Quick Start Site (NFPA)

Warehouse — Roof Remote — Hydraulic Calculation Report

US Imperial
2026/11/16
Job: Xxxx
Rev: X

PROJECT
Quick Start Site (NFPA)

JOB NUMBER
Xxxx

CLIENT
Test Site

REVISION
X

ADDRESS
1Main street.

PREPARED BY
MF

DRAWING NUMBER
Xxxx

CHECKED BY
Xx

Source duty — Node 100 **540 gpm @ 27.453 psi**

Node 140
BLDG 1 ICV 1
540 gpm @ 26.906 psi

Design Parameters

Report type	Warehouse — Roof Remote	**Design density**	0.055 gpm/ft²
Water supply	Pump Off	**Pump operating point**	—
Required at Node 100	540 gpm @ 27.453 psi	**Actual area of operation**	2576.880 ft² covered by 31 heads — required 2500.000 ft² ✓
Assumed max area (AMAO)	2500.000 ft²	**Min pressure area basis**	84.766 ft²
Min head pressure	7.252 psi	**Largest sprinkler area**	93.646 ft²
Total operating sprinklers	31	**Highest head elevation**	25.125 ft
Roof sprinklers operating	31	**Rack sprinklers operating**	0
Controlling sprinkler demand	Node 835: 15 gpm @ 7.252 psi		
Notes	NFPA13 OH2 Factory and HH Warehouse		
Steel pipework basis	Steel pipe fittings are identified from the pipe connections (FireSprinkPro steel take-off) and counted once, at the node where the flow enters each pipe. Equivalent lengths: threaded and welded elbows and tees from the EN 12845 equivalent-length table (C = 120, scaled to the pipe's C; welded 45° elbow taken as half the welded 90°); grooved elbows and tees by the app's grooved fitting factor × internal diameter; welded outlets (set-on, steam socket, grooved or flanged stub) as a standard tee on the branch; Victaulic 920/920N mechanical tees from Victaulic's published values (C = 120). Straight runs, couplings, welded reducers, caps and the outlet directly feeding a sprinkler are not counted. Valves use the valve equivalent-length table.		

Hydraulically Significant Nodes

Node	Flow downstream (gpm)	Required pressure (psi)
100	540	27.453
105	540	26.799
110	540	26.157
115	540	25.871
120	540	25.819
125	540	30.036
130	540	29.845
135	540	27.601
140	540	26.906
145	540	26.513
150	540	19.358
196	540	19.014
525	540	18.978
530	540	18.874
535	540	18.770
540	477	18.687
545	358	18.639
550	238	18.616
555	119	18.609
640	63	14.756
645	42	14.458
650	21	14.220
655	0	14.154
680	120	13.629
685	100	12.650
690	81	11.458
695	63	10.648
700	46	9.141
705	30	8.292
710	15	7.506
715	0	7.291
720	119	13.585

Node	Flow downstream (gpm)	Required pressure (psi)
725	100	12.609
730	81	11.421
735	63	10.613
740	46	9.111
745	30	8.264
750	15	7.481
755	0	7.267
760	119	13.564
765	100	12.589
770	81	11.403
775	63	10.597
780	46	9.097
785	30	8.251
790	15	7.469
795	0	7.255
800	119	13.558
805	100	12.584
810	81	11.398
815	63	10.592
820	46	9.093
825	30	8.248
830	15	7.466
835	0	7.252

Hydraulically Significant Sprinklers

Line	Node	Head	K	Area (ft²)	Flow out (gpm)	Pressure (psi)	Density (gpm/ft²)	Status
146	645	Roof	5.60	79.115	21	14.458	0.267	OK
147	650	Roof	5.60	84.766	21	14.220	0.247	OK
148	655	Roof	5.60	84.766	21	14.154	0.246	OK
154	685	Roof	5.60	79.115	20	12.650	0.249	OK
155	690	Roof	5.60	84.766	19	11.458	0.221	OK
156	695	Roof	5.60	84.766	18	10.648	0.214	OK

