

Project #: Upstairs
Name:

Upstairs remaining materials. Shipping on downstairs materials list

Quotation
June 16, 2018

Goods & Services Supplied

Tubing

Part Number	Description	Quantity	Unit	Price
A1180313	5/16" Wirsbo hePEX, 250 ft. coil	1	Ea	\$222.00
A1140750	3/4" Wirsbo hePEX, 100 ft. coil	2	Ea	on site
A1220313	5/16" Wirsbo hePEX, 1,000 ft. coil	1	Ea	\$868.00

Subtotal: \$1,090.00

Fittings

Part Number	Description	Quantity	Unit	Price
Q4153275	ProPEX Manifold Elbow Adapter, R32 x 3/4" ProPEX	2	Ea	on site
A4020313	5/16" QS-style Compression Fitting Assembly, R20 thread	14	Ea	on site
A2660701	TruFLOW Jr. Assembly with Isolation and Balancing Valves, 7-loop	1	Ea	on site
Q4690756	ProPEX Ring with Stop, 3/4"	2	Ea	on site

Subtotal: \$0.00

Controls

Part Number	Description	Quantity	Unit	Price
A3010100	Single-zone Pump Relay	1	Ea	installed
A3031003	Three-zone Control Module for Two and Four-wire Operation	1	Ea	installed
A3100101	Heat-only Thermostat with Touchscreen	1	Ea	installed

Subtotal: \$0.00

Quik Trak

Part Number	Description	Quantity	Unit	Price
E6051250	Quik Trak Screws (1 1/4") (2500/pkg)	2	Pkg	lowes
E6050010	Quik Trak Sealant, 10.3 fluid oz. (300 ml)	10	Ea	lowes
A5060701	Quik Trak 7" x 48" Panels	232	Ea	on site
A5060702	Quik Trak 7" x 48" Return Panels	26	Ea	on site

Subtotal: \$100.00

Accessories

Part Number	Description	Quantity	Unit	Price
E6081128	Tube Cutter (plastic) for up to 1" PEX	1	Ea	on site
E6061000	Tube Uncoiler	1	Ea	on site
A5150375	3/8" Plastic Bend Support	14	Ea	on site

Subtotal: \$0.00

Total Quote Price:

\$1,190.00

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Created Using LoopCAD 2022 Uponor(US) (3/8/2026)
Software Version:22.0.0994 R (Trial) / Pricing Version: 22.0.994.0

See sections at end of report for important Notes, Assumptions and Disclaimers.

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Project Information

Project #: Upstairs

Notes:

Name:

Location:

Circuit Stock Summary

Part Number	Description	Quantity
A1180313	5/16" Wirsbo hePEX, 250 ft. coil	1
A1220313	5/16" Wirsbo hePEX, 1,000 ft. coil	1

Supply/Return Stock Summary

Part Number	Description	Quantity
A1140750	3/4" Wirsbo hePEX, 100 ft. coil	2

*Supply/Return stock is not included in coil summary.

Coil Summary

Coil	Part Number	Coil Length (ft)	Tube Type	Length Used (ft)
Coil 1	A1180313	250	hePEX 5/16"	160
Coil 2	A1220313	1,000	hePEX 5/16"	846

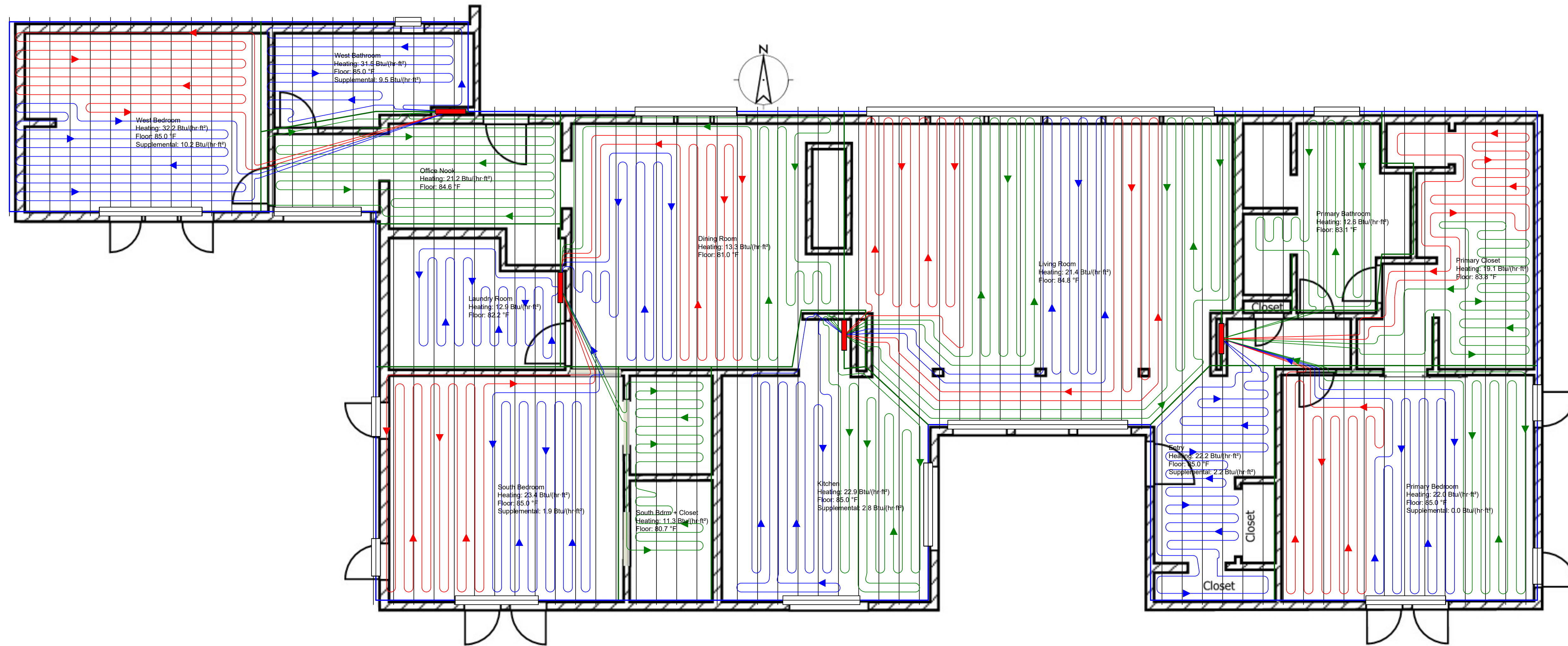
Circuits Cut Schedule

Main Floor

Circuit	Length (ft)	Location	Coil	Coil Length (ft)
A-5	160	Main Floor;Manifold 2;Primary Bedroom	Coil 1	250
A-6	161	Main Floor;Manifold 2;Primary Bedroom	Coil 2	1,000
A-7	159	Main Floor;Manifold 2;Primary Bedroom	Coil 2	1,000
A-8	135	Main Floor;Manifold 2;Primary Bathroom	Coil 2	1,000
A-9	120	Main Floor;Manifold 2;Primary Closet	Coil 2	1,000
A-10	122	Main Floor;Manifold 2;Primary Closet	Coil 2	1,000
A-17	149	Main Floor;Manifold 2;Entry	Coil 2	1,000

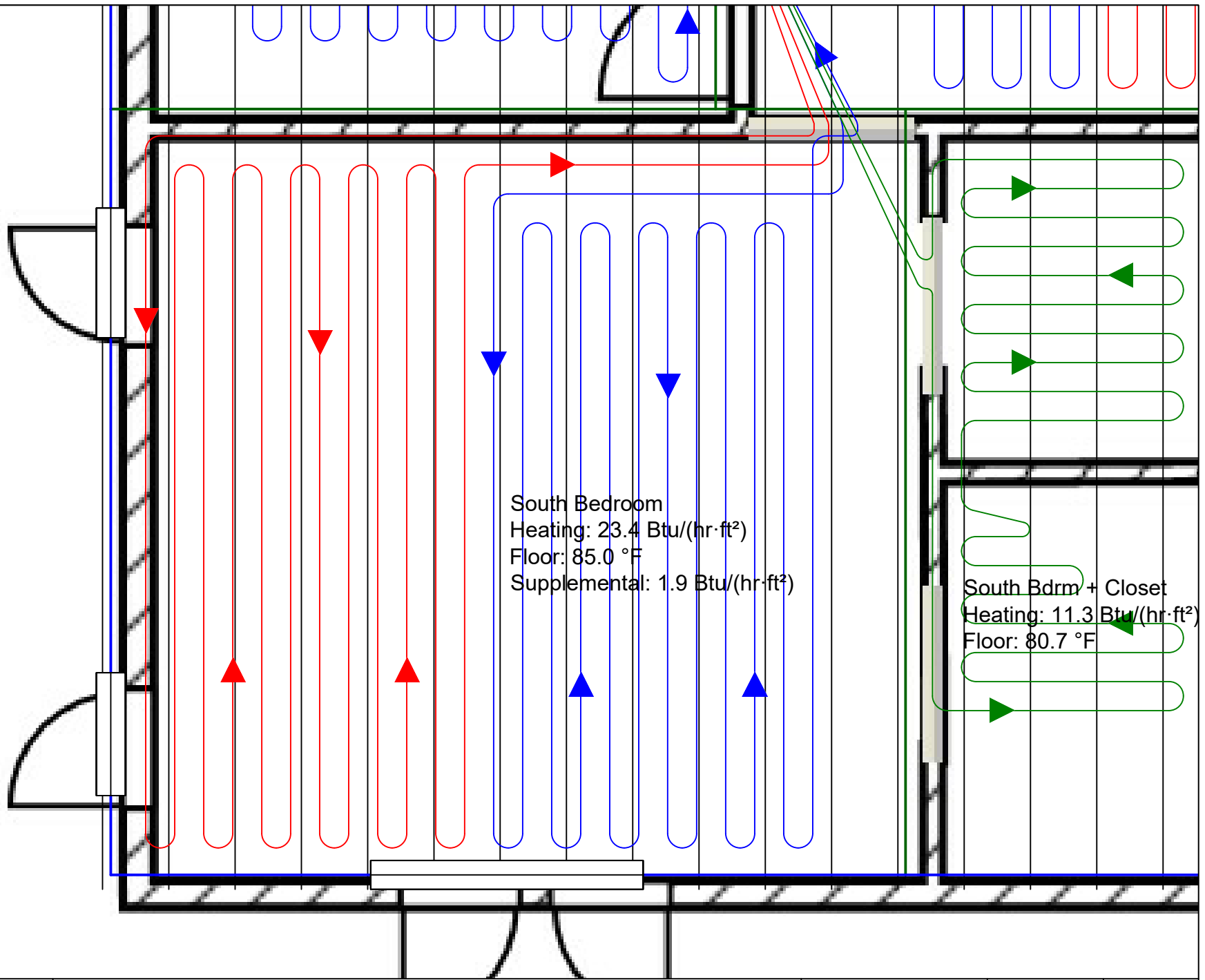
↑
plus 96' for
downstairs on coil 2

Upstairs layout diagram



136'





Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



Project Number:
Upstairs

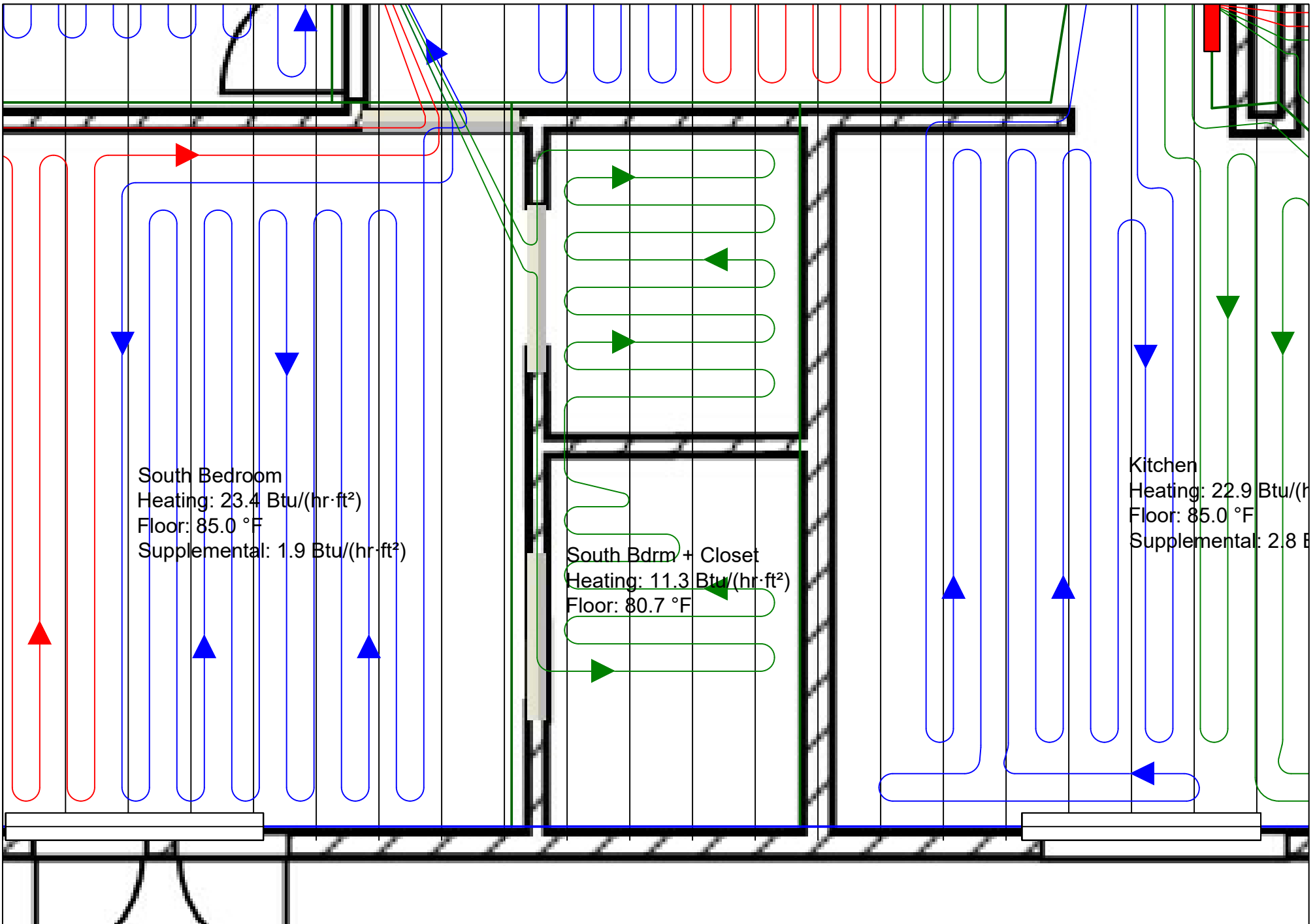
Scale:
3/8"=1'

Date:
6/16/2018

Drawing:
South Bedroom

Page:
1

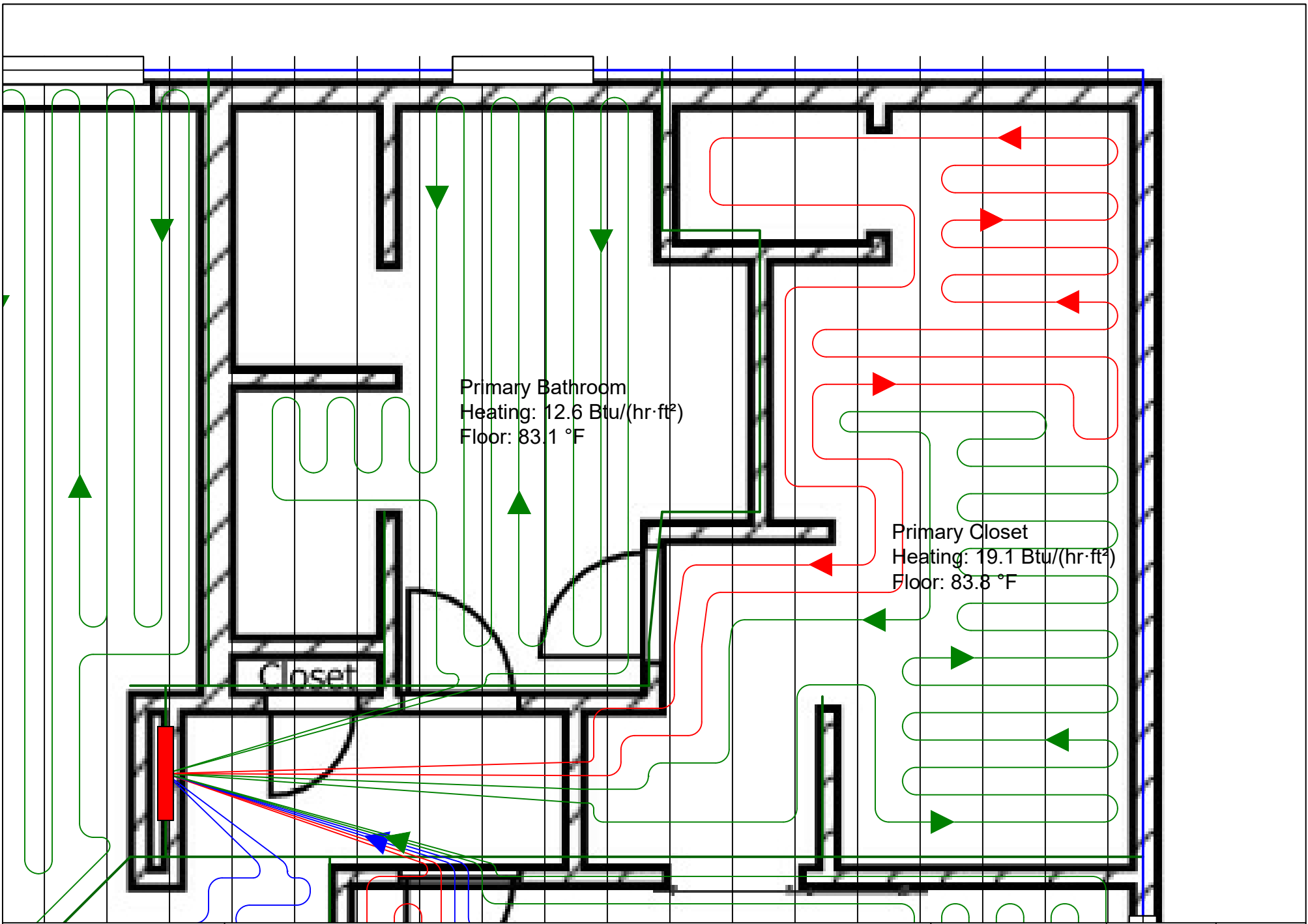




Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: South Bdrm + Closet	Page: 2	



Primary Bathroom
 Heating: 12.6 Btu/(hr-ft²)
 Floor: 83.1 °F

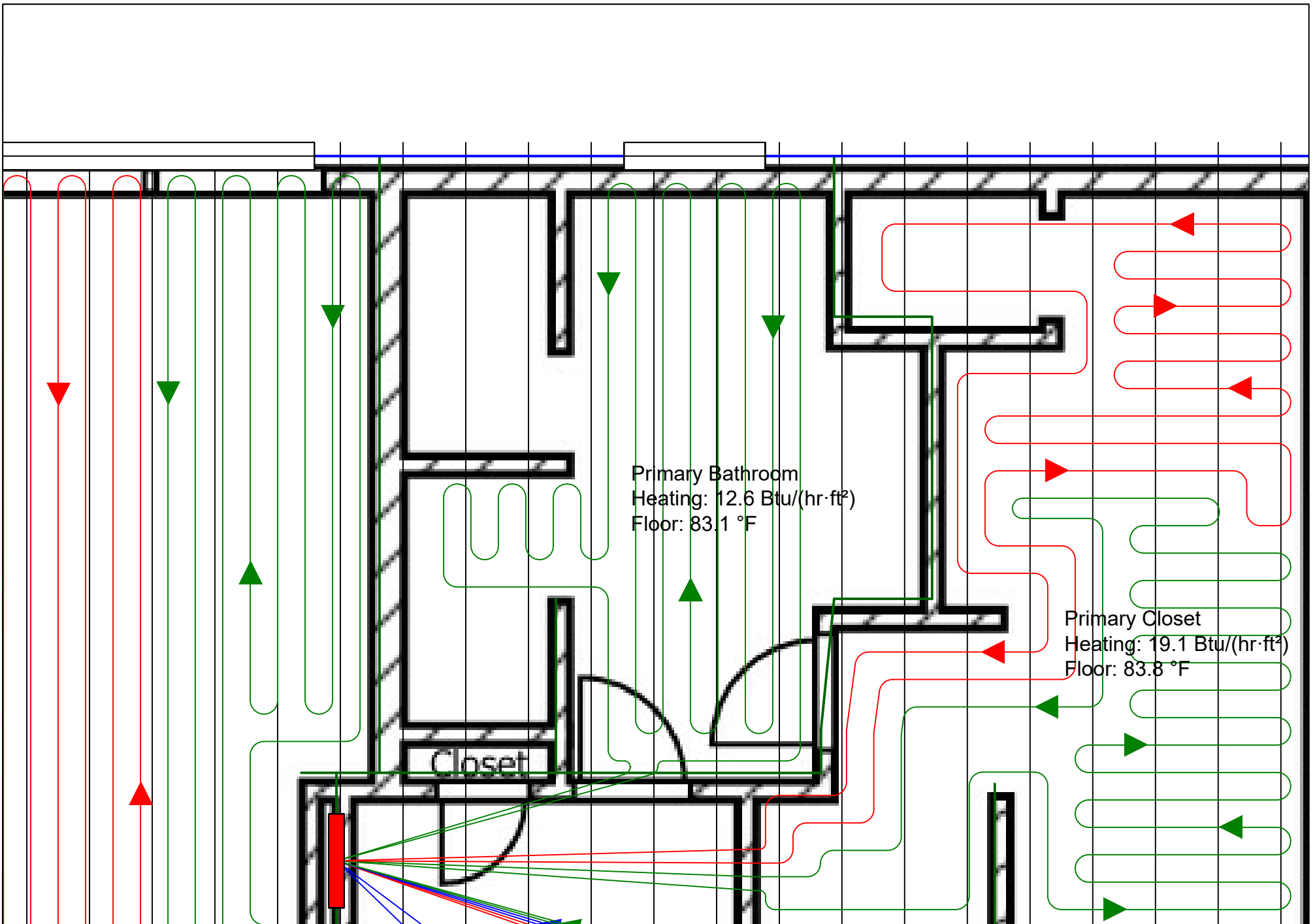
Primary Closet
 Heating: 19.1 Btu/(hr-ft²)
 Floor: 83.8 °F

