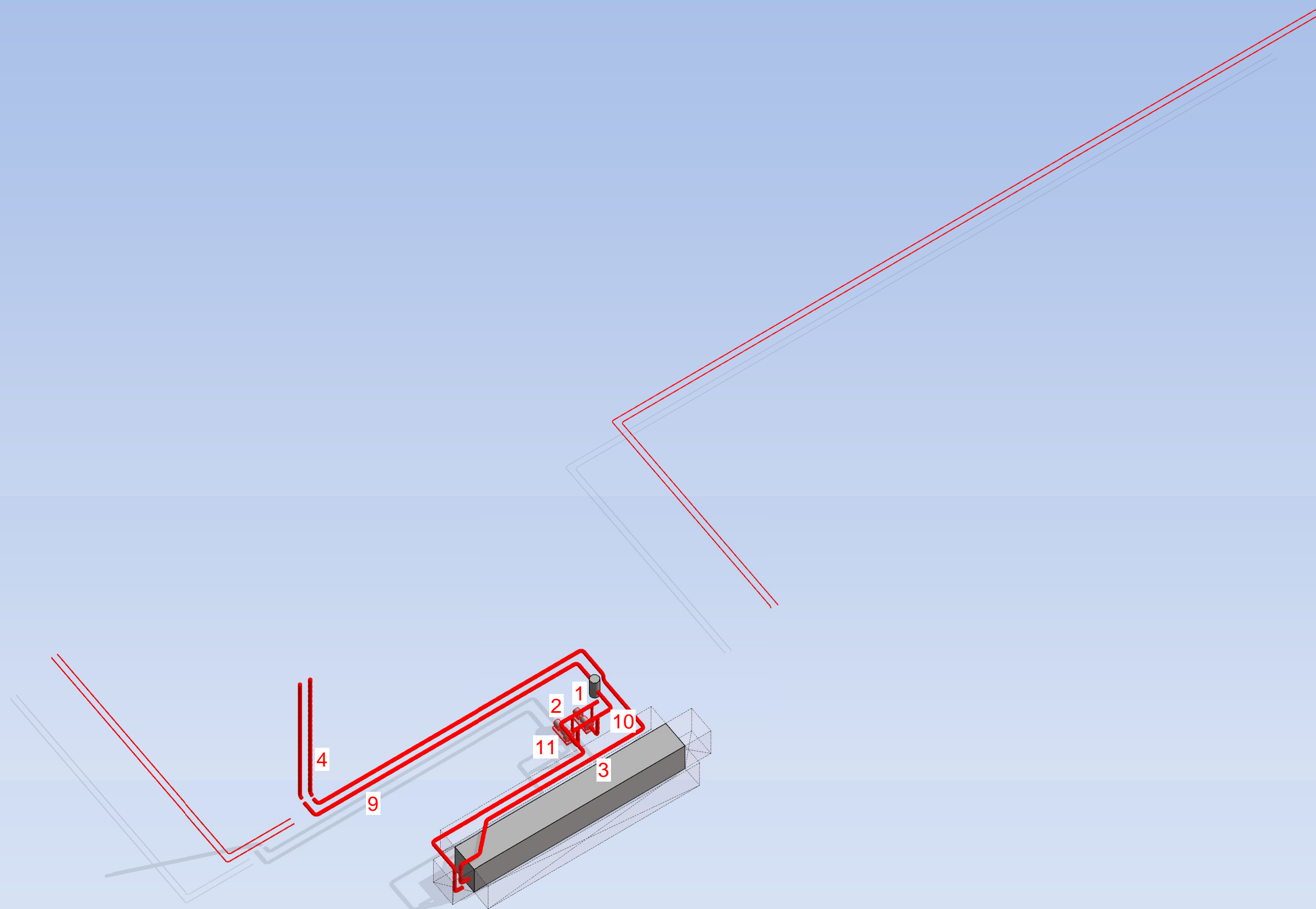
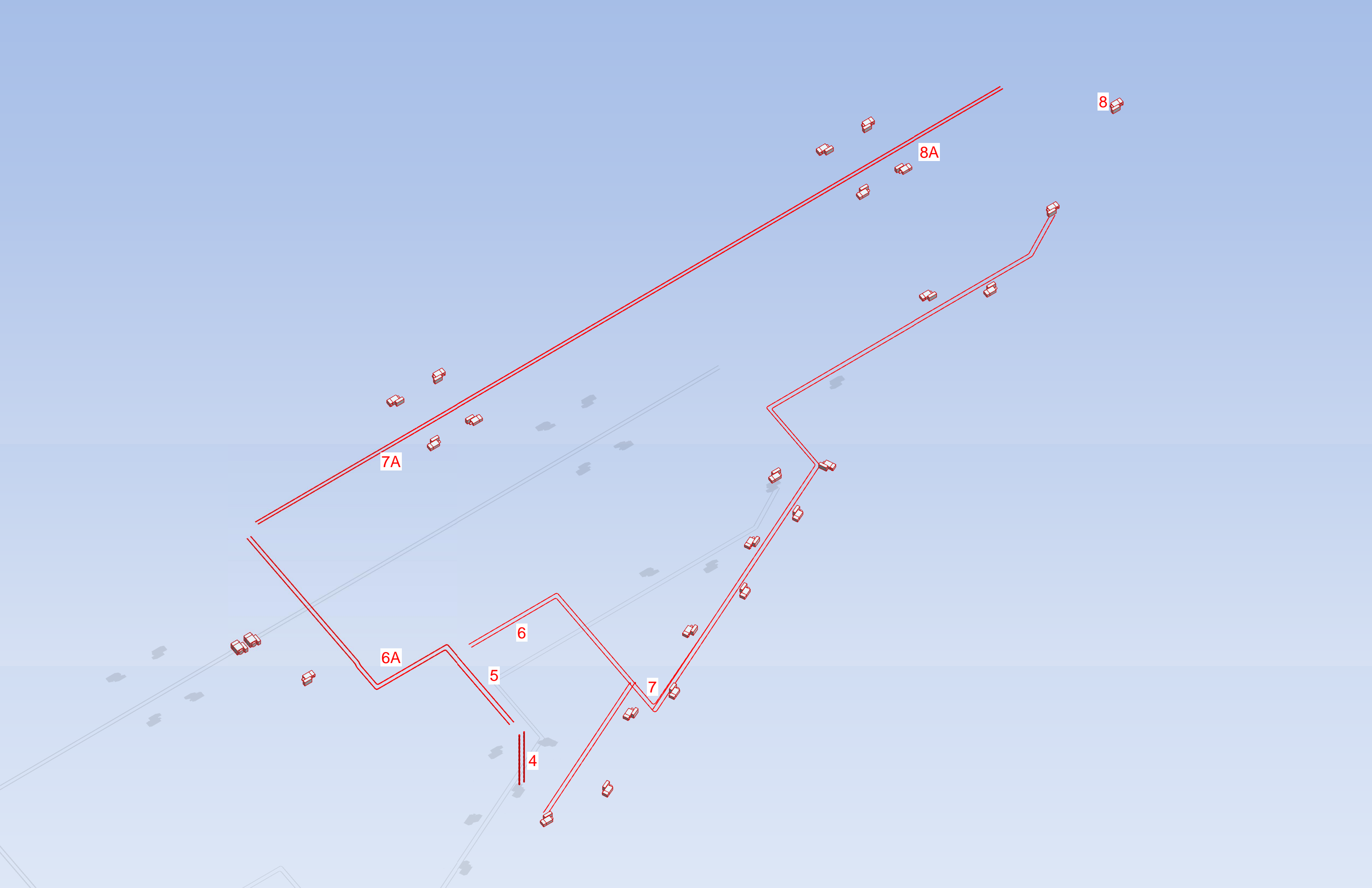
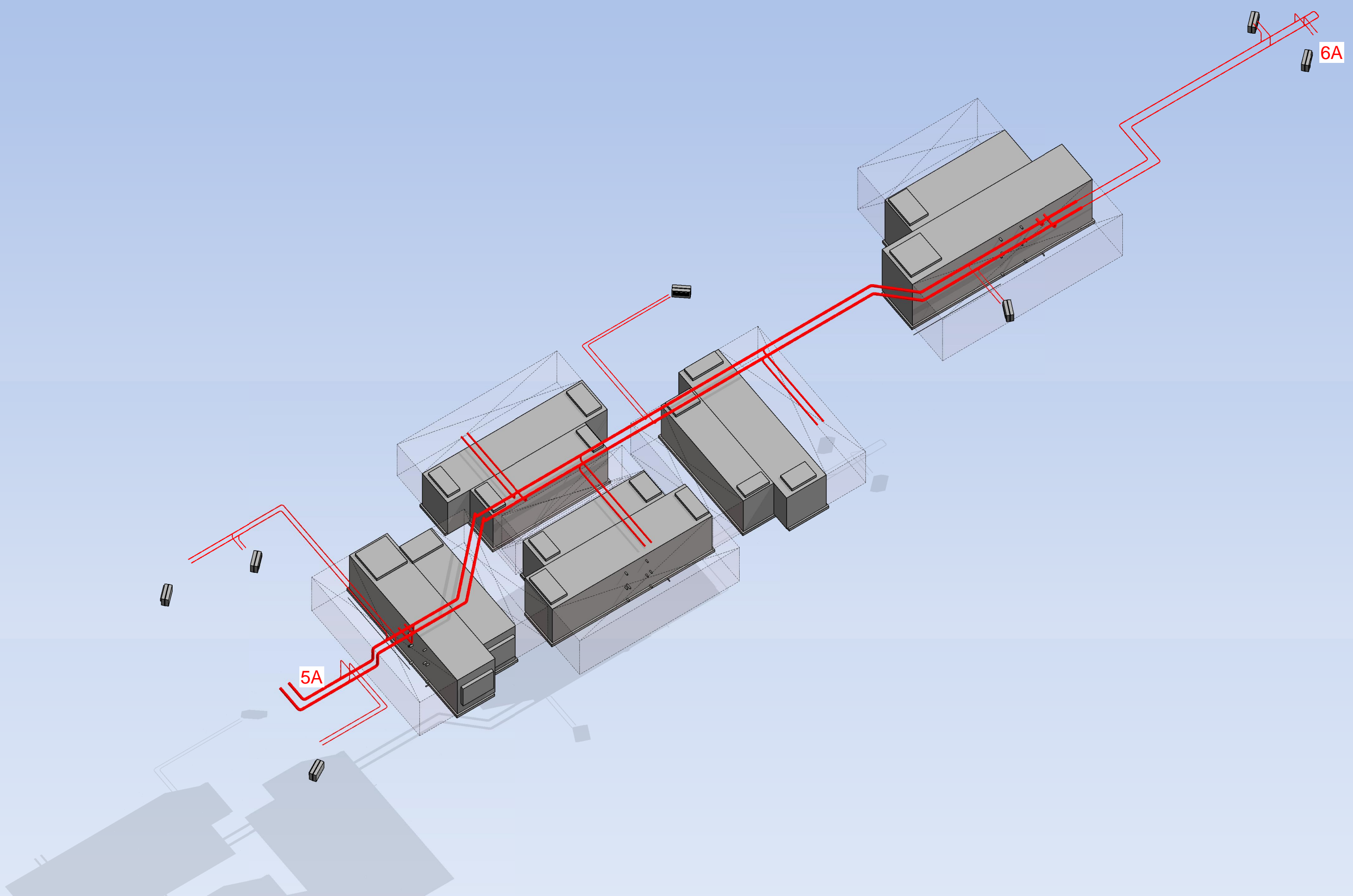


Project CNY								HHW Piping				
Pipe material = Sch40 steel				Metal Pipes - Very to extremely smooth				HHWP				
Hazen-Williams Constant = 130												
Density (kg/m3) at mean temp.= 1002												
Safety Factor= 15%				for unknown and pipe aging								
Section		Flow gpm	Size inches	Length Feet	Quantity of Items	K Factor	Total K Factor	Known Constant Pressure Drop in ft H2O	Known Constant Pressure Drop in kPa	Static P. Drop kPa	Dynamic P. Drop kPa	Total P. Drop kPa
1 - AFTER PUMP	STRAIGHT LENGTH	836.6	6	3.5					0	0.53	0.0	0.5
	STANDARD TEE (THRU FLO)	836.6	6		1	0.12	0.12		0	0.00	0.5	0.5
	CHECK VALVE	836.6	6		1	2	2		0	0.00	8.0	8.0
	BUTTERFLY ISOLATION VALVE	836.6	6		1	0.68	0.68		0	0.00	2.7	2.7
2 - RUN BEFORE CHILLER	STANDARD TEE (BRANCH FLO - PUMP HEADER)	836.6	6		1	0.62	0.62		0	0.00	2.5	2.5
	STRAIGHT LENGTH	836.6	6	3					0	0.45	0.0	0.5
	STANDARD TEE (THRU FLO - STANDBY PUMP)	836.6	6		1	0.12	0.12		0	0.00	0.5	0.5
	STRAIGHT LENGTH	836.6	6	1.5					0	0.23	0.0	0.2
	90° ELBOW	836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
	STRAIGHT LENGTH	836.6	6	5					0	0.76	0.0	0.8
	90° ELBOW	836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
	STRAIGHT LENGTH	836.6	6	25.5					0	3.86	0.0	3.9
	90° ELBOW	836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
	STRAIGHT LENGTH	836.6	6	4.5					0	0.68	0.0	0.7
	90° ELBOW	836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
	STRAIGHT LENGTH	836.6	6	5					0	0.76	0.0	0.8
	BUTTERFLY ISOLATION VALVE	836.6	6		1	0.68	0.68		0	0.00	2.7	2.7
	STRAINER (SEE APOLLO VALVES, 6", 900 GPM - 1.1 psi)	836.6	6					2.54	7.590028	0.00	0.0	7.6
	90° ELBOW	836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
	CHILLER (MULTISTACK MHRC-1 - estimated 19.5 ft H2O)	836.6	6					19.6	58.56872	0.00	0.0	58.6
	3 - RUN AFTER CHILLER	STRAIGHT LENGTH	836.6	6	1.5					0	0.23	0.0
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
BALANCING VALVE (GLOBE STYLE)		836.6	6		1	6	6		0	0.00	24.1	24.1
BUTTERFLY ISOLATION VALVE		836.6	6		1	0.68	0.68		0	0.00	2.7	2.7
STANDARD TEE (THRU FLO - BYPASS)		836.6	6		1	0.12	0.12		0	0.00	0.5	0.5
STRAIGHT LENGTH		836.6	6	4					0	0.61	0.0	0.6
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
STRAIGHT LENGTH		836.6	6	3					0	0.45	0.0	0.5
45° ELBOW		836.6	6		1	0.17	0.17		0	0.00	0.7	0.7
