



Submittal Transmittal

Gresham Smith

PROJECT:	HCA Lake City Medical Center Ancillary Building 45057.01	DATE SENT:	10/26/2022
SUBJECT:	Fire Protection Shops & Hydraulic Calc. - Ancillary	SUBMITTAL ID:	21 1000-002
TYPE:	Submittal	TRANSMITTAL ID:	00314
PURPOSE:	Delegated Design-Reviewed for General Conformance Only	VIA:	Info Exchange

SPEC SECTION:	21 1000
---------------	---------

FROM

NAME	COMPANY	EMAIL	PHONE
Helga Bolyard	Gresham Smith	helga.bolyard@greshamsmith.com	615.770.8253

TO

NAME	COMPANY	EMAIL	PHONE
Joey Bray 5500 Maryland Way Suite 100 Brentwood TN 37027 United States	Robins & Morton Group	joey.bray@robinsmorton.com	205.870.1000

REMARKS:	Response (Delegated Design-Reviewed for General Conformance Only) from: Donna Sharber (I. C. Thomasson Associates, Inc.) Remarks: FURNISH AS CORRECTED. CONTRACTOR TO VERIFY THAT SYSTEM VELOCITY DOES NOT EXCEED 25 FT/SEC. CONTRACTOR TO SUBMIT CONFIRMATION THAT SYSTEM DOES NOT EXCEED 25 FT/SEC. David Herron ICT 10/26/2022
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CONTENTS

QUANTITY:	1	DATED:	10/26/2022	NUMBER:	
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ARCHITECTURE ENGINEERING INTERIORS PLANNING

FL Qualifier No. AR0013420 / FL Registry No. RY3806

Submittal Transmittal

DATE:	10/26/2022
ID:	00314

DESCRIPTION:					
21 1000-001 - Fire Protection Shops & Hydraulic Calc. - Ancillary - ICT Reviewed.pdf					
ACTION:	Delegated Design-Reviewed for General Conformance Only				
REMARKS:					

COPIES:

Austin Trammell
Garrett Plossay
Jeff Hitchcock

(Robins & Morton Group)
(Robins & Morton Group)
(Robins & Morton - Nashville)

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ARCHITECTURE ENGINEERING INTERIORS PLANNING

FL Qualifier No. AR0013420 / FL Registry No. RY3806

ROBINS & MORTON

Lake City Medical Center

Phone: 615.916.4644

SUBMITTAL COVER SHEET

NAME: Gresham Smith
222 2nd Ave South
Nashville, TN, 37201

ATTN: _____

DATE: 10/25/22

RE: Lake City Medical Center- Ancillary Building
3157 NW York Drive, Lake City, FL 32055
Lake City FL 32055

WE ARE SENDING YOU:

- | | | |
|--|---|--|
| ☐ Warranties | ☒ Shop Drawings | ☐ Product Data |
| ☐ Manufacturer Data | ☐ Test Reports | ☐ Samples |
| ☐ Material Certificates | ☐ Other: | ☒ Calculations |
| ☐ Coordination Drawings | ☐ Application for Payment | |

NUMBER	SUBMITTAL #	SPECS SECTION	ITEM SUBMITTED	Trade Partner	OTHER INFORMATION
	21 1000-001	211000	Fire Protection Shops & Hydraulic Calcs.	WW Gay FP	Ancillary

Subcontractor's Stamp

Robins and Morton Stamp

THESE DRAWINGS OR BROCHURES HAVE BEEN
REVIEWED FOR GENERAL COMPLIANCE WITH CONTRACT
DOCUMENTS AND CHECKED FOR COMPLETENESS AND
FIELD DIMENSIONS.

THIS REVIEW DOES NOT RELIEVE THE SUBCONTRACTOR
OR VENDOR OF RESPONSIBILITY FOR COMPLIANCE WITH
CONTRACT DOCUMENTS.

- | | |
|-------------------------------------|------------------------|
| ☒ | NO EXCEPTIONS TAKEN |
| ☐ | MAKE CORRECTIONS NOTED |
| ☐ | REVISE AND RESUBMIT |
| ☐ | REJECTED |

ROBINS & MORTON

10/25/2022
DATE

Joey Bray
BY

Architect's Stamp:

**CONTRACTOR TO VERIFY THAT SYSTEM
VELOCITY DOES NOT EXCEED 25 FT/SEC.
CONTRACTOR TO SUBMIT CONFIRMATION
THAT SYSTEM DOES NOT EXCEED 25 FT/SEC.**

- | | |
|--|--|
| ☐ APPROVED | ☒ FURNISH AS CORRECTED |
| ☐ REJECTED | ☐ REVISE AND RESUBMIT |
| ☐ SUBMIT SPECIFIED ITEM | ☐ REVIEWED |

This review is only for general conformance with the design concept and the information given in the Construction Documents. Contractor is responsible for compliance with the information provided in the contract documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

BY:

David S. Heron

DATE:



I. C. THOMASSON
ASSOCIATES, INC.

COPY TO File

SIGNED Joey Bray



FIRE PROTECTION DRAWING SUBMITTALS

FOR:

Lake City Medical Ancillary

Date:	10/25/2022
Our Project Number:	FP-265722
Project Manager:	James Glass
Prepared By:	James Glass

The materials submitted represent the quality of materials specified. All materials may be substituted at this contractor's discretion for like equivalent materials.

**W. W. Gay Fire & Integrated Systems, Inc.
2251 Rosselle Street / 2500 N.E. 18th Terrace
Jacksonville, Florida 32204 / Gainesville, Florida 32609
904-387-7973 / 352-380-0317**

1. ADHERE TO AND OBTAIN ALL PERMITS, LICENSES, AND ALL GOVERNMENT REQUIREMENTS.
2. FINAL INSPECTION AND APPROVAL BY FIRE MARSHAL AND ARCHITECT/ENGINEER OR LOCAL AHI OR OWNERS INSURANCE AGENT SHALL BE PROVIDED.
3. PIPE ROUTING SHOWN SHALL BE USED AND ANY ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES SHALL BE PROVIDED.
4. PIPE SHALL BE REAMED AND CLEANED BEFORE ASSEMBLY.
5. ALL PENETRATIONS OF EXISTING WALLS AND CEILING SHALL BE IN ACCORDANCE WITH NFPA 13.
6. PROTECT ALL PENETRATIONS OF SMOKE/FIRE RATED WALLS, FLOORS, ETC. WITH AN APPROVED UL LISTED FIRESTOP SYSTEM.
7. SPRINKLER HEADS ARE TO BE COORDINATED WITH ALL CEILING FEATURES, AND MATERIALS WITHIN THE RACK.
8. PROVIDE HEAD GUARDS ON SPRINKLER HEADS WHERE SPRINKLERS ARE SUBJECT ARE SUBJECT TO DAMAGE.
9. ALL COMPONENTS SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND/OR APPROVED BY INTERNATIONAL FIRE MARSHAL WITH THE FIRE PROTECTION SYSTEMS.
10. ALL COMPONENTS SHALL BE LISTED FOR THE MAXIMUM SYSTEM PRESSURE, 175 PSI MINIMUM.
11. ALL VALVES ON THE FIRE PROTECTION SYSTEM ARE TO BE ELECTRICALLY SUPERVISED.
12. PROVIDE ALL NECESSARY DETECTION, AND ELECTRICAL ITEMS WITH ELECTRICAL CONTRACTOR AND ENSURE PROPER INSTALLATION.
13. PROVIDE HYDRAULIC DESIGN INFORMATION DATA PLATES AT EACH SYSTEM RISER.
14. PROVIDE STOCK OF SPARE SPRINKLERS/NOZZLES AND HEAD WRENCHES IN A MOUNTED CABINET AS REQUIRED.
15. NEW SYSTEMS SHALL BE HYDROSTATICALLY TESTED ACCORDING TO NFPA 13 AT 220 PSI FOR A MINIMUM OF 2 HOURS OR 50 PSI ABOVE THE SYSTEM WORKING PRESSURE IF THE SYSTEM WORKING PRESSURE EXCEEDS 150 PSI PRIOR TO CONNECTING TO EXISTING SYSTEM.
16. PROVIDE STOCK OF SPARE SPRINKLERS/NOZZLES AND HEAD WRENCHES IN A MOUNTED CABINET AS REQUIRED. FOR ANY PORTION OF THE FIRE PROTECTION SYSTEM(S) UNLESS NOTED OTHERWISE.
17. SPRINKLER DETAILS THIS SHEET ARE INCLUDED FOR GENERAL CONFIGURATION PURPOSES.
18. PROVIDE STOCK OF SPARE SPRINKLERS/NOZZLES AND HEAD WRENCHES IN A MOUNTED CABINET AS REQUIRED.
19. HYDRAULIC CALCULATIONS ARE REQUIRED TO HAVE A MINIMUM OF 5% DIFFERENCE OF SYSTEM DEMAND INCLUDING FIRE STREAM AND THE AVAILABLE WATER SUPPLY.

1. SCOPE OF FIRE PROTECTION WORK: FURNISH AND INSTALL A WET-PIE FIRE SPRINKLER SYSTEM IN A NEW ONE-STORY ANCIILLARY BUILDING TO THE HCA LAKE CITY MEDICAL CENTER.
2. UNDERGROUND WATER SUPPLY FOR FIRE SYSTEM, BY OTHERS, INCLUDES BACKFLOW PREVENTER, FDC, FORWARD FLOW CONNECTION AND STUB-IN.
3. FIRE SPRINKLER SYSTEM INCLUDES A GRIDDED PIPING SYSTEM, SUPPLYING UPRIGHT AND PENDANT SPRINKLERS, AND DRY-BARREL HORIZONTAL SIDEWALL SPRINKLERS PROTECTING THE EXTERIOR CANOPIES AND LOADING DOCK.

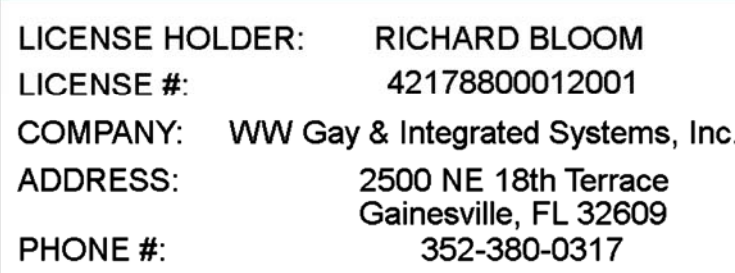
FAC-69A-3.012 FOR FIRE SPRINKLER INSTALLATION:
FLORIDA FIRE PREVENTION CODE (2020) THE 7th EDITION
FLORIDA BUILDING CODE (2020) WITH THE LATEST REVISIONS, THE 7th EDITION
NFPA 13 (2016), STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
NFPA 70 (2017), NATIONAL ELECTRICAL CODE
NFPA 72 (2016), NATIONAL FIRE ALARM AND SIGNALING CODE

OSGY GASKET VALVE - MUEIR R-2306-6 RESILIENT GASKET ABOVE VALVE, FLANGED
ALARM CHECK VALVE - POTTY CV-1FR 4" W/ TRIM, GAUGES ABOVE AND BELOW CHECK VALVE
INSPECTORS TEST AND DRAIN - A6F 3011ASG, 1" VALVE, 1/2" TEST ORIFICE, PRESSURE RELIEF, SIGHT
GLASS
WATERFLOW SWITCH - POTTER VSR-F VANE TYPE, WATERFLOW SWITCH W/ RETARD
ELECTRIC BELT - POTTER BELT 10" RED (COORDINATE VOLTAGE WITH DIVISION 26 AND FIRE ALARM
CONTRACTOR TO BE ON SITE)
TAMPER SWITCH - POTTER OGSY-2 OS&Y VALVE SUPERVISORY SWITCH
INTERIOR PIPE - BULLMOOSE SCHEDULE 40 BLACK STEEL, 2" AND SMALLER, ASTM A135 OR ASTM A53
BULLMOOSE SCHEDULE 10 BLACK STEEL, 2.5" AND LARGER, ASTM A135
FITTINGS - DUCTILE IRON THREADED FITTINGS, ANSI B16.3 CLASS 300
CAST IRON THREADED FITTINGS, ANSI B16.4 CLASS 125 AND CLASS 300
CAST IRON FLANGED FITTINGS, ANSI B16.4 CLASS 125 AND CLASS 300
MECHANICAL JOINT - SHURJOINT GROOVED DUCTILE IRON FITTINGS, ASTM A536 65-45-12 AND/OR
ASTM A336 65-45-15
SPRINKLERS - TYCO T-5338 STANDARD RESPONSE EXTENDED COVERAGE ORDINARY HAZARD
DRY-BARREL HORIZONTAL SIDEWALL, 11-1/2", 200-F, CHROME, 16X16 SPACING, 6" - 12" DEFLECTOR TO
CEILING, LENGTH TO BE DETERMINED IN FIELD
VIKING VK182 QUICK RESPONSE STANDARD SPRAY LIGHT HAZARD DRY-BARREL HORIZONTAL
SIDEWALL, 5.6K, 200-F, CHROME, 4" - 6" DEFLECTOR TO CEILING, LENGTH TO BE DETERMINED IN FIELD
VIKING VK301 QUICK RESPONSE STANDARD SPRAY LIGHT HAZARD DRY-BARREL HORIZONTAL
SIDEWALL, 5.6K, 200-F, CHROME, 4" - 6" DEFLECTOR TO CEILING, LENGTH TO BE DETERMINED IN FIELD
CONCEALED PENDING, 5.6K, 155-F, WHITE COVER PLATE, LENGTH TO BE DETERMINED IN FIELD
VIKING VK3001 QUICK RESPONSE STANDARD SPRAY LIGHT AND ORDINARY HAZARD UPRIGHT
SPRINKLER, 5.6K, 155-F (288-F IN MECHANICAL ROOM), CHROME
VIKING VK301 QUICK RESPONSE STANDARD SPRAY LIGHT AND ORDINARY HAZARD PENDING
SPRINKLER, 5.6K, 155-F, CHROME SPRINKLER W/ CHROME 2-PIECE ESCUTCHEON
AIR VENT - POTTER PAV W/ 12" BALL VALVE W/ TAMPER

NOMINAL PIPE SIZE (N.)	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	8"
STEEL PIPE (EXCEPT THRD. LIGHTWALL)	N/A	8'-0"	10'-0"	10'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	14'-0"	14'-0"	14'-0"

NOTE: ALL HANGERS SHOWN ON THE DRAWING HAVE NOT BEEN COORDINATED. BE ADVISED.
 HANGERS ARE TO BE INSTALLED AS PER THE SCHEDULE ABOVE WHEN ADDITIONAL HANGERS ARE FOUND TO BE ADDED.
 LEAVE NO HORIZONTAL, UNSUPPORTED BETWEEN ANY TWO COUPLINGS NOR SHALL ANY PIPE BE LEFT UNSUPPORTED
 WHENEVER A CHANGE IN DIRECTION OF FLOW TAKES PLACE.