Line	Node	Head	K	Area (ft²)	Flow out (gpm)	Pressure (psi)	Density (gpm/ft²)	Status
157	700	Roof	5.60	84.766	17	9.141	0.198	OK
158	705	Roof	5.60	84.766	16	8.292	0.188	OK
159	710	Roof	5.60	84.766	15	7.506	0.179	OK
160	715	Roof	5.60	79.115	15	7.291	0.189	OK
162	725	Roof	5.60	79.115	20	12.609	0.249	OK
163	730	Roof	5.60	84.766	19	11.421	0.221	OK
164	735	Roof	5.60	84.766	18	10.613	0.213	OK
165	740	Roof	5.60	84.766	17	9.111	0.198	OK
166	745	Roof	5.60	84.766	16	8.264	0.188	OK
167	750	Roof	5.60	84.766	15	7.481	0.179	OK
168	755	Roof	5.60	79.115	15	7.267	0.189	OK
170	765	Roof	5.60	79.115	20	12.589	0.249	OK
171	770	Roof	5.60	84.766	19	11.403	0.221	OK
172	775	Roof	5.60	84.766	18	10.597	0.213	OK
173	780	Roof	5.60	84.766	17	9.097	0.197	OK
174	785	Roof	5.60	84.766	16	8.251	0.188	OK
175	790	Roof	5.60	84.766	15	7.469	0.179	OK
176	795	Roof	5.60	79.115	15	7.255	0.189	OK
178	805	Roof	5.60	79.115	20	12.584	0.249	OK
179	810	Roof	5.60	84.766	19	11.398	0.221	OK
180	815	Roof	5.60	84.766	18	10.592	0.213	OK
181	820	Roof	5.60	84.766	17	9.093	0.197	OK
182	825	Roof	5.60	84.766	16	8.248	0.188	OK
183	830	Roof	5.60	84.766	15	7.466	0.179	OK
184	835	Roof	5.60	79.115	15	7.252	0.189	OK

Hydraulically Significant Pipes

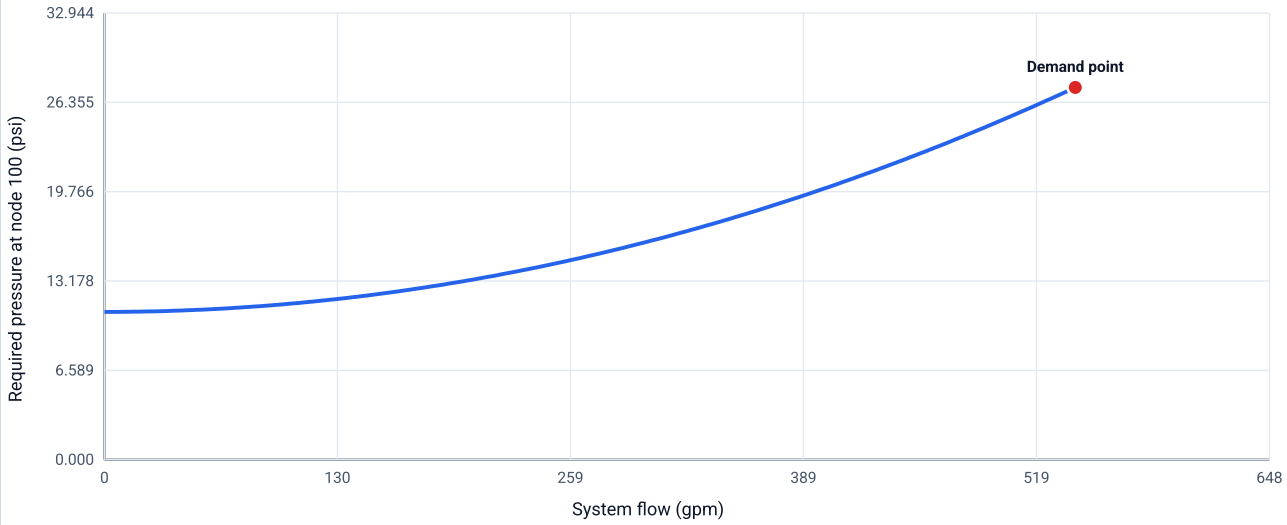
Pipe	Start	End	Dir	Plan ft	Slope	Actual ft	Equiv ft	Nom	ID mm	Friction psi	Static psi	Flow gpm	Press psi
1	100	105	U	1.312	0.00	1.312	34.121	200	210,10	0.085	0.569	540	26.799
	Large bore heavy steel 4.5mm wall — SANS719 — Dual plate check valve												
2	105	110	U	1.312	0.00	1.312	29.528	200	210,10	0.073	0.569	540	26.157
	Large bore heavy steel 4.5mm wall — SANS719 — Butterfly valve												