Closet

Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



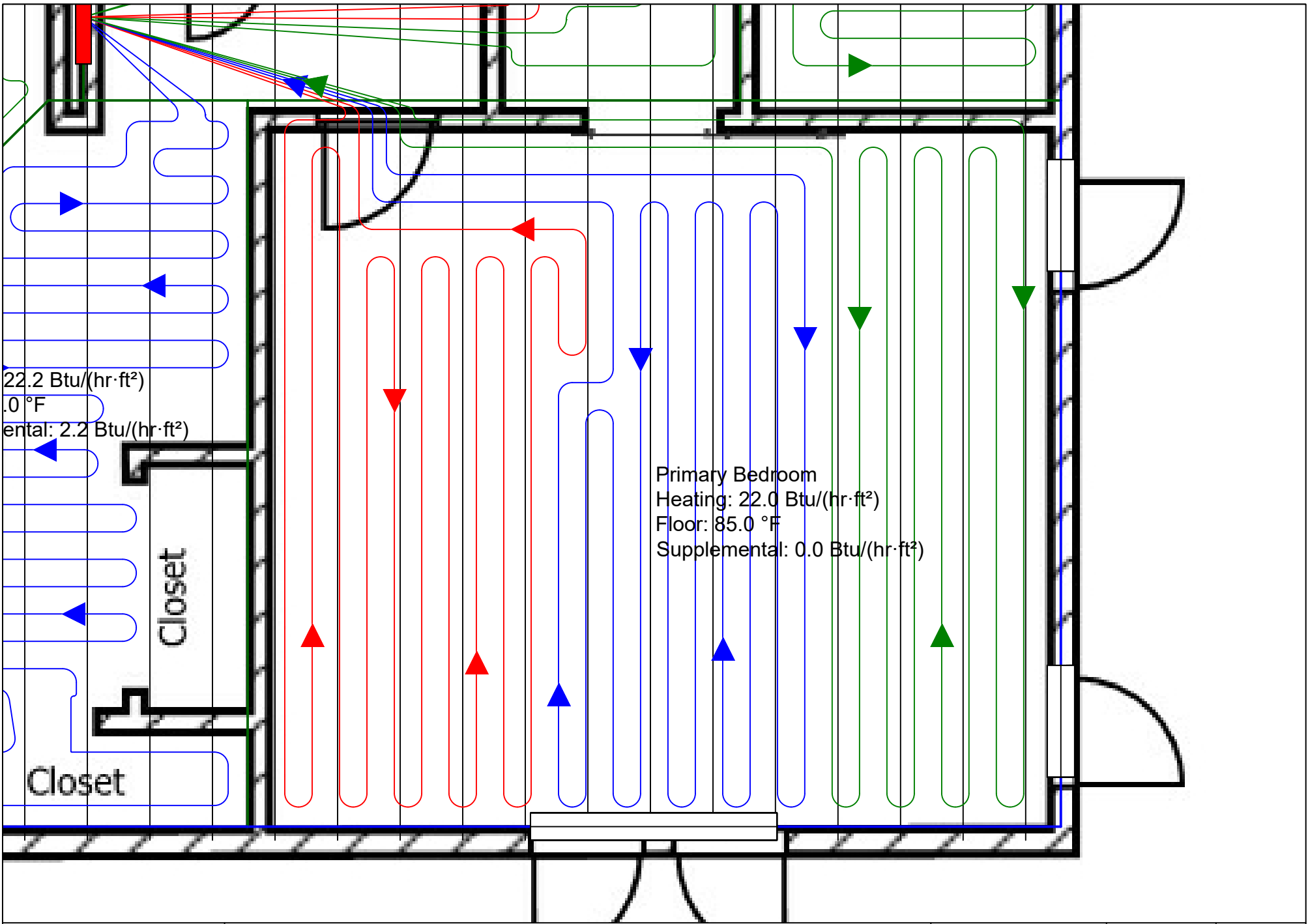
Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: Primary Closet	Page: 4	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



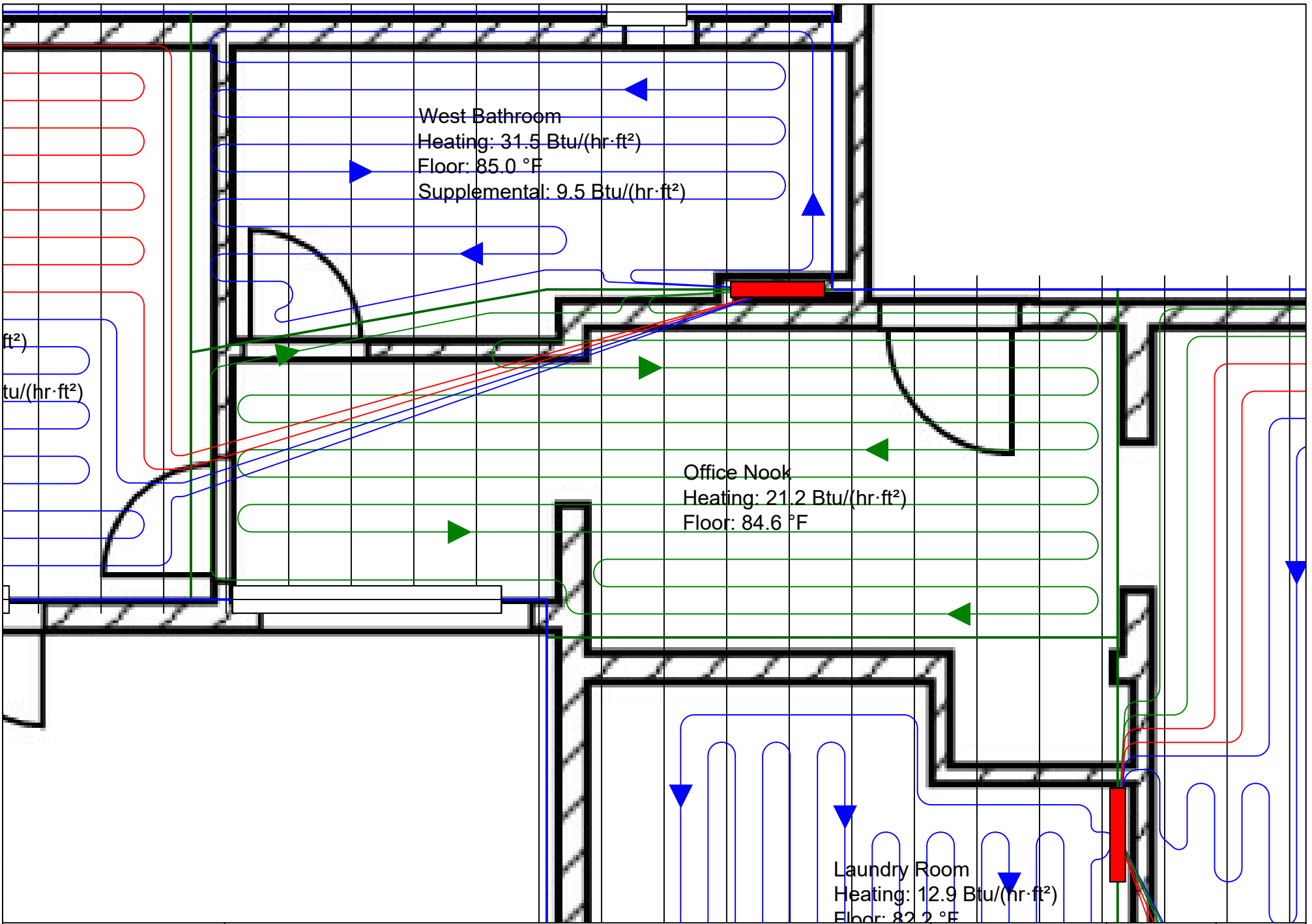
Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: Primary Bathroom	Page: 5	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