STRAIGHT LENGTH		836.6	6	5.5					0	0.83	0.0	0.8
45° ELBOW		836.6	6		1	0.17	0.17		0	0.00	0.7	0.7
STRAIGHT LENGTH		836.6	6	26.5					0	4.01	0.0	4.0
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
STRAIGHT LENGTH		836.6	6	9					0	1.36	0.0	1.4
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
STRAIGHT LENGTH		836.6	6	0.5					0	0.08	0.0	0.1
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
STRAIGHT LENGTH		836.6	6	4.5					0	0.68	0.0	0.7
90° ELBOW		836.6	6		1	0.29	0.29		0	0.00	1.2	1.2
STRAIGHT LENGTH		836.6	6	44.5					0	6.73	0.0	6.7
STANDARD TEE (THRU FLO - DOMESTIC WATER HTR)		836.6	6		2	0.12	0.24		0	0.00	1.0	1.0
STANDARD TEE (THRU FLO - SOUTH MAIN)		801.6	6		2	0.12	0.24		0	0.00	0.9	0.9
GRADUAL REDUCTION (6" TO 4")		801.6	6		2	0.22	0.44		0	0.00	1.6	1.6
STANDARD TEE (BRANCH FLO - NORTH MAIN)		220.3	4		2	0.7	1.4		0	0.00	2.0	2.0
STRAIGHT LENGTH		220.3	4	124					0	11.66	0.0	11.7
90° ELBOW		220.3	4		2	0.31	0.62		0	0.00	0.9	0.9
STRAIGHT LENGTH		220.3	4	28					0	2.63	0.0	2.6
90° ELBOW	220.3	4		2	0.31	0.62		0	0.00	0.9	0.9	
STANDARD TEE (THRU FLO - LEVEL 0 NORTH)	220.3	4		2	0.15	0.3		0	0.00	0.4	0.4	
STRAIGHT LENGTH	189.2	4	72					0	5.11	0.0	5.1	
90° ELBOW	189.2	4		2	0.31	0.62		0	0.00	0.7	0.7	
STRAIGHT LENGTH	189.2	4	8					0	0.57	0.0	0.6	
90° ELBOW	189.2	4		2	0.31	0.62		0	0.00	0.7	0.7	
STRAIGHT LENGTH	189.2	4	29					0	2.06	0.0	2.1	
90° ELBOW	189.2	4		2	0.31	0.62		0	0.00	0.7	0.7	
STRAIGHT LENGTH	189.2	4	4					0	0.28	0.0	0.3	
90° ELBOW	189.2	4		2	0.31	0.62		0	0.00	0.7	0.7	
STRAIGHT LENGTH	189.2	4	40					0	2.84	0.0	2.8	
STANDARD TEE (BRANCH FLO - LEVEL 1)	189.2	4		2	0.7	1.4		0	0.00	1.5	1.5	
GRADUAL REDUCTION (4" TO 3")	189.2	4		2	0.22	0.44		0	0.00	0.5	0.5	
STRAIGHT LENGTH	107.3	3	2					0	0.19	0.0	0.2	
90° ELBOW	107.3	3		2	0.34	0.68		0	0.00	0.7	0.7	
STRAIGHT LENGTH	107.3	3	28					0	2.62	0.0	2.6	
5 - LEVEL 4 NORTH S&R	STANDARD TEE (THRU FLO - LEVEL 2)	107.3	3		2	0.17	0.34		0	0.00	0.3	0.3
	GRADUAL REDUCTION (3" TO 2.5")	107.3	3		2	0.22	0.44		0	0.00	0.4	0.4
	STRAIGHT LENGTH	68.5	2.5	28					0	3.29	0.0	3.3
	STANDARD TEE (THRU FLO - LEVEL 3)	68.5	2.5		2	0.18	0.36		0	0.00	0.4	0.4
	GRADUAL REDUCTION (2.5" TO 2")	68.5	2.5		2	0.22	0.44		0	0.00	0.4	0.4
	STRAIGHT LENGTH	35.9	2	28					0	2.36	0.0	2.4
	STANDARD TEE (BRANCH FLO - LEVEL 4)	35.9	2		2	1.4	2.8		0	0.00	1.5	1.5
	BALANCING VALVE (GLOBE STYLE)	35.9	2		2	9	18		0	0.00	9.9	9.9
	ISOLATION VALVE - BALL	35.9	2		2	0.06	0.12		0	0.00	0.1	0.1
	STRAIGHT LENGTH	35.9	2	46					0	3.87	0.0	3.9
