.250	T: 8.0	8.00	0.2	-0.0
19	11.0	13.3	13.1	28.0		1.452		16.17	0.050	0.8
Pipe: 29A		5.60	8.3	24.7	Disch			1.00	120	-0.3
39	11.0	19.2	16.9	0.0		C1.000	----	0.00	0.5	-0.4
118	10.0	19.5	19.5	24.7		1.104		1.00	0.150	0.2
Pipe: 30		5.60	7.5	22.5	Disch			1.00	120	-0.3
32	11.0	15.8	14.5	0.0		C1.000	----	0.00	0.4	-0.4
111	10.0	16.1	16.1	22.5		1.104		1.00	0.126	0.1
Pipe: 31		5.60	7.1	21.3	Disch			1.00	120	-0.3
31	11.0	14.1	13.5	0.0		C1.000	----	0.00	0.3	-0.4
110	10.0	14.4	14.4	21.3		1.104		1.00	0.114	0.1
Pipe: 32		0.0	21.1	22.1	119			22.00	120	18.4
15	11.0	34.8	34.7	86.9	30	C1.250	T: 8.0	8.00	3.0	-0.0
40	11.0	16.4	13.4	109.0		1.452		30.00	0.615	18.4
Pipe: 32A		0.0	16.8	20.5	109			6.00	120	2.4
40	11.0	16.4	13.4	66.4	29	C1.250	----	0.00	1.9	-0.0
30	11.0	13.9	12.0	86.9		1.452		6.00	0.404	2.4
Pipe: 33		0.0	12.9	20.0	108			3.83	120	0.9
30	11.0	13.9	12.0	46.3	27	C1.250	----	0.00	1.1	-0.0
29	11.0	13.0	11.9	66.4		1.452		3.83	0.246	0.9
Pipe: 34		0.0	9.0	38.3	28			3.50	120	0.4
29	11.0	13.0	11.9	8.0	25	C1.250	----	0.00	0.5	-0.0
27	11.0	12.5	12.0	46.3		1.452		3.50	0.126	0.4
Pipe: 35		0.0	1.6	37.7	26			15.50	120	0.1
27	11.0	12.5	12.0	-29.7		C1.250	----	0.00	0.0	-0.0
25	11.0	12.5	12.2	8.0		1.452		15.50	0.005	0.1
Pipe: 36		0.0	5.8	37.7	26			6.08	120	0.8
18	11.0	13.3	13.2	-8.0		C1.250	T: 8.0	8.00	0.2	-0.0
25	11.0	12.5	12.2	29.7		1.452		14.08	0.056	0.8