Pipe	Start	End	Dir	Plan ft	Slope	Actual ft	Equiv ft	Nom	ID mm	Friction psi	Static psi	Flow gpm	Press psi
3	110	115	U	0.656	0.00	0.656	0.656	200	210,10	0.002	0.285	540	25.871
	Large bore heavy steel 4.5mm wall — SANS719 — Grooved short elbow												
4	115	120	N	9.843	0.00	9.843	20.871	200	210,10	0.052	0.000	540	25.819
	Large bore heavy steel 4.5mm wall — SANS719 — Grooved short elbow												
5	120	125	D	9.843	0.00	9.843	20.871	200	210,10	0.052	-4.268	540	30.036
	Large bore heavy steel 4.5mm wall — SANS719 — Grooved short elbow												
6	125	130	N	65.617	0.00	65.617	76.646	200	210,10	0.190	0.000	540	29.845
	Large bore heavy steel 4.5mm wall — SANS719 — Grooved short elbow												
7	130	135	U	4.921	0.00	4.921	44.165	200	210,10	0.110	2.134	540	27.601
	Large bore heavy steel 4.5mm wall — SANS719 — Butterfly valve												
8	135	140	U	1.417	0.00	1.417	32.257	200	210,10	0.080	0.615	540	26.906
	Large bore heavy steel 4.5mm wall — SANS719 — Alarm / non-return valve (swinging)												
9	140	145	U	0.741	0.00	0.741	28.957	200	210,10	0.072	0.322	540	26.513
	Large bore heavy steel 4.5mm wall — SANS719 — Butterfly valve												
10	145	150	U	16.404	0.00	16.404	16.404	200	210,10	0.041	7.114	540	19.358
	Large bore heavy steel 4.5mm wall — SANS719 — Grooved tee												
11	150	196	W	3.281	0.00	3.281	31.496	150	155,00	0.344	0.000	540	19.014
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved coupling												
12	196	525	W	3.281	0.00	3.281	3.281	150	155,00	0.036	0.000	540	18.978
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
13	525	530	W	9.514	0.00	9.514	9.514	150	155,00	0.104	0.000	540	18.874
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
14	530	535	W	9.514	0.00	9.514	9.514	150	155,00	0.104	0.000	540	18.770
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
15	535	540	W	9.514	0.00	9.514	9.514	150	155,00	0.083	0.000	477	18.687
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
16	540	545	W	9.514	0.00	9.514	9.514	150	155,00	0.049	0.000	358	18.639
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
17	545	550	W	9.514	0.00	9.514	9.514	150	155,00	0.023	0.000	238	18.616
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
18	550	555	W	9.514	0.00	9.514	9.514	150	155,00	0.006	0.000	119	18.609
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Grooved tee												
19	535	640	U	8.202	0.00	8.202	12.028	50	53,00	0.457	3.557	63	14.756
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
20	640	645	N	2.625	0.00	2.625	7.841	50	53,00	0.298	0.000	63	14.458
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
21	645	650	N	9.843	0.00	9.843	13.320	50	53,00	0.238	0.000	42	14.220
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												