	STANDARD TEE (THRU FLO - LEVEL 4 WEST)	35.9	2		2	0.9	1.8		0	0.00	1.0	1.0
	GRADUAL REDUCTION (2" TO 1.5")	35.9	2		2	0.22	0.44		0	0.00	0.2	0.2
	90° ELBOW	17.8	1.5		2	1.2	2.4		0	0.00	0.9	0.9
	STRAIGHT LENGTH	17.8	1.5	28					0	2.17	0.0	2.2
	90° ELBOW	17.8	1.5		2	1.2	2.4		0	0.00	0.9	0.9
	STRAIGHT LENGTH	17.8	1.5	10					0	0.77	0.0	0.8
	6A - LEVEL 4 WEST S&R	45° ELBOW	17.8	1.5		2	0.31	0.62		0	0.00	0.2
STRAIGHT LENGTH		17.8	1.5	2					0	0.15	0.0	0.2
45° ELBOW		17.8	1.5		2	0.31	0.62		0	0.00	0.2	0.2
STRAIGHT LENGTH		17.8	1.5	30					0	2.32	0.0	2.3
GRADUAL REDUCTION (1.5" TO 1")		17.8	1.5		2	0.22	0.44		0	0.00	0.2	0.2
STANDARD TEE (THRU FLO - LEVEL 4 NORTH WEST)		10	1		2	0.9	1.8		0	0.00	1.2	1.2
STRAIGHT LENGTH		10	1	34					0	7.36	0.0	7.4
90° ELBOW		10	1		2	1.5	3		0	0.00	1.9	1.9
STRAIGHT LENGTH		10	1	29					0	6.28	0.0	6.3
STANDARD TEE (THRU FLO - VAV 4.20)		10	1		2	0.9	1.8		0	0.00	1.2	1.2
7A - LEVEL 4 NORTH WEST S&R	STANDARD TEE (THRU FLO - VAV 4.22)	8.6	1		2	0.9	1.8		0	0.00	0.9	0.9
	STANDARD TEE (THRU FLO - VAV 4.21)	8	1		2	0.9	1.8		0	0.00	0.7	0.7
	STANDARD TEE (THRU FLO - VAV 4.23)	6.5	1		2	0.9	1.8		0	0.00	0.5	0.5
	GRADUAL REDUCTION (1" TO 0.75")	6.5	1		2	0.22	0.44		0	0.00	0.1	0.1
	STRAIGHT LENGTH	5.9	0.75	180					0	46.49	0.0	46.5
	STANDARD TEE (THRU FLO - VAV 4.37)	5.9	0.75		2	0.9	1.8		0	0.00	1.0	1.0
	STANDARD TEE (THRU FLO - VAV 4.38)	4.4	0.75		2	0.9	1.8		0	0.00	0.6	0.6
	STANDARD TEE (THRU FLO - VAV 4.39)	2.9	0.75		2	0.9	1.8		0	0.00	0.3	0.3
	STANDARD TEE (BRANCH FLO - VAV 4.40)	1.4	0.75		2	2.1	4.2		0	0.00	0.1	0.1
	STRAIGHT LENGTH	0.7	0.75	15					0	0.07	0.0	0.1
8A - VAV CONNECTION	STANDARD TEE (THRU FLO - BYPASS)	0.7	0.75		1	0.9	0.9		0	0.00	0.0	0.0
	SHUTOFF VALVE - BALL	0.7	0.75</									

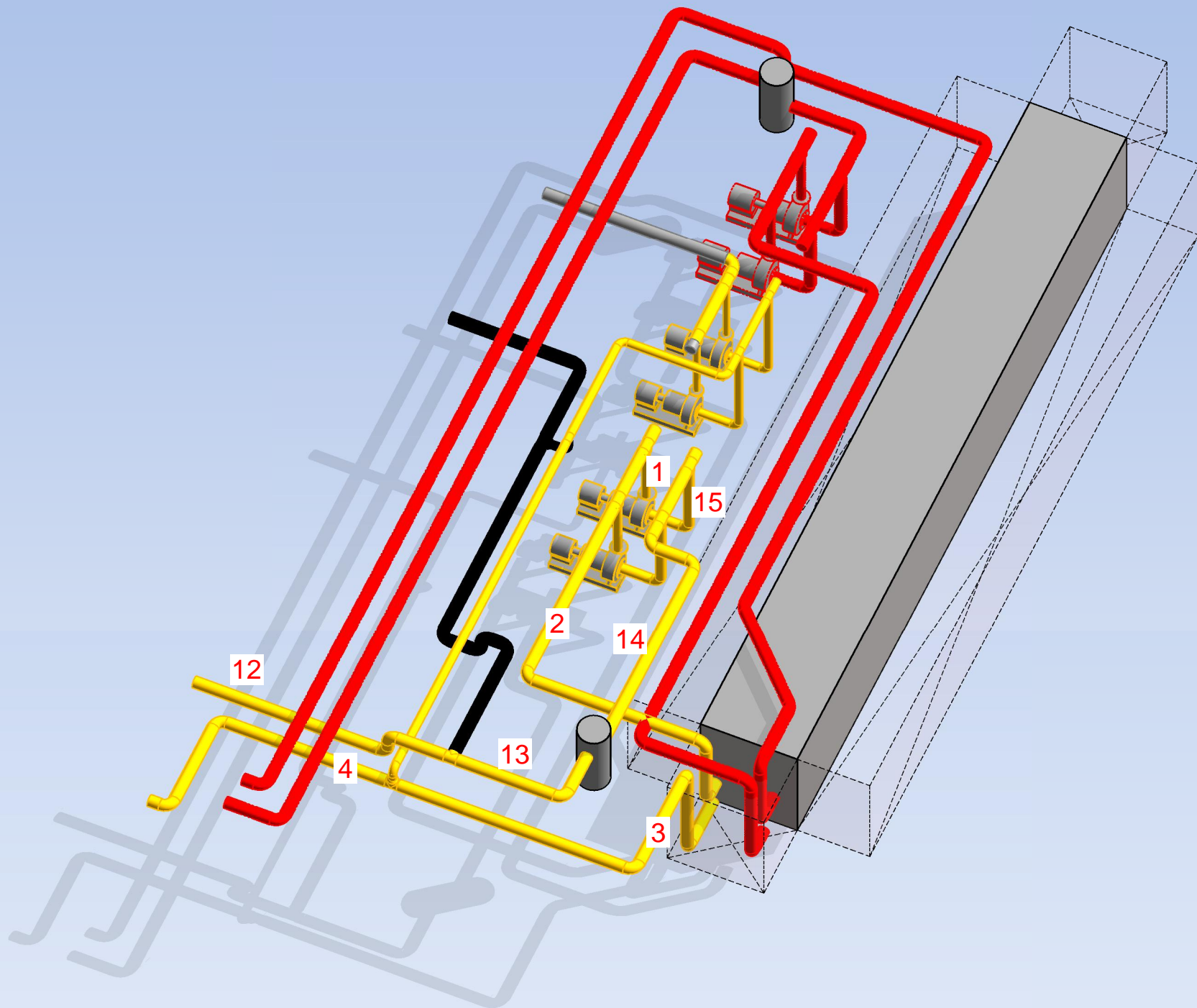


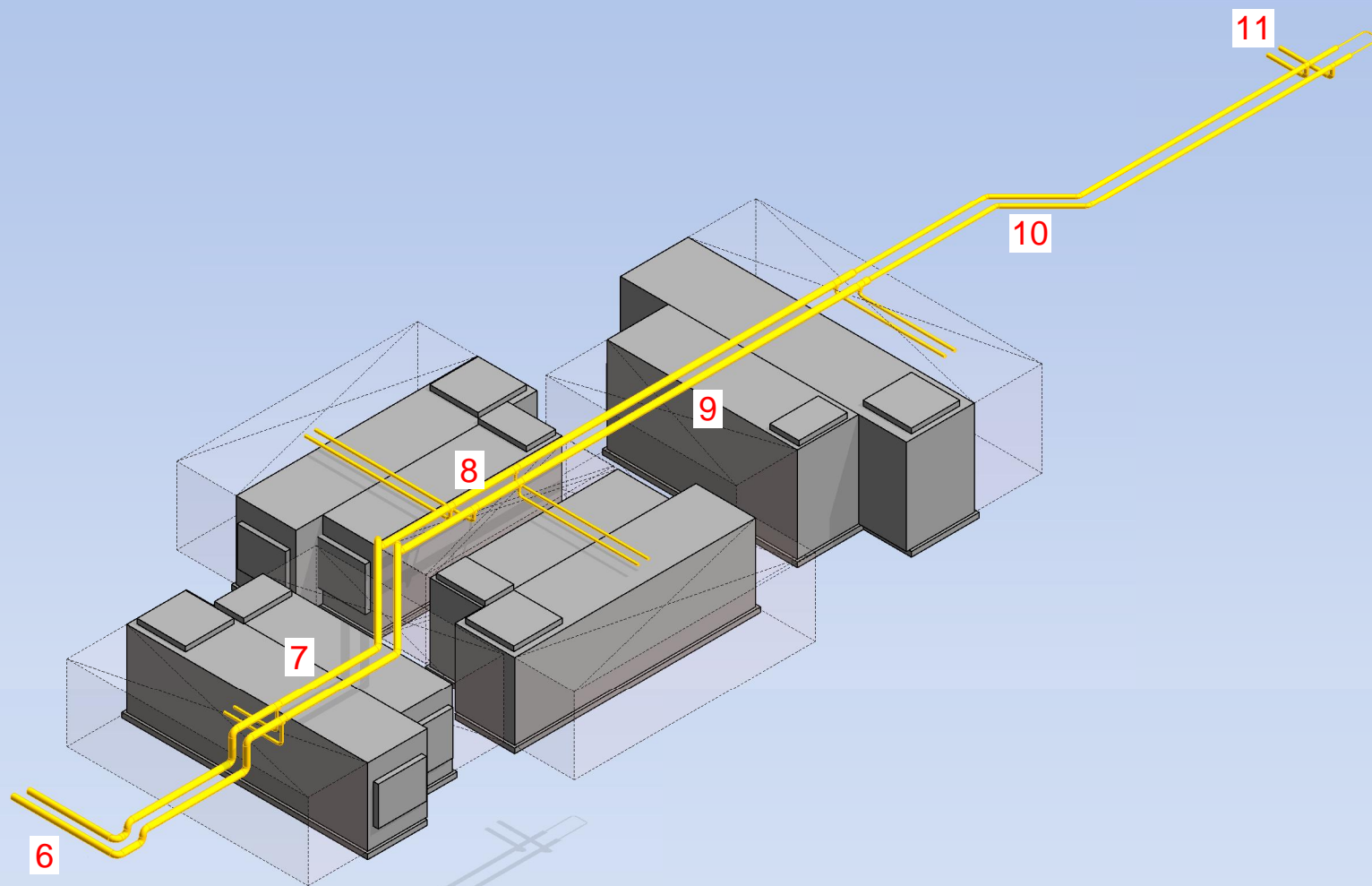




Project CNY															CHW Piping				
Pipe material = Sch40 steel															CHWP				
Hazen-Williams Constant = 130																			
Density (kg/m3) at mean temp.= 1002																			
Safety Factor= 15%																			
Metal Pipes - Very to extremely smooth																			
for unknown and pipe aging																			
Section		Flow gpm	Size Inches	Length Feet	Flow Rate L/s	Actual Diam. in	Length m	CSA mm2	Velocity m/s	Pv kPa	Quantity of Items	K Factor	Total K Factor	Known Constant Pressure Drop in ft H2O	Known Constant Pressure Drop in kPa	Static P. Drop kPa	Dynamic P. Drop kPa	Total P. Drop kPa	
