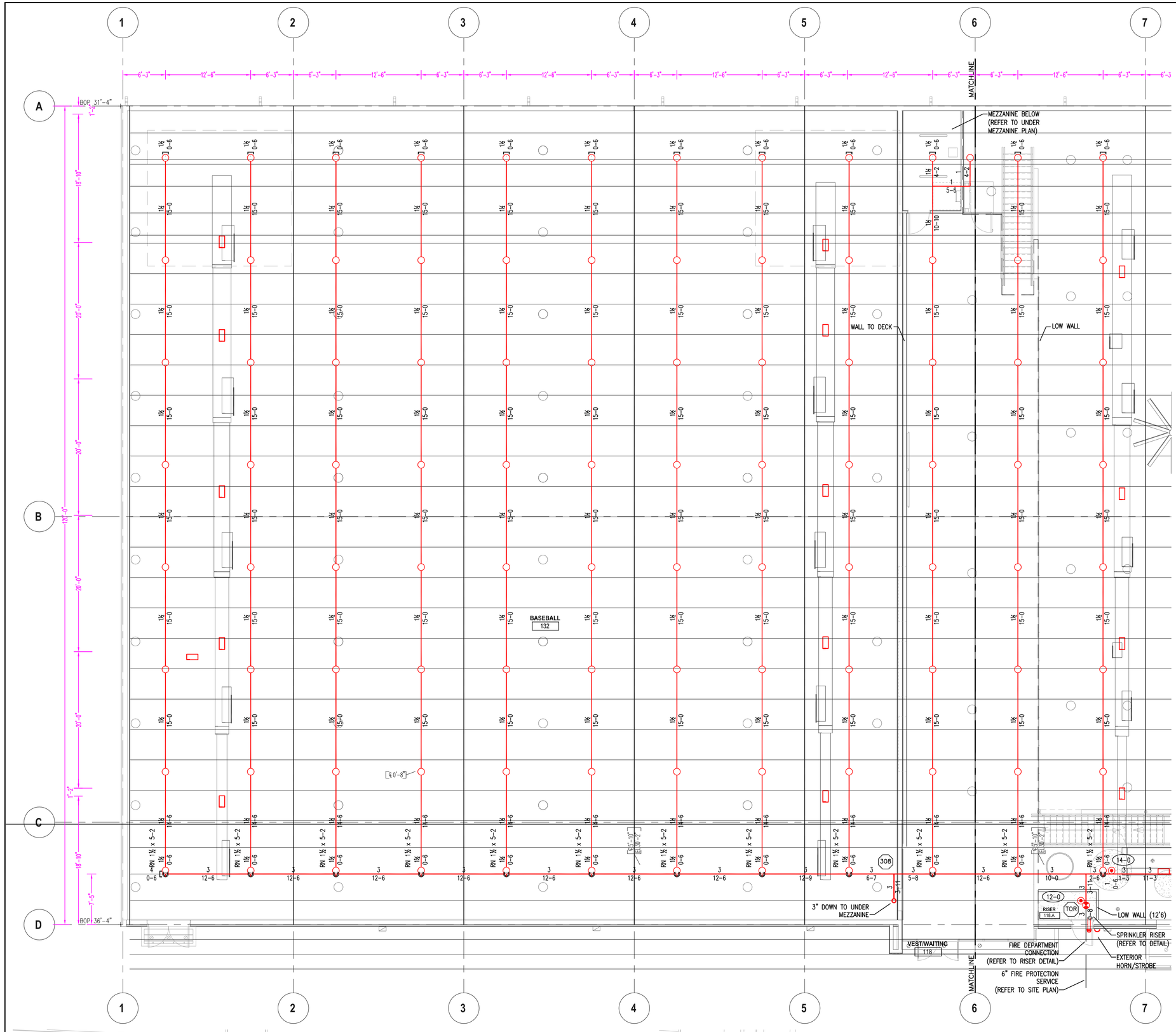
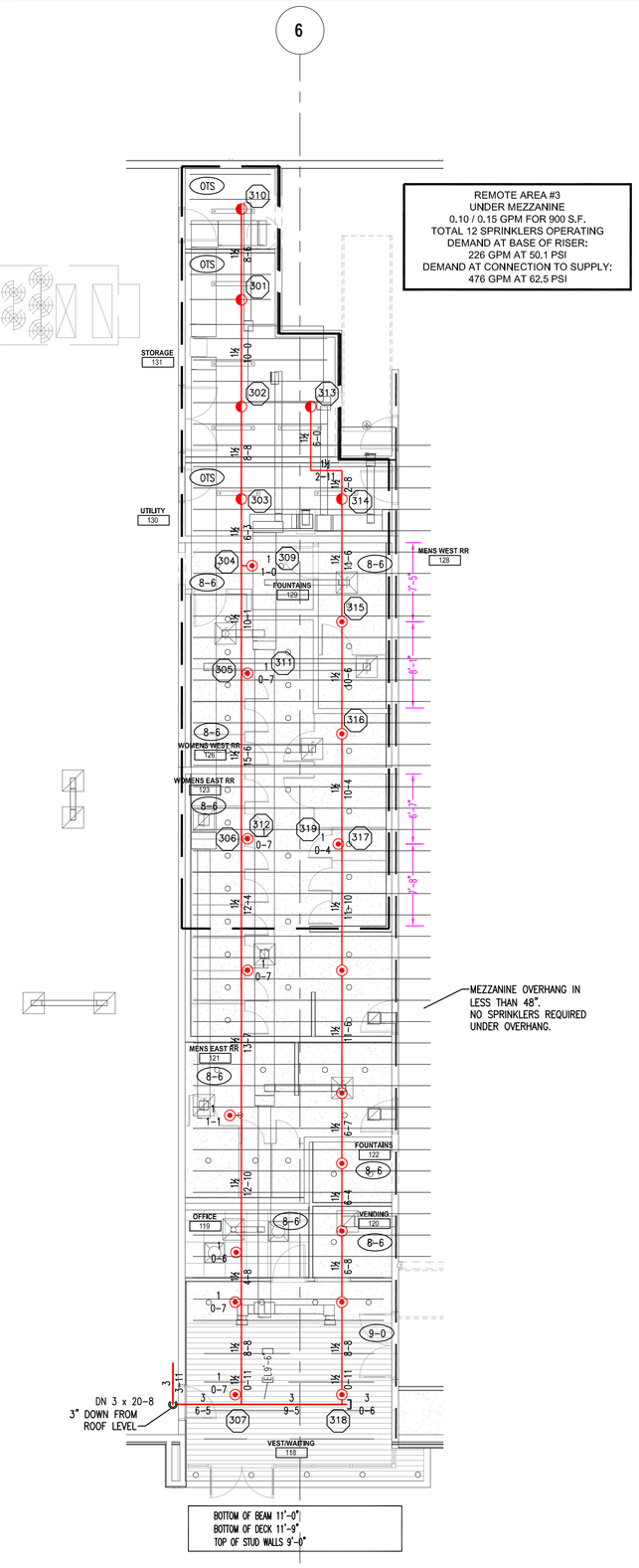


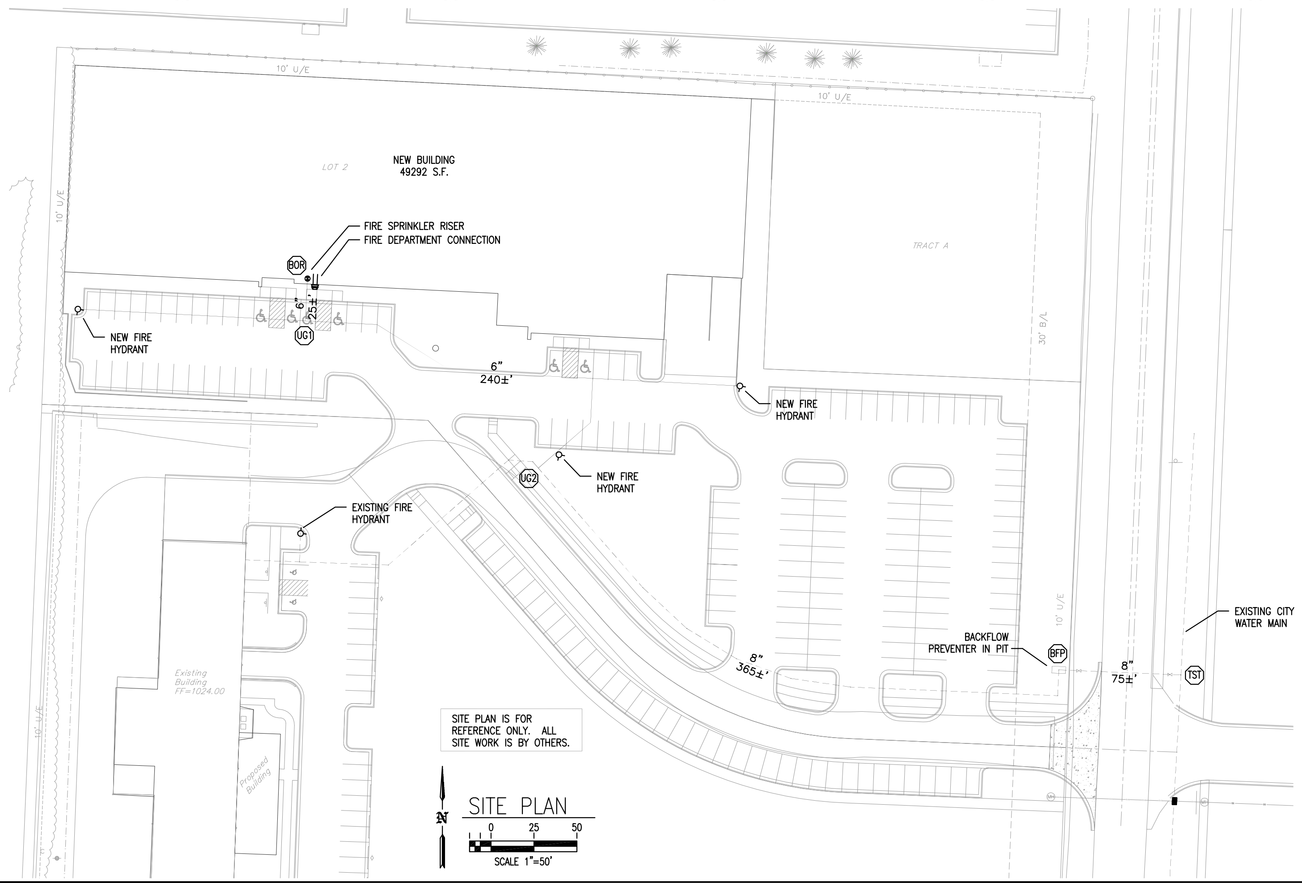
FIRE SPRINKLER PLAN (WEST)