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
WHEN MAX. WORKING PRESSURE AT SPRINK. EXCEEDS 100PSI AND A LINE SUPPLIES SPRINKLER IN A PEND. POSITION BELOW THE CEILING, "A" SHALL NOT BE GREATER THAN 12"			
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/2"-8"	5'-0" MAX.	15'-0" MAX.	3" MIN.

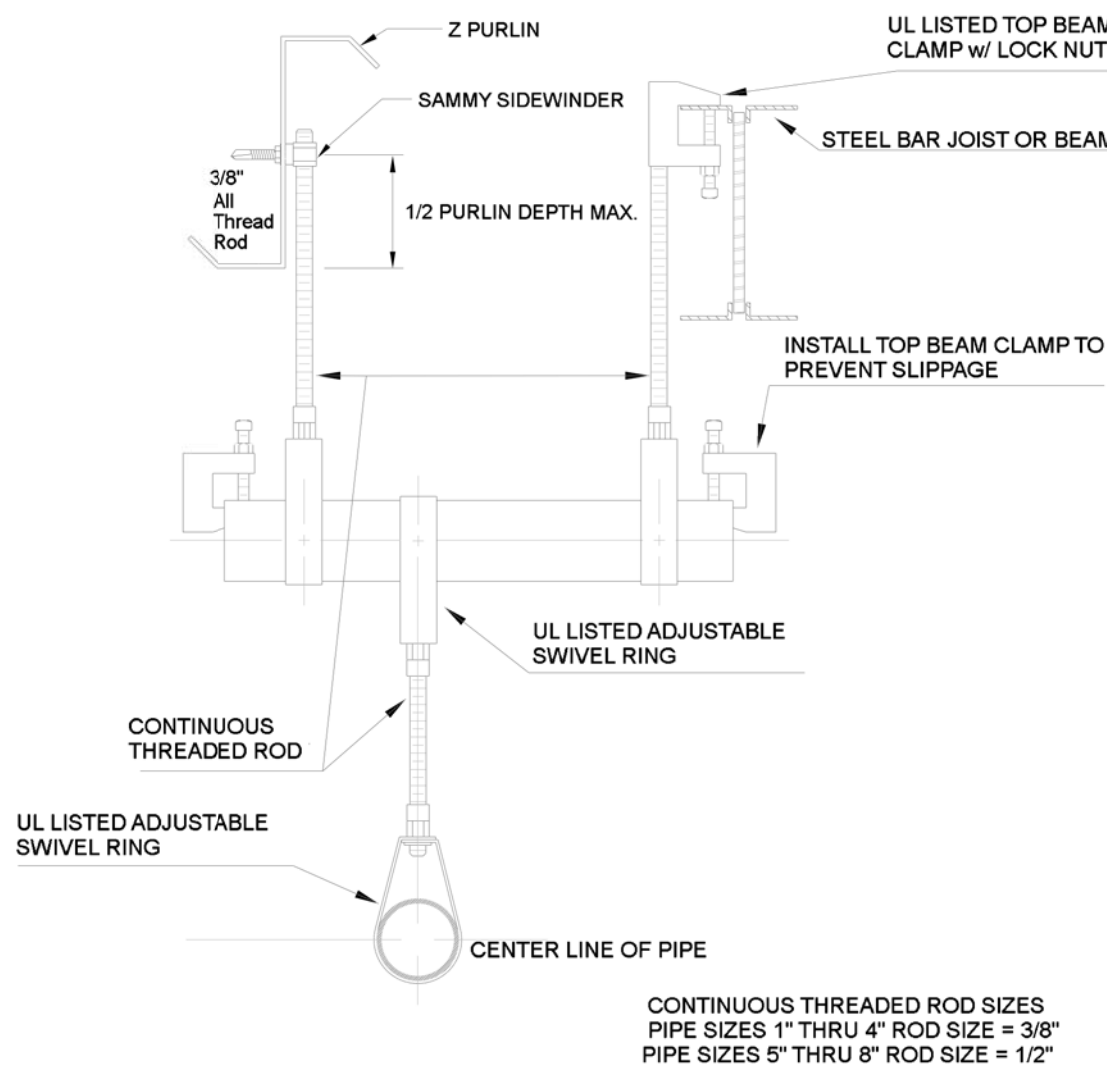
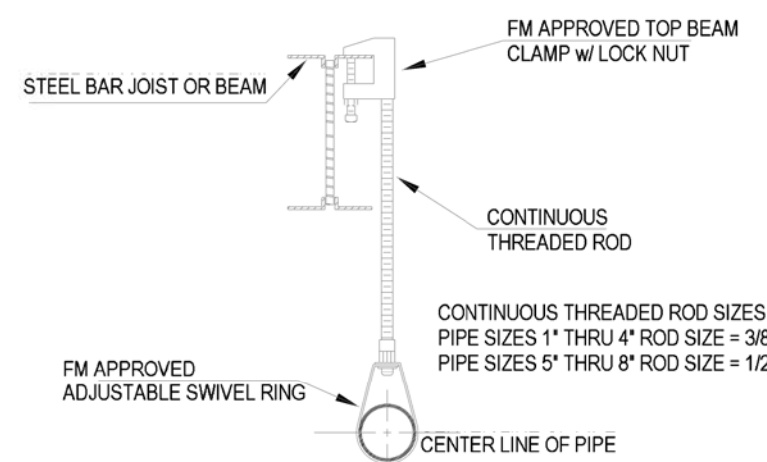


LICENSE HOLDER: SHAWN M. SULLIVAN
 LICENSE #: FL PE 81090
 COMPANY: I.C. THOMASSON ASSOCIATES, INC.
 ADDRESS: 2950 KRAFT DRIVE
 NASHVILLE, TN 37204
 PHONE #: 615-346-3400

Diagram illustrating the assembly of a branch line outlet fitting. The diagram shows a vertical main line with a branch line outlet fitting attached. Key components and labels include:

- SEE PLAN FOR ARMORER LENGTHS
- BRANCH LINE OUTLET FITTING
- CENTER LINE OF BRANCH LINE PIPING
- SCHEDULE 40 DROP NIPPLE w/1"x3/4" REDUCER
- RECESSED QUICK RESPONSE PENDENT SPRINKLER
- RECESSED ESCUTCHEON

The image contains two technical diagrams of branch line tees. The left diagram shows a 'WELDED OUTLET' at the top of a tee fitting, with a 'BRANCH LINE' indicated by an arrow pointing to the side of the fitting. Below this, the text reads 'VIKING MICROMATIC SERIES STANDARD COVERAGE QUICK RESPONSE UPRIGHT (NO ESCUTCHEON)'. The right diagram shows a 'VIKING UPRIGHT QUICK RESPONSE SPRINKLER' at the top, followed by a 'REDUCER COUPLING' and a 'SPRIG'. A 'BRANCH LINE' is indicated by an arrow pointing to the side of the fitting. The text 'VIKING MICROMATIC SERIES STANDARD COVERAGE QUICK RESPONSE UPRIGHT (NO ESCUTCHEON)' is also present at the bottom of this diagram.



FIRE RISER DETAIL
 0 1/2" = 1 Foot

 INDICATES RISER LOCATION[illegible]

* : FOR REFERENCE ONLY

Thomas Bender
ET # 142203
er-Based Layout III
through 4/1/2025

MAIN OFFICE:
2251 ROSSELLE STREET
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GAINESVILLE BRANCH:
2500 N.E. 18TH TERRACE
GAINESVILLE, FL 32609
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FAX:(352) 378-1454

A DIVISION OF:
sciens
Building Solutions



W.W. GAY
FIRE & INTEGRATED

DISCUSSION

3Y

ITE

No.

RY

CITY MEDICAL ANCILLARY
NW COMMERCE DRIVE
LAKE CITY, FL 32055

GENERAL NOTES AND DETAILS

DATE: OCTOBER 24, 2023

JOB NO. _____

DRAWN BY:	CHECKED:
-----------	----------

IVVD	AD
SCALE:	

FP-0



Thomas Bender
NICET # 142203
Water-Based Layout III
Valid Through 4/1/2025

MAIN OFFICE:
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PHONE: 904-387-7973
FAX: 904-384-7261

GAINESVILLE BRANCH:
2500 N.E. 18TH TERRACE
GAINESVILLE, FL 32609
PHONE: (352) 380-0317
FAX: (352) 378-1454



REVISIONS		BY	DATE

PROJECT: LAKE CITY MEDICAL ANCILLARY
340 NW COMMERCE DRIVE
LAKE CITY, FL 32055

DATE: OCTOBER 24, 2022

JOB NO: FP-265722

DRAWN BY: TWB

CHECKED BY: AB

SCALE: 1/8" = 1'-0"

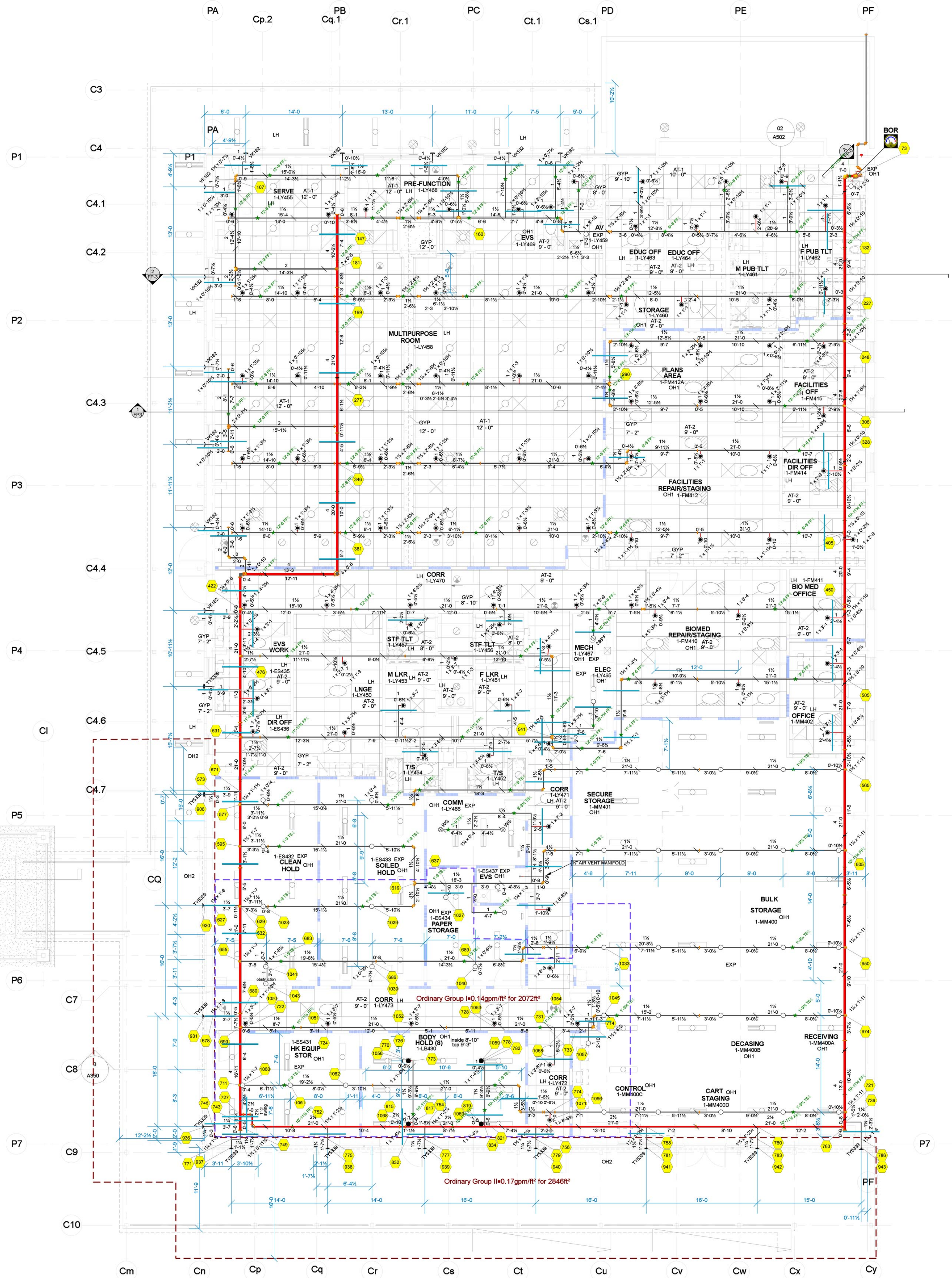
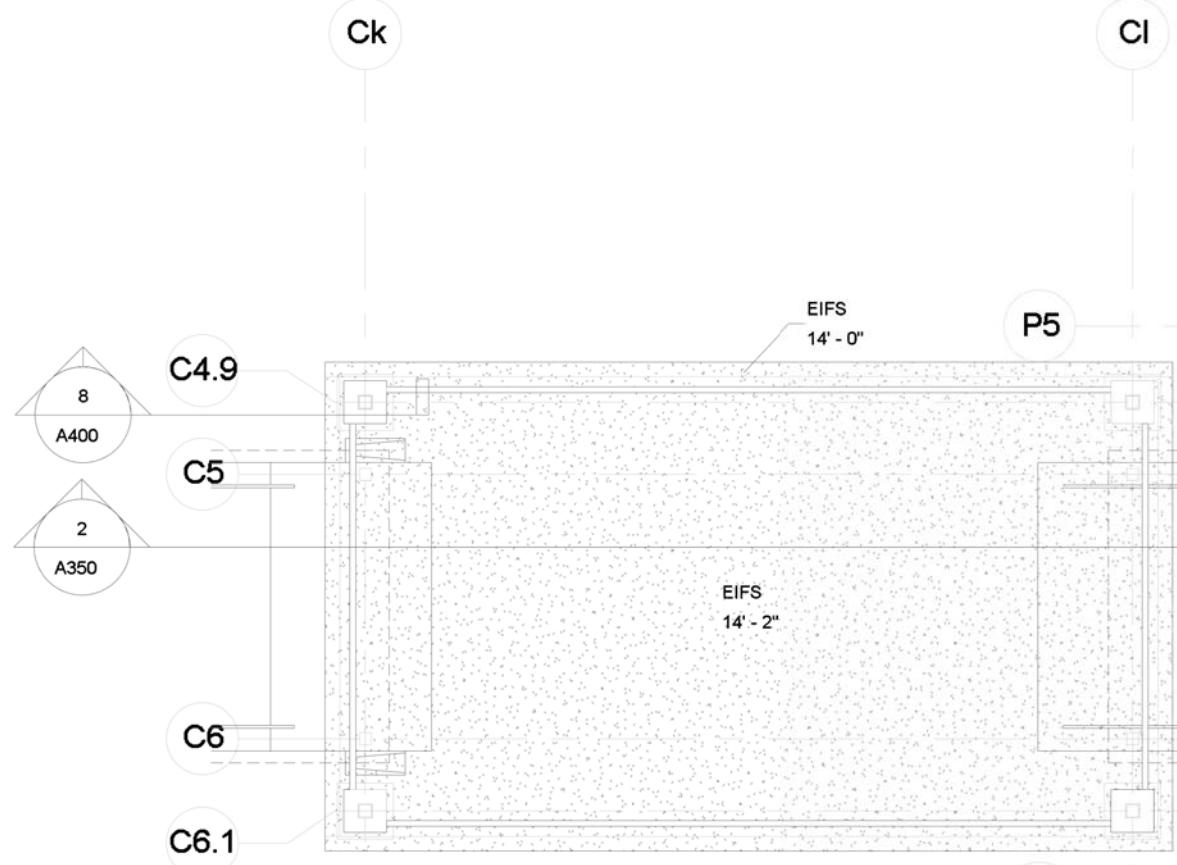
DESCRIPTION: FIRE PROTECTION SITE
FOR HYDRAULIC REFERENCE ONLY