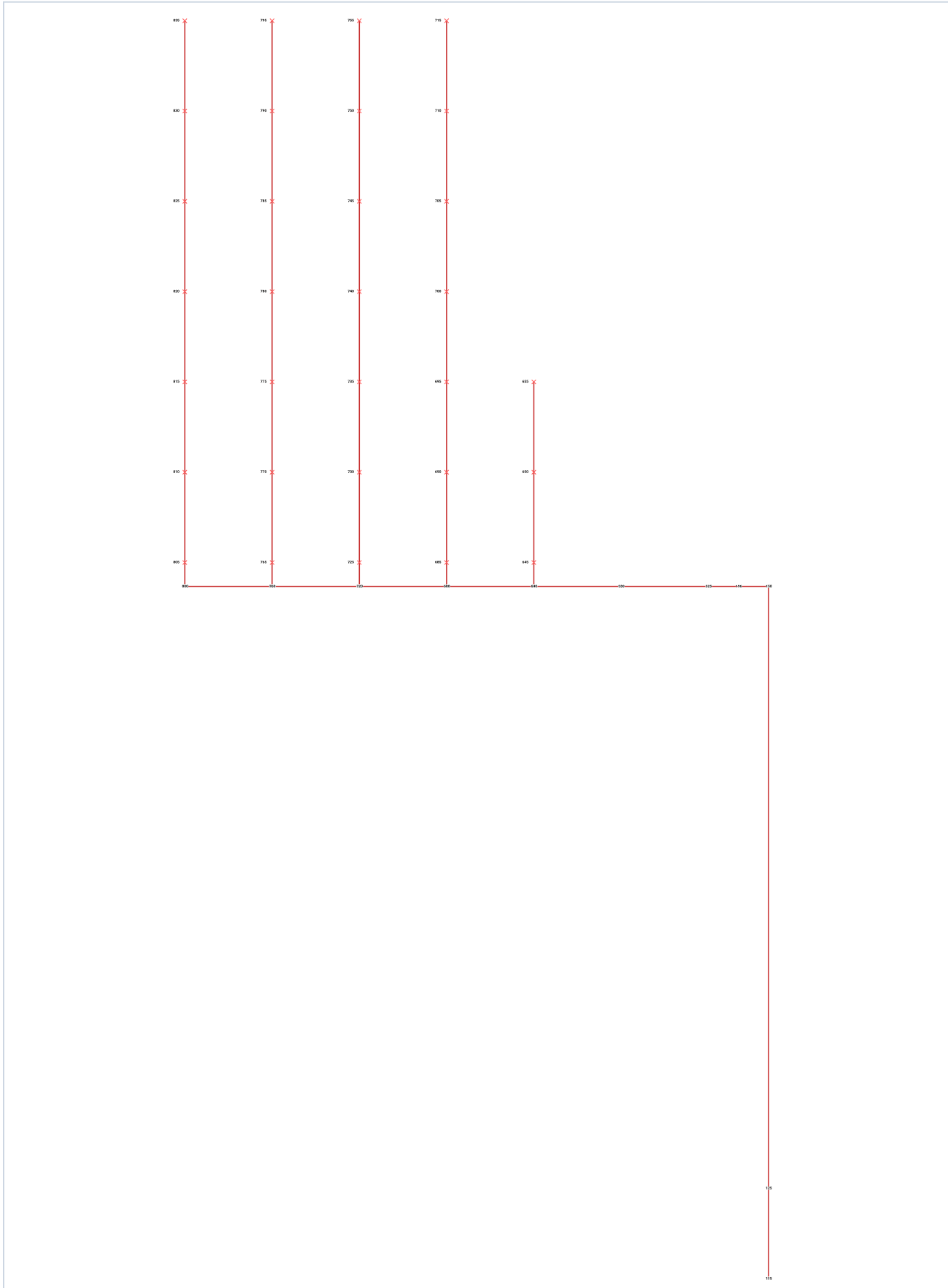
Pipe	Start	End	Dir	Plan ft	Slope	Actual ft	Equiv ft	Nom	ID mm	Friction psi	Static psi	Flow gpm	Press psi
22	650	655	N	9.843	0.00	9.843	13.320	50	53,00	0.066	0.000	21	14.154
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
23	540	680	U	8.202	0.00	8.202	12.028	50	53,00	1.502	3.557	120	13.629
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
24	680	685	N	2.625	0.00	2.625	7.841	50	53,00	0.979	0.000	120	12.650
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
25	685	690	N	9.843	0.00	9.843	13.320	50	53,00	1.191	0.000	100	11.458
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
26	690	695	N	9.843	0.00	9.843	13.320	50	53,00	0.810	0.000	81	10.648
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
27	695	700	N	9.843	0.00	9.843	12.592	40	41,90	1.507	0.000	63	9.141
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
28	700	705	N	9.843	0.00	9.843	12.592	40	41,90	0.849	0.000	46	8.292
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
29	705	710	N	9.843	0.00	9.843	12.205	32	36,00	0.786	0.000	30	7.506
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
30	710	715	N	9.843	0.00	9.843	12.205	32	36,00	0.215	0.000	15	7.291
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
31	545	720	U	8.202	0.00	8.202	12.028	50	53,00	1.497	3.557	119	13.585
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
32	720	725	N	2.625	0.00	2.625	7.841	50	53,00	0.976	0.000	119	12.609
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
33	725	730	N	9.843	0.00	9.843	13.320	50	53,00	1.188	0.000	100	11.421
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
34	730	735	N	9.843	0.00	9.843	13.320	50	53,00	0.808	0.000	81	10.613
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
35	735	740	N	9.843	0.00	9.843	12.592	40	41,90	1.502	0.000	63	9.111
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
36	740	745	N	9.843	0.00	9.843	12.592	40	41,90	0.847	0.000	46	8.264
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
37	745	750	N	9.843	0.00	9.843	12.205	32	36,00	0.783	0.000	30	7.481
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
38	750	755	N	9.843	0.00	9.843	12.205	32	36,00	0.214	0.000	15	7.267
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
39	550	760	U	8.202	0.00	8.202	12.028	50	53,00	1.495	3.557	119	13.564
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
40	760	765	N	2.625	0.00	2.625	7.841	50	53,00	0.975	0.000	119	12.589
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												