SCALE 1/8"=1'-0"



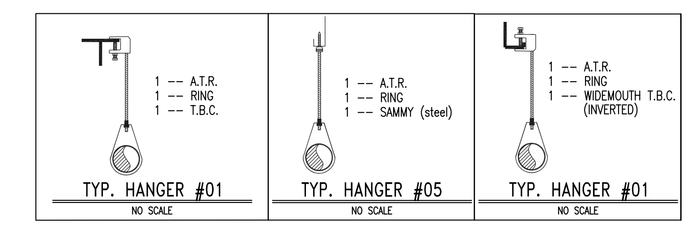
FIRE SPRINKLER PLAN (UNDER MEZZANINE)

SCALE 1/8"=1'-0"



SITE PLAN

SCALE 1"=50'



HANGER SPACING TABLE

PIPE SIZE (NOMINAL, INCHES)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
STEEL PIPE (EXCEPT THREADED LIGHTWALL)	N/A	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
STEEL PIPE (THREADED LIGHTWALL)	N/A	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	N/A	N/A	N/A
COPPER	8'-0"	8'-0"	10'-0"	10'-0"	12'-0"	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"
CPVC	5'-6"	6'-0"	6'-6"	7'-0"	8'-0"	9'-0"	10'-0"	N/A	N/A	N/A

SYMBOLS LEGEND

SYMBOL	DESCRIPTION
(f)	HYDRAULIC REFERENCE POINT
(9'-9")	CEILING HEIGHT
BOP	BOTTOM OF PURLIN ELEVATION ABOVE FINISHED FLOOR
[C ?'-?"]	CENTERLINE OF PIPE DOWN FROM BOTTOM OF PURLIN
[CL ?'-?"]	CENTERLINE OF PIPE A.F.F.
RN	RISER NIPPLE
DN	PIPE DOWN
	SPRINKLER RISER
	APPROVED TYPE HANGER ON PIPE

SPRINKLER LEGEND

SYMBOL	SPRINKLER TYPE	SIN #	FINISH	TEMP.	THREAD	K-FACTOR	ROOF/CEILING	UNDER MEZZ	TOTAL
	RELIABLE MODEL F1FR56 Q.R. RECESSED PENDENT	RA1414	WHITE	155°	1/2"	5.6	39	17	56
	RELIABLE MODEL F1FR56 Q.R. UPRIGHT	RA1425	BRASS	200°	1/2"	5.6	262	–	262
	RELIABLE MODEL F1FR56 Q.R. UPRIGHT (ON SPRIG-UP)	RA1425	BRASS	200°	1/2"	5.6	8	6	14
	RELIABLE MODEL F3QR56 Q.R. DRY PENDENT	RA5714	CHROME	200°	1/2"	5.6	2	–	2
							311	23	334

SCOPE OF WORK

THIS IS A NEW BUILDING.

THE BUILDING WILL BE PROTECTED BY A NEW WET SPRINKLER SYSTEM THROUGHOUT.

THE ENTIRE BUILDING WILL BE DESIGNED PER NFPA 13.

GENERAL NOTES

ALL WET SYSTEM MAIN PIPING TO BE SCHEDULE 10 WITH ROLLED GROOVED END, GROOVED FITTINGS AND WELDED OUTLETS.

ALL WET SYSTEM WELDED BRANCHLINE PIPING TO BE SCHEDULE 10 WITH ROLLED GROOVED END, GROOVED FITTINGS AND WELDED OUTLETS.

ALL WET SYSTEM THREADED PIPE TO BE SCHEDULE 40 (BLACK) WITH CAST IRON THREADED FITTINGS.

ALL PIPE AND FITTINGS TO BE LISTED FOR USE IN FIRE SPRINKLER SYSTEMS AND TO CONFORM WITH REQUIREMENTS OF NFPA 13.

VALVES ON CONNECTIONS TO WATER SUPPLIES, SECTIONAL CONTROL VALVES AND OTHER VALVES IN SUPPLY PIPES TO SPRINKLERS SHALL BE SUPERVISED OPEN BY AN APPROVED METHOD (BY OTHERS).

IT IS THE OWNERS RESPONSIBILITY TO PROVIDE ADEQUATE HEAT TO KEEP THE SPRINKLER SYSTEM FROM FREEZING.

ALL SECTIONS OF TRAPPED PIPING SHALL HAVE AUXILIARY DRAINS WHERE REQUIRED.

ALL ELECTRICAL WIRING OF ALARM BELLS, FLOW SWITCHES AND TAMPER SWITCHES (IF REQUIRED) TO BE DONE BY OTHERS.

THE SPRINKLER SYSTEM TO BE INSTALLED IN ACCORDANCE WITH NFPA 13, 2016 EDITION.

THE SPRINKLER SYSTEM IS TO BE TESTED IN ACCORDANCE WITH THE LATEST APPLICABLE NFPA STANDARDS.

SPRINKLERS WILL BE NOT BE CENTERED IN CEILING TILES.

HANGERS TO BE SPACED TO MEET NFPA REQUIREMENTS.

SEISMIC BRACING IS NOT REQUIRED.

CONSTRUCTION

ROOF: METAL DECK ON STEEL PURLINS AND BEAMS

DESIGN CRITERIA

GYNASIUM, CONCOURSE, VESTIBULE, OFFICES, RESTROOMS, CORRIDORS, ETC:
PER NFPA 13, LIGHT HAZARD
0.10 GPM/S.F. FOR 1500 S.F
(REDUCED AREA FOR USE OF Q.R SPRINKLERS WHERE APPLICABLE)
MAXIMUM 225 S.F. SPRINKLER SPACING
100 GPM HOSE ALLOWANCE

COOKING, STORAGE ROOMS, MECHANICAL ROOMS:
PER NFPA 13, ORDINARY HAZARD GROUP 1
0.15 GPM/S.F. FOR 1500 S.F.
(REDUCED AREA FOR USE OF Q.R SPRINKLERS WHERE APPLICABLE)
MAXIMUM 130 S.F. SPRINKLER SPACING
250 GPM HOSE ALLOWANCE

FLOW TEST

FLOW TEST:

STATIC: 82 PSI

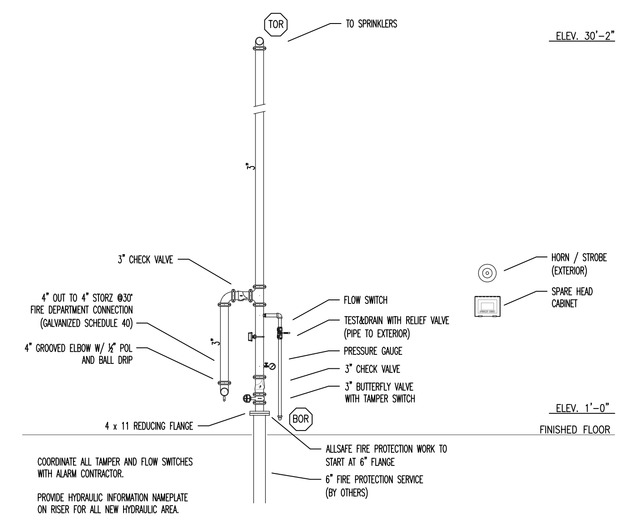
RESIDUAL: 56 PSI WITH 1980 GPM FLOWING

LOCATION: Hydrant: #047-057 FH
SE KINGSPOINT DRIVE – SOUTH OF HAMBLEN ROAD

ELEVATION: APPROXIMATELY 10' BELOW FINISHED FLOOR

DATE: 07-23-2024

INFORMATION FROM: LEE'S SUMMIT WATER UTILITIES



SPRINKLER RISER

SCALE 1/4"=1'-0"

REVISIONS:		
#	DATE	DESCRIPTION

Fire Sprinkler Solutions, Inc.
1704 NE 82nd Terrace, Kansas City, MO 64118
phone: 816-260-4897 fax: 816-468-5633

ALL SAFE FIRE PROTECTION LLC
6603D Royal Street
Pleasant Valley, MO. 64068
P:816-492-7202
F:816-492-7310
info@allsafefirepro.com

TM FIELDHOUSE
1550 SE Hamben Road
Lee's Summit, MO 64081

STATE OF MISSOURI
PAUL C. LINK
NUMBER
EXPIRES:
2/31/2025
REGISTERED PROFESSIONAL ENGINEER

CONTRACT NO.