FP-1

Hydraulic Information				Hydraulic Information			
Remote Area 1				Remote Area 2			
OCCUPANCY CLASSIFICATION	Ordinary Group II	DENSITY (gpm/ft²)	0.17 for 3000ft² (Actual 2946ft²)	OCCUPANCY CLASSIFICATION	Ordinary Group I	DENSITY (gpm/ft²)	0.14 for 2000ft² (Actual 2072ft²)
TOTAL HOSE STREAMS	250.00	TOTAL HOSE STREAMS	250.00	TOTAL HOSE STREAMS	250.00	TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	11	TOTAL HEADS FLOWING	25	TOTAL HEADS FLOWING	25	TOTAL HEADS FLOWING	25
K-FACTOR	11.2	K-FACTOR	5.6	K-FACTOR	5.6	K-FACTOR	5.6
TOTAL WATER REQUIRED	840.40	TOTAL WATER REQUIRED	760.99	TOTAL WATER REQUIRED	760.99	TOTAL WATER REQUIRED	760.99
TOTAL PRESSURE REQUIRED	71.118	TOTAL PRESSURE REQUIRED	51.878	TOTAL PRESSURE REQUIRED	51.878	TOTAL PRESSURE REQUIRED	51.878
BASE OF RISER (gpm)	590.40	BASE OF RISER (gpm)	510.99	BASE OF RISER (gpm)	510.99	BASE OF RISER (gpm)	510.99
SAFETY MARGIN (psi)	+4.316 (5.7%)	SAFETY MARGIN (psi)	+24.658 (32.2%)	SAFETY MARGIN (psi)	+24.658 (32.2%)	SAFETY MARGIN (psi)	+24.658 (32.2%)

Sprinkler Legend - Ancillary Building										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
	Viking	VK3021		95	5.6	Pendent	1/2"	Quick	Chrome	155°F
	Viking	VK3001		45	5.6	Upright	1/2"	Quick	Chrome	155°F
	Viking	VK3001		2	5.6	Upright	1/2"	Quick	Brass	155°F
	Viking	VK3001		1	5.6	Upright	1/2"	Quick	Brass	286°F
	Viking	VK182	ADJ REC	11	5.6	Sidewall	1"	Quick	Chrome	200°F
	Tyco	TY5339	DRY SR EC HSW	12	11.2	Sidewall	1"	Standard	Bronze	200°F
	Viking	VK194	Dry Concealed	4	5.6	Pendent	1"	Quick	Brass	155°F
				Total = 170						
				Note						
				Wire Guard						
				Model G-1 Eeach						
				Custom Escutcheon						
				White Concealed Plate						

1/8" = 1'-0"
0' 2' 4' 8'



Thomas Bender
NICET # 142203
Water-Based Layout III
Valid through 4/1/2025

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W.W. GAY
FIRE & INTEGRATED
SYSTEMS, INC.

REVISIONS	DATE	BY

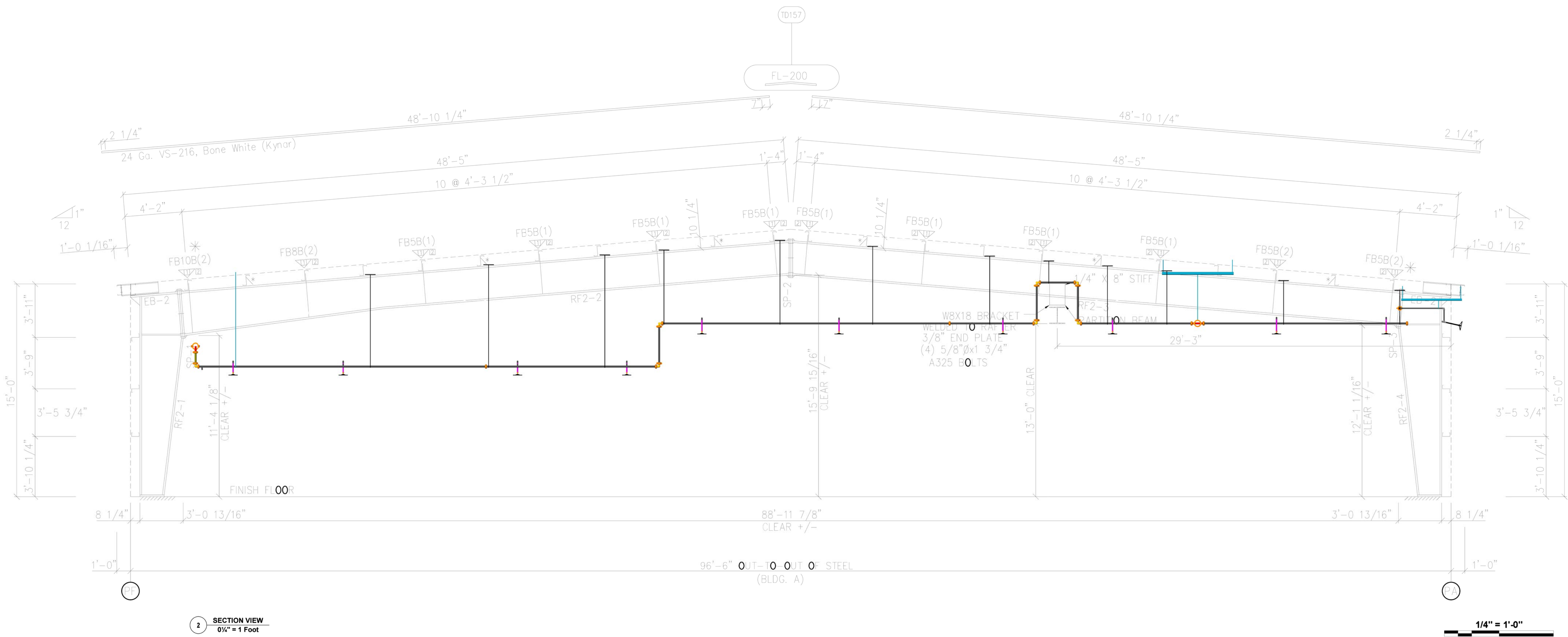
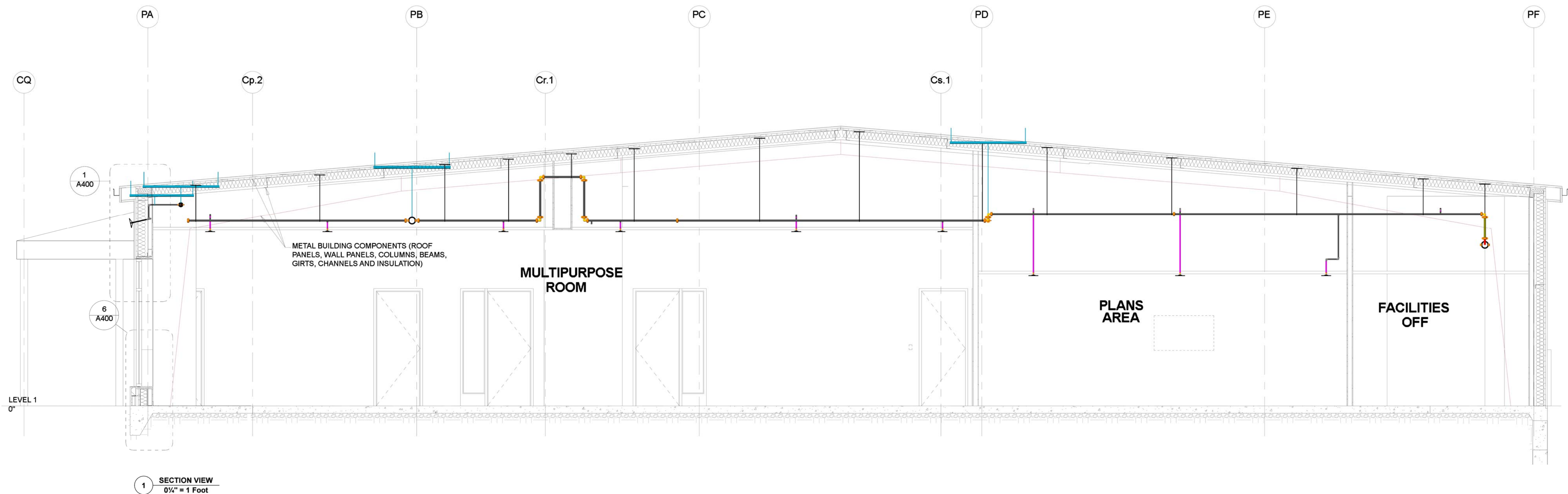
PROJECT: LAKE CITY MEDICAL ANCILLARY
340 NW COMMERCE DRIVE
LAKE CITY, FL 32055

DATE: OCTOBER 24, 2022
JOB NO: FP-265722

DRAWN BY: TWB
CHECKED BY: AB

SCALE: 1/8" = 1'-0"

FP-2



Thomas Bender
NICET # 142203
Water-Based Layout III
Valid through 4/1/2025

MAIN OFFICE:
2251 ROSSELLE STREET
JACKSONVILLE, FL 32204
PHONE: 904-387-7973
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W.W. GAY
FIRE & INTEGRATED
SYSTEMS, INC.

REVISIONS

BY

DATE

NO

PROJECT: LAKE CITY MEDICAL ANCILLARY
340 NW COMMERCE DRIVE
LAKE CITY, FL 32055

SECTION VIEWS

DATE

OCTOBER 24, 2022

JOB NO.

FP-265722

DRAWN BY

TWB

CHECKED BY

AB

SCALE

NOT TO SCALE

FP-4



FIRE PROTECTION CALCULATION SUBMITTALS

FOR:

Lake City Medical Ancillary

Date:	10/25/2022
Our Project Number:	FP-265722
Project Manager:	James Glass
Prepared By:	James Glass

The materials submitted represent the quality of materials specified. All materials may be substituted at this contractor's discretion for like equivalent materials.

**W. W. Gay Fire & Integrated Systems, Inc.
2251 Rosselle Street / 2500 N.E. 18th Terrace
Jacksonville, Florida 32204 / Gainesville, Florida 32609
904-387-7973 / 352-380-0317**

Hydraulic Calculations

for

Project Name: Lake City Medical Center

Location: Ancillary Building, 340 NW Commerce Drive, Lake City, FL 32055

Drawing Name: 265722 Lake City Medical Ancillary 2022-10-24 0748

Calculation Date: 10/24/2022

Design

Remote Area Number: 1
Remote Area Location: Loading Dock
Occupancy Classification: Ordinary Group II

Density 0.17gpm/ft²
Area of Application: 3000ft² (Actual 2846ft²)
Coverage per Sprinkler: 130ft²
Type of sprinklers calculated: Sidewall
No. of sprinklers calculated: 11
No. of nozzles calculated: 0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 250.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 840.40 @ 71.118 (Safety Margin = 4.316 psi)
Type of System: Wet
Volume of Dry or PreAction System: 0.04gal

Water Supply Information:

for Node: 1 Date: September 27, 20:
Location: 3239 NW York Drive
Source: Lake City

Name of Contractor: WW Gay Fire
Address: 2500 NE 18th Terrace, Gainesville, FL 32609
Phone Number:
Name of designer:
Authority Having Jurisdiction:

Notes:

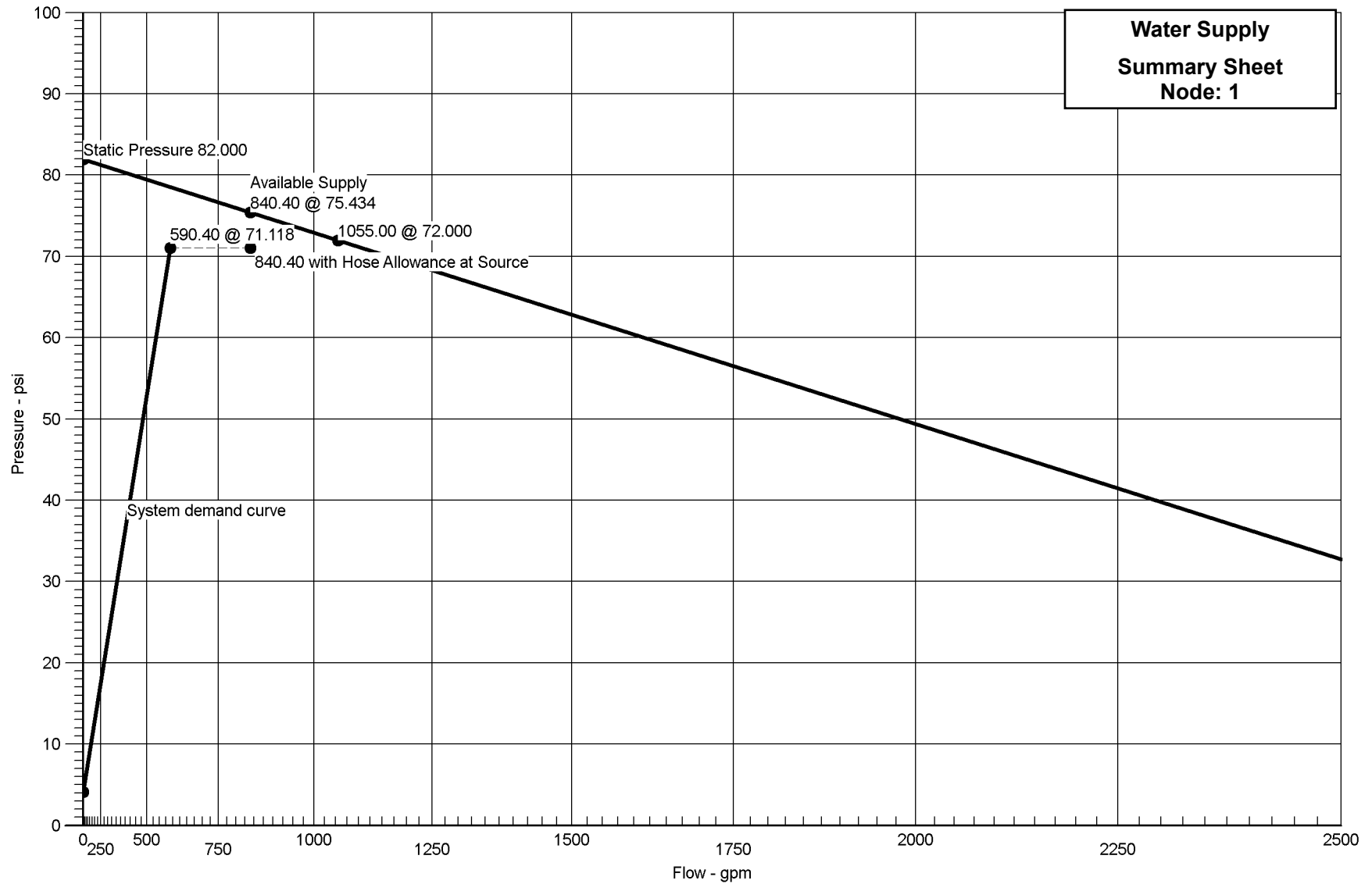
Automatic peaking results Left: N/A Right: N/A

Hydraulic Graph

Job Name: Lake City Medical Center
Remote Area Number: 1

N 1.85

Date: 10/24/2022



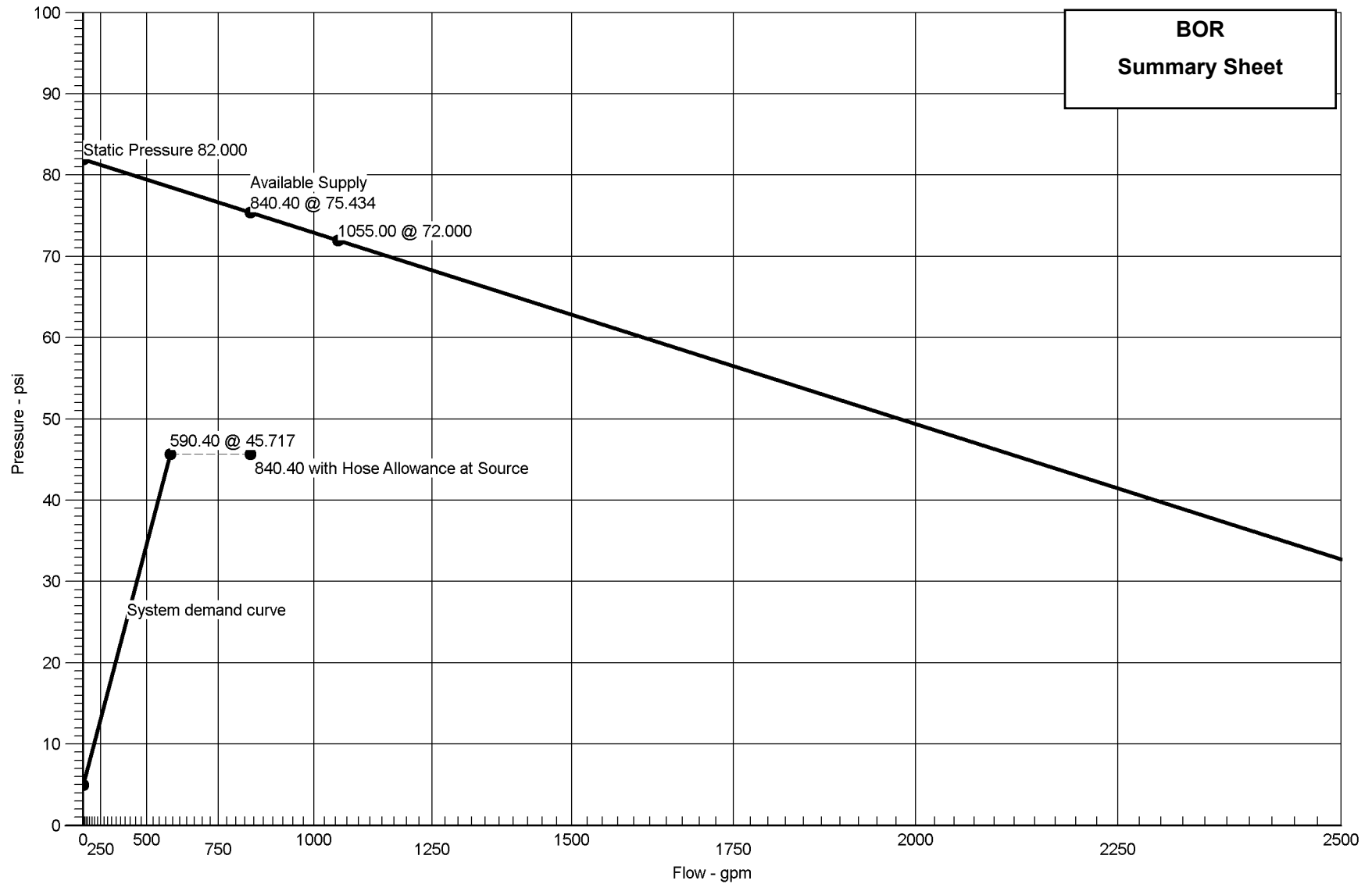
Hydraulic Graph

Job Name: Lake City Medical Center
Remote Area Number: 1

N 1.85

Date: 10/24/2022

BOR
Summary Sheet





Summary Of Outflowing Devices

Job Number: FP-265722

Report Description: Ordinary Group II (1)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)		
⇒ Sprinkler	906	50.96	50.96	11.2	20.700		
Sprinkler	920	52.36	50.96	11.2	21.859		
Sprinkler	931	52.24	50.96	11.2	21.753		
Sprinkler	936	51.53	50.96	11.2	21.165		
Sprinkler	937	51.22	50.96	11.2	20.916		
Sprinkler	938	55.45	50.96	11.2	24.511		
Sprinkler	939	55.39	50.96	11.2	24.458		
Sprinkler	940	55.41	50.96	11.2	24.477		
Sprinkler	941	55.67	50.96	11.2	24.709		
Sprinkler	942	56.40	50.96	11.2	25.359		
Sprinkler	943	53.77	50.96	11.2	23.050		

⇒ Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi)	@ Flow (gpm)	Available (psi)	@ Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	72.000	1055.00	75.434	840.40	71.118

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
655	11'-3½		29.120		
674	10'-11½		31.948		
678	9'-6		26.849		
680	11'-4		29.040		
690	11'-4		29.031		
711	11'-4		28.968		
721	10'-11½		31.715		
727	11'-4		28.927		
739	10'-11½		31.695		
743	11'-4		28.923		
746	9'-6		26.133		
749	11'-4		28.923		
752	10'-11½		28.045		
754	10'-11½		27.984		
756	10'-11½		28.006		
758	10'-11½		28.275		
760	10'-11½		29.027		
763	10'-11½		31.689		
771	9'-6		25.831		

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
775	9'-6		25.914		
777	9'-6		25.858		
779	9'-6		25.878		
781	9'-6		26.123		
783	9'-6		26.807		
786	9'-6		28.427		
1	3'-0	Supply	71.118	590.40	
906	12'-6½	Sprinkler	20.700	50.96	
920	9'-6	Sprinkler	21.859	52.36	
931	9'-6	Sprinkler	21.753	52.24	
936	9'-6	Sprinkler	21.165	51.53	
937	9'-6	Sprinkler	20.916	51.22	
938	9'-6	Sprinkler	24.511	55.45	
939	9'-6	Sprinkler	24.458	55.39	
940	9'-6	Sprinkler	24.477	55.41	
941	9'-6	Sprinkler	24.709	55.67	
942	9'-6	Sprinkler	25.359	56.40	
943	9'-6	Sprinkler	23.050	53.77	
2	-4'-0		74.094		
14	-4'-0		73.524		
18	-4'-0		49.231		
73	1'-0	Gauge	45.717		
107	13'-9		29.252		

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
147	12'-8		29.565		
160	12'-8		30.401		
181	12'-8		29.559		
182	10'-11½		36.284		
199	12'-8		29.557		
227	10'-11½		35.677		
248	10'-11½		35.301		
277	12'-8		29.536		
290	12'-8		33.442		
306	10'-11½		34.803		
328	10'-11½		34.477		
346	12'-8		29.497		
381	12'-8		29.444		
405	10'-11½		33.948		
422	11'-4		29.652		
450	10'-11½		33.512		
476	11'-4		29.585		
505	10'-11½		33.160		
531	11'-4		29.456		
541	12'-10		29.501		
565	10'-11½		32.766		
571	11'-4		29.356		
573	12'-9		25.301		

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
577	11'-3½		29.341		
595	11'-3½		29.280		
605	10'-11½		32.456		
619	15'-8		27.795		
627	9'-6		26.979		
629	11'-4		29.184		
632	11'-3½		29.183		
650	10'-11½		32.139		

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
						Total (Foot)		Friction(Pf)	
906	12'-6½	11.2	50.96	1	(See Notes)	1'-0	100	20.700	••••• Route 1 ••••• Sprinkler, T(3'-7)
573	12'-9		50.96	1.0490		3'-7	1.028698	-0.095	
						4'-7		4.696	
573	12'-9			1¼	(See Notes)	5'-9	120	25.301	2E(3'-0), PO(6'-0)
571	11'-4		50.96	1.3800		12'-0	0.193094	0.623	
						17'-9		3.431	
571	11'-4		176.20	4		7'-10½	120	29.356	Flow (q) from Route 18
531	11'-4		227.16	4.2600			0.012666		
						7'-10½		0.100	
531	11'-4			1½	(See Notes)	45'-11½	120	29.456	PO(8'-0) 2E(3'-6), T(6'-6)
541	12'-10		15.91	1.6100		21'-6	0.010575	-0.668	
						67'-5½		0.713	
541	12'-10		13.26	1½	(See Notes)	58'-8	120	29.501	Flow (q) from Route 19 6E(3'-6), PO(8'-0)
505	10'-11½		29.17	1.6100		29'-0	0.032472	0.813	
						87'-8		2.846	
505	10'-11½		363.24	4		10'-1½	120	33.160	Flow (q) from Route 2
450	10'-11½		392.41	4.2600			0.034822		
						10'-1½		0.352	
450	10'-11½		28.23	4		11'-0½	120	33.512	Flow (q) from Route 23
405	10'-11½		420.64	4.2600			0.039597		
						11'-0½		0.437	
405	10'-11½		28.15	4		11'-10	120	33.948	Flow (q) from Route 27
328	10'-11½		448.79	4.2600			0.044639		
						11'-10		0.528	
328	10'-11½		29.34	4		6'-6	120	34.477	Flow (q) from Route 26
306	10'-11½		478.13	4.2600			0.050187		
						6'-6		0.326	
306	10'-11½		16.30	4		9'-4	120	34.803	Flow (q) from Route 14
248	10'-11½		494.43	4.2600			0.053398		
						9'-4		0.498	
248	10'-11½		21.66	4		6'-6	120	35.301	Flow (q) from Route 13
227	10'-11½		516.10	4.2600			0.057807		
						6'-6		0.375	

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot) Total (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe) Friction(Pf)	Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
227	10'-11½		34.12	4		9'-4	120	35.677	Flow (q) from Route 20
182	10'-11½		550.22	4.2600		9'-4	0.065075	0.607	
182	10'-11½		40.19	4	(See Notes)	19'-7½	120	36.284	
73	1'-0		590.40	4.2600		49'-3	0.074140	4.326	Flow (q) from Route 12 2E(8'-10), CV(28'-11½), GV(2'- 7½), BOR
						68'-10½		5.107	
73	1'-0			4	(See Notes)	5'-0	120	45.717	
18	-4'-0		590.40	4.2600		13'-2	0.074140	2.168	E(13'-2)
						18'-2		1.347	
18	-4'-0			4	(See Notes)	206'-9½	140	49.231	
14	-4'-0		590.40	4.2200		123'-9½	0.058365	0.000	E(16'-8½), 3LtE(10'-0½), 2T(3 3'-5½), BFP(-5.000), EE(6'-8½) , GV(3'-4)
						330'-6½		24.293	
14	-4'-0			8	(See Notes)	231'-3½	140	73.524	
2	-4'-0		590.40	8.3900		45'-9½	0.002054	0.000	EE(15'-3), E(30'-6½)
						277'-1½		0.569	
2	-4'-0			6	(See Notes)	7'-0	140	74.094	
1	3'-0		590.40	6.2800		7'-0	0.008421	-3.035	Water Supply
								0.059	
			250.00					71.118	
1			840.40						Hose Allowance At Source Total(Pt) Route 1
937	9'-6	11.2	51.22	1	(See Notes)	1'-2	100	20.916	
771	9'-6		51.22	1.0490		3'-7	1.038636		
						4'-9		4.914	••••• Route 2 ••••• Sprinkler, T(3'-7)
771	9'-6			1¼	(See Notes)	4'-10½	120	25.831	3E(3'-0), PO(6'-0)
749	11'-4		51.22	1.3800		15'-0	0.194959	-0.786	
						19'-10½		3.878	
749	11'-4			4		0'-5	120	28.923	
743	11'-4		51.22	4.2600		0'-5	0.000805	0.000	
743	11'-4		51.53	4		1'-4	120	28.923	Flow (q) from Route 3
727	11'-4		102.75	4.2600		1'-4	0.002919		
								0.004	