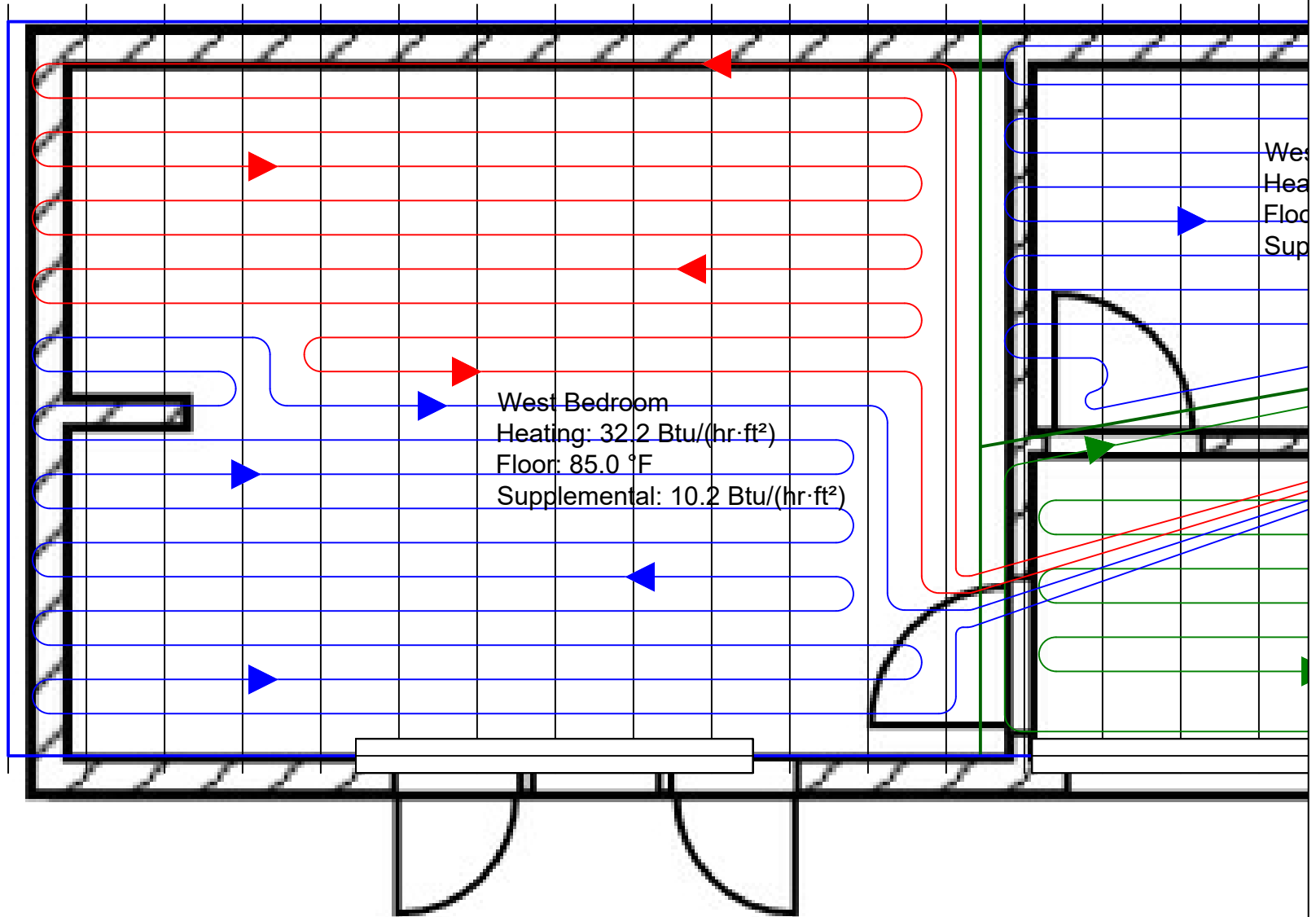
Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: Primary Bedroom	Page: 6	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: Office Nook	Page: 7	



West Bedroom
 Heating: 32.2 Btu/(hr·ft²)
 Floor: 85.0 °F
 Supplemental: 10.2 Btu/(hr·ft²)

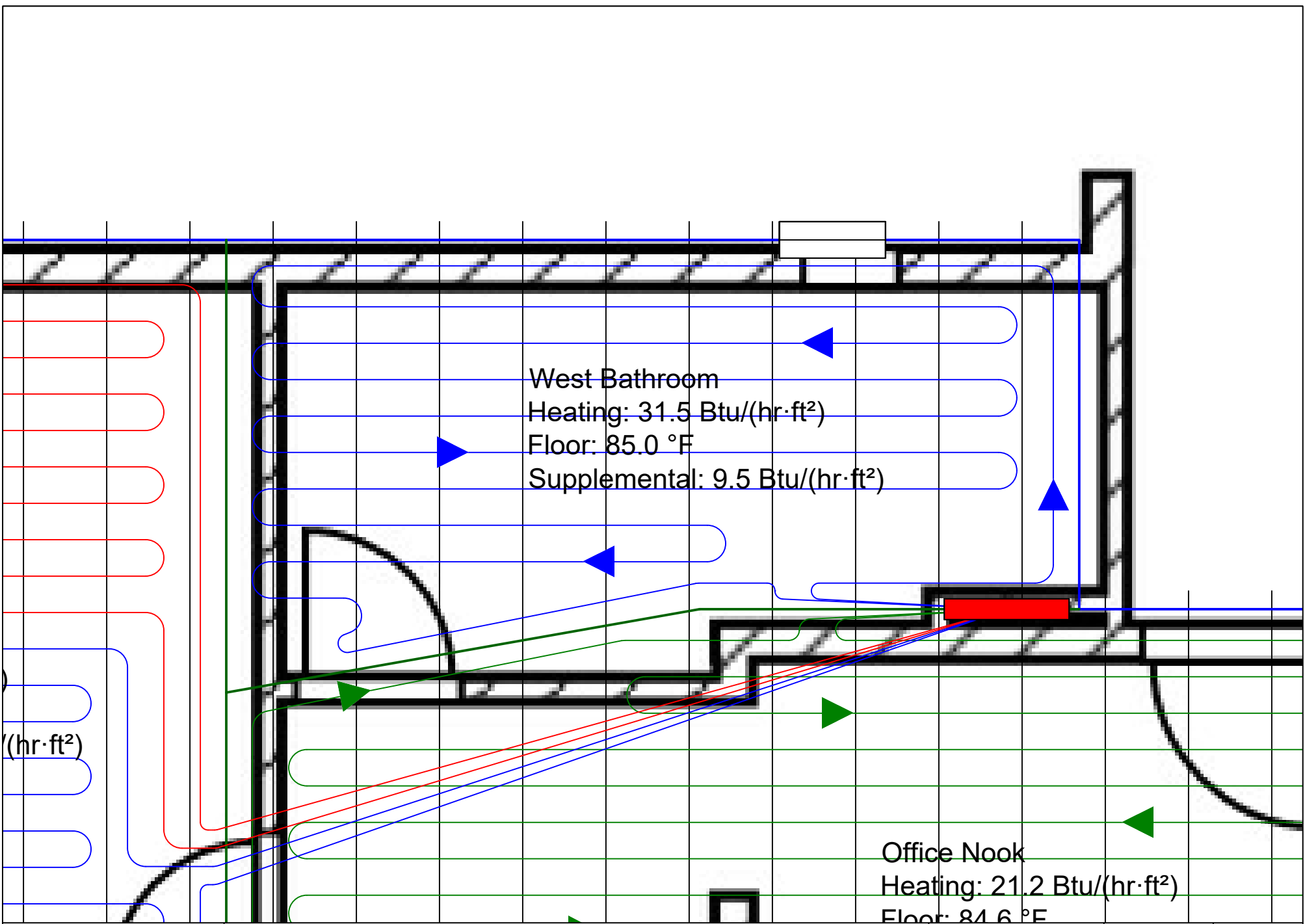
West
 Bedroom
 Heating
 Floor
 Supplemental



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.



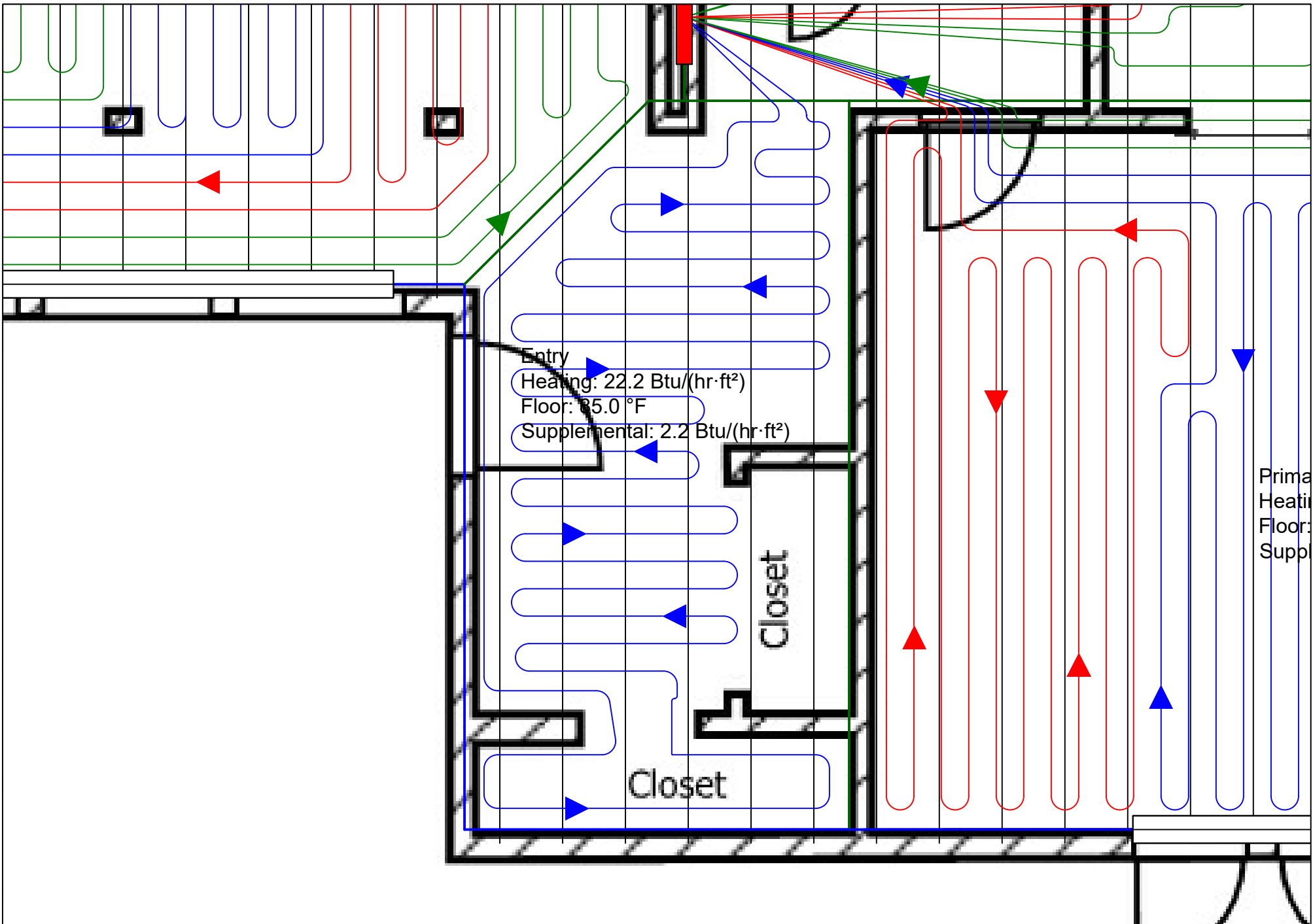
Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: West Bedroom	Page: 8	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.