CONTRACT WITH
OWNER

DRAWN BY:
PCL

CHECKED BY:
VC

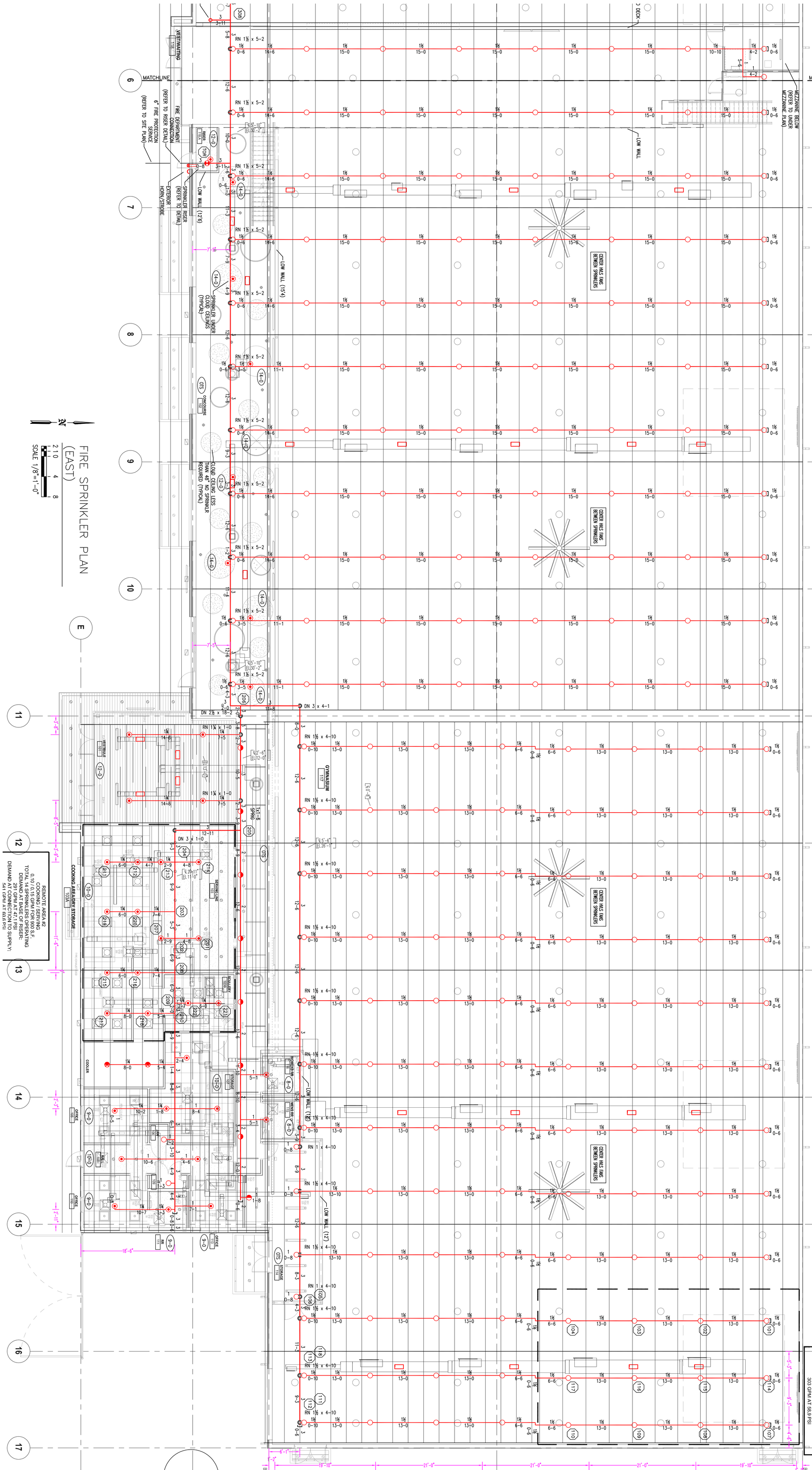
PLOTTED FOR:
APPROVAL

DOCUMENT DATE:
08-27-24

SHEET NUMBER:
1 OF 2

FIRE SPRINKLER PLAN (EAST)

SCALE 1/8"=1'-0"



TYP. HANGER #01

NO SCALE

1 -- A.T.R.
1 -- RING
1 -- T.B.C.

TYP. HANGER #05

NO SCALE

1 -- A.T.R.
1 -- RING
1 -- SAMMY (steel)

TYP. HANGER #01

NO SCALE

1 -- A.T.R.
RING
WIDEMOUTH T.B.C.
(INVERTED)

HANGER SPACING TABLE

PIPE SIZE (NOMINAL INCHES)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
STEEL PIPE (EXCEPT THREADED LIGHTWALL)	N/A	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"
STEEL PIPE (THREADED LIGHTWALL)	N/A	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	N/A	N/A	N/A
COPPER	8'-0"	8'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"
CPVC	5'-6"	6'-0"	6'-6"	7'-0"	8'-0"	9'-0"	10'-0"	N/A	N/A	N/A

SYMBOLS LEGEND

SYMBOL	DESCRIPTION
(1)	HYDRAULIC REFERENCE POINT
(9'-7")	CEILING HEIGHT
BOP	BOTTOM OF PURLIN ELEVATION ABOVE FINISHED FLOOR
C ?'-?"	CENTERLINE OF PIPE DOWN FROM BOTTOM OF PURLIN
EL ?'-?"	CENTERLINE OF PIPE A.F.F.
	RISER NIPPLE
RN	PIPE DOWN
DN	SPRINKLER RISER
	APPROVED TYPE HANGER ON PIPE

SPRINKLER LEGEND

SYMBOL	SPRINKLER TYPE	SIN #	FINISH	TEMP.	THREAD	K-FACTOR	ROOF/CEILING	UNDER MEZZ	TOTAL
●	RELIABLE MODEL F1FR56 Q.R. RECESSED PENDENT	RA1414	WHITE	155°	1/2"	5.6	39	17	56
○	RELIABLE MODEL F1FR56 Q.R. UPRIGHT	RA1425	BRASS	200°	1/2"	5.6	262	–	262
◐	RELIABLE MODEL F1FR56 Q.R. UPRIGHT (ON SPRIG-UP)	RA1425	BRASS	200°	1/2"	5.6	8	6	14
◉	RELIABLE MODEL F3QR56 Q.R. DRY PENDENT	RA5714	CHROME	200°	1/2"	5.6	2	–	2
							311	23	334

TM FIELDHOUSE
1550 SE Hamben Road
Lee's Summit, MO 64081

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Pleasant Valley, MO. 64068
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F:816-492-7310
info@allsafefirepro.com

Fire Sprinkler Solutions, Inc.
1704 NE 82nd Terrace, Kansas City, MO 64118
phone: 816-260-4897 fax: 816-468-5633

REVISIONS:

#	DATE	DESCRIPTION

CONTRACT NO.

CONTRACT WITH
OWNER

DRAWN BY:
PCL

CHECKED BY:
VC

PLOTTED FOR:
APPROVAL

DOCUMENT DATE:
08-27-24

SHEET NUMBER:
2 OF 2

Hydraulic Calculations

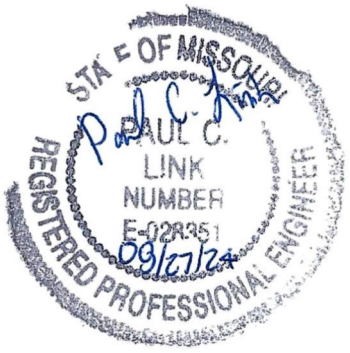
TM FIELDHOUSE

1550 SE Hamblen Road
Lee's Summit, MO 64081
Date: 08-27-24

Calculated by: Paul C. Link, P.E.