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices Equiv. Length (Foot)	Length (Foot)	C Factor Pf Friction Loss Per Unit (psi)	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.		
	Node 2		Elev 2 (Foot)	Total Flow (Q)		Actual ID		Fitting (Foot)		Elev(Pe)	Friction(Pf)
			Total (Foot)								
727	11'-4		91.57	4		4'-3½	120	28.927	Flow (q) from Route 9		
711	11'-4		194.31	4.2600		4'-3½	0.009488	0.041			
711	11'-4			4			8'-4	120		28.968	
690	11'-4		171.55	4.2600	8'-4		0.007534	0.063			
690	11'-4			1½	(See Notes)		96'-7½	120	29.031	PO(8'-0) 5E(3'-6), PO(8'-0)	
674	10'-11½		23.23	1.6100		33'-6	0.021310	0.145			
						130'-1½		2.773			
674	10'-11½		263.29	4		9'-10	120	31.948	Flow (q) from Route 6		
650	10'-11½		286.52	4.2600		9'-10	0.019462	-0.000			
								0.191			
650	10'-11½		24.22	4		14'-0	120	32.139	Flow (q) from Route 30		
605	10'-11½		310.75	4.2600		14'-0	0.022614	-0.000			
								0.317			
605	10'-11½		27.85	4		11'-8½	120	32.456	Flow (q) from Route 4		
565	10'-11½		338.60	4.2600		11'-8½	0.026506	-0.000			
								0.310			
565	10'-11½		24.64	4		13'-0½	120	32.766	Flow (q) from Route 5		
505	10'-11½		363.24	4.2600		13'-0½	0.030185	-0.000			
								0.394			
								33.160	Total(Pt) Route 2		
936	9'-6	11.2	51.53	1	(See Notes)	1'-2	100	21.165	 Route 3 Sprinkler, T(3'-7)		
746	9'-6		51.53	1.0490		3'-7	1.050034				
						4'-9		4.968			
746	9'-6			1¼	(See Notes)	6'-1½	120	26.133	2E(3'-0), PO(6'-0)		
743	11'-4		51.53	1.3800		12'-0	0.197099	-0.786			
						18'-1½		3.576			
								28.923	Total(Pt) Route 3		
931	9'-6	11.2	52.24	1	(See Notes)	1'-2	100	21.753	 Route 4 Sprinkler, T(3'-7)		
678	9'-6		52.24	1.0490		3'-7	1.076994				
						4'-9		5.096			

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices Equiv. Length (Foot)	Length (Foot)	C Factor Pf Friction Loss Per Unit (psi)	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.		
	Node 2		Elev 2 (Foot)	Total Flow (Q)		Actual ID		Fitting (Foot)		Elev(Pe)	Friction(Pf)
			Total (Foot)								
678	9'-6			1¼	(See Notes)	5'-8½	120	26.849	E(3'-0), PO(6'-0)		
680	11'-4		52.24	1.3800		9'-0	0.202159	-0.786			
						14'-8½		2.977			
680	11'-4		148.32	4		7'-11	120	29.040	Flow (q) from Route 16		
							0.010059	0.000			
655	11'-3½		200.56	4.2600		7'-11		0.080			
655	11'-3½			4		7'-11	120	29.120			
							0.007928	-0.000			
632	11'-3½		176.33	4.2600		7'-11		0.063			
632	11'-3½			1½	(See Notes)	31'-0	120	29.183	PO(8'-0) 2E(3'-6), T(6'-6)		
						21'-6	0.009367	-1.880			
619	15'-8		14.90	1.6100		52'-6		0.492			
619	15'-8		12.96	1½	(See Notes)	69'-11½	120	27.795	Flow (q) from Route 28 3E(3'-6), PO(8'-0)		
						18'-6	0.029814	2.024			
605	10'-11½		27.85	1.6100		88'-5½		2.637			
								32.456	Total(Pt) Route 4		
920	9'-6	11.2	52.36	1	(See Notes)	1'-2	100	21.859	 Route 5 Sprinkler, T(3'-7)		
627	9'-6		52.36	1.0490		3'-7	1.081888				
						4'-9		5.119			
627	9'-6			1¼	(See Notes)	5'-8½	120	26.979	E(3'-0), PO(6'-0)		
						9'-0	0.203078	-0.786			
629	11'-4		52.36	1.3800		14'-8½		2.991			
629	11'-4		161.44	4		8'-6	120	29.184	Flow (q) from Route 17		
							0.011323	0.000			
595	11'-3½		213.80	4.2600		8'-6		0.096			
595	11'-3½			4		6'-0	120	29.280			
							0.010086	-0.000			
577	11'-3½		200.85	4.2600		6'-0		0.061			
577	11'-3½			1½	(See Notes)	97'-6	120	29.341	PO(8'-0) 7E(3'-6), PO(8'-0)		
						40'-6	0.023771	0.145			
565	10'-11½		24.64	1.6100		138'-0		3.281			
								32.766	Total(Pt) Route 5		

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
943	9'-6	11.2	53.77	1	(See Notes)	1'-2	100	23.050	***** Route 6 ***** Sprinkler, T(3'-7)
786	9'-6		53.77	1.0490		3'-7	1.136293		
						4'-9		5.377	
786	9'-6			1¼	(See Notes)	6'-4	120	28.427	2E(3'-0), PO(6'-0)
739	10'-11½		53.77	1.3800		12'-0	0.213290	-0.641	
						18'-4		3.909	
739	10'-11½		186.76	4		1'-5½	120	31.695	Flow (q) from Route 7
721	10'-11½		240.53	4.2600			0.014080	0.000	
						1'-5½		0.020	
721	10'-11½		22.76	4		14'-0	120	31.715	Flow (q) from Route 29
674	10'-11½		263.29	4.2600			0.016644	0.000	
						14'-0		0.233	
								31.948	Total(Pt) Route 6
939	9'-6	11.2	55.39	1	(See Notes)	1'-2	100	24.458	***** Route 7 ***** Sprinkler
777	9'-6		55.39	1.0490			1.200343		
						1'-2		1.400	
777	9'-6			1¼	(See Notes)	3'-3½	120	25.858	E(3'-0), PO(6'-0)
754	10'-11½		55.39	1.3800		9'-0	0.225313	-0.641	
						12'-3½		2.767	
754	10'-11½			2½		16'-0	120	27.984	
756	10'-11½		19.27	2.6350			0.001370		
						16'-0		0.022	
756	10'-11½		55.41	2½		16'-0	120	28.006	Flow (q) from Route 8
758	10'-11½		74.69	2.6350			0.016786		
						16'-0		0.269	
758	10'-11½		55.67	2½		16'-0	120	28.275	Flow (q) from Route 10
760	10'-11½		130.36	2.6350			0.047039		
						16'-0		0.753	
760	10'-11½		56.40	2½	(See Notes)	12'-7½	120	29.027	Flow (q) from Route 11 PO(16'-5½)
763	10'-11½		186.76	2.6350		16'-5½	0.091480		
						29'-1		2.661	
763	10'-11½			4		0'-8	120	31.689	
739	10'-11½		186.76	4.2600			0.008817		
						0'-8		0.006	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
								31.695	Total(Pt) Route 7
940	9'-6	11.2	55.41	1	(See Notes)	1'-2	100	24.477	Route 8..... Sprinkler
779	9'-6		55.41	1.0490			1.201203		
						1'-2		1.401	
779	9'-6			1¼	(See Notes)	3'-3½	120	25.878	E(3'-0), PO(6'-0)
756	10'-11½		55.41	1.3800		9'-0	0.225474	-0.641	
						12'-3½		2.769	
								28.006	Total(Pt) Route 8
938	9'-6	11.2	55.45	1	(See Notes)	1'-2	100	24.511	Route 9..... Sprinkler
775	9'-6		55.45	1.0490			1.202746		
						1'-2		1.403	
775	9'-6			1¼	(See Notes)	3'-3½	120	25.914	E(3'-0), PO(6'-0)
752	10'-11½		55.45	1.3800		9'-0	0.225764	-0.641	
						12'-3½		2.772	
752	10'-11½		36.12	2½	(See Notes)	14'-6	120	28.045	Flow (q) from Route 15 2LtE(5'-6), PO(16'-5½)
727	11'-4		91.57	2.6350		27'-5½	0.024471	-0.145	
						41'-11½		1.026	
								28.927	Total(Pt) Route 9
941	9'-6	11.2	55.67	1	(See Notes)	1'-2	100	24.709	Route 10..... Sprinkler
781	9'-6		55.67	1.0490			1.211731		
						1'-2		1.414	
781	9'-6			1¼	(See Notes)	3'-3½	120	26.123	E(3'-0), PO(6'-0)
758	10'-11½		55.67	1.3800		9'-0	0.227450	-0.641	
						12'-3½		2.793	
								28.275	Total(Pt) Route 10
942	9'-6	11.2	56.40	1	(See Notes)	1'-2	100	25.359	Route 11..... Sprinkler
783	9'-6		56.40	1.0490			1.241202		
						1'-2		1.448	
783	9'-6			1¼	(See Notes)	3'-3½	120	26.807	E(3'-0), PO(6'-0)
760	10'-11½		56.40	1.3800		9'-0	0.232982	-0.641	
						12'-3½		2.861	
								29.027	Total(Pt) Route 11

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
107	13'-9		16.38	1½	(See Notes)	39'-6½	120	29.252	 Route 12 Flow (q) from Route 24 4E(3'-6), T(6'-6)
160	12'-8		16.38	1.6100		20'-6	0.011167	0.478	
						60'-0½		0.670	
160	12'-8		23.81	1½	(See Notes)	62'-4	120	30.401	Flow (q) from Route 21 5E(3'-6), PO(8'-0)
182	10'-11½		40.19	1.6100		25'-6	0.058742	0.723	
						87'-10		5.160	
								36.284	Total(Pt) Route 12
290	12'-8		37.97	1½	(See Notes)	42'-2½	120	33.442	 Route 13 Flow (q) from Route 25 3E(3'-6), PO(8'-0)
248	10'-11½		21.66	1.6100		18'-6	0.018731	0.723	
						60'-8½		1.137	
								35.301	Total(Pt) Route 13
290	12'-8		37.97	1½	(See Notes)	39'-2½	120	33.442	 Route 14 Flow (q) from Route 25 3E(3'-6), PO(8'-0)
306	10'-11½		16.30	1.6100		18'-6	0.011069	0.723	
						57'-8½		0.639	
								34.803	Total(Pt) Route 14
754	10'-11½		19.27	2½		14'-0	120	27.984	 Route 15 Flow (q) from Route 7
752	10'-11½		36.12	2.6350			0.004377		
						14'-0		0.061	
								28.045	Total(Pt) Route 15
690	11'-4		23.23	4		1'-7½	120	29.031	 Route 16 Flow (q) from Route 2
680	11'-4		148.32	4.2600			0.005756		
						1'-7½		0.009	
								29.040	Total(Pt) Route 16
632	11'-3½		14.90	4		0'-2	120	29.183	 Route 17 Flow (q) from Route 4
629	11'-4		161.44	4.2600			0.006733	-0.000	
						0'-2		0.001	
								29.184	Total(Pt) Route 17
577	11'-3½		24.64	4		1'-11	120	29.341	 Route 18 Flow (q) from Route 5
571	11'-4		176.20	4.2600			0.007917	-0.000	
						1'-11		0.015	
								29.356	Total(Pt) Route 18

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.	
	Node 2		Elev 2 (Foot)	Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)		Elev(Pe)
			Total (Foot)				Friction(Pf)			
531	11'-4		15.91	4		11'-8½	120	29.456	***** Route 19 ***** Flow (q) from Route 1	
476	11'-4		211.25	4.2600			0.011074			
						11'-8½		0.129		
476	11'-4			1½	(See Notes)	58'-9½	120	29.585	PO(8'-0) 3E(3'-6)	
						18'-6	0.007557	-0.668		
541	12'-10		13.26	1.6100		77'-3½		0.584		
								29.501	Total(Pt) Route 19	
381	12'-8		169.76	4		10'-0	120	29.444	***** Route 20 ***** Flow (q) from Route 22	
346	12'-8		141.61	4.2600			0.005284			
						10'-0		0.053		
346	12'-8			4		11'-6	120	29.497		
							0.003439			
277	12'-8		112.27	4.2600		11'-6		0.040		
277	12'-8			4		12'-8	120	29.536		
							0.001603			
199	12'-8		74.31	4.2600		12'-8		0.020		
199	12'-8			1½	(See Notes)	83'-10½	120	29.557	PO(8'-0) 7E(3'-6), PO(8'-0)	
						40'-6	0.043397	0.723		
227	10'-11½		34.12	1.6100		124'-4½		5.397		
								35.677	Total(Pt) Route 20	
199	12'-8		34.12	4		3'-11½	120	29.557	***** Route 21 ***** Flow (q) from Route 20	
181	12'-8		40.19	4.2600			0.000514			
						3'-11½		0.002		
181	12'-8			4	(See Notes)	7'-4	120	29.559	PO(26'-4)	
						26'-4	0.000195			
147	12'-8		23.81	4.2600		33'-8		0.007		
147	12'-8			1½	(See Notes)	23'-6	120	29.565	4E(3'-6)	
						14'-0	0.022297			
160	12'-8		23.81	1.6100		37'-6		0.836		
								30.401	Total(Pt) Route 21	
476	11'-4		13.26	4		6'-9½	120	29.585	***** Route 22 ***** Flow (q) from Route 19	
							0.009823			
422	11'-4		197.99	4.2600		6'-9½		0.067		