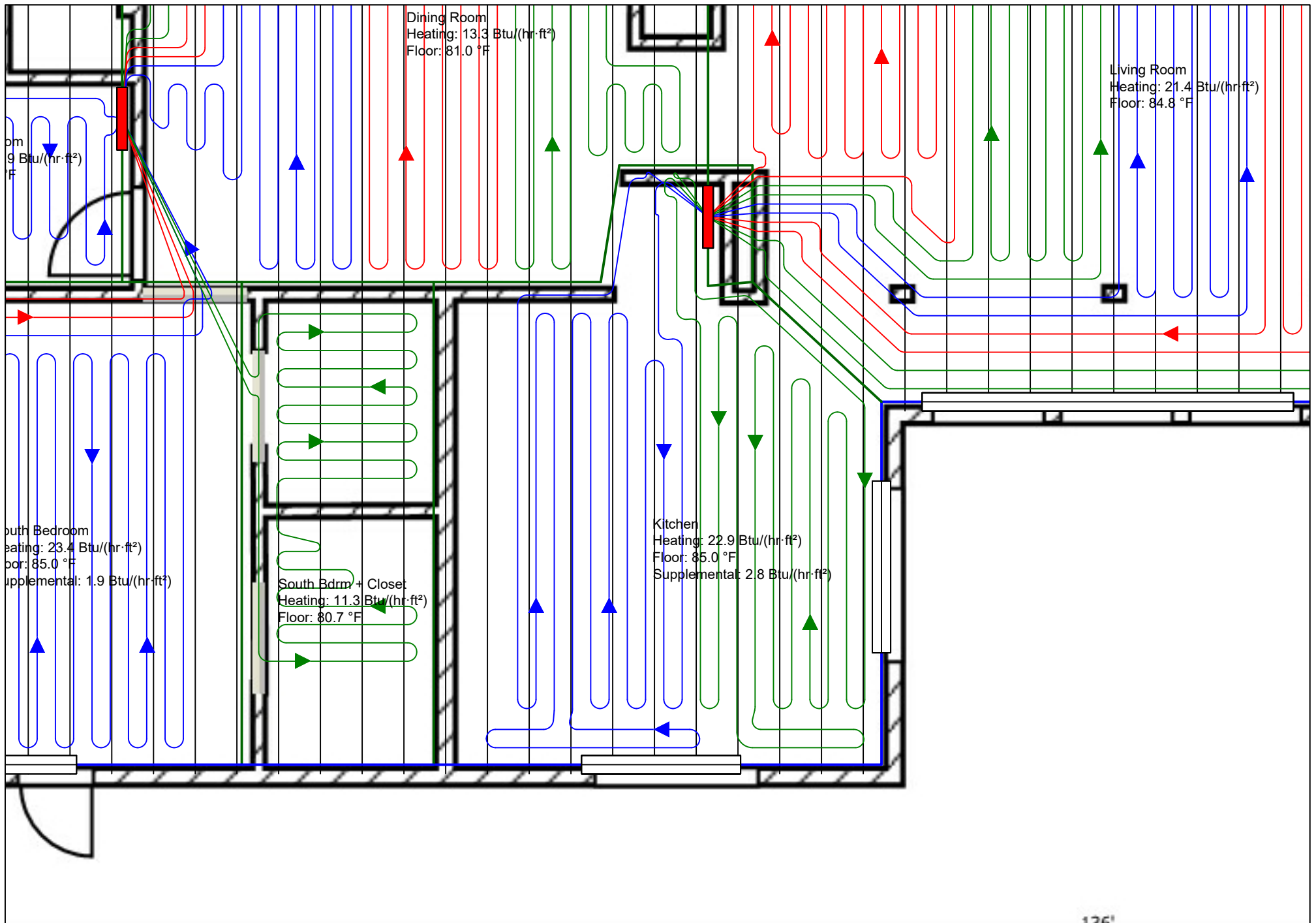


Project Number: Upstairs	Scale: 1/2"=1'	Date: 6/16/2018
Drawing: West Bathroom	Page: 9	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.

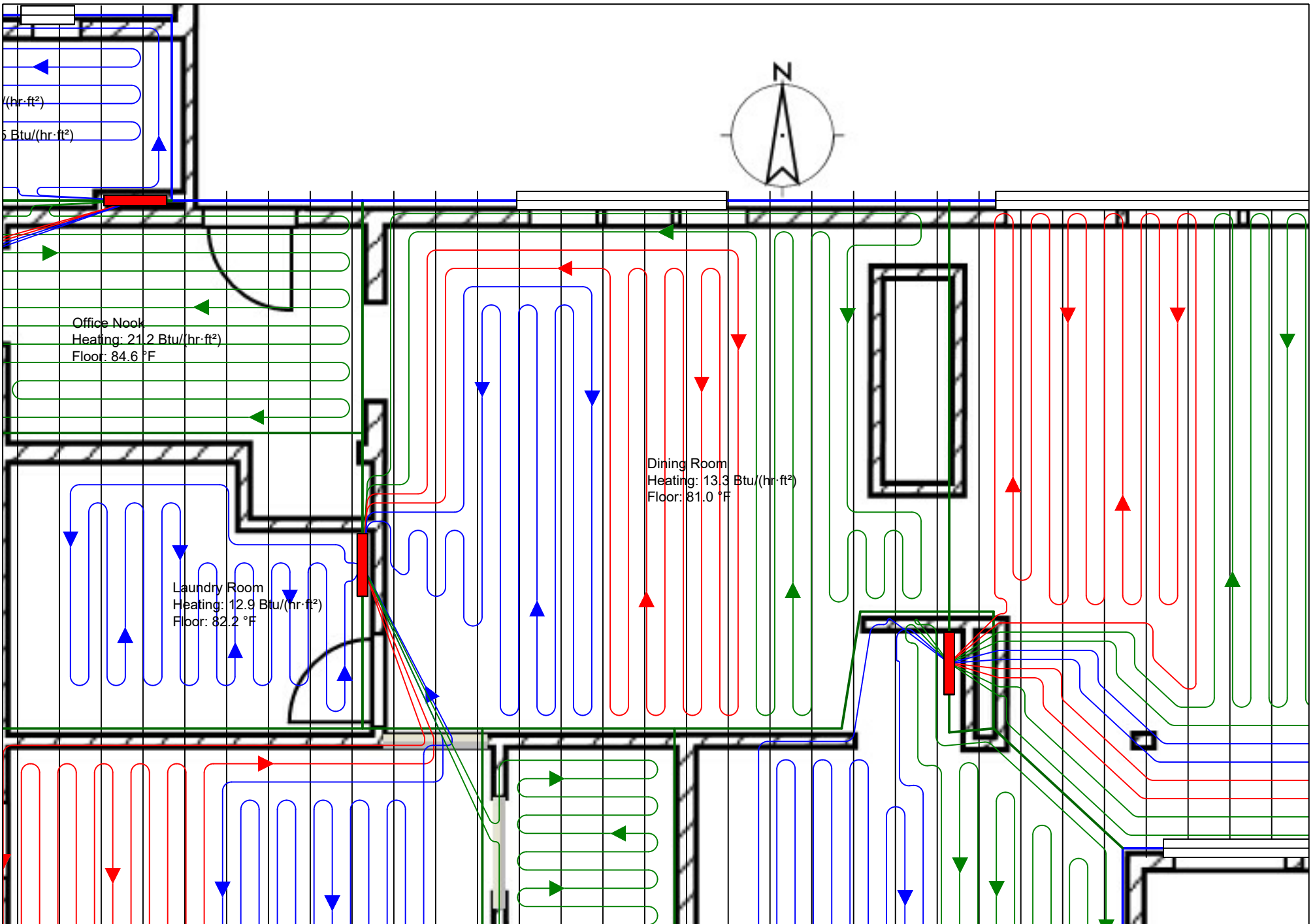
Project Number: Upstairs	Scale: 3/8"=1'	Date: 6/16/2018
Drawing: Entry	Page: 10	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.




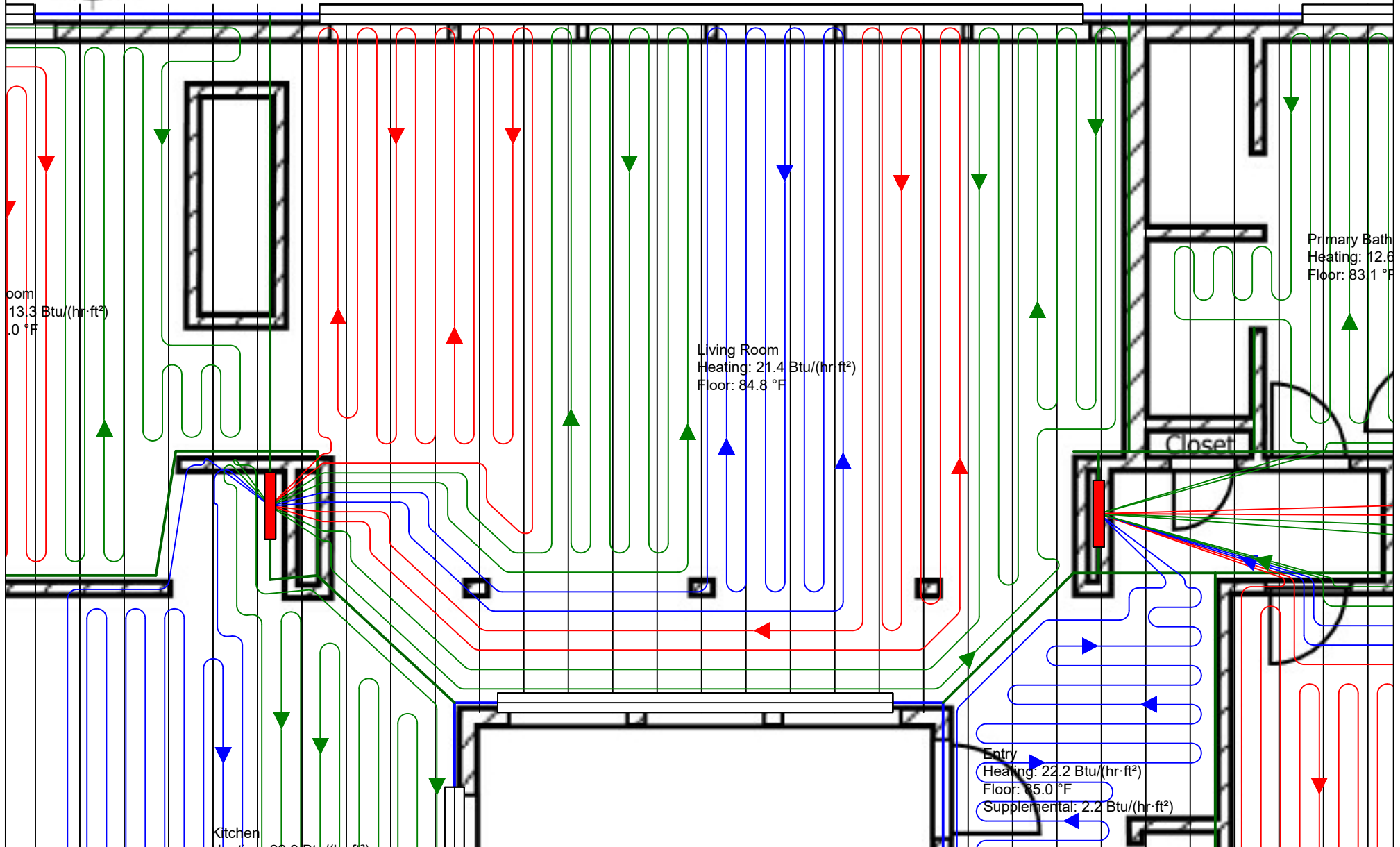
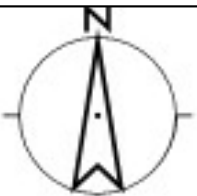
Project Number: Upstairs	Scale: 1/4"=1'	Date: 6/16/2018
Drawing: Kitchen	Page: 11	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.