Area Summary:

Area	Description	GPM	PSI	Demand Location
Area #1	Gynnasium	303	58.9	at conn to city main
Area #2	Cooking / Serving	541	60.6	at conn to city main
Area #3	Under Mezzanine	476	62.5	at conn to city main



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phone: 816-260-4897 * fax: 816-468-5633

On 2024-07-24 8:06 am, Brandon Williams wrote:

Good Morning Vincent,

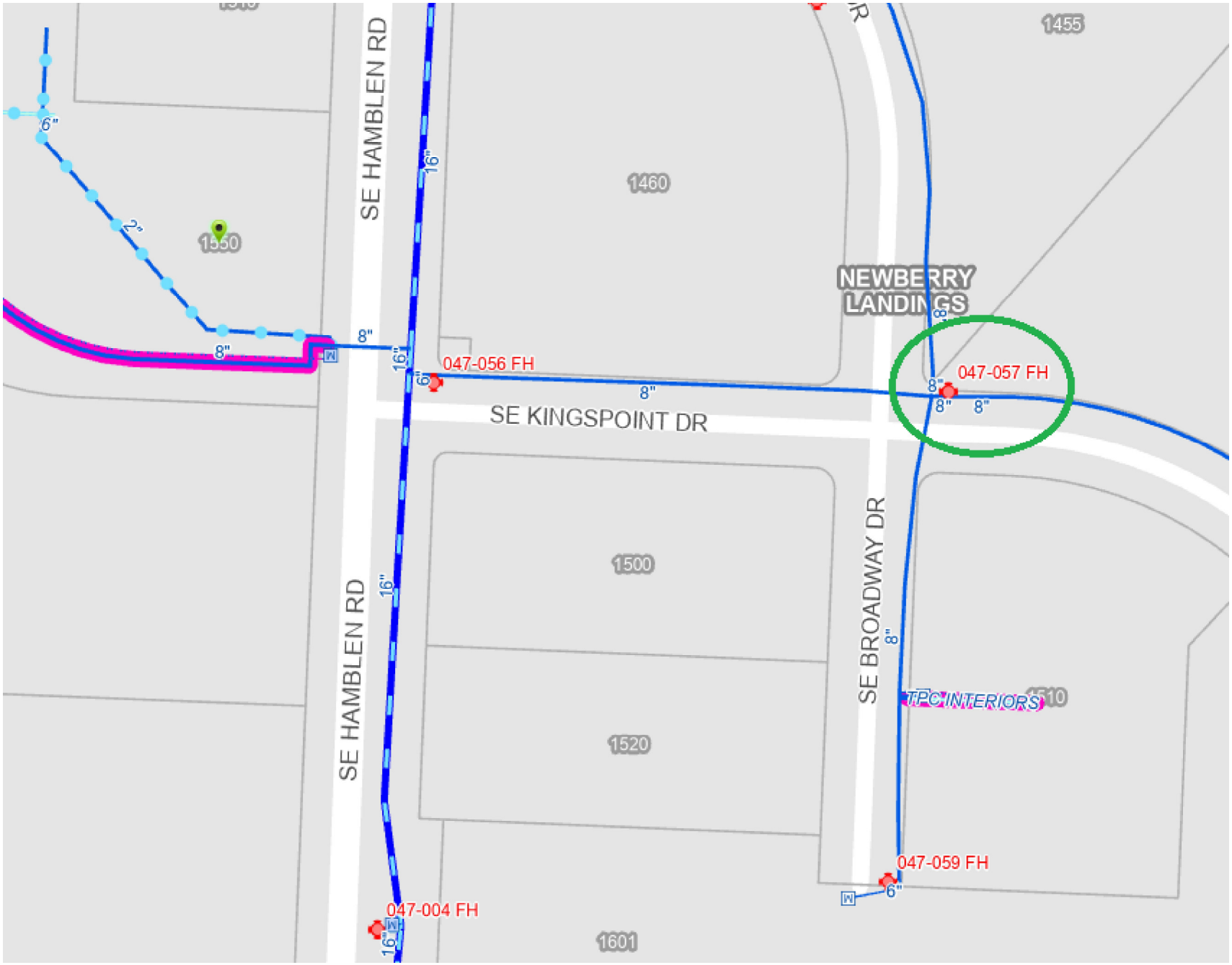
We performed the hydrant flow test for 1550 SE Hamblen Rd yesterday, 7/23/2024 at 11:00am.

Static Pressure: 82 PSI
Flow: 1980 GPM
Residual Pressure: 56 PSI

Yours Truly,

Brandon Williams | Operations Technician
1200 SE Hamblen Road | Lee's Summit, MO 64081
816.969.1970 |lswater.net | Brandon.Williams@cityofls.net

WATER UTILITIES
LEE'S SUMMIT


SE HAMBLEN RD
SE KINGSPOINT DR
SE BROADWAY DR
NEWBERRY LANDINGS
1455
1460
1500
1520
1550
1601
047-056 FH
047-057 FH
047-059 FH
047-004 FH
TPC INTERIORS
6"
8"
16"

Hydraulic Design Information Sheet

Name - TM Fieldhouse area #1 Date - 08-27-24
Location - gymnasium
Building - TM Fieldhouse System No. - wet
Contractor - Allsafe Fire Protection Contract No. -
Calculated By - Paul C. Link, P.E. Drawing No. - 2 of 2
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 31'4
Occupancy - athletic club

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other

Specific Ruling	Made By	Date

Area of Sprinkler Operation	- 1500	System Type	Sprinkler/Nozzle
Density	- 0.10	(X) Wet	Make Reliable
Area Per Sprinkler	- varies	( ) Dry	Model F1FR56
Elevation at Highest Outlet	- 30'11	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.200
Hose Allowance - Outside	- 100		

Note

Calculation Summary: Flow Required - 303 Press Required - 58.9; C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 07-23-2024			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 82	@ Press	-	
Residual Press	- 56	Elev.	-	Well
Flow	- 1980			Proof Flow
Elevation	- -10'			

Location - hydrant #047-057 - SE Kingspoint Drive - south of Hamblen Road

Source of Information - Lee's Summit Water Utilities

COMMODITY STORAGE

Commodity		Class	Location
Storage Ht.		Area	Aisle W.
Storage Method:	Solid Piled %	Palletized %	Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

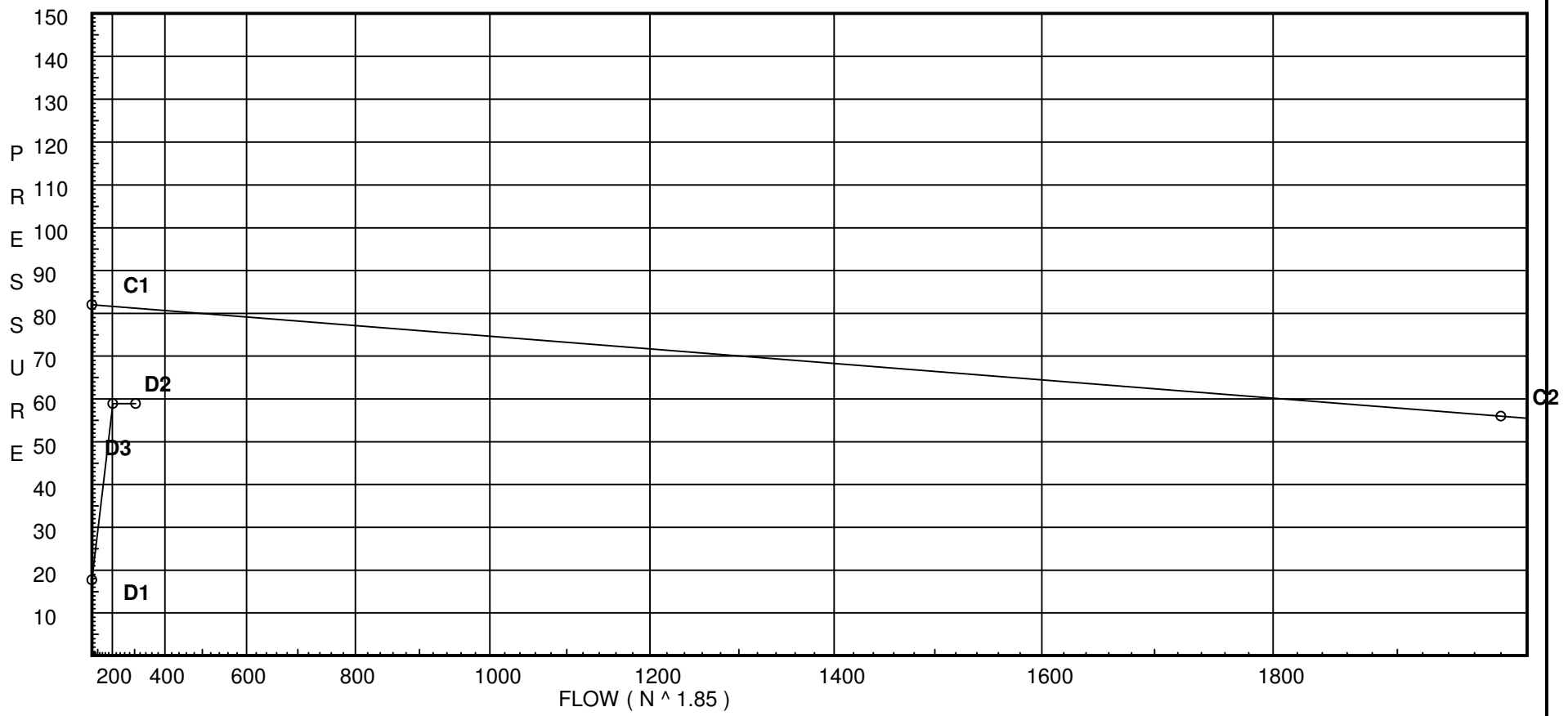
Water Supply Curve C

Fire Sprinkler Solutions, Inc.
TM Fieldhouse - Area #1

Date 08-27-24

City Water Supply:
- C1 - Static Pressure : 82
- C2 - Residual Pressure: 56
- C2 - Residual Flow : 1980

Demand:
- D1 - Elevation : 17.722
- D2 - System Flow : 203.283
- D2 - System Pressure : 58.927
- Hose (Demand) : 100
- D3 - System Demand : 303.283
- Safety Margin : 22.265



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TST	82.0	56	1980.0	81.192	303.28	58.927