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)			
422	11'-4			4	(See Notes)	26'-5	120	29.652	3LtE(7'-11)
381	12'-8		169.76	4.2600		23'-8½	0.007390	-0.578	
						50'-1½		0.370	
								29.444	Total(Pt) Route 22
422	11'-4			1½	(See Notes)	91'-6½	120	29.652	 Route 23 PO(8'-0) 4E(3'-6), PO(8'-0)
450	10'-11½		28.23	1.6100		30'-0	0.030567	0.145	
						121'-6½		3.716	
								33.512	Total(Pt) Route 23
181	12'-8			2	(See Notes)	28'-7	120	29.559	 Route 24 PO(10'-0) E(5'-0), T(8'-6)
107	13'-9		16.38	2.0670		23'-6	0.003307	-0.478	
						52'-1		0.172	
								29.252	Total(Pt) Route 24
277	12'-8			1½	(See Notes)	45'-4	120	29.536	 Route 25 PO(8'-0) 4E(3'-6), T(6'-6)
290	12'-8		37.97	1.6100		28'-6	0.052884		
						73'-10		3.905	
								33.442	Total(Pt) Route 25
346	12'-8			1½	(See Notes)	85'-8½	120	29.497	 Route 26 PO(8'-0) 8E(3'-6), PO(8'-0)
328	10'-11½		29.34	1.6100		44'-0	0.032821	0.723	
						129'-8½		4.257	
								34.477	Total(Pt) Route 26
381	12'-8		169.76	1½	(See Notes)	83'-10½	120	29.444	 Route 27 PO(8'-0), Flow (q) from Route 22 7E(3'-6), PO(8'-0)
405	10'-11½		28.15	1.6100		40'-6	0.030405	0.723	
						124'-4½		3.782	
								33.948	Total(Pt) Route 27
595	11'-3½			1½	(See Notes)	33'-0	120	29.280	 Route 28 PO(8'-0) 2E(3'-6), T(6'-6)
619	15'-8		12.96	1.6100		21'-6	0.007236	-1.880	
						54'-6		0.394	
								27.795	Total(Pt) Route 28
711	11'-4			1½	(See Notes)	96'-9½	120	28.968	 Route 29 PO(8'-0) 4E(3'-6), PO(8'-0)
721	10'-11½		22.76	1.6100		30'-0	0.020526	0.145	
						126'-9½		2.602	
								31.715	Total(Pt) Route 29

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
						Total (Foot)		Friction(Pf)	
655	11'-3½			1½	(See Notes)	94'-10	120	29.120	***** Route 30 ***** PO(8'-0) 4E(3'-6), PO(8'-0)
						30'-0	0.023025	0.145	
650	10'-11½		24.22	1.6100		124'-10		2.875	
								32.139	Total(Pt) Route 30

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	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BaIV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	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 Relief Valve
PRV	Pressure Reducing Valve	red	Reducer/Adapter	S	Supply
sCV	Swing Check Valve	SFx	Seismic Flex	Spr	Sprinkler
St	Strainer	T	Tee Flow Turn 90°	Tr	Tee Run
U	Union	WirF	Wirsbo	WMV	Water Meter Valve
Z	Cap				

Hydraulic Calculations

for

Project Name: Lake City Medical Center

Location: Ancillary Building, 340 NW Commerce Drive, Lake City, FL 32055

Drawing Name: 265722 Lake City Medical Ancillary 2022-10-24 0748

Calculation Date: 10/24/2022

Design

Remote Area Number: 2
Remote Area Location: Storage Areas
Occupancy Classification: Ordinary Group I

Density 0.14gpm/ft²
Area of Application: 2000ft² (Actual 2072ft²)
Coverage per Sprinkler: 120ft²
Type of sprinklers calculated: Upright, Pendent
No. of sprinklers calculated: 25
No. of nozzles calculated: 0

In-rack Demand: N/A gpm at Node: N/A
Hose Streams: 250.00 at Node: 1 Type: Allowance at Source

Total Water Required (including Hose Streams where applicable):
From Water Supply at Node 1: 760.99 @ 51.878 (Safety Margin = 24.658 psi)
Type of System: Wet
Volume of Dry or PreAction System: 0.04gal

Water Supply Information:

for Node: 1 Date: September 27, 20:
Location: 3239 NW York Drive
Source: Lake City

Name of Contractor: WW Gay Fire
Address: 2500 NE 18th Terrace, Gainesville, FL 32609
Phone Number:
Name of designer:
Authority Having Jurisdiction:

Notes:

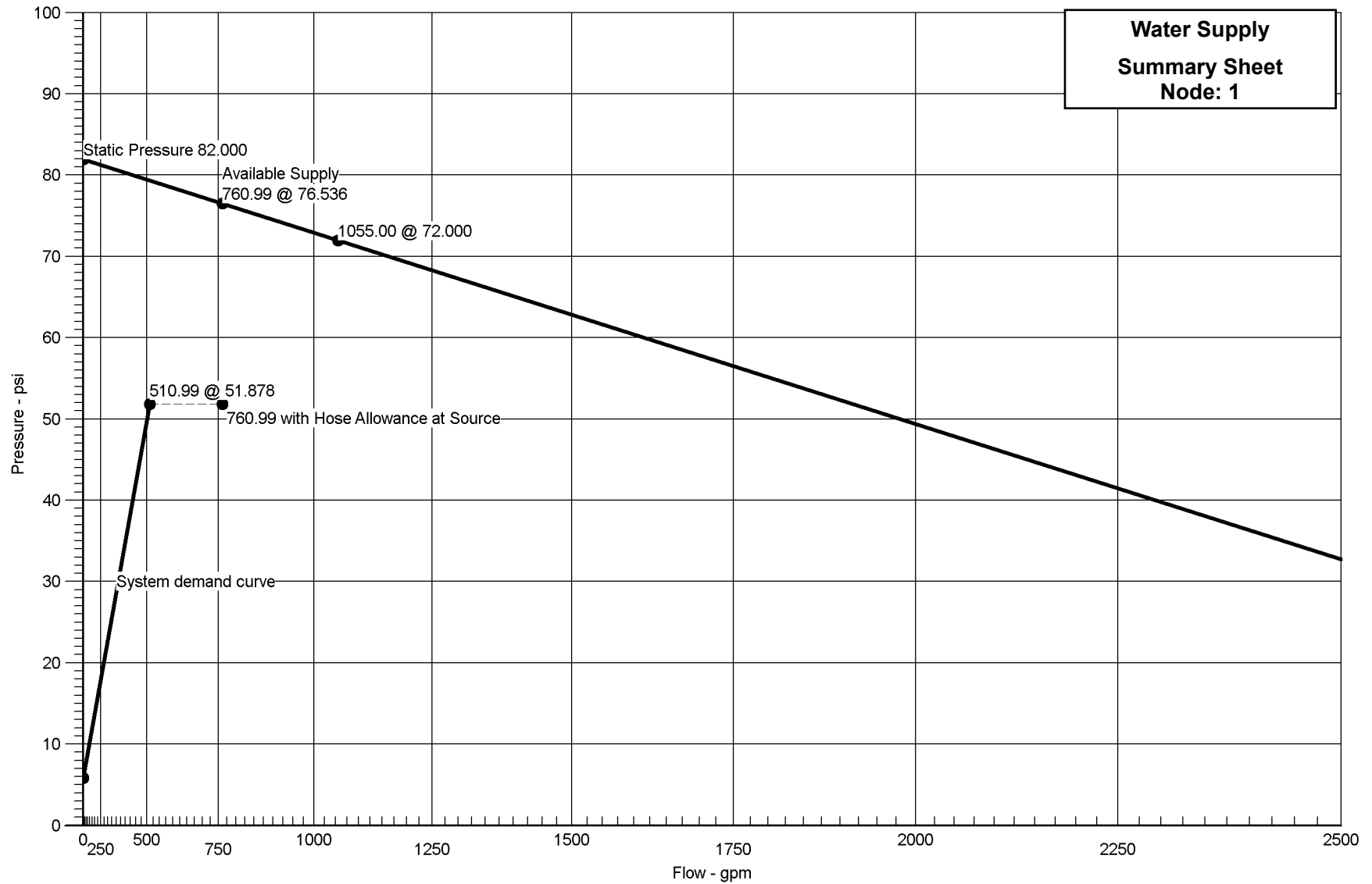
Automatic peaking results Left: N/A Right: N/A

Hydraulic Graph

Job Name: Lake City Medical Center
Remote Area Number: 2

N 1.85

Date: 10/24/2022



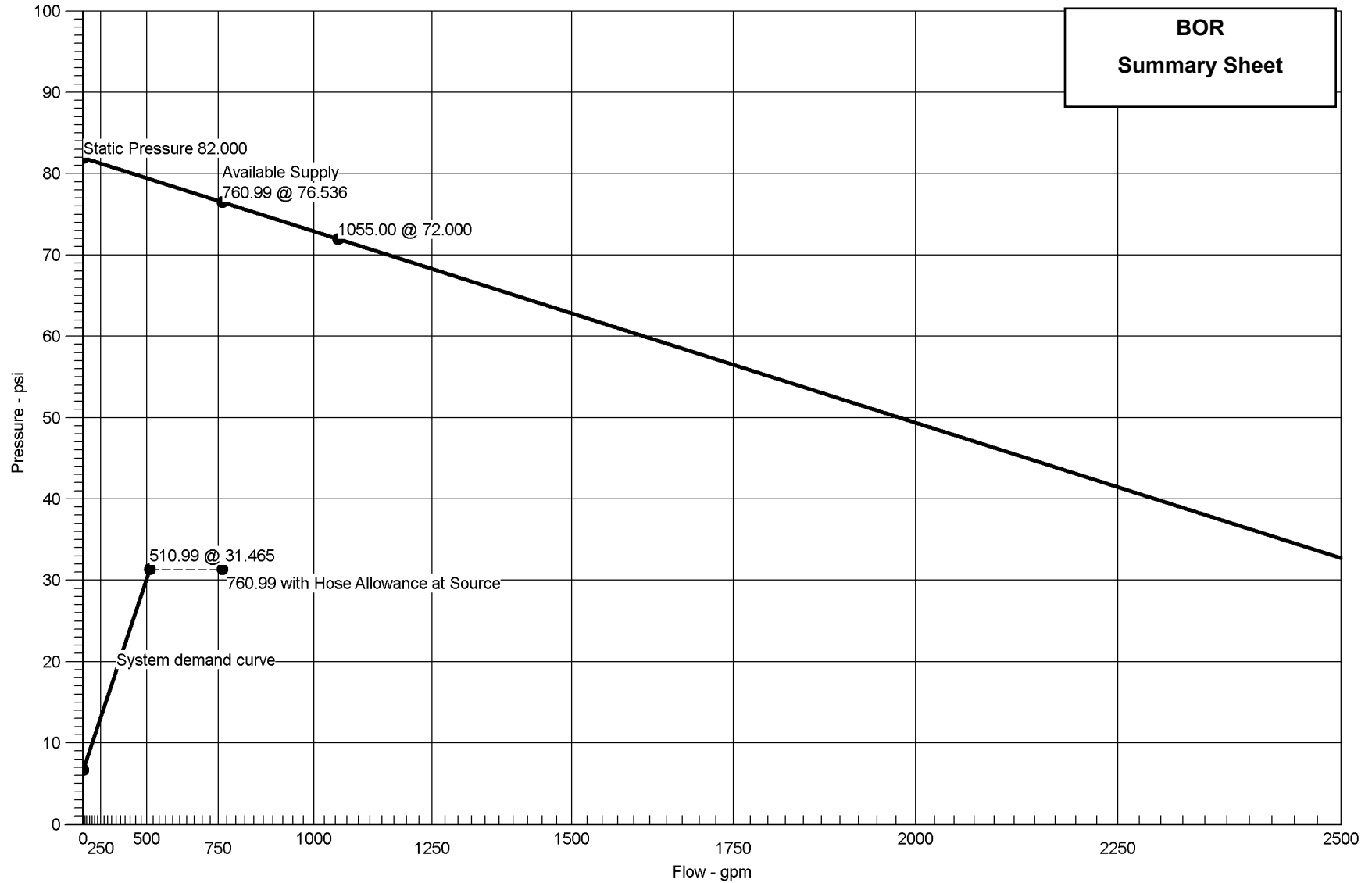
Hydraulic Graph

Job Name: Lake City Medical Center
Remote Area Number: 2

N 1.85

Date: 10/24/2022

BOR
Summary Sheet





Summary Of Outflowing Devices

Job Number: FP-265722
Report Description: Ordinary Group I (2)

Device		Actual Flow (gpm)	Minimum Flow (gpm)	K-Factor (K)	Pressure (psi)		
Sprinkler	1027	21.24	16.80	5.6	14.391		
Sprinkler	1028	22.49	16.80	5.6	16.133		
Sprinkler	1029	22.09	16.80	5.6	15.560		
Sprinkler	1033	20.96	16.80	5.6	14.012		
Sprinkler	1039	20.04	16.80	5.6	12.806		
Sprinkler	1040	19.67	16.80	5.6	12.340		
Sprinkler	1041	20.80	16.80	5.6	13.793		
Sprinkler	1043	19.57	16.80	5.6	12.211		
Sprinkler	1045	18.18	16.80	5.6	10.535		
Sprinkler	1050	20.80	16.80	5.6	13.792		
Sprinkler	1051	19.63	16.80	5.6	12.289		
Sprinkler	1052	19.01	16.80	5.6	11.528		
Sprinkler	1053	18.79	16.80	5.6	11.255		
Sprinkler	1054	18.79	16.80	5.6	11.255		
Sprinkler	1056	22.18	16.80	5.6	15.693		
⇒ Sprinkler	1057	16.80	16.80	5.6	9.000		
Sprinkler	1058	18.16	16.80	5.6	10.521		
Sprinkler	1059	22.27	16.80	5.6	15.809		
Sprinkler	1060	21.62	16.80	5.6	14.908		
Sprinkler	1061	21.19	16.80	5.6	14.324		
Sprinkler	1062	20.92	16.80	5.6	13.961		
Sprinkler	1066	20.61	16.80	5.6	13.540		
Sprinkler	1068	22.11	16.80	5.6	15.591		
Sprinkler	1069	22.19	16.80	5.6	15.704		
Sprinkler	1071	20.86	16.80	5.6	13.879		

⇒ Most Demanding Sprinkler Data

Supply Analysis

Node	Name	Static (psi)	Residual (psi)	@ Flow (gpm)	Available (psi)	@ Total Demand (gpm)	Required Pressure (psi)
1	Water Supply	82.000	72.000	1055.00	76.536	760.99	51.878

Node Analysis

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
405	10'-11½		21.447		
422	11'-4		18.052		
450	10'-11½		21.115		
476	11'-4		18.000		
505	10'-11½		20.848		
531	11'-4		17.899		
541	12'-10		17.792		
565	10'-11½		20.550		
577	11'-3½		17.802		
595	11'-3½		17.730		
605	10'-11½		20.316		
619	15'-8		15.548		
632	11'-3½		17.636		
637	16'-0½		15.414		
650	10'-11½		20.087		
655	11'-3½		17.569		
674	10'-11½		19.974		
683	13'-10½		14.601		
686	15'-1½		13.904		