Pipe	Start	End	Dir	Plan ft	Slope	Actual ft	Equiv ft	Nom	ID mm	Friction psi	Static psi	Flow gpm	Press psi
41	765	770	N	9.843	0.00	9.843	13.320	50	53,00	1.186	0.000	100	11.403
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
42	770	775	N	9.843	0.00	9.843	13.320	50	53,00	0.807	0.000	81	10.597
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
43	775	780	N	9.843	0.00	9.843	12.592	40	41,90	1.500	0.000	63	9.097
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
44	780	785	N	9.843	0.00	9.843	12.592	40	41,90	0.845	0.000	46	8.251
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
45	785	790	N	9.843	0.00	9.843	12.205	32	36,00	0.782	0.000	30	7.469
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
46	790	795	N	9.843	0.00	9.843	12.205	32	36,00	0.214	0.000	15	7.255
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
47	555	800	U	8.202	0.00	8.202	12.028	50	53,00	1.494	3.557	119	13.558
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												
48	800	805	N	2.625	0.00	2.625	7.841	50	53,00	0.974	0.000	119	12.584
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
49	805	810	N	9.843	0.00	9.843	13.320	50	53,00	1.185	0.000	100	11.398
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
50	810	815	N	9.843	0.00	9.843	13.320	50	53,00	0.806	0.000	81	10.592
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
51	815	820	N	9.843	0.00	9.843	12.592	40	41,90	1.500	0.000	63	9.093
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
52	820	825	N	9.843	0.00	9.843	12.592	40	41,90	0.845	0.000	46	8.248
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
53	825	830	N	9.843	0.00	9.843	12.205	32	36,00	0.782	0.000	30	7.466
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded coupling												
54	830	835	N	9.843	0.00	9.843	12.205	32	36,00	0.214	0.000	15	7.252
	Medium weight steel — BS1387/EN10255/SANS62-1/AS1074 — Threaded short elbow												