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
101	30.92	5.6	8.69	16.51	
102	30.92	5.6	8.81	16.62	
103	30.92	5.6	9.24	17.03	
104	30.92	5.6	10.17	17.86	
105	30.92		18.12		
106	26.08		22.69		
206	30.17		26.8		
TOR	30.17		32.58		
BOR	0.0		48.12		
UG1	0.0		48.3	100.0	
UG2	0.0		49.23		
BFP	0.0		54.5		
TST	-10.0		58.93		
107	30.92	5.6	8.58	16.41	
108	30.92	5.6	8.7	16.52	
109	30.92	5.6	9.13	16.92	
110	30.92	5.6	10.05	17.75	
111	30.92		17.9		
112	26.08		22.44		
113	26.08		22.49		
114	30.92	5.6	8.6	16.43	
115	30.92	5.6	8.72	16.54	
116	30.92	5.6	9.15	16.94	
117	30.92	5.6	10.07	17.77	
118	30.92		17.94		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
101	30.920	5.60	16.51	1.5		0.0	13.000	120	8.692	
to						0.0	0.0		0.0	
102	30.920		16.51	1.682		0.0	13.000	0.0092	0.119	Vel = 2.38
102	30.920	5.60	16.62	1.5		0.0	13.000	120	8.811	
to						0.0	0.0		0.0	
103	30.920		33.13	1.682		0.0	13.000	0.0332	0.432	Vel = 4.78
103	30.920	5.60	17.03	1.5		0.0	13.000	120	9.243	
to						0.0	0.0		0.0	
104	30.920		50.16	1.682		0.0	13.000	0.0715	0.930	Vel = 7.24
104	30.920	5.60	17.86	1.5	2E	9.9	53.330	120	10.173	
to						0.0	9.900		0.0	
105	30.920		68.02	1.682		0.0	63.230	0.1257	7.946	Vel = 9.82
105	30.920		0.0	1.5	E	4.95	4.830	120	18.119	
to					T	9.9	14.850		2.096	
106	26.080		68.02	1.682		0.0	19.680	0.1257	2.474	Vel = 9.82
106	26.080		135.26	3	2E	18.815	136.250	120	22.689	
to						0.0	18.815		-1.771	
206	30.170		203.28	3.26		0.0	155.065	0.0380	5.885	Vel = 7.81
206	30.170		0.0	3	2E	18.815	113.330	120	26.803	
to					T	20.159	38.974		0.0	
TOR	30.170		203.28	3.26		0.0	152.304	0.0380	5.780	Vel = 7.81
TOR	30.170		0.0	3	B	13.44	30.170	120	32.583	
to					S	21.503	34.943		13.067	
BOR	0		203.28	3.26		0.0	65.113	0.0379	2.471	Vel = 7.81
BOR	0		0.0	6	E	20.084	75.000	140	48.121	
to					T	43.037	63.121		0.0	
UG1	0		203.28	6.16		0.0	138.121	0.0013	0.178	Vel = 2.19
UG1	0	H100	100.00	6	E	20.084	240.000	140	48.299	
to					2T	86.075	106.159		0.0	
UG2	0		303.28	6.16		0.0	346.159	0.0027	0.934	Vel = 3.26
UG2	0		0.0	8	2E	56.936	365.000	140	49.233	
to						0.0	56.936		5.000	* * Fixed Loss = 5
BFP	0		303.28	8.27		0.0	421.936	0.0006	0.271	Vel = 1.81
BFP	0		0.0	8	2G	12.652	75.000	140	54.504	
to					T	55.354	68.006		4.331	
TST	-10		303.28	8.27		0.0	143.006	0.0006	0.092	Vel = 1.81
			0.0							
TST			303.28						58.927	K Factor = 39.51
107	30.920	5.60	16.41	1.5		0.0	13.000	120	8.583	
to						0.0	0.0		0.0	
108	30.920		16.41	1.682		0.0	13.000	0.0091	0.118	Vel = 2.37
108	30.920	5.60	16.51	1.5		0.0	13.000	120	8.701	
to						0.0	0.0		0.0	
109	30.920		32.92	1.682		0.0	13.000	0.0328	0.426	Vel = 4.75
109	30.920	5.60	16.92	1.5		0.0	13.000	120	9.127	
to						0.0	0.0		0.0	
110	30.920		49.84	1.682		0.0	13.000	0.0707	0.919	Vel = 7.20
110	30.920	5.60	17.75	1.5	2E	9.9	53.330	120	10.046	
to						0.0	9.900		0.0	
111	30.920		67.59	1.682		0.0	63.230	0.1242	7.855	Vel = 9.76

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
111	30.920		0.0	1.5	E	4.95	4.830	120	17.901	
to					T	9.9	14.850		2.096	
112	26.080		67.59	1.682		0.0	19.680	0.1242	2.445	Vel = 9.76
112	26.080		0.0	3		0.0	9.250	120	22.442	
to						0.0	0.0		0.0	
113	26.080		67.59	3.26		0.0	9.250	0.0050	0.046	Vel = 2.60
113	26.080		67.67	3		0.0	11.250	120	22.488	
to						0.0	0.0		0.0	
106	26.080		135.26	3.26		0.0	11.250	0.0179	0.201	Vel = 5.20
			0.0							
106			135.26						22.689	K Factor = 28.40
114	30.920	5.60	16.43	1.5		0.0	13.000	120	8.603	
to						0.0	0.0		0.0	
115	30.920		16.43	1.682		0.0	13.000	0.0091	0.118	Vel = 2.37
115	30.920	5.60	16.53	1.5		0.0	13.000	120	8.721	
to						0.0	0.0		0.0	
116	30.920		32.96	1.682		0.0	13.000	0.0329	0.428	Vel = 4.76
116	30.920	5.60	16.94	1.5		0.0	13.000	120	9.149	
to						0.0	0.0		0.0	
117	30.920		49.9	1.682		0.0	13.000	0.0708	0.921	Vel = 7.21
117	30.920	5.60	17.77	1.5	2E	9.9	53.330	120	10.070	
to						0.0	9.900		0.0	
118	30.920		67.67	1.682		0.0	63.230	0.1245	7.871	Vel = 9.77
118	30.920		0.0	1.5	E	4.95	4.830	120	17.941	
to					T	9.9	14.850		2.096	
113	26.080		67.67	1.682		0.0	19.680	0.1245	2.451	Vel = 9.77
			0.0							
113			67.67						22.488	K Factor = 14.27

Hydraulic Design Information Sheet

Name - TM Fieldhouse area #2 Date - 08-27-24
Location - cooking / serving
Building - TM Fieldhouse System No. - wet
Contractor - Allsafe Fire Protection Contract No. -
Calculated By - Paul C. Link, P.E. Drawing No. - 2 of 2
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - varies
Occupancy - athletic club

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

Area of Sprinkler Operation	- 900	System Type	Sprinkler/Nozzle
Density	- 0.10/0.15	(X) Wet	Make Reliable
Area Per Sprinkler	- varies	( ) Dry	Model F1FR56
Elevation at Highest Outlet	- 10'	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 100		

Note cooking area is calculated at 0.15 gpm/sf - serviing is 0.10 gpm/sf

Calculation Summary: Flow Required - 541 Press Required - 60.6
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 07-23-2024			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 82	@ Press	-	
Residual Press	- 56	Elev.	-	Well
Flow	- 1980			Proof Flow
Elevation	- -10'			

Location - hydrant #047-057 - SE Kingspoint Drive - south of Hamblen Road

Source of Information - Lee's Summit Water Utilities

STORAGE

Commodity		Class	Location
Storage Ht.		Area	Aisle W.
Storage Method:	Solid Piled %	Palletized %	Rack

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

Flue Spacing Clearance:Storage to Ceiling
Longitudinal Transverse

Horizontal Barriers Provided:

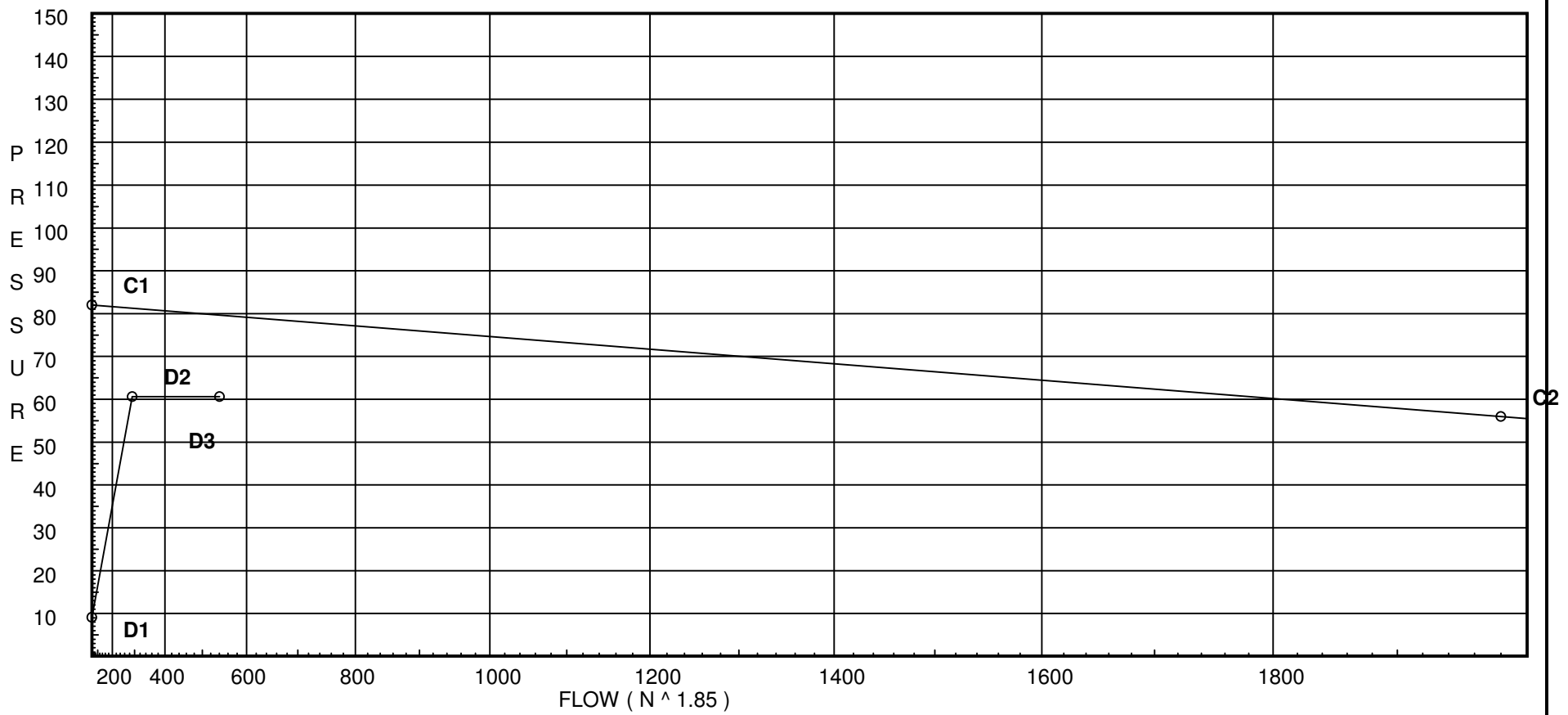
Water Supply Curve C

Fire Sprinkler Solutions, Inc.
TM Fieldhouse - Area #2

Date 08-27-24

City Water Supply:
- C1 - Static Pressure : 82
- C2 - Residual Pressure: 56
- C2 - Residual Flow : 1980

Demand:
- D1 - Elevation : 9.095
- D2 - System Flow : 290.94
- D2 - System Pressure : 60.590
- Hose (Demand) : 250
- D3 - System Demand : 540.94
- Safety Margin : 19.053



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TST	82.0	56	1980.0	79.642	540.94	60.59

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
DP07	10.0	5.6	7.17	15.0	
EQ07	11.0		7.2		
DP06	10.0	5.6	14.08	21.01	
EQ06	11.0		13.79		
DP05	10.0	5.6	7.17	15.0	
EQ05	11.0		6.82		
DP01	10.0	5.6	9.51	17.27	
EQ01	11.0		9.38		
DP02	10.0	5.6	9.51	17.27	
EQ02	11.0		9.68		
DP04	10.0	5.6	7.2	15.02	
EQ04	11.0		7.22		
DP03	10.0	5.6	7.2	15.02	
EQ03	11.0		6.99		
201	11.0	5.66	13.79	21.01	K=K @ EQ06
202	11.0		15.45		
203	11.0		15.59		
204	11.0		15.98		
205	12.0		19.9		
206	30.17		18.05		
TOR	30.17		29.27		
BOR	0.0		47.13		
UG1	0.0		47.48	250.0	
UG2	0.0		50.2		
BFP	0.0		55.99		
TST	-10.0		60.59		
207	11.0	5.74	14.0	21.49	K=K @ EQ05
208	11.0		15.35		
209	11.0		15.3		
210	11.0		15.3		
211	11.0	5.64	12.84	20.21	K=K @ EQ01
212	11.0	5.55	13.05	20.06	K=K @ EQ02
213	11.0	5.59	13.63	20.63	K=K @ EQ07
214	11.0	5.66	14.26	21.37	K=K @ EQ06
215	11.0	5.64	13.4	20.64	K=K @ EQ01
216	11.0	5.55	13.61	20.49	K=K @ EQ02
217	11.0	5.64	13.52	20.74	K=K @ EQ01
218	11.0	5.55	13.81	20.63	K=K @ EQ02
219	11.0	5.64	13.61	20.81	K=K @ EQ01
220	11.0	5.55	13.83	20.65	K=K @ EQ02
221	11.0	5.68	13.9	21.18	K=K @ EQ03
222	11.0	5.59	14.13	21.01	K=K @ EQ04

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
DP07	10	5.60	15.00	1	T	5.0	1.000	120	7.175	
to						0.0	5.000		-0.433	
EQ07	11		15.0	1.049		0.0	6.000	0.0763	0.458	Vel = 5.57
			0.0							
EQ07			15.00						7.200	K Factor = 5.59
DP06	10	5.60	21.01	1		0.0	1.000	120	14.076	
to						0.0	0.0		-0.433	
EQ06	11		21.01	1.049		0.0	1.000	0.1420	0.142	Vel = 7.80
			0.0							
EQ06			21.01						13.785	K Factor = 5.66
DP05	10	5.60	15.00	1		0.0	1.000	120	7.175	
to						0.0	0.0		-0.433	
EQ05	11		15.0	1.049		0.0	1.000	0.0760	0.076	Vel = 5.57
			0.0							
EQ05			15.00						6.818	K Factor = 5.74
DP01	10	5.60	17.27	1	E	2.0	1.000	120	9.513	
to						0.0	2.000		-0.433	
EQ01	11		17.27	1.049		0.0	3.000	0.0993	0.298	Vel = 6.41
			0.0							
EQ01			17.27						9.378	K Factor = 5.64
DP02	10	5.60	17.27	1	T	5.0	1.000	120	9.513	
to						0.0	5.000		-0.433	
EQ02	11		17.27	1.049		0.0	6.000	0.0993	0.596	Vel = 6.41
			0.0							
EQ02			17.27						9.676	K Factor = 5.55
DP04	10	5.60	15.02	1	T	5.0	1.000	120	7.196	
to						0.0	5.000		-0.433	
EQ04	11		15.02	1.049		0.0	6.000	0.0767	0.460	Vel = 5.58
			0.0							
EQ04			15.02						7.223	K Factor = 5.59
DP03	10	5.60	15.02	1	E	2.0	1.000	120	7.196	
to						0.0	2.000		-0.433	
EQ03	11		15.02	1.049		0.0	3.000	0.0767	0.230	Vel = 5.58
			0.0							
EQ03			15.02						6.993	K Factor = 5.68
201	11	5.66	21.01	1	E	2.0	4.670	120	13.785	K = K @ EQ06
to					T	5.0	7.000		0.0	
202	11		21.01	1.049		0.0	11.670	0.1426	1.664	Vel = 7.80
202	11		146.19	3		0.0	5.250	120	15.449	
to						0.0	0.0		0.0	
203	11		167.2	3.26		0.0	5.250	0.0265	0.139	Vel = 6.43
203	11		41.46	3		0.0	9.750	120	15.588	
to						0.0	0.0		0.0	
204	11		208.66	3.26		0.0	9.750	0.0398	0.388	Vel = 8.02
204	11		82.28	3	2E	18.815	20.170	120	15.976	
to					T	20.159	38.974		-0.433	
205	12		290.94	3.26		0.0	59.144	0.0737	4.357	Vel = 11.18

Final Calculations - Hazen-Williams

Fire Sprinkler Solutions, Inc.
TM Fieldhouse - Area #2

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
205	12		0.0	3	2E	18.815	42.670	120	19.900	
to					T	20.159	38.974		-7.869	
206	30.170		290.94	3.26		0.0	81.644	0.0737	6.015	Vel = 11.18
206	30.170		0.0	3	2E	18.815	113.330	120	18.046	
to					T	20.159	38.974		0.0	
TOR	30.170		290.94	3.26		0.0	152.304	0.0737	11.221	Vel = 11.18
TOR	30.170		0.0	3	B	13.44	30.170	120	29.267	
to					S	21.503	34.943		13.067	
BOR	0		290.94	3.26		0.0	65.113	0.0737	4.797	Vel = 11.18
BOR	0		0.0	6	E	20.084	75.000	140	47.131	
to					T	43.037	63.121		0.0	
UG1	0		290.94	6.16		0.0	138.121	0.0025	0.345	Vel = 3.13
UG1	0	H250	250.00	6	E	20.084	240.000	140	47.476	
to					2T	86.075	106.159		0.0	
UG2	0		540.94	6.16		0.0	346.159	0.0079	2.724	Vel = 5.82
UG2	0		0.0	8	2E	56.936	365.000	140	50.200	
to						0.0	56.936		5.000	* * Fixed Loss = 5
BFP	0		540.94	8.27		0.0	421.936	0.0019	0.790	Vel = 3.23
BFP	0		0.0	8	2G	12.652	75.000	140	55.990	
to					T	55.354	68.006		4.331	
TST	-10		540.94	8.27		0.0	143.006	0.0019	0.269	Vel = 3.23
			0.0							
TST			540.94						60.590	K Factor = 69.49
207	11	5.74	21.49	1	E	2.0	2.750	120	13.999	K = K @ EQ05
to					T	5.0	7.000		0.0	
202	11		21.49	1.049		0.0	9.750	0.1487	1.450	Vel = 7.98
202	11		-146.19	3		0.0	6.750	120	15.449	
to						0.0	0.0		0.0	
208	11		-124.7	3.26		0.0	6.750	-0.0154	-0.104	Vel = 4.79
208	11		41.13	3		0.0	6.000	120	15.345	
to						0.0	0.0		0.0	
209	11		-83.57	3.26		0.0	6.000	-0.0073	-0.044	Vel = 3.21
209	11		42.20	3		0.0	2.000	120	15.301	
to						0.0	0.0		0.0	
210	11		-41.37	3.26		0.0	2.000	-0.0020	-0.004	Vel = 1.59
			0.0							
210			-41.37						15.297	K Factor = -10.58
211	11	5.64	20.21	1.25		0.0	6.000	120	12.844	K = K @ EQ01
to						0.0	0.0		0.0	
212	11		20.21	1.38		0.0	6.000	0.0348	0.209	Vel = 4.34
212	11	5.55	20.07	1.25		0.0	4.580	120	13.053	K = K @ EQ02
to						0.0	0.0		0.0	
213	11		40.28	1.38		0.0	4.580	0.1251	0.573	Vel = 8.64
213	11	5.59	20.63	1.25	T	6.0	2.750	120	13.626	K = K @ EQ07
to						0.0	6.000		0.0	
204	11		60.91	1.38		0.0	8.750	0.2686	2.350	Vel = 13.07
			0.0							
204			60.91						15.976	K Factor = 15.24