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
689	16'-4½		13.387		
690	11'-4		17.527		
711	11'-4		17.522		
714	16'-7		10.011		
721	10'-11½		19.891		
722	11'-11½		14.359		
724	11'-11½		12.678		
726	11'-11½		11.821		
727	11'-4		17.524		
728	11'-11½		11.513		
731	11'-11½		11.494		
733	11'-11½		11.513		
763	10'-11½		19.885		
770	9'-10		15.480		
773	10'-11½		16.333		
774	17'-1½		13.038		
778	9'-10		15.598		
782	10'-11½		16.434		
815	9'-10		15.377		
817	10'-11½		16.701		
819	9'-10		15.491		
821	10'-11½		16.804		
832	10'-11½		17.697		

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
834	10'-11½		17.807		
1	3'-0	Supply	51.878	510.99	
1027	16'-0½	Sprinkler	14.391	21.24	
1028	13'-10	Sprinkler	16.133	22.49	
1029	15'-1½	Sprinkler	15.560	22.09	
1033	16'-6	Sprinkler	14.012	20.96	
1039	14'-1½	Sprinkler	12.806	20.04	
1040	15'-4½	Sprinkler	12.340	19.67	
1041	13'-10½	Sprinkler	13.793	20.80	
1043	13'-10½	Sprinkler	12.211	19.57	
1045	16'-6	Sprinkler	10.535	18.18	
1050	9'-0	Sprinkler	13.792	20.80	
1051	9'-0	Sprinkler	12.289	19.63	
1052	9'-0	Sprinkler	11.528	19.01	
1053	9'-0	Sprinkler	11.255	18.79	
1054	9'-0	Sprinkler	11.255	18.79	
1056	8'-10	Sprinkler	15.693	22.18	
1057	16'-7	Sprinkler	9.000	16.80	
1058	9'-0	Sprinkler	10.521	18.16	
1059	8'-10	Sprinkler	15.809	22.27	
1060	13'-7	Sprinkler	14.908	21.62	
1061	14'-2	Sprinkler	14.324	21.19	
1062	14'-10	Sprinkler	13.961	20.92	

Node Number	Elevation (Foot)	Node Type	Pressure at Node (psi)	Discharge at Node (gpm)	Notes
1066	16'-6	Sprinkler	13.540	20.61	
1068	8'-10	Sprinkler	15.591	22.11	
1069	8'-10	Sprinkler	15.704	22.19	
1071	9'-0	Sprinkler	13.879	20.86	
2	-4'-0		54.868		
14	-4'-0		54.432		
18	-4'-0		34.664		
73	1'-0	Gauge	31.465		
107	13'-9		17.506		
147	12'-8		17.856		
160	12'-8		18.505		
181	12'-8		17.851		
182	10'-11½		23.230		
199	12'-8		17.850		
227	10'-11½		22.765		
248	10'-11½		22.479		
277	12'-8		17.834		
290	12'-8		20.875		
306	10'-11½		22.098		
328	10'-11½		21.849		
346	12'-8		17.803		
381	12'-8		17.762		

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
						Total (Foot)		Friction(Pf)	
1057	16'-7	5.6	16.80	1	(See Notes)	3'-8½	120	9.000	••••• Route 1 ••••• Sprinkler, E(2'-0), PO(5'-0)
714	16'-7		16.80	1.0490		7'-0	0.094254		
						10'-8½		1.011	
714	16'-7		30.09	1½	(See Notes)	2'-6½	120	10.011	Flow (q) from Route 2 E(3'-6)
1045	16'-6		46.89	1.6100		3'-6	0.078139	0.053	
						6'-0½		0.471	
1045	16'-6	5.6	18.18	1½	(See Notes)	37'-9	120	10.535	Sprinkler, E(3'-6), PO(8'-0)
674	10'-11½		65.06	1.6100		11'-6	0.143250	2.385	
						49'-3		7.054	
674	10'-11½		150.51	4		9'-10	120	19.974	Flow (q) from Route 10
650	10'-11½		215.57	4.2600			0.011497	-0.000	
						9'-10		0.113	
650	10'-11½		45.84	4		14'-0	120	20.087	Flow (q) from Route 8
605	10'-11½		261.42	4.2600			0.016424	-0.000	
						14'-0		0.230	
605	10'-11½		29.11	4		11'-8½	120	20.316	Flow (q) from Route 16
565	10'-11½		290.53	4.2600			0.019968	-0.000	
						11'-8½		0.233	
565	10'-11½		21.75	4		13'-0½	120	20.550	Flow (q) from Route 4
505	10'-11½		312.28	4.2600			0.022821	-0.000	
						13'-0½		0.298	
505	10'-11½		25.64	4		10'-1½	120	20.848	Flow (q) from Route 23
450	10'-11½		337.92	4.2600			0.026408		
						10'-1½		0.267	
450	10'-11½		24.78	4		11'-0½	120	21.115	Flow (q) from Route 34
405	10'-11½		362.70	4.2600			0.030101		
						11'-0½		0.332	
405	10'-11½		24.67	4		11'-10	120	21.447	Flow (q) from Route 39
328	10'-11½		387.37	4.2600			0.033998		
						11'-10		0.402	
328	10'-11½		25.66	4		6'-6	120	21.849	Flow (q) from Route 38
306	10'-11½		413.03	4.2600			0.038282		
						6'-6		0.249	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
						Total (Foot)		Friction(Pf)	
306	10'-11½		14.29	4		9'-4	120	22.098	Flow (q) from Route 26
248	10'-11½		427.32	4.2600		9'-4	0.040768	0.381	
248	10'-11½		18.87	4		6'-6	120	22.479	Flow (q) from Route 25
227	10'-11½		446.19	4.2600		6'-6	0.044162	0.287	
227	10'-11½		29.77	4		9'-4	120	22.765	Flow (q) from Route 31
182	10'-11½		475.96	4.2600		9'-4	0.049766	0.464	
182	10'-11½		35.03	4	(See Notes)	19'-7½	120	23.230	Flow (q) from Route 24 2E(8'-10), CV(28'-11½), GV(2'- 7½), BOR
73	1'-0		510.99	4.2600		49'-3	0.056753	4.326	
						68'-10½		3.909	
73	1'-0			4	(See Notes)	5'-0	120	31.465	E(13'-2)
18	-4'-0		510.99	4.2600		13'-2	0.056753	2.168	
						18'-2		1.031	
18	-4'-0			4	(See Notes)	206'-9½	140	34.664	E(16'-8½), 3LtE(10'-0½), 2T(3 3'-5½), BFP(-5.000), EE(6'-8½) , GV(3'-4)
14	-4'-0		510.99	4.2200		123'-9½	0.044678	0.000	
						330'-6½		19.768	
14	-4'-0			8	(See Notes)	231'-3½	140	54.432	EE(15'-3), E(30'-6½)
2	-4'-0		510.99	8.3900		45'-9½	0.001573	0.000	
						277'-1½		0.436	
2	-4'-0			6	(See Notes)	7'-0	140	54.868	Water Supply
1	3'-0		510.99	6.2800		7'-0	0.006446	-3.035	
								0.045	
			250.00					51.878	Hose Allowance At Source
1			760.99						Total(Pt) Route 1
1058	9'-0	5.6	18.16	1	(See Notes)	9'-8½	120	10.521	•••••Route 2••••• Sprinkler, 3E(2'-0), PO(5'-0)
731	11'-11½		18.16	1.0490		11'-0	0.108903	-1.283	
						20'-8½		2.255	
731	11'-11½			1½		3'-4	120	11.494	
733	11'-11½		11.30	1.6100		3'-4	0.005619	0.019	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
733	11'-11½		18.79	1½	(See Notes)	7'-7½	120	11.513	Flow (q) from Route 3 2E(3'-6)
714	16'-7		30.09	1.6100		7'-0	0.034390	-2.004	
						14'-7½		0.502	
								10.011	Total(Pt) Route 2
1054	9'-0	5.6	18.79	1	(See Notes)	4'-3½	120	11.255	•••••Route 3••••• Sprinkler, 2E(2'-0), PO(5'-0)
733	11'-11½		18.79	1.0490		9'-0	0.115906	-1.283	
						13'-3½		1.541	
								11.513	Total(Pt) Route 3
1053	9'-0	5.6	18.79	1	(See Notes)	4'-3½	120	11.255	•••••Route 4••••• Sprinkler, 2E(2'-0), PO(5'-0)
728	11'-11½		18.79	1.0490		9'-0	0.115911	-1.283	
						13'-3½		1.541	
728	11'-11½		6.86	1½		12'-0	120	11.513	Flow (q) from Route 35
726	11'-11½		25.65	1.6100		12'-0	0.025601	0.307	
726	11'-11½		19.01	1½		12'-0	120	11.821	Flow (q) from Route 5
724	11'-11½		44.66	1.6100		12'-0	0.071424	0.857	
724	11'-11½		19.63	1½		12'-0	120	12.678	Flow (q) from Route 7
722	11'-11½		64.30	1.6100		12'-0	0.140136	1.682	
722	11'-11½		20.80	1½	(See Notes)	0'-9	120	14.359	Flow (q) from Route 11 E(3'-6), PO(8'-0)
690	11'-4		85.09	1.6100		11'-6	0.235349	0.289	
						12'-3		2.878	
690	11'-4		43.45	4		9'-6½	120	17.527	Flow (q) from Route 15
655	11'-3½		128.54	4.2600		9'-6½	0.004417	0.042	
655	11'-3½		55.20	4		7'-11	120	17.569	Flow (q) from Route 6
632	11'-3½		183.75	4.2600			0.008555	-0.000	
						7'-11		0.068	
632	11'-3½		24.69	4		8'-8	120	17.636	Flow (q) from Route 18
595	11'-3½		208.43	4.2600			0.010802	0.000	
						8'-8		0.094	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
					Equiv. Length (Foot)	Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID				Total (Foot)	
595	11'-3½		12.03	4		6'-0	120	17.730	
577	11'-3½		220.46	4.2600			0.011984	-0.000	
						6'-0		0.072	
577	11'-3½			1½	(See Notes)	97'-6	120	17.802	PO(8'-0) 7E(3'-6), PO(8'-0)
565	10'-11½		21.75	1.6100		40'-6	0.018865	0.145	
						138'-0		2.603	
								20.550	Total(Pt) Route 4
1052	9'-0	5.6	19.01	1	(See Notes)	4'-3½	120	11.528	•••••Route 5••••• Sprinkler, 2E(2'-0), PO(5'-0)
726	11'-11½		19.01	1.0490		9'-0	0.118507	-1.283	
						13'-3½		1.575	
								11.821	Total(Pt) Route 5
1043	13'-10½	5.6	19.57	1	(See Notes)	7'-1½	120	12.211	•••••Route 6••••• Sprinkler, E(2'-0), T(5'-0), PO(5'-0)
683	13'-10½		19.57	1.0490		12'-0	0.124991	-0.000	
						19'-1½		2.389	
683	13'-10½		20.80 + 14.83	1½	(See Notes)	6'-1½	120	14.601	Flow (q) from Route 12 and 40 E(3'-6), PO(8'-0)
655	11'-3½		55.20	1.6100		11'-6	0.105687	1.105	
						17'-7½		1.863	
								17.569	Total(Pt) Route 6
1051	9'-0	5.6	19.63	1	(See Notes)	4'-3½	120	12.289	•••••Route 7••••• Sprinkler, 2E(2'-0), PO(5'-0)
724	11'-11½		19.63	1.0490		9'-0	0.125727	-1.283	
						13'-3½		1.671	
								12.678	Total(Pt) Route 7
1040	15'-4½	5.6	19.67	1	(See Notes)	1'-9½	120	12.340	•••••Route 8••••• Sprinkler, T(5'-0), PO(5'-0)
689	16'-4½		19.67	1.0490		10'-0	0.126214	-0.440	
						11'-9½		1.486	
689	16'-4½		5.21	1½	(See Notes)	20'-8	120	13.387	Flow (q) from Route 9 2E(3'-6)
1033	16'-6		24.88	1.6100		7'-0	0.024192	-0.045	
						27'-8		0.670	
1033	16'-6	5.6	20.96	1½	(See Notes)	37'-9	120	14.012	Sprinkler, E(3'-6), PO(8'-0)
650	10'-11½		45.84	1.6100		11'-6	0.074940	2.385	
						49'-3		3.690	
								20.087	Total(Pt) Route 8

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
1039	14'-1½	5.6	20.04	1	(See Notes)	1'-9½	120	12.806	***** Route 9 ***** Sprinkler, T(5'-0), PO(5'-0)
686	15'-1½		20.04	1.0490		10'-0	0.130613	-0.440	
						11'-9½		1.538	
686	15'-1½			1½		14'-11	120	13.904	
							0.001339	-0.538	
689	16'-4½		5.21	1.6100		14'-11		0.020	
								13.387	Total(Pt) Route 9
1066	16'-6	5.6	27.06	1½	(See Notes)	37'-9	120	13.540	***** Route 10 ***** Sprinkler,, Flow (q) from Route 13 E(3'-6), PO(8'-0)
721	10'-11½		47.66	1.6100		11'-6	0.080544	2.385	
						49'-3		3.966	
721	10'-11½		102.85	4		14'-0	120	19.891	Flow (q) from Route 19
							0.005915	0.000	
674	10'-11½		150.51	4.2600		14'-0		0.083	
								19.974	Total(Pt) Route 10
1050	9'-0	5.6	20.80	1	(See Notes)	4'-2½	120	13.792	***** Route 11 ***** Sprinkler, 2E(2'-0), PO(5'-0)
722	11'-11½		20.80	1.0490		9'-0	0.139887	-1.283	
						13'-2½		1.850	
								14.359	Total(Pt) Route 11
1041	13'-10½	5.6	20.80	1	(See Notes)	0'-9	120	13.793	***** Route 12 ***** Sprinkler, PO(5'-0)
683	13'-10½		20.80	1.0490		5'-0	0.139901		
						5'-9		0.807	
								14.601	Total(Pt) Route 12
1071	9'-0	5.6	20.86	1	(See Notes)	10'-0	120	13.879	***** Route 13 ***** Sprinkler, 2E(2'-0), PO(5'-0)
774	17'-1½		20.86	1.0490		9'-0	0.140706	-3.515	
						19'-0		2.674	
774	17'-1½		6.19	1½		7'-9½	120	13.038	Flow (q) from Route 14
							0.028255	0.281	
1066	16'-6		27.06	1.6100		7'-9½		0.221	
								13.540	Total(Pt) Route 13
1062	14'-10	5.6	20.92	1½	(See Notes)	33'-5½	120	13.961	***** Route 14 ***** Sprinkler, 2E(3'-6)
774	17'-1½		6.19	1.6100		7'-0	0.001847	-0.997	
						40'-5½		0.075	
								13.038	Total(Pt) Route 14