1 - AFTER PUMP	STRAIGHT LENGTH	617.2	6	3.5	38.9	0.15	1.1	18651	2.1	2.18	1	0.12	0.12		0	0.30	0.0	0.3	
	STANDARD TEE (THRU FLO)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	2	2		0	0.00	0.3	0.3	
	CHECK VALVE	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.68	0.68		0	0.00	4.4	4.4	
	BUTTERFLY ISOLATION VALVE	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.68	0.68		0	0.00	1.5	1.5	
	STANDARD TEE (BRANCH FLO)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.62	0.62		0	0.00	1.4	1.4	
2 - RUN BEFORE CHILLER	STRAIGHT LENGTH	617.2	6	2.5	38.9	0.15	0.8	18651	2.1	2.18	1				0	0.22	0.0	0.2	
	STANDARD TEE (THRU FLO)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.12	0.12		0	0.00	0.3	0.3	
	STRAIGHT LENGTH	617.2	6	9.5	38.9	0.15	2.9	18651	2.1	2.18	1				0	0.82	0.0	0.8	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	617.2	6	8	38.9	0.15	2.4	18651	2.1	2.18	1				0	0.69	0.0	0.7	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	617.2	6	4	38.9	0.15	1.2	18651	2.1	2.18	1				0	0.34	0.0	0.3	
	BUTTERFLY ISOLATION VALVE	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.68	0.68		0	0.00	1.5	1.5	
	STRAINER (SEE APOLLO VALVES, 6", 700 GPM - 1.1 psi)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1			2.54	7.590028	0.00	0.0	7.6	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
3 - RUN AFTER CHILLER	CHILLER (MULTISTACK MHRG-1)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1			19.1	57.07462	0.00	0.0	57.1	
	STRAIGHT LENGTH	617.2	6	2.5	38.9	0.15	0.8	18651	2.1	2.18	1				0	0.22	0.0	0.2	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
	BALANCING VALVE (GLOBE STYLE)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	6	6		0	0.00	13.1	13.1	
	BUTTERFLY ISOLATION VALVE	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.68	0.68		0	0.00	1.5	1.5	
	STRAIGHT LENGTH	617.2	6	5.5	38.9	0.15	1.7	18651	2.1	2.18	1				0	0.47	0.0	0.5	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	617.2	6	5	38.9	0.15	1.5	18651	2.1	2.18	1				0	0.43	0.0	0.4	
	90° ELBOW	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.29	0.29		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	617.2	6	11	38.9	0.15	3.4	18651	2.1	2.18	1				0	0.95	0.0	0.9	
4 - RUN AFTER SCHWS BRANCH	STANDARD TEE (THRU FLO)	617.2	6		38.9	0.15	0.0	18651	2.1	2.18	1	0.12	0.12		0	0.00	0.3	0.3	
	STRAIGHT LENGTH	508.6	6	8	32.1	0.15	2.4	18651	1.7	1.48	1				0	0.48	0.0	0.5	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	1	0.29	0.29		0	0.00	0.4	0.4	