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
214	11	5.66	21.37	1	E	2.0	4.670	120	14.260	K = K @ EQ06
to					T	5.0	7.000		0.0	
204	11		21.37	1.049		0.0	11.670	0.1470	1.716	Vel = 7.93
			0.0							
204			21.37						15.976	K Factor = 5.35
215	11	5.64	20.64	1.25		0.0	6.000	120	13.396	K = K @ EQ01
to						0.0	0.0		0.0	
216	11		20.64	1.38		0.0	6.000	0.0362	0.217	Vel = 4.43
216	11	5.55	20.49	1.25	T	6.0	7.330	120	13.613	K = K @ EQ02
to						0.0	6.000		0.0	
208	11		41.13	1.38		0.0	13.330	0.1299	1.732	Vel = 8.82
			0.0							
208			41.13						15.345	K Factor = 10.50
217	11	5.64	20.74	1.25		0.0	8.000	120	13.517	K = K @ EQ01
to						0.0	0.0		0.0	
218	11		20.74	1.38		0.0	8.000	0.0365	0.292	Vel = 4.45
218	11	5.55	20.63	1.25	T	6.0	5.330	120	13.809	K = K @ EQ02
to						0.0	6.000		0.0	
210	11		41.37	1.38		0.0	11.330	0.1313	1.488	Vel = 8.87
			0.0							
210			41.37						15.297	K Factor = 10.58
219	11	5.64	20.81	1.25		0.0	6.000	120	13.609	K = K @ EQ01
to						0.0	0.0		0.0	
220	11		20.81	1.38		0.0	6.000	0.0368	0.221	Vel = 4.46
220	11	5.55	20.65	1.25	T	6.0	7.330	120	13.830	K = K @ EQ02
to						0.0	6.000		0.0	
203	11		41.46	1.38		0.0	13.330	0.1319	1.758	Vel = 8.89
			0.0							
203			41.46						15.588	K Factor = 10.50
221	11	5.68	21.18	1.25		0.0	6.000	120	13.904	K = K @ EQ03
to						0.0	0.0		0.0	
222	11		21.18	1.38		0.0	6.000	0.0380	0.228	Vel = 4.54
222	11	5.59	21.02	1.25	T	6.0	2.580	120	14.132	K = K @ EQ04
to						0.0	6.000		0.0	
209	11		42.2	1.38		0.0	8.580	0.1362	1.169	Vel = 9.05
			0.0							
209			42.20						15.301	K Factor = 10.79

Hydraulic Design Information Sheet

Name - TM Fieldhouse area #3 Date - 08-27-24
Location - under mezzanine area
Building - TM Fieldhouse System No. - wet
Contractor - Allsafe Fire Protection Contract No. -
Calculated By - Paul C. Link, P.E. Drawing No. - 1 of 2
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 8'6
Occupancy - athletic club

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling Made By Date

Area of Sprinkler Operation	- 900	System Type	Sprinkler/Nozzle
Density	- 0.10/0.15	(X) Wet	Make Reliable
Area Per Sprinkler	- varies	( ) Dry	Model F1FR56
Elevation at Highest Outlet	- 10'6	( ) Deluge	Size 1/2"
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
Hose Allowance - Outside	- 100		

Note sprinklers in storage room calculated at 0.15 gpm/sf

Calculation Summary: Flow Required - 476 Press Required - 62.5
C-Factor Used: 120 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:
Date of Test - 07-23-2024
Time of Test -
Static Press - 82
Residual Press - 56
Flow - 1980
Elevation - -10'

Pump Data:
Rated Cap.-
@ Press -
Elev. -

Tank or Reservoir:
Cap. -
Elev.-
Well
Proof Flow

Location - hydrant #047-057 - SE Kingspoint Drive - south of Hamblen Road

Source of Information - Lee's Summit Water Utilities

COMMODITY STORAGE

Commodity
Storage Ht.
Storage Method: Solid Piled % Palletized % Rack

Class
Area

Location
Aisle W.

( ) Single Row ( ) Conven. Pallet ( ) Auto. Storage ( ) Encap.
( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non
( ) Mult. Row ( ) Open Shelf

RACK STORAGE

Flue Spacing
Longitudinal
Transverse

Clearance:Storage to Ceiling

Horizontal Barriers Provided:

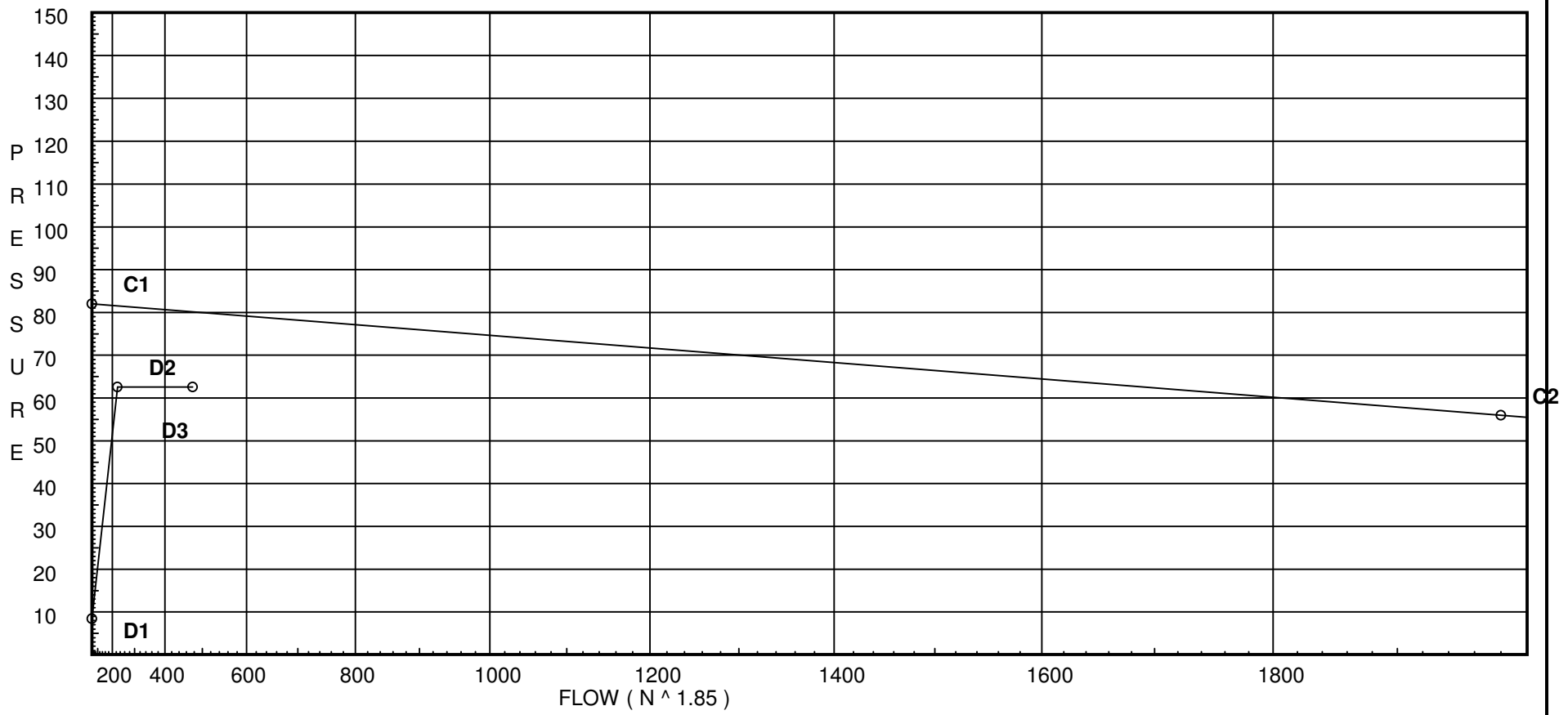
Water Supply Curve C

Fire Sprinkler Solutions, Inc.
TM Fieldhouse - Area #3

Date 08-27-24

City Water Supply:
- C1 - Static Pressure : 82
- C2 - Residual Pressure: 56
- C2 - Residual Flow : 1980

Demand:
- D1 - Elevation : 8.445
- D2 - System Flow : 226.284
- D2 - System Pressure : 62.605
- Hose (Demand) : 250
- D3 - System Demand : 476.284
- Safety Margin : 17.532