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
1062	14'-10	5.6	20.92	1½	(See Notes)	8'-0½	120	13.961	***** Route 15 ***** Sprinkler
1061	14'-2		14.73	1.6100			0.009175	0.289	
						8'-0½		0.074	
1061	14'-2	5.6	21.19	1½	(See Notes)	6'-11½	120	14.324	Sprinkler
1060	13'-7		35.92	1.6100			0.047741	0.251	
						6'-11½		0.333	
1060	13'-7	5.6	21.62	1½	(See Notes)	2'-9½	120	14.908	Sprinkler, E(3'-6), PO(8'-0)
711	11'-4		57.55	1.6100			0.114143	0.984	
						14'-3½		1.630	
711	11'-4			4		8'-4	120	17.522	
690	11'-4		43.45	4.2600			0.000594		
						8'-4		0.005	
								17.527	Total(Pt) Route 15
1027	16'-0½	5.6	21.24	1	(See Notes)	2'-0½	120	14.391	***** Route 16 ***** Sprinkler, PO(5'-0)
637	16'-0½		21.24	1.0490		5'-0	0.145499	0.000	
						7'-0½		1.022	
637	16'-0½		7.87	1½	(See Notes)	65'-4	120	15.414	Flow (q) from Route 17 3E(3'-6), PO(8'-0)
605	10'-11½		29.11	1.6100			0.032358	2.190	
						83'-10		2.713	
								20.316	Total(Pt) Route 16
1029	15'-1½	5.6	22.09	1½	(See Notes)	9'-5½	120	15.560	***** Route 17 ***** Sprinkler, E(3'-6)
619	15'-8		19.90	1.6100		3'-6	0.016001	-0.220	
						12'-11½		0.207	
619	15'-8			1½	(See Notes)	4'-7½	120	15.548	T(6'-6)
637	16'-0½		7.87	1.6100		6'-6	0.002877	-0.166	
						11'-1½		0.032	
								15.414	Total(Pt) Route 17
1029	15'-1½	5.6	22.09	1½	(See Notes)	15'-9½	120	15.560	***** Route 18 ***** Sprinkler
1028	13'-10		2.19	1.6100			0.000271	0.568	
						15'-9½		0.004	
1028	13'-10	5.6	22.49	1½	(See Notes)	5'-9	120	16.133	Sprinkler, E(3'-6), PO(8'-0)
632	11'-3½		24.69	1.6100		11'-6	0.023848	1.091	
						17'-3		0.412	

Pipe Information

Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes
						Fitting (Foot)		Elev(Pe)	Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)	Pf Friction Loss Per Unit (psi)	Friction(Pf)	
								17.636	Total(Pt) Route 18
1068	8'-10	5.6	22.11	1	(See Notes)	1'-0	100	15.591	 Route 19 Sprinkler
815	9'-10		22.11	1.0490			0.219538	-0.434	
						1'-0		0.220	
815	9'-10			1	(See Notes)	2'-7½	120	15.377	2E(2'-0), PO(5'-0)
817	10'-11½		22.11	1.0490		9'-0	0.156684	-0.497	
						11'-7½		1.821	
817	10'-11½		22.18	1¼	(See Notes)	0'-8	120	16.701	Flow (q) from Route 20 PO(6'-0)
832	10'-11½		44.30	1.3800		6'-0	0.149008		
						6'-8		0.996	
832	10'-11½		14.10	2½		10'-4	120	17.697	Flow (q) from Route 28
834	10'-11½		58.39	2.6350			0.010646		
						10'-4		0.110	
834	10'-11½		44.46	2½	(See Notes)	52'-0	120	17.807	Flow (q) from Route 21 PO(16'-5½)
763	10'-11½		102.85	2.6350		16'-5½	0.030340		
						68'-5½		2.077	
763	10'-11½			4		2'-1½	120	19.885	
721	10'-11½		102.85	4.2600			0.002924	0.000	
						2'-1½		0.006	
								19.891	Total(Pt) Route 19
1056	8'-10	5.6	22.18	1	(See Notes)	1'-0	100	15.693	 Route 20 Sprinkler
770	9'-10		22.18	1.0490			0.220869	-0.434	
						1'-0		0.221	
770	9'-10			1	(See Notes)	2'-6½	120	15.480	3E(2'-0)
773	10'-11½		22.18	1.0490		6'-0	0.157634	-0.497	
						8'-6½		1.350	
773	10'-11½			1¼		8'-10½	120	16.333	
817	10'-11½		22.18	1.3800			0.041459		
						8'-10½		0.368	
								16.701	Total(Pt) Route 20
1069	8'-10	5.6	22.19	1	(See Notes)	1'-0	100	15.704	 Route 21 Sprinkler
819	9'-10		22.19	1.0490			0.221010	-0.434	
						1'-0		0.221	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
819	9'-10			1	(See Notes)	2'-5½	120	15.491	2E(2'-0), PO(5'-0)
821	10'-11½		22.19	1.0490		9'-0	0.157735	-0.497	
						11'-5½		1.810	
821	10'-11½		22.27	1¼	(See Notes)	0'-8	120	16.804	Flow (q) from Route 22 PO(6'-0)
						6'-0	0.150019		
834	10'-11½		44.46	1.3800		6'-8		1.003	
								17.807	Total(Pt) Route 21
1059	8'-10	5.6	22.27	1	(See Notes)	1'-0	100	15.809	••••• Route 22 ••••• Sprinkler
							0.222384	-0.434	
778	9'-10		22.27	1.0490		1'-0		0.222	
778	9'-10			1	(See Notes)	2'-5	120	15.598	3E(2'-0)
						6'-0	0.158715	-0.497	
782	10'-11½		22.27	1.0490		8'-5		1.333	
782	10'-11½			1¼		8'-10½	120	16.434	
							0.041743		
821	10'-11½		22.27	1.3800		8'-10½		0.370	
								16.804	Total(Pt) Route 22
541	12'-10		13.98 + 11.67	1½	(See Notes)	58'-8	120	17.792	••••• Route 23 ••••• Flow (q) from Route 27 and 29 6E(3'-6), PO(8'-0)
						29'-0	0.025589	0.813	
505	10'-11½		25.64	1.6100		87'-8		2.243	
								20.848	Total(Pt) Route 23
107	13'-9		14.28	1½	(See Notes)	39'-6½	120	17.506	••••• Route 24 ••••• Flow (q) from Route 36 4E(3'-6), T(6'-6)
						20'-6	0.008661	0.478	
160	12'-8		14.28	1.6100		60'-0½		0.520	
160	12'-8		20.75	1½	(See Notes)	62'-4	120	18.505	Flow (q) from Route 32 5E(3'-6), PO(8'-0)
						25'-6	0.045562	0.723	
182	10'-11½		35.03	1.6100		87'-10		4.002	
								23.230	Total(Pt) Route 24
290	12'-8		33.17	1½	(See Notes)	42'-2½	120	20.875	••••• Route 25 ••••• Flow (q) from Route 37 3E(3'-6), PO(8'-0)
						18'-6	0.014514	0.723	
248	10'-11½		18.87	1.6100		60'-8½		0.881	
								22.479	Total(Pt) Route 25

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
290	12'-8		33.17	1½	(See Notes)	39'-2½	120	20.875	***** Route 26 ***** Flow (q) from Route 37 3E(3'-6), PO(8'-0)
306	10'-11½		14.29	1.6100		18'-6	0.008675	0.723	
						57'-8½		0.500	
								22.098	Total(Pt) Route 26
531	11'-4			1½	(See Notes)	45'-11½	120	17.899	***** Route 27 ***** PO(8'-0) 2E(3'-6), T(6'-6)
541	12'-10		13.98	1.6100		21'-6	0.008326	-0.668	
						67'-5½		0.562	
								17.792	Total(Pt) Route 27
711	11'-4		43.45	4	(See Notes)	4'-3½	120	17.522	***** Route 28 ***** Flow (q) from Route 15 PO(26'-4)
727	11'-4		14.10	4.2600		26'-4	0.000074		
						30'-7½		0.002	
727	11'-4			2½	(See Notes)	26'-9½	120	17.524	2LtE(5'-6)
832	10'-11½		14.10	2.6350		11'-0	0.000768	0.145	
						37'-9		0.029	
								17.697	Total(Pt) Route 28
577	11'-3½		21.75	4		9'-9½	120	17.802	***** Route 29 ***** Flow (q) from Route 4
531	11'-4		198.71	4.2600			0.009889	-0.000	
						9'-9½		0.097	
531	11'-4		13.98	4		11'-8½	120	17.899	Flow (q) from Route 27
476	11'-4		184.73	4.2600			0.008641		
						11'-8½		0.101	
476	11'-4			1½	(See Notes)	58'-9½	120	18.000	PO(8'-0) 3E(3'-6)
541	12'-10		11.67	1.6100		18'-6	0.005961	-0.668	
						77'-3½		0.461	
								17.792	Total(Pt) Route 29
619	15'-8		7.87	1½	(See Notes)	33'-0	120	15.548	***** Route 30 ***** Flow (q) from Route 17 2E(3'-6), PO(8'-0)
595	11'-3½		12.03	1.6100		15'-0	0.006306	1.880	
						48'-0		0.303	
								17.730	Total(Pt) Route 30
381	12'-8		148.29	4		10'-0	120	17.762	***** Route 31 ***** Flow (q) from Route 33
346	12'-8		123.62	4.2600			0.004110		
						10'-0		0.041	

Pipe Information										
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.	
						Fitting (Foot)		Elev(Pe)		
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)	Pf Friction Loss Per Unit (psi)	Friction(Pf)		
346	12'-8			4		11'-6	120	17.803		
277	12'-8		97.96	4.2600			0.002672			0.031
						11'-6				
277	12'-8			4		12'-8	120	17.834		
199	12'-8		64.79	4.2600			0.001244			0.016
						12'-8				
199	12'-8			1½	(See Notes)	83'-10½	120	17.850	PO(8'-0) 7E(3'-6), PO(8'-0)	
						40'-6	0.033713	0.723		
227	10'-11½		29.77	1.6100		124'-4½		4.193		
								22.765	Total(Pt) Route 31	
199	12'-8		29.77	4		3'-11½	120	17.850	 Route 32 Flow (q) from Route 31	
181	12'-8		35.03	4.2600			0.000399			0.002
						3'-11½				
181	12'-8			4	(See Notes)	7'-4	120	17.851	PO(26'-4)	
147	12'-8		20.75	4.2600		26'-4	0.000151			0.005
						33'-8				
147	12'-8			1½	(See Notes)	23'-6	120	17.856	4E(3'-6)	
						14'-0	0.017294			0.648
160	12'-8		20.75	1.6100		37'-6				
								18.505	Total(Pt) Route 32	
476	11'-4		11.67	4		6'-9½	120	18.000	 Route 33 Flow (q) from Route 29	
422	11'-4		173.07	4.2600			0.007658			0.052
						6'-9½				
422	11'-4			4	(See Notes)	26'-5	120	18.052	3LtE(7'-11)	
						23'-8½	0.005754	-0.578		0.288
381	12'-8		148.29	4.2600		50'-1½				
								17.762	Total(Pt) Route 33	
422	11'-4			1½	(See Notes)	91'-6½	120	18.052	 Route 34 PO(8'-0) 4E(3'-6), PO(8'-0)	
						30'-0	0.024010	0.145		2.919
450	10'-11½		24.78	1.6100		121'-6½				
								21.115	Total(Pt) Route 34	

Pipe Information									
Node 1	Elev 1 (Foot)	K-Factor	Flow added this step (q)	Nominal ID	Fittings & Devices	Length (Foot)	C Factor	Total(Pt)	Notes Fitting/Device (Equivalent Length) Fixed Pressure Losses, when applicable, are added directly to (Pf) and shown as a negative value.
						Fitting (Foot)	Pf Friction Loss Per Unit (psi)	Elev(Pe)	
Node 2	Elev 2 (Foot)		Total Flow (Q)	Actual ID	Equiv. Length (Foot)	Total (Foot)		Friction(Pf)	
731	11'-11½		11.30	1½		8'-8	120	11.494	 Route 35 Flow (q) from Route 2
728	11'-11½		6.86	1.6100		8'-8	0.002234		
							0.019		
								11.513	Total(Pt) Route 35
181	12'-8			2	(See Notes)	28'-7	120	17.851	 Route 36 PO(10'-0) E(5'-0), T(8'-6)
107	13'-9		14.28	2.0670		23'-6	0.002565	-0.478	
						52'-1		0.134	
								17.506	Total(Pt) Route 36
277	12'-8			1½	(See Notes)	45'-4	120	17.834	 Route 37 PO(8'-0) 4E(3'-6), T(6'-6)
290	12'-8		33.17	1.6100		28'-6	0.041179		
						73'-10		3.041	
								20.875	Total(Pt) Route 37
346	12'-8			1½	(See Notes)	85'-8½	120	17.803	 Route 38 PO(8'-0) 8E(3'-6), PO(8'-0)
328	10'-11½		25.66	1.6100		44'-0	0.025621	0.723	
						129'-8½		3.323	
								21.849	Total(Pt) Route 38
381	12'-8		148.29	1½	(See Notes)	83'-10½	120	17.762	 Route 39 PO(8'-0), Flow (q) from Route 33 7E(3'-6), PO(8'-0)
405	10'-11½		24.67	1.6100		40'-6	0.023815	0.723	
						124'-4½		2.962	
								21.447	Total(Pt) Route 39
686	15'-1½		5.21	1½		15'-4½	120	13.904	 Route 40 Flow (q) from Route 9
683	13'-10½		14.83	1.6100			0.009295	0.553	
						15'-4½		0.143	
								14.601	Total(Pt) Route 40

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	150
Multiplying Factor	0.713	1.16	1.33	1.51

Fittings Legend

ALV	Alarm Valve	AngV	Angle Valve	b	Bushing
BaIV	Ball Valve	BFP	Backflow Preventer	BV	Butterfly Valve
C	Cross Flow Turn 90°	cplg	Coupling	Cr	Cross Run
CV	Check Valve	DelV	Deluge Valve	DPV	Dry Pipe Valve
E	90° Elbow	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 Relief Valve
PRV	Pressure Reducing Valve	red	Reducer/Adapter	S	Supply
sCV	Swing Check Valve	SFx	Seismic Flex	Spr	Sprinkler
St	Strainer	T	Tee Flow Turn 90°	Tr	Tee Run
U	Union	WirF	Wirsbo	WMV	Water Meter Valve
Z	Cap				