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT / PT	Vel / PN / PN	Add Fl (q) / Tot.(Q)	Add Fl Node/ Disch	To Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / (Pv) / Pf/ft.	(Pt) / (Pe) / (Pf)
Pipe: 36A		5.60	7.4	22.1	Disch			3.00	120	0.8
40	11.0	16.4	13.4	0.0		C1.000	T: 7.0	7.00	0.4	-0.4
119	10.0	15.6	15.6	22.1		1.104		10.00	0.122	1.2
Pipe: 37		5.60	6.9	20.5	Disch			2.00	120	0.5
30	11.0	13.9	12.0	0.0		C1.000	T: 7.0	7.00	0.3	-0.4
109	10.0	13.4	13.4	20.5		1.104		9.00	0.106	1.0
Pipe: 38		5.60	6.7	20.0	Disch			3.00	120	0.2
29	11.0	13.0	11.9	0.0		C1.000	E: 3.0	3.00	0.3	-0.4
108	10.0	12.8	12.8	20.0		1.104		6.00	0.102	0.6
Pipe: 39		0.0	7.4	19.2	107			2.00	120	0.3
27	11.0	12.5	12.0	19.2	106	C1.250	T: 8.0	8.00	0.4	-0.0
28	11.0	11.7	11.3	38.3		1.452		10.00	0.089	0.9
Pipe: 40		5.60	6.4	19.2	Disch			4.00	120	-0.1
28	11.0	11.7	11.3	0.0		C1.000	----	0.00	0.3	-0.4
106	10.0	11.7	11.7	19.2		1.104		4.00	0.094	0.4
Pipe: 41		5.60	6.4	19.2	Disch			4.00	120	-0.1
28	11.0	11.7	11.3	0.0		C1.000	----	0.00	0.3	-0.4
107	10.0	11.7	11.7	19.2		1.104		4.00	0.094	0.4
Pipe: 42		0.0	7.3	18.6	104			2.00	120	0.3
25	11.0	12.5	12.2	19.1	105	C1.250	T: 8.0	8.00	0.4	-0.0
26	11.0	11.6	11.2	37.7		1.452		10.00	0.086	0.9
Pipe: 43		5.60	6.4	19.1	Disch			4.00	120	-0.1
26	11.0	11.6	11.2	0.0		C1.000	----	0.00	0.3	-0.4
105	10.0	11.7	11.7	19.1		1.104		4.00	0.093	0.4
Pipe: 44		5.60	6.2	18.6	Disch			4.00	120	0.5
26	11.0	11.6	11.2	0.0		C1.000	T: 7.0	7.00	0.3	-0.4
104	10.0	11.1	11.1	18.6		1.104		11.00	0.089	1.0
Pipe: 45		0.0	0.0	0.0				29.00	120	0.0
24	11.0	10.0	9.9	0.0		C1.250	T: 8.0	8.00	0.0	-0.0
16	11.0	10.0	10.0	0.0		1.452		37.00	0.000	0.0
Pipe: 46		0.0	3.5	18.0	103			12.00	120	0.3
23	11.0	10.2	9.9	-0.0	16	C1.250	----	0.00	0.1	-0.0
24	11.0	10.0	9.9	18.0		1.452		12.00	0.022	0.3
Pipe: 47		0.0	7.0	18.2	102			12.00	120	1.0
22	11.0	11.2	10.4	18.0	24	C1.250	----	0.00	0.3	-0.0
23	11.0	10.2	9.9	36.2		1.452		12.00	0.080	1.0
Pipe: 48		0.0	10.7	19.0	101			3.50	120	2.0
17	11.0	13.2	13.2	36.2	23	C1.250	T: 8.0	8.00	0.8	-0.0
22	11.0	11.2	10.4	55.3		1.452		11.50	0.175	2.0

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT / PT	Vel / PN / PN	Add Fl (q) / Tot.(Q)	Add Fl Node/ Disch	To Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / (Pv) / Pf/ft.	(Pt) / (Pe) / (Pf)
Pipe: 49		5.60	6.0	18.0	Disch			1.00	120	-0.1
24	11.0	10.0	9.9	0.0		C1.000	----	0.00	0.2	-0.4
103	10.0	10.3	10.3	18.0		1.104		1.00	0.083	0.1
Pipe: 50		5.60	6.1	18.2	Disch			1.00	120	-0.1
23	11.0	10.2	9.9	0.0		C1.000	----	0.00	0.3	-0.4
102	10.0	10.6	10.6	18.2		1.104		1.00	0.085	0.1
Pipe: 51		5.60	6.4	19.0	Disch			1.00	120	-0.1
22	11.0	11.2	10.4	0.0		C1.000	----	0.00	0.3	-0.4
101	10.0	11.5	11.5	19.0		1.104		1.00	0.093	0.1

NOTES (HASS):

(1) Calculations were performed by the HASS computer program in accordance with NFPA (2020) under license no. 64777277 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 0.002 gpm and a maximum imbalance at any node of 0.107 gpm.

(3) Velocity pressures have been included in the calculation of the system pressures and flows. Maximum water velocity is 21.1 ft/sec at pipe 32.

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

are automatically transferred from the calculation report.

(5) Fullflow calculations are not done for systems with variable speed pumps.

(6) PIPE FITTINGS TABLE

HASS Pipe Table Name: standard

PAGE: B MATERIAL: THNWL HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
	F								
	F45Ell								
3.260	10.00	20.00	7.00	22.00	14.00	1.00	18.00	18.00	20.00
	5.00								

PAGE: C MATERIAL: XL HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
	F F45Ell								
1.104	3.00 1.50	7.00	3.00	7.00	8.00	1.00	13.00	13.00	7.00
1.452	4.00 2.00	8.00	3.00	9.00	8.00	1.00	13.00	13.00	8.00

PAGE: D MATERIAL: DIRON HWC: 140

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee	F F45Ell
4.220	17.00	34.00	10.00	37.00	20.00	3.00	34.00	8.50