	STRAIGHT LENGTH	508.6	6	4.5	32.1	0.15	1.4	18651	1.7	1.48	1	6	6		0	0.27	0.0	0.3	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	1	0.29	0.29		0	0.00	0.4	0.4	
5 - CHWS/R RISER	STRAIGHT LENGTH	508.6	6	1	32.1	0.15	0.3	18651	1.7	1.48	1				0	0.06	0.0	0.1	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	STRAIGHT LENGTH	508.6	6	124	32.1	0.15	37.8	18651	1.7	1.48	1				0	7.47	0.0	7.5	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	ISOLATION VALVE - BALL	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.05	0.1		0	0.00	0.1	0.1	
	STRAIGHT LENGTH	508.6	6	21	32.1	0.15	6.4	18651	1.7	1.48	1				0	1.26	0.0	1.3	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	STRAIGHT LENGTH	508.6	6	4	32.1	0.15	1.2	18651	1.7	1.48	1				0	0.24	0.0	0.2	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
6 - MER BRANCH S&R	STRAIGHT LENGTH	508.6	6	20	32.1	0.15	6.1	18651	1.7	1.48	1				0	1.20	0.0	1.2	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	STRAIGHT LENGTH	508.6	6	4	32.1	0.15	1.2	18651	1.7	1.48	1				0	0.24	0.0	0.2	
	90° ELBOW	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.29	0.58		0	0.00	0.9	0.9	
	STRAIGHT LENGTH	508.6	6	6	32.1	0.15	1.8	18651	1.7	1.48	1				0	0.36	0.0	0.4	
	STANDARD TEE (THRU FLO - AHU 3)	508.6	6		32.1	0.15	0.0	18651	1.7	1.48	2	0.12	0.24		0	0.00	0.4	0.4	
	STRAIGHT LENGTH	439.6	6	23	27.7	0.15	7.0	18651	1.5	1.11	1				0	1.06	0.0	1.1	
	45° ELBOW	439.6	6		27.7	0.15	0.0	18651	1.5	1.11	2	0.17	0.34		0	0.00	0.4	0.4	
	STRAIGHT LENGTH	439.6	6	27	27.7	0.15	8.2	18651	1.5	1.11	1				0	1.24	0.0	1.2	
	90° ELBOW	439.6	6		27.7	0.15	0.0	18651	1.5	1.11	2	0.29	0.58		0	0.00	0.6	0.6	
7 - MER BRANCH S&R	90° ELBOW	439.6	6		27.7	0.15	0.0	18651	1.5	1.11	2	0.29	0.58		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	439.6	6	15	27.7	0.15	4.6	18651	1.5	1.11	1				0	0.69	0.0	0.7	
	STANDARD TEE (THRU FLO - AHU 2)	439.6	6		27.7	0.15	0.0	18651	1.5	1.11	2	0.12	0.24		0	0.00	0.3	0.3	
	STRAIGHT LENGTH	362.2	6	8	22.9	0.15	2.4	18651	1.2	0.75	1				0	0.26	0.0	0.3	
	STANDARD TEE (THRU FLO - AHU 4)	362.2	6		22.9	0.15	0.0	18651	1.2	0.75	2	0.12	0.24		0	0.00	0.2	0.2	
9 - MER BRANCH S&R	GRADUAL REDUCTION (6" TO 4")	264.7	4		16.7	0.10	0.0	8219	2.0	2.07	2	0.22	0.44		0	0.00	0.9	0.9	
	STRAIGHT LENGTH	264.7	4	70	16.7	0.10	21.3	8219	2.0	2.07	1				0	9.25	0.0	9.2	
	STANDARD TEE (THRU FLO - AHU 5)	264.7	4		16.7	0.10	0.0	8219	2.0	2.07	2	0.15	0.3		0	0.00	0.6	0.6	