uponor

Project Number: Upstairs	Scale: 1/4"=1'	Date: 6/16/2018
Drawing: Dining Room	Page: 12	



Note: Details of the tubing bend radius have been simplified for clarity. Consult tubing manufacturer for specific bend radius recommendations.

uponor

Project Number: Upstairs	Scale: 1/4"=1'	Date: 6/16/2018
Drawing: Living Room	Page: 13	



Water Supply Summary

Project #: Upstairs
June 16, 2018

Project Information

Project #: Upstairs
Name:
Location:

Notes:

Note that this project has rooms that may require a supplemental heat supply to meet the design load.

Supply Summary

Name	Temp	Total Fluid Vol	Total Flow	Head Loss ¹	Load ²	# Circuits	# Zones
Water Temperature	118	22.51	3.97	8.6	57,015	25	1

(1) Head loss includes manifolds, circuits, and supply/return piping if specified, may also contain control valve losses. (2) Load includes all panel back losses.

Manifold Summary

Manifold Name	Circuits	Flowrate	Required Temp.	Supplied Temp.	Manifold Type	S/R Length ¹	S/R Pipe	Manifold Head Loss	Circuit Head Loss	S/R Head Loss	Total Head Loss ²
Manifold 1	7	0.95	115	118	TruFLOW Jr Valved w/ Balancing	40	hePEX 3/4"	0.0	5.8	0.6	6.4
Manifold 2	7	1.14	118	118	TruFLOW Jr Valved w/ Balancing	80	hePEX 3/4"	0.0	5.7	1.5	7.3
Manifold 3	7	1.21	118	118	TruFLOW Jr Valved w/ Balancing	60	hePEX 3/4"	0.1	7.2	1.3	8.6
Manifold 4	4	0.66	114	118	TruFLOW Jr Valved w/ Balancing	80	hePEX 5/8"	0.0	3.9	1.3	5.2
Total	25	3.97	-	-	-	-	-	0.1	7.2	8.6	8.6

(1) S/R Length = one way, (2) Total Head loss includes manifold, circuits and supply/return piping if specified.

Water Temperature (118 °F)

Manifold 1 (118 °F, TruFLOW Jr Valved w/ Balancing, 7 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop ²	Load ³	Actuator	Valve Setting
A-2	South Bedroom	208	7	119	hePEX 5/16"	0.22	5.8	20 (29)	3,144	No	4.2
A-3	South Bedroom	184	7	110	hePEX 5/16"	0.22	5.1	20 (27)	2,883	No	0.8
A-4	South Bdrm + Closet	114	7	71	hePEX 5/16"	0.10	0.8	20 (33)	1,348	No	0.25
A-12	Dining Room	127	7	72	hePEX 5/16"	0.10	0.9	20 (36)	1,336	No	0.25
A-13	Dining Room	161	7	86	hePEX 5/16"	0.10	1.2	20 (41)	1,595	No	0.25
A-14	Dining Room	159	7	103	hePEX 5/16"	0.10	1.2	20 (43)	1,916	No	0.25
A-15	Laundry Room	101	7	80	hePEX 5/16"	0.11	0.9	20 (32)	1,783	No	0.25
Total	-	1,054		642	-	0.95	5.8	-	14,005	0	

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Manifold 2 (118 °F, TruFLOW Jr Valved w/ Balancing, 7 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop ²	Load ³	Actuator	Valve Setting
A-5	Primary Bedroom	160	7	85	hePEX 5/16"	0.15	2.2	20 (31)	2,235	No	0.4
A-6	Primary Bedroom	161	7	83	hePEX 5/16"	0.14	2.2	20 (31)	2,203	No	0.39
A-7	Primary Bedroom	159	7	85	hePEX 5/16"	0.15	2.3	20 (30)	2,229	No	0.41
A-8	Primary Bathroom	135	7	93	hePEX 5/16"	0.15	2.0	20 (30)	2,292	No	0.4
A-9	Primary Closet	120	7	72	hePEX 5/16"	0.10	0.9	20 (35)	1,768	No	0.25
A-10	Primary Closet	122	7	88	hePEX 5/16"	0.18	2.3	20 (24)	2,153	No	0.44
A-17	Entry	149		97	hePEX 5/16"	0.27	5.7	20 (20)	2,640	No	4.2
Total	-	1,006		603	-	1.14	5.7	-	15,520	0	

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Name:
Project #:Upstairs

Manifold 3 (118 °F, TruFLOW Jr Valved w/ Balancing, 7 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop ²	Load ³	Actuator	Valve Setting
A-11	Kitchen	148	7	79	hePEX 5/16"	0.14	1.8	20 (31)	2,130	No	0.3
A-16	Kitchen	163	7	109	hePEX 5/16"	0.29	7.2	20 (20)	2,930	No	4.2
A-18	Living Room	176	7	95	hePEX 5/16"	0.15	2.5	20 (33)	2,455	No	0.36
A-19	Living Room	157	7	85	hePEX 5/16"	0.13	1.9	20 (33)	2,198	No	0.29
A-20	Living Room	178	7	95	hePEX 5/16"	0.15	2.5	20 (33)	2,446	No	0.36
A-21	Living Room	159	7	95	hePEX 5/16"	0.17	2.7	20 (30)	2,441	No	0.39
A-22	Living Room	173	7	105	hePEX 5/16"	0.19	3.7	20 (29)	2,708	No	0.45
Total	-	1,154		663	-	1.21	7.2	-	17,308	0	

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Manifold 4 (118 °F, TruFLOW Jr Valved w/ Balancing, 4 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop ²	Load ³	Actuator	Valve Setting
A-23	West Bathroom	136	7	74	hePEX 5/16"	0.14	1.7	20 (29)	2,001	No	0.45
A-24	Office Nook	216	7	111	hePEX 5/16"	0.17	3.8	20 (34)	2,876	No	1.42
A-25	West Bedroom	192	7	99	hePEX 5/16"	0.17	3.4	20 (31)	2,616	No	0.76
A-26	West Bedroom	195	7	101	hePEX 5/16"	0.18	3.9	20 (30)	2,689	No	4.2
Total	-	738		386	-	0.66	3.9	-	10,182	0	

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

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Heating System Summary

Project #:upstairs
June 16, 2018

Project Information

Project #: upstairs
Name:
Location:

Notes:

Project Summary

Load Calculation Method:	Manual J8	Total Circuit Lengths:	Component Losses:	28,599 Btu/hr
Design Location:	Anchorage IAP, Alaska	hePEX 5/16"	Infiltration/Ventilation:	21,510 Btu/hr
Outdoor Temperature:	-4.0 °F	hePEX 3/4"	Radiant Back Losses:	10,810 Btu/hr
Floorplans / Levels:		hePEX 5/8"	Total Heating Load:	60,918 Btu/hr
Main Floor	2,727 ft ²			
Total Area:	2,727 ft ²	Total RH Circuits:	Radiant Heating:	46,205 Btu/hr
		Total Manifolds:	Radiant Back Losses:	10,810 Btu/hr
		Total Zones:	Other:	3,903 Btu/hr
			Total Heating Load:	60,918 Btu/hr
		Fluid Type:		
				100% Water
		Total Tubing Volume:		22.51 USG
		Surface Temperature:		82 - 85 °F

Note that this project has rooms that may require a supplemental heat supply to meet the design load.

Zone Heating Summary

Zone #	Gross Area	Construction	Heating Types	RH ¹ Circuits	Total Tubing	Manifolds	Flowrate	Head Loss (Circuit Only)	RH Load ²	Supplemental	Zone Load ³
Zone 101	2,727	Quik Trak Above Sub-Floor	RH,OTH	25	3,952	4	3.97	7.2	57,015	3,903	60,918

(1) Complete circuits assigned to this zone. (2) Total Radiant heating load for rooms in zone, including all panel back loss. (3) Total load for zone including all panel back loss. Does not account for reclaimed loss within building envelope.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/(hr-ft²) Rv = hr-ft²-°F/btu
Head Loss = ft water RH = Radiant Floor Heating BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated

Created Using LoopCAD 2022 Uponor(US) (3/3/2026)
Version:22.0.0994 R (Trial)

See end of report for important Notes and Disclaimers.

Room Heating Summary (By Construction Type)

Quik Trak Above Sub-Floor

Zone #	Room Name	Heating Type	Floor Area	Heated Area	Manifold #	Tube Size	RH Circuits ¹	Tube Spacing	Tubing In Room	Floor Cover RV	Required Temp.	Unit RH Load	RH Load ²	Supplemental	Total Load ³
Zone 101	Dining Room	RH	283	269	Manifold 1	5/16"	3	7	445	0.5	102	18.5	4,990	0	4,990
Zone 101	Entry	RH, OTH	106	96	Manifold 2	5/16"	1	8	137	0.5	118	27.1	2,614	235	2,849
Zone 101	Kitchen	RH, OTH	206	188	Manifold 3	5/16"	2	7	297	0.5	118	26.9	5,060	569	5,629
Zone 101	Laundry Room	RH	102	80	Manifold 1	5/16"	1	7	94	0.5	113	22.3	1,783	0	1,783
Zone 101	Living Room	RH	477	474	Manifold 3	5/16"	5	7	809	0.5	114	25.8	12,248	0	12,248
Zone 101	Office Nook	RH	120	120	Manifold 4	5/16"	1	7	249	0.5	111	25.8	3,101	0	3,101
Zone 101	Primary Bathroom	RH	125	86	Manifold 2	5/16"	1	7	112	0.5	113	24.7	2,128	0	2,128
Zone 101	Primary Bedroom	RH, OTH	250	250	Manifold 2	5/16"	3	7	421	0.5	114	26.4	6,591	5	6,596
Zone 101	Primary Closet	RH	176	171	Manifold 2	5/16"	2	7	271	0.5	116	24.4	4,187	0	4,187
Zone 101	South Bdrm + Closet	RH	82	70	Manifold 1	5/16"	1	7	90	0.5	103	18.8	1,308	0	1,308
Zone 101	South Bedroom	RH, OTH	228	223	Manifold 1	5/16"	2	7	363	0.5	115	26.5	5,924	439	6,363
Zone 101	West Bathroom	RH, OTH	74	74	Manifold 4	5/16"	1	7	122	0.5	114	26.9	2,001	708	2,709
Zone 101	West Bedroom	RH, OTH	191	191	Manifold 4	5/16"	2	7	322	0.5	114	26.6	5,080	1,946	7,026

(1) Circuits assigned to this room. Leaders from other rooms may not be counted. (2) Includes panel back loss. (3) Total load including panel back loss. Does not account for reclaimed loss within building envelope.