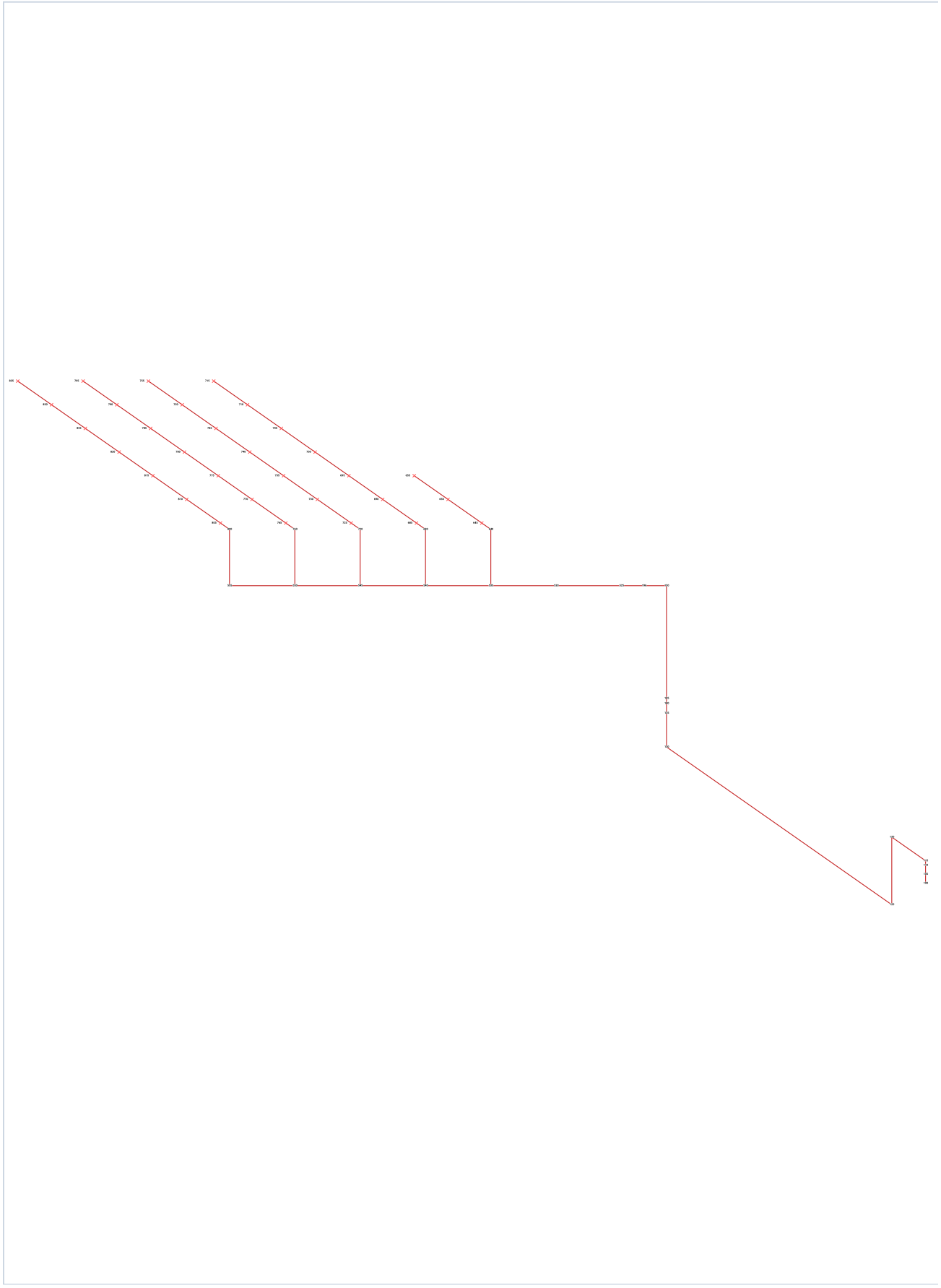
System Demand Curve



Plan View


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Isometric View



Selected Operating Area