	STRAIGHT LENGTH	163.8	4	26	10.3	0.10	7.9	8219	1.3	0.79	1				0	1.41	0.0	1.4	
	45° ELBOW	163.8	4		10.3	0.10	0.0	8219	1.3	0.79	2	0.18	0.36		0	0.00	0.3	0.3	
10 - MER BRANCH S&R	STRAIGHT LENGTH	163.8	4	13	10.3	0.10	4.0	8219	1.3	0.79	1				0	0.71	0.0	0.7	
	45° ELBOW	163.8	4		10.3	0.10	0.0	8219	1.3	0.79	2	0.18	0.36		0	0.00	0.3	0.3	
	STRAIGHT LENGTH	163.8	4	50	10.3	0.10	15.2	8219	1.3	0.79	1				0	2.72	0.0	2.7	
	STANDARD TEE (BRANCH - AHU 1)	163.8	4		10.3	0.10	0.0	8219	1.3	0.79	2	0.7	1.4		0	0.00	1.1	1.1	
	STRAIGHT LENGTH	163.8	4	1	10.3	0.10	0.3	8219	1.3										







Project CNY							SCHW Piping					
Pipe material = Sch40 steel				SCHWP								
Hazen-Williams Constant = 130				Metal Pipes - Very to extremely smooth								
Density (kg/m3) at mean temp.= 1002												
Safety Factor= 15%				for unknown and pipe aging								
Section		Flow gpm	Size inches	Length Feet	Quantity of Items	K Factor	Total K Factor	Known Constant Pressure Drop in ft H2O	Known Constant Pressure Drop in kPa	Static P. Drop kPa	Dynamic P. Drop kPa	Total P. Drop kPa
1 - AFTER PUMP	STRAIGHT LENGTH	325.72	6	4					0	0.11	0.0	0.1
	STANDARD TEE (THRU FLO)	325.72	6		1	0.12	0.12		0	0.00	0.1	0.1
	CHECK VALVE	325.72	6		1	2	2		0	0.00	1.2	1.2
	BUTTERFLY ISOLATION VALVE	325.72	6		1	0.68	0.68		0	0.00	0.4	0.4
	STANDARD TEE (BRANCH FLO - PUMP HEADER)	325.72	6		1	0.62	0.62		0	0.00	0.4	0.4
2 - MECHANICAL ROOM SUPPLY BRANCH	STRAIGHT LENGTH	325.72	6	3					0	0.08	0.0	0.1
	STANDARD TEE (THRU FLO)	325.72	6		1	0.12	0.12		0	0.00	0.1	0.1
	STRAIGHT LENGTH	325.72	6	0.5					0	0.01	0.0	0.0
	90° ELBOW	325.72	6		1	0.29	0.29		0	0.00	0.2	0.2
	STRAIGHT LENGTH	325.72	6	9					0	0.24	0.0	0.2
3 - LEVEL 0 NORTH BRANCH SUPPLY	STANDARD TEE (BRANCH FLO - NORTH BRANCH)	325.72	6		1	0.62	0.62		0	0.00	0.4	0.4
	GRADUAL REDUCTION (6" TO 4")	226.48	4		1	0.22	0.22		0	0.00	0.3	0.3
	STRAIGHT LENGTH	226.48	4	25.5					0	2.52	0.0	2.5
	90° ELBOW	226.48	4		1	0.31	0.31		0	0.00	0.5	0.5
	STRAIGHT LENGTH	226.48	4	10					0	0.99	0.0	1.0
4 - LEVEL 1 SHAFT CROSSOVER RISER SCHW S&R	STANDARD TEE (THRU FLO - FCU 0.2)	226.48	4		1	0.15	0.15		0	0.00	0.2	0.2
	90° ELBOW	221.28	4		1	0.31	0.31		0	0.00	0.4	0.4
	STRAIGHT LENGTH	221.28	4	32.5					0	3.08	0.0	3.1
	STANDARD TEE (THRU FLO - FCU 0.3 & FCU 0.4)	221.28	4		1	0.15	0.15		0	0.00	0.2	0.2
	90° ELBOW	211.35	4		1	0.31	0.31		0	0.00	0.4	0.4
5 - SCHW RISER S&R	STRAIGHT LENGTH	211.35	4	22					0	1.92	0.0	1.9
	90° ELBOW	211.35	4		2	0.31	0.62		0	0.00	0.8	0.8