Manifold Summary

Manifold Name	# Zones	# Circuits	Flow	Head Loss ¹	Required Temp.	Supplied Temp.	Temp Drop	Manifold Type	Control Type	# Actuators	S/R Length ²	S/R Pipe
Manifold 1	1	7	0.95	6.4	115	118	20 (43)	TruFLOW Jr Valved w/ Balancing	Manifold	0	40	hePEX 3/4"
Manifold 2	1	7	1.14	7.3	118	118	20 (35)	TruFLOW Jr Valved w/ Balancing	Manifold	0	80	hePEX 3/4"
Manifold 3	1	7	1.21	8.6	118	118	20 (33)	TruFLOW Jr Valved w/ Balancing	Manifold	0	60	hePEX 3/4"
Manifold 4	1	4	0.66	5.2	114	118	20 (34)	TruFLOW Jr Valved w/ Balancing	Manifold	0	80	hePEX 5/8"
Total	1	25	3.97	8.6	-	-	-	-	-	0	-	-

(1) Total Head loss includes manifold, circuits and supply/return piping if specified. (2) S/R Length = one way

Disclaimers

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Heating System Detail

Project #: Upstairs
June 16, 2018

Project Information

Project #: Upstairs
Name:
Location:

Notes:

Design Conditions and Summary

Load Calculation Method:	Manual J8	Total Tubing Lengths:		Component Losses:	28,599 Btu/hr
Design Location:	Anchorage IAP, Alaska	hePEX 5/16"	3,952 ft	Infiltration/Ventilation:	21,510 Btu/hr
Outdoor Temperature:	-4.0 °F	hePEX 3/4"	360 ft	Radiant Back Losses:	10,810 Btu/hr
Floorplans / Levels:		hePEX 5/8"	160 ft	Total Heating Load:	60,918 Btu/hr
Main Floor	2,727 ft ²				
Total Area:	2,727 ft ²	Total RH Circuits:	25	Radiant Heating:	46,205 Btu/hr
		Total Manifolds:	4	Radiant Back Losses:	10,810 Btu/hr
		Total Zones:	1	Other:	3,903 Btu/hr
				Total Heating Load:	60,918 Btu/hr
		Fluid Type:	100% Water		
		Total Tubing Volume:	22.51 USG		

Note that this project has rooms that may require a supplemental heat supply to meet the design load.

Zone Heating Summary

Zone #	Area	Heating Types	RH Circuits	Flowrate	Head Loss	Supplemental	Rooms
101	2,727	RH,OTH	25	3.97	8.6	3,903	South Bedroom, South Bdrm + Closet, Laundry Room, Primary Closet, Primary Bathroom, Primary Bedroom, Office Nook, West Bedroom, West Bathroom, Entry, Kitchen, Dining Room, Living Room
Total	2,727	RH,OTH	25	3.97	8.6	3,903	

*RH Loads include internal panel back loss that may not be included in the project total.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/(hr-ft²) Rv = hr-ft²-°F/btu
Head Loss = ft water RH = Radiant Floor Heating BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated

Created Using LoopCAD 2022 Uponor(US) (3/3/2026)
Version:22.0.0994 R (Trial)

Room Heating Summary

Main Floor

Dining Room

Total Area: 309 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 269 ft²
Tubing in Floor: 455 ft
Circuits in Room: 3
Tube Spacing: 7
Required Surface Temp: 81 °F
Required Water Temp: 102 °F
Est. Peak Output: 4,960 Btu/hr

Load/Loss Summary:
Room Design Load: 3,765 Btu/hr

Radiant Load: 4,990 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr

Radiant Back Loss: 1,225 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 4,990 Btu/hr

Entry

Total Area: 125 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 96 ft²
Tubing in Floor: 144 ft
Circuits in Room: 1
Tube Spacing: 8
Required Surface Temp: 85 °F
Required Water Temp: 118 °F
Est. Peak Output: 2,120 Btu/hr

Supplemental Req'd: 235 Btu/hr

Load/Loss Summary:
Room Design Load: 2,120 Btu/hr

Radiant Load: 2,614 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 235 Btu/hr

Radiant Back Loss: 494 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 2,849 Btu/hr

Kitchen

Total Area: 232 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 188 ft²
Tubing in Floor: 305 ft
Circuits in Room: 2
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 118 °F
Est. Peak Output: 4,142 Btu/hr

Supplemental Req'd: 569 Btu/hr

Load/Loss Summary:
Room Design Load: 4,142 Btu/hr
Radiant Load: 5,060 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 569 Btu/hr
Radiant Back Loss: 918 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 5,629 Btu/hr

Laundry Room

Total Area: 117 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 80 ft²
Tubing in Floor: 98 ft
Circuits in Room: 1
Tube Spacing: 7
Required Surface Temp: 82 °F
Required Water Temp: 113 °F
Est. Peak Output: 1,317 Btu/hr

Supplemental Req'd: 0 Btu/hr

Load/Loss Summary:
Room Design Load: 1,317 Btu/hr
Radiant Load: 1,783 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 466 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 1,783 Btu/hr

Living Room

Total Area: 514 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 474 ft²
Tubing in Floor: 821 ft
Circuits in Room: 5
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 114 °F
Est. Peak Output: 10,210 Btu/hr

Load/Loss Summary:
Room Design Load: 10,210 Btu/hr
Radiant Load: 12,248 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 2,038 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 12,248 Btu/hr

Office Nook

Total Area: 139 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 120 ft²
Tubing in Floor: 253 ft
Circuits in Room: 1
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 111 °F
Est. Peak Output: 2,557 Btu/hr

Load/Loss Summary:
Room Design Load: 2,548 Btu/hr
Radiant Load: 3,101 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 553 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 3,101 Btu/hr

Primary Bathroom

Total Area: 142 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 86 ft²
Tubing in Floor: 115 ft
Circuits in Room: 1
Tube Spacing: 7
Required Surface Temp: 83 °F
Required Water Temp: 113 °F
Est. Peak Output: 1,567 Btu/hr

Supplemental Req'd: 0 Btu/hr

Load/Loss Summary:
Room Design Load: 1,567 Btu/hr
Radiant Load: 2,128 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 561 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 2,128 Btu/hr

Primary Bedroom

Total Area: 278 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 250 ft²
Tubing in Floor: 429 ft
Circuits in Room: 3
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 114 °F
Est. Peak Output: 5,489 Btu/hr

Supplemental Req'd: 5 Btu/hr

Load/Loss Summary:
Room Design Load: 5,489 Btu/hr
Radiant Load: 6,591 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 5 Btu/hr
Radiant Back Loss: 1,102 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 6,596 Btu/hr

Primary Closet

Total Area: 207 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 171 ft²
Tubing in Floor: 283 ft
Circuits in Room: 2
Tube Spacing: 7
Required Surface Temp: 84 °F
Required Water Temp: 116 °F
Est. Peak Output: 3,391 Btu/hr

Load/Loss Summary:
Room Design Load: 3,368 Btu/hr
Radiant Load: 4,187 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 819 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 4,187 Btu/hr

South Bdrm + Closet

Total Area: 96 ft²
Heated by: RH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 70 ft²
Tubing in Floor: 95 ft
Circuits in Room: 1
Tube Spacing: 7
Required Surface Temp: 81 °F
Required Water Temp: 103 °F
Est. Peak Output: 1,213 Btu/hr

Load/Loss Summary:
Room Design Load: 927 Btu/hr
Radiant Load: 1,308 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 0 Btu/hr
Radiant Back Loss: 381 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 1,308 Btu/hr

South Bedroom

Total Area: 256 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 223 ft²
Tubing in Floor: 369 ft
Circuits in Room: 2
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 115 °F
Est. Peak Output: 4,911 Btu/hr

Supplemental Req'd: 439 Btu/hr

Load/Loss Summary:
Room Design Load: 4,911 Btu/hr
Radiant Load: 5,924 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 439 Btu/hr
Radiant Back Loss: 1,013 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 6,363 Btu/hr

West Bathroom

Total Area: 92 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 74 ft²
Tubing in Floor: 129 ft
Circuits in Room: 1
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 114 °F
Est. Peak Output: 1,637 Btu/hr

Supplemental Req'd: 708 Btu/hr

Load/Loss Summary:
Room Design Load: 1,637 Btu/hr
Radiant Load: 2,001 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 708 Btu/hr
Radiant Back Loss: 364 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 2,709 Btu/hr

West Bedroom

Total Area: 221 ft²
Heated by: RH,OTH
Room Temperature: 74 °F
Floor Covering (Rv): 0.5

Radiant Heating:
Heated Area: 191 ft²
Tubing in Floor: 327 ft
Circuits in Room: 2
Tube Spacing: 7
Required Surface Temp: 85 °F
Required Water Temp: 114 °F
Est. Peak Output: 4,203 Btu/hr

Supplemental Req'd: 1,946 Btu/hr

Load/Loss Summary:
Room Design Load: 4,203 Btu/hr
Radiant Load: 5,080 Btu/hr
Baseboard Load: 0 Btu/hr
Forced Air Load: 0 Btu/hr
Other Load: 1,946 Btu/hr
Radiant Back Loss: 877 Btu/hr
Recovered Back Loss: 0 Btu/hr
Total Heat Loss: 7,026 Btu/hr

**Radiant Heating Details
Manifold Summary**

Manifold Name	Zones	Circuits	Flowrate	Head Loss ¹	Required Temp.	Supplied Temp.	Temp Drop	Manifold Type	Control Type	Actuators	S/R Length ²	S/R Pipe
Manifold 1	1	7	0.95	6.4	115	118	20 (43)	TruFLOW Jr Valved w/ Balancing	Manifold	0	40	hePEX 3/4"
Manifold 2	1	7	1.14	7.3	118	118	20 (35)	TruFLOW Jr Valved w/ Balancing	Manifold	0	80	hePEX 3/4"
Manifold 3	1	7	1.21	8.6	118	118	20 (33)	TruFLOW Jr Valved w/ Balancing	Manifold	0	60	hePEX 3/4"
Manifold 4	1	4	0.66	5.2	114	118	20 (34)	TruFLOW Jr Valved w/ Balancing	Manifold	0	80	hePEX 5/8"