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
TST	82.0	56	1980.0	80.137	476.28	62.605

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
DP02	8.5	5.6	7.18	15.01	
EQ02	9.5		6.83		
DP01	8.5	5.6	7.18	15.01	
EQ01	9.5		7.21		
DP03	8.5	5.6	7.2	15.02	
EQ03	9.5		6.84		
SP04	10.5	5.6	7.2	15.02	
EQ04	9.5		7.86		
SP05	10.5	5.6	7.2	15.02	
EQ05	9.5		8.09		
301	9.5	5.28	8.09	15.02	K=K @ EQ05
302	9.5	5.28	8.37	15.28	K=K @ EQ05
303	9.5	5.28	8.89	15.75	K=K @ EQ05
304	9.5		9.53		
305	9.5		11.17		
306	9.5		14.91		
307	9.5		36.82		
308	30.17		31.1		
TOR	30.17		33.99		
BOR	0.0		50.07		
UG1	0.0		50.29	250.0	
UG2	0.0		52.44		
BFP	0.0		58.06		
TST	-10.0		62.61		
309	9.5	5.74	8.76	17.0	K=K @ EQ03
310	9.5	5.36	8.02	15.18	K=K @ EQ04
311	9.5	5.74	10.32	18.46	K=K @ EQ02
312	9.5	5.74	13.8	21.34	K=K @ EQ02
313	9.5	5.36	14.28	20.25	K=K @ EQ04
314	9.5	5.28	14.56	20.16	K=K @ EQ05
315	9.5	5.59	15.12	21.73	K=K @ EQ01
316	9.5	5.59	16.23	22.52	K=K @ EQ01
317	9.5		18.18		
318	9.5		36.71		
319	9.5	5.74	16.88	23.6	K=K @ EQ02

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
DP02	8.5	5.60	15.01	1		0.0	1.000	120	7.184	
to						0.0	0.0		-0.433	
EQ02	9.5		15.01	1.049		0.0	1.000	0.0770	0.077	Vel = 5.57
			0.0							
EQ02			15.01						6.828	K Factor = 5.74
DP01	8.5	5.60	15.01	1	T	5.0	1.000	120	7.184	
to						0.0	5.000		-0.433	
EQ01	9.5		15.01	1.049		0.0	6.000	0.0765	0.459	Vel = 5.57
			0.0							
EQ01			15.01						7.210	K Factor = 5.59
DP03	8.5	5.60	15.02	1		0.0	1.000	120	7.196	
to						0.0	0.0		-0.433	
EQ03	9.5		15.02	1.049		0.0	1.000	0.0770	0.077	Vel = 5.58
			0.0							
EQ03			15.02						6.840	K Factor = 5.74
SP04	10.5	5.60	15.02	1	E	2.0	1.000	120	7.196	
to						0.0	2.000		0.433	
EQ04	9.5		15.02	1.049		0.0	3.000	0.0767	0.230	Vel = 5.58
			0.0							
EQ04			15.02						7.859	K Factor = 5.36
SP05	10.5	5.60	15.02	1	T	5.0	1.000	120	7.196	
to						0.0	5.000		0.433	
EQ05	9.5		15.02	1.049		0.0	6.000	0.0767	0.460	Vel = 5.58
			0.0							
EQ05			15.02						8.089	K Factor = 5.28
301	9.500	5.28	30.20	1.5		0.0	10.000	120	8.089	K = K @ EQ05
to						0.0	0.0		0.0	
302	9.5		30.2	1.682		0.0	10.000	0.0280	0.280	Vel = 4.36
302	9.5	5.28	15.28	1.5		0.0	8.670	120	8.369	K = K @ EQ05
to						0.0	0.0		0.0	
303	9.5		45.48	1.682		0.0	8.670	0.0597	0.518	Vel = 6.57
303	9.5	5.28	15.75	1.5		0.0	6.250	120	8.887	K = K @ EQ05
to						0.0	0.0		0.0	
304	9.5		61.23	1.682		0.0	6.250	0.1034	0.646	Vel = 8.84
304	9.5		17.00	1.5		0.0	10.080	120	9.533	
to						0.0	0.0		0.0	
305	9.5		78.23	1.682		0.0	10.080	0.1628	1.641	Vel = 11.30
305	9.5		18.46	1.5		0.0	15.500	120	11.174	
to						0.0	0.0		0.0	
306	9.5		96.69	1.682		0.0	15.500	0.2409	3.734	Vel = 13.96
306	9.5		21.33	1.5	T	9.9	53.000	120	14.908	
to						0.0	9.900		0.0	
307	9.5		118.02	1.682		0.0	62.900	0.3483	21.910	Vel = 17.04
307	9.5		108.26	3	2E	18.815	31.000	120	36.818	
to					T	20.159	38.974		-8.952	
308	30.17		226.28	3.26		0.0	69.974	0.0463	3.239	Vel = 8.70
308	30.17		0.0	3	E	9.408	32.750	120	31.105	
to					T	20.159	29.567		0.0	
TOR	30.170		226.28	3.26		0.0	62.317	0.0463	2.884	Vel = 8.70

Node1 / to / Node2	Elev1 / Elev2	K / Fact	Qa / Qt	Nom / Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact / Pf/Ft	Pt / Pe / Pf	******* Notes ******
TOR	30.170		0.0	3	B	13.44	30.170	120	33.989	
to					S	21.503	34.943		13.067	
BOR	0		226.28	3.26		0.0	65.113	0.0463	3.013	Vel = 8.70
BOR	0		0.0	6	E	20.084	75.000	140	50.069	
to					T	43.037	63.121		0.0	
UG1	0		226.28	6.16		0.0	138.121	0.0016	0.217	Vel = 2.44
UG1	0	H250	250.00	6	E	20.084	240.000	140	50.286	
to					2T	86.075	106.159		0.0	
UG2	0		476.28	6.16		0.0	346.159	0.0062	2.152	Vel = 5.13
UG2	0		0.0	8	2E	56.936	365.000	140	52.438	
to						0.0	56.936		5.000	* * Fixed Loss = 5
BFP	0		476.28	8.27		0.0	421.936	0.0015	0.625	Vel = 2.84
BFP	0		0.0	8	2G	12.652	75.000	140	58.063	
to					T	55.354	68.006		4.331	
TST	-10		476.28	8.27		0.0	143.006	0.0015	0.211	Vel = 2.84
			0.0							
TST			476.28						62.605	K Factor = 60.19
309	9.5	5.74	17.00	1	E	2.0	1.000	120	8.762	K = K @ EQ03
to					T	5.0	7.000		0.0	
304	9.5		17.0	1.049		0.0	8.000	0.0964	0.771	Vel = 6.31
			0.0							
304			17.00						9.533	K Factor = 5.51
310	9.5	5.36	15.18	1.5		0.0	8.500	120	8.023	K = K @ EQ04
to						0.0	0.0		0.0	
301	9.500		15.18	1.682		0.0	8.500	0.0078	0.066	Vel = 2.19
			0.0							
301			15.18						8.089	K Factor = 5.34
311	9.5	5.74	18.46	1	E	2.0	0.580	120	10.324	K = K @ EQ02
to					T	5.0	7.000		0.0	
305	9.5		18.46	1.049		0.0	7.580	0.1121	0.850	Vel = 6.85
			0.0							
305			18.46						11.174	K Factor = 5.52
312	9.5	5.74	21.34	1	E	2.0	0.580	120	13.796	K = K @ EQ02
to					T	5.0	7.000		0.0	
306	9.5		21.34	1.049		0.0	7.580	0.1467	1.112	Vel = 7.92
			0.0							
306			21.34						14.908	K Factor = 5.53
313	9.5	5.36	20.25	1.5	2E	9.9	11.590	120	14.277	K = K @ EQ04
to						0.0	9.900		0.0	
314	9.5		20.25	1.682		0.0	21.490	0.0134	0.287	Vel = 2.92
314	9.5	5.28	20.16	1.5		0.0	11.500	120	14.564	K = K @ EQ05
to						0.0	0.0		0.0	
315	9.5		40.41	1.682		0.0	11.500	0.0480	0.552	Vel = 5.83
315	9.5	5.59	21.73	1.5		0.0	10.500	120	15.116	K = K @ EQ01
to						0.0	0.0		0.0	
316	9.500		62.14	1.682		0.0	10.500	0.1063	1.116	Vel = 8.97
316	9.500	5.59	22.52	1.5		0.0	10.330	120	16.232	K = K @ EQ01
to						0.0	0.0		0.0	
317	9.5		84.66	1.682		0.0	10.330	0.1884	1.946	Vel = 12.22

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqv.	Ln.	Pipe Ftng's Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
317	9.5		23.60	1.5	T	9.9	52.500	120	18.178	
to						0.0	9.900		0.0	
318	9.5		108.26	1.682		0.0	62.400	0.2969	18.529	Vel = 15.63
318	9.5		0.0	3		0.0	9.420	120	36.707	
to						0.0	0.0		0.0	
307	9.5		108.26	3.26		0.0	9.420	0.0118	0.111	Vel = 4.16
			0.0							
307			108.26						36.818	K Factor = 17.84
319	9.5	5.74	23.60	1	E	2.0	0.330	120	16.882	K = K @ EQ02
to					T	5.0	7.000		0.0	
317	9.5		23.6	1.049		0.0	7.330	0.1768	1.296	Vel = 8.76
			0.0							
317			23.60						18.178	K Factor = 5.54