	STRAIGHT LENGTH	211.35	4	4					0	0.35	0.0	0.3
	90° ELBOW	211.35	4		2	0.31	0.62		0	0.00	0.8	0.8
	STRAIGHT LENGTH	211.35	4	48					0	4.18	0.0	4.2
6 - LEVEL 4 MAIN BRANCH S&R	STANDARD TEE (BRANCH FLO - NORTH RISER)	211.35	4		2	0.7	1.4		0	0.00	1.8	1.8
	STRAIGHT LENGTH	164.95	4	13					0	0.72	0.0	0.7
	90° ELBOW	164.95	4		2	0.31	0.62		0	0.00	0.5	0.5
	STRAIGHT LENGTH	164.95	4	28					0	1.54	0.0	1.5
	STANDARD TEE (THRU FLO - LEVEL 2)	164.95	4		2	0.15	0.3		0	0.00	0.2	0.2
7 - LEVEL 4 NORTH BRANCH S&R	GRADUAL REDUCTION (4" TO 3")	109.8	3		2	0.22	0.44		0	0.00	0.5	0.5
	STRAIGHT LENGTH	109.8	3	28					0	2.73	0.0	2.7
	STANDARD TEE (THRU FLO - LEVEL 3)	109.8	3		2	0.17	0.34		0	0.00	0.4	0.4
	GRADUAL REDUCTION (3" TO 2.5")	54.86	2.5		2	0.22	0.44		0	0.00	0.3	0.3
	STRAIGHT LENGTH	54.86	2.5	28					0	2.18	0.0	2.2
8 - BEFORE CHILLED BEAM	STANDARD TEE (BRANCH FLO - LEVEL 4)	54.86	2.5		2	0.76	1.52		0	0.00	1.0	1.0
	STRAIGHT LENGTH	49.86	2.5	8					0	0.52	0.0	0.5
	ISOLATION VALVE - BALL	49.86	2.5		2	0.05	0.1		0	0.00	0.1	0.1
	STRAIGHT LENGTH	49.86	2.5	41					0	2.67	0.0	2.7
	STANDARD TEE (BRANCH FLO - LEVEL 4 NORTH BRANCH)	49.86	2.5		2	0.79	1.58		0	0.00	0.8	0.8
9 - AFTER CHILLED BEAM	GRADUAL REDUCTION (2.5" TO 2")	28.32	2		2	0.22	0.44		0	0.00	0.2	0.2
	STRAIGHT LENGTH	28.32	2	28					0	1.52	0.0	1.5
	90° ELBOW	28.32	2		2	1	2		0	0.00	0.7	0.7
	STRAIGHT LENGTH	28.32	2	28					0	1.52	0.0	1.5
	90° ELBOW	28.32	2		2	1	2		0	0.00	0.7	0.7
10 - LEVEL 0 NORTH BRANCH RETURN	STRAIGHT LENGTH	28.32	2	8					0	0.43	0.0	0.4
	45° ELBOW	28.32	2		2	0.31	0.62		0	0.00	0.2	0.2
	STRAIGHT LENGTH	28.32	2	1					0	0.05	0.0	0.1
	45° ELBOW	28.32	2		2	0.31	0.62		0	0.00	0.2	0.2
	STRAIGHT LENGTH	28.32	2	94					0	5.10	0.0	5.1
11 - MECHANICAL ROOM RETURN BRANCH	90° ELBOW	28.32	2		2	1	2		0	0.00	0.7	0.7
	STRAIGHT LENGTH	28.32	2	70					0	3.80	0.0	3.8
	STANDARD TEE (THRU FLO - VAV 4.20 ACB'S)	28.32	2		2	0.9	1.8		0	0.00	0.6	0.6
	GRADUAL REDUCTION (2" TO 1.5")	23.46	1.5		2	0.22	0.44		0	0.00	0.3	0.3
	STRAIGHT LENGTH	23.46	1.5	4					0	0.52	0.0	0.5
12 - BEFORE PUMP	STANDARD TEE (THRU FLO - VAV 4.22 ACB'S)	23.46	1.5		2	0.9	1.8		0	0.00	1.1	1.1
	STRAIGHT LENGTH	21.96	1.5	11					0	1.26	0.0	1.3
	STANDARD TEE (THRU FLO - VAV 4.23 ACB'S)	21.96	1.5		2	0.9	1.8		0	0.00	1.0	1.0
	STRAIGHT LENGTH	20.46	1.5	4					0	0.40	0.0	0.4
	STANDARD TEE (THRU FLO - VAV 4.21 ACB'S)	20.46	1.5		2	0.9	1.8		0	0.00	0.9	0.9
13 - MECHANICAL ROOM RETURN BRANCH	STRAIGHT LENGTH	18.96	1.5	162					0	14.11	0.0	14.1