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/(hr-ft²) Rv = hr-ft²-°F/btu
Head Loss = ft water RH = Radiant Floor Heating BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated

Created Using LoopCAD 2022 Uponor(US) (3/3/2026)
Version:22.0.0994 R (Trial)

Name:
Project #:Upstairs

Total	1	25	3.97	8.6	118	-	-	-	-	0	-	-
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(1) Total Head loss includes manifold, circuits and supply/return piping if specified., (2) S/R Length = one way

Tubing Circuit Details

Manifold 1

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop	Load	Actuator	Valve Setting
A-2	South Bedroom	208	7	119	hePEX 5/16"	0.22	5.8	20 (29)	3,144	No	4.2
A-3	South Bedroom	184	7	110	hePEX 5/16"	0.22	5.1	20 (27)	2,883	No	0.8
A-4	South Bdrm + Closet	114	7	71	hePEX 5/16"	0.10	0.8	20 (33)	1,348	No	0.25
A-12	Dining Room	127	7	72	hePEX 5/16"	0.10	0.9	20 (36)	1,336	No	0.25
A-13	Dining Room	161	7	86	hePEX 5/16"	0.10	1.2	20 (41)	1,595	No	0.25
A-14	Dining Room	159	7	103	hePEX 5/16"	0.10	1.2	20 (43)	1,916	No	0.25
A-15	Laundry Room	101	7	80	hePEX 5/16"	0.11	0.9	20 (32)	1,783	No	0.25
Total	-	1,054		642	-	0.95	5.8		14,005	0	

(1) Head loss for circuit tubing only

Manifold 2

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop	Load	Actuator	Valve Setting
A-5	Primary Bedroom	160	7	85	hePEX 5/16"	0.15	2.2	20 (31)	2,235	No	0.4
A-6	Primary Bedroom	161	7	83	hePEX 5/16"	0.14	2.2	20 (31)	2,203	No	0.39
A-7	Primary Bedroom	159	7	85	hePEX 5/16"	0.15	2.3	20 (30)	2,229	No	0.41
A-8	Primary Bathroom	135	7	93	hePEX 5/16"	0.15	2.0	20 (30)	2,292	No	0.4
A-9	Primary Closet	120	7	72	hePEX 5/16"	0.10	0.9	20 (35)	1,768	No	0.25
A-10	Primary Closet	122	7	88	hePEX 5/16"	0.18	2.3	20 (24)	2,153	No	0.44
A-17	Entry	149	8	97	hePEX 5/16"	0.27	5.7	20 (20)	2,640	No	4.2
Total	-	1,006		603	-	1.14	5.7		15,520	0	

(1) Head loss for circuit tubing only

Manifold 3

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop	Load	Actuator	Valve Setting
A-11	Kitchen	148	7	79	hePEX 5/16"	0.14	1.8	20 (31)	2,130	No	0.3
A-16	Kitchen	163	7	109	hePEX 5/16"	0.29	7.2	20 (20)	2,930	No	4.2
A-18	Living Room	176	7	95	hePEX 5/16"	0.15	2.5	20 (33)	2,455	No	0.36
A-19	Living Room	157	7	85	hePEX 5/16"	0.13	1.9	20 (33)	2,198	No	0.29
A-20	Living Room	178	7	95	hePEX 5/16"	0.15	2.5	20 (33)	2,446	No	0.36
A-21	Living Room	159	7	95	hePEX 5/16"	0.17	2.7	20 (30)	2,441	No	0.39
A-22	Living Room	173	7	105	hePEX 5/16"	0.19	3.7	20 (29)	2,708	No	0.45
Total	-	1,154		663	-	1.21	7.2		17,308	0	

(1) Head loss for circuit tubing only

Manifold 4

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss ¹	Temp Drop	Load	Actuator	Valve Setting
A-23	West Bathroom	136	7	74	hePEX 5/16"	0.14	1.7	20 (29)	2,001	No	0.45
A-24	Office Nook	216	7	111	hePEX 5/16"	0.17	3.8	20 (34)	2,876	No	1.42
A-25	West Bedroom	192	7	99	hePEX 5/16"	0.17	3.4	20 (31)	2,616	No	0.76
A-26	West Bedroom	195	7	101	hePEX 5/16"	0.18	3.9	20 (30)	2,689	No	4.2
Total	-	738		386	-	0.66	3.9		10,182	0	

(1) Head loss for circuit tubing only

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Project Information

Project #: upstairs

Notes:

Name:

Location:

Circuit Stock Summary

Part Number	Description	Quantity
A1220313	5/16" Wirsbo hePEX, 1,000 ft. coil	4

Supply/Return Stock Summary

Part Number	Description	Quantity
A1140750	3/4" Wirsbo hePEX, 100 ft. coil	4
A1140625	5/8" Wirsbo hePEX, 100 ft. coil	2

*Supply/Return stock is not included in coil summary.

Coil Summary

Coil	Part Number	Coil Length (ft)	Tube Type	Length Used (ft)
Coil 1	A1220313	1,000	hePEX 5/16"	993
Coil 2	A1220313	1,000	hePEX 5/16"	976
Coil 3	A1220313	1,000	hePEX 5/16"	998
Coil 4	A1220313	1,000	hePEX 5/16"	986

Circuits Cut Schedule

Main Floor

Circuit	Length (ft)	Location	Coil	Coil Length (ft)
A-2	208	Main Floor;Manifold 1;South Bedroom	Coil 1	1,000
A-3	184	Main Floor;Manifold 1;South Bedroom	Coil 1	1,000
A-4	114	Main Floor;Manifold 1;South Bdrm + Closet	Coil 4	1,000
A-5	160	Main Floor;Manifold 2;Primary Bedroom	Coil 2	1,000
A-6	161	Main Floor;Manifold 2;Primary Bedroom	Coil 4	1,000
A-7	159	Main Floor;Manifold 2;Primary Bedroom	Coil 4	1,000
A-8	135	Main Floor;Manifold 2;Primary Bathroom	Coil 4	1,000
A-9	120	Main Floor;Manifold 2;Primary Closet	Coil 4	1,000
A-10	122	Main Floor;Manifold 2;Primary Closet	Coil 4	1,000
A-11	148	Main Floor;Manifold 3;Kitchen	Coil 1	1,000
A-12	127	Main Floor;Manifold 1;Dining Room	Coil 1	1,000
A-13	161	Main Floor;Manifold 1;Dining Room	Coil 1	1,000
A-14	159	Main Floor;Manifold 1;Dining Room	Coil 3	1,000
A-15	101	Main Floor;Manifold 1;Laundry Room	Coil 3	1,000
A-16	163	Main Floor;Manifold 3;Kitchen	Coil 1	1,000
A-17	149	Main Floor;Manifold 2;Entry	Coil 2	1,000
A-18	176	Main Floor;Manifold 3;Living Room	Coil 4	1,000
A-19	157	Main Floor;Manifold 3;Living Room	Coil 2	1,000

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A-20	178	Main Floor;Manifold 3;Living Room	Coil 2	1,000
A-21	159	Main Floor;Manifold 3;Living Room	Coil 2	1,000
A-22	173	Main Floor;Manifold 3;Living Room	Coil 2	1,000
A-23	136	Main Floor;Manifold 4;West Bathroom	Coil 3	1,000
A-24	216	Main Floor;Manifold 4;Office Nook	Coil 3	1,000
A-25	192	Main Floor;Manifold 4;West Bedroom	Coil 3	1,000
A-26	195	Main Floor;Manifold 4;West Bedroom	Coil 3	1,000

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Project Information

Project #: Upstairs
Name:
Location:

Notes:

Outdoor Conditions

Location: Anchorage IAP, Alaska
Elevation: 131'
Latitude: 61
Dry Bulb: -4.0 °F
Daily Range: Low
Wet Bulb: 57.0 °F

Infiltration

Method: Simple
Stories: 1
Construction: Semi-Loose
Exposure Category: Three or Four Exposures
Num Fireplaces: None
Net Air Changes (H/C): 0.52/0.00
Net Flow (H/C): 188 cfm/0 cfm

Indoor Conditions

Room Temp: 74 °F
Design Temp Diff: 78.0 °F
Humidity: 35
Moisture Diff (Grains): -13.0
Num Occupants: 2

Ventilation

Type: Heating
ACH: 0.35
Outside Air: 127 cfm
Sensible Eff: 50 %

Floorplan/Levels

Main Floor: 2,727 ft²
Total Heated Area: 2,727 ft²
Total Cooled Area: 0 ft²

Total Heating: 60,918 Btu/hr

Total Sensible: 0 Btu/hr

Total Latent: 0 Btu/hr

Load Breakdown

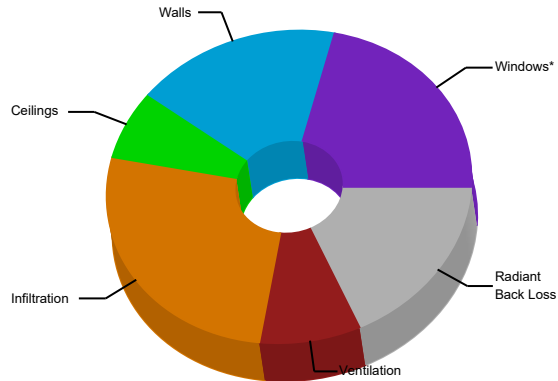
Name	Heating	Sensible	Latent
Windows*	13,364	0	
Skylights*	0	0	
Doors	0	0	
Walls	10,981	0	
Below Grade Walls	0		
Ceilings	4,254	0	
Floors	0	0	
Infiltration	16,073	0	0
Internal		0	0
Other	0		
Duct Loads	0	0	0
Ventilation	5,437	0	0
Humidification	0		
Piping Load	0		
Radiant Back Loss	10,810		
Blower Heat		0	
AED*		0	
Total	60,918	0	0
Total Area	2,727 ft²	0 ft²	

*Average Load Procedure

Heating ΔT¹: 70.0

Est. Heating CFM²: 0

Heating Load Breakdown



(1) ΔT: Difference between supply air and return air (2) Estimated air flow based on specified supply air ΔT

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr
Unit Heat Loss = Btu/(hr·ft²) Rv = hr·ft²·°F/btu Head Loss = ft water RH = Radiant Floor Heating
BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated

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circuit temperature