	STANDARD TEE (THRU FLO - VAV 4.37 ACB'S)	18.96	1.5		2	0.9	1.8		0	0.00	0.7	0.7
	GRADUAL REDUCTION (1.5" TO 1.25")	14.1	1.25		2	0.22	0.44		0	0.00	0.2	0.2
	STRAIGHT LENGTH	14.1	1.25	4					0	0.42	0.0	0.4
	STANDARD TEE (THRU FLO - VAV 4.39 ACB'S)	14.1	1.25		2	0.9	1.8		0	0.00	0.8	0.8
14 - MECHANICAL ROOM RETURN BRANCH	STRAIGHT LENGTH	12.6	1.25	11					0	0.95	0.0	0.9
	STANDARD TEE (THRU FLO - VAV 4.40 ACB'S)	12.6	1.25		2	0.9	1.8		0	0.00	0.6	0.6
	STRAIGHT LENGTH	11.1	1.25	4					0	0.27	0.0	0.3
	STANDARD TEE (THRU FLO - VAV 4.38 ACB'S)	11.1	1.25		2	0.9	1.8		0	0.00	0.5	0.5
	GRADUAL REDUCTION (1.25" TO 0.75")	6.24	0.75		2	0.22	0.44		0	0.00	0.3	0.3
15 - MECHANICAL ROOM RETURN BRANCH	STRAIGHT LENGTH	6.24	0.75	119					0	34.10	0.0	34.1
	STANDARD TEE (THRU BRANCH - VAV 4.42 ACB'S)	6.24	0.75		2	2.1	4.2		0	0.00	2.7	2.7
	ISOLATION VALVE - BALL	6.24	0.75		1	0.08	0.08		0	0.00	0.1	0.1
	STRAINER (SEE EATON, 3/4", 7 GPM - 0.6 psi)	6.24	0.75					1.386	4.1416452	0.00	0.0	4.1
	STRAIGHT LENGTH	6.24	0.75	3.5					0	1.00	0.0	1.0
16 - MECHANICAL ROOM RETURN BRANCH	STANDARD TEE (THRU BRANCH - NORTH BRANCH)	6.24	0.75		1	2.1	2.1		0	0.00	1.4	1.4
	STRAIGHT LENGTH	3.12	0.75	8.5					0	0.67	0.0	0.7
	90° ELBOW	3.12	0.75		1	1.7	1.7		0	0.00	0.3	0.3
	STRAIGHT LENGTH	3.12	0.75	2					0	0.16	0.0	0.2
	STANDARD TEE (THRU FLO - ACB 3.2)	3.12	0.75		1	0.9	0.9		0	0.00	0.1	0.1
17 - MECHANICAL ROOM RETURN BRANCH	STRAIGHT LENGTH	2.08	0.75	4					0	0.15	0.0	0.1
	STANDARD TEE (THRU FLO - ACB 3.2)	2.08	0.75		1	0.9	0.9		0	0.00	0.1	0.1
	STRAIGHT LENGTH	1.04	0.75	12					0	0.12	0.0	0.1
	90° ELBOW	1.04	0.75		1	1.7	1.7		0	0.00	0.0	0.0
	STRAIGHT LENGTH	1.04	0.75	3					0	0.03	0.0	0.0
18 - MECHANICAL ROOM RETURN BRANCH	ISOLATION VALVE - BALL	1.04	0.75		1	0.08	0.08		0	0.00	0.0	0.0
	CHILLED BEAM (SEE SWEGON DATA SHEET)	1.04	0.75					0.923	2.7581086	0.00	0.0	2.8
	BALANCING VALVE (GLOBE STYLE)	1.04	0.75		1	10	10		0	0.00	0.2	0.2
	ISOLATION VALVE - BALL	1.04	0.75		1	0.08	0.08		0	0.00	0.0	0.0
	STRAIGHT LENGTH	1.04	0.75	3					0	0.03	0.0	0.0
19 - MECHANICAL ROOM RETURN BRANCH	90° ELBOW	1.04	0.75		1	1.7	1.7		0	0.00	0.0	0.0
	STRAIGHT LENGTH	1.04	0.75	12					0	0.12	0.0	0.1
	STANDARD TEE (THRU FLO - ACB 3.2)	1.04	0.75		1	0.9	0.9		0	0.00	0.0	0.0
	STRAIGHT LENGTH	2.08	0.75	4					0	0.15	0.0	0.1
	STANDARD TEE (THRU FLO - ACB 3.2)	2.08	0.75		1	0.9	0.9		0	0.00	0.1	0.1
20 - MECHANICAL ROOM RETURN BRANCH	STRAIGHT LENGTH											



