



Enser Consulting, LLC
(303) 725-8836

Radiant Heating Tubing Requirements

Job: Ranch Sample
Date: July 27, 2008
By: Enser Consulting, LLC

Joe Builder

Project Information

For: Ranch Sample - Radiant Heat, Joe Builder
Denver, CO

Tubing Requirements

Roll 1: 600 ft 1/2" BPEX (Part # WX-BP4-600)	2 lengths 43 ft waste	
Unfinished Bsmt-A: 287 ft	Unfinished Bsmt-B: 271 ft	
Roll 2: 600 ft 1/2" BPEX (Part # WX-BP4-600)	3 lengths 24 ft waste	
Unfinished Bsmt-C: 255 ft	Unfinished Bsmt-D: 239 ft	Hall Bath: 82 ft
Roll 3: 2000 ft 1/2" BPEX (Part # WX-BP4-2000)	10 lengths 2 ft waste	
Unfinished Bsmt-E: 272 ft	Unfinished Bsmt-F: 248 ft	Unfinished Bsmt-G: 265 ft
Lndry Rm: 81 ft	Mstr Bath & Clst: 162 ft	Bedrm #1: 202 ft
Master Bedrm-A: 165 ft	Master Bedrm-B: 207 ft	Den/Bedrm #2: 188 ft
Dining Rm: 208 ft		
Roll 4: 600 ft 1/2" BPEX (Part # WX-BP4-600)	3 lengths 6 ft waste	
Family Rm-A: 210 ft	Family Rm-B: 213 ft	Kitchen/Nook-A: 171 ft
Roll 5: 600 ft 1/2" BPEX (Part # WX-BP4-600)	3 lengths 40 ft waste	
Kitchen/Nook-B: 222 ft	Foyer: 81 ft	Living Rm: 257 ft



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Radiant Heating Manifold Summary

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Manifold name: Manifold 3
Manifold location: Basement

	Loop number						
	1	2	3	4	5	6	7
Name	Unfinished Bsmt-A	Unfinished Bsmt-B	Unfinished Bsmt-C	Unfinished Bsmt-D	Unfinished Bsmt-E	Unfinished Bsmt-F	Unfinished Bsmt-G
Heating zone	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House
Heated area (ft²)	275	259	242	226	260	236	253
Room temperature (°F)	68	68	68	68	68	68	68
Cover R (ft²-°F/Btuh)	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Surface temperature (°F)	69	69	69	69	69	69	69
Radiant panel CST	45A0	45A0	45A0	45A0	45A0	45A0	45A0
Radiant panel type	Slab embedded	Slab embedded	Slab embedded	Slab embedded	Slab embedded	Slab embedded	Slab embedded
Tube spacing (in)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Tube type/size	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX
Distance to manifold (ft)	8	8	8	8	8	8	8
Loop length (ft)	287	271	255	239	272	248	265
Temperature drop (°F)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Flow (gpm)	0.22	0.21	0.20	0.18	0.21	0.19	0.20
Head loss (ft H2O)	0.88	0.76	0.64	0.54	0.77	0.60	0.72
Supply temperature (°F)	83	83	83	83	83	83	83
Balance valve (turns from closed)							

Totals for Manifold 3

S/R tubing	3/4" BPEX	Total flow (gpm)	1.41
S/R Tubing length(ft)	30	Total panel output (Btuh)	5351
S/R Tubing head loss (ft H2O)	0.47	Total tubing required (ft)	1836
Max loop head loss (ft H2O)	0.88	Max. supply temp. (°F)	83.4
Manifold head loss (ft H2O)	0		



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	Loop number							
	1	2	3	4	5	6	7	8
Manifold name:	Manifold 1							
Manifold location:	Main floor							
Name	Hall Bath	Lndry Rm	Mstr Bath & Clst	Bedrm #1	Master Bedrm-A	Master Bedrm-B	Family Rm-A	Family Rm-B
Heating zone	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House
Heated area (ft ²)	54	49	112	120	96	128	118	120
Room temperature (°F)	68	68	68	68	68	68	68	68
Cover R (ft ² -°F/Btuh)	2.90	0.80	1.60	1.50	1.50	1.50	1.50	1.50
Surface temperature (°F)	69	76	75	79	78	77	75	75
Radiant panel CST	43D0	43D0	43D0	43D0	43D0	43D0	43D0	43D0
Radiant panel type	Overpour	Overpour	Overpour	Overpour	Overpour	Overpour	Overpour	Overpour
Tube spacing (in)	9.0	9.0	9.0	6.0	6.0	9.0	6.0	9.0
Tube type/size	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX
Distance to manifold (ft)	7	15	12	20	17	17	16	16
Loop length (ft)	82	81	162	202	165	207	210	213
Temperature drop (°F)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Flow (gpm)	0.03	0.15	0.32	0.57	0.40	0.49	0.36	0.34
Head loss (ft H2O)	0.01	0.11	0.86	2.84	1.25	2.28	1.32	1.25
Supply temperature (°F)	82	108	114	134	126	126	112	112
Balance valve (turns from closed)								

Totals for Manifold 1

S/R tubing	3/4" BPEX	Total flow (gpm)	2.65
S/R Tubing length(ft)	30	Total panel output (Btuh)	10869
S/R Tubing head loss (ft H2O)	1.23	Total tubing required (ft)	1322
Max loop head loss (ft H2O)	2.84	Max. supply temp. (°F)	134
Manifold head loss (ft H2O)	0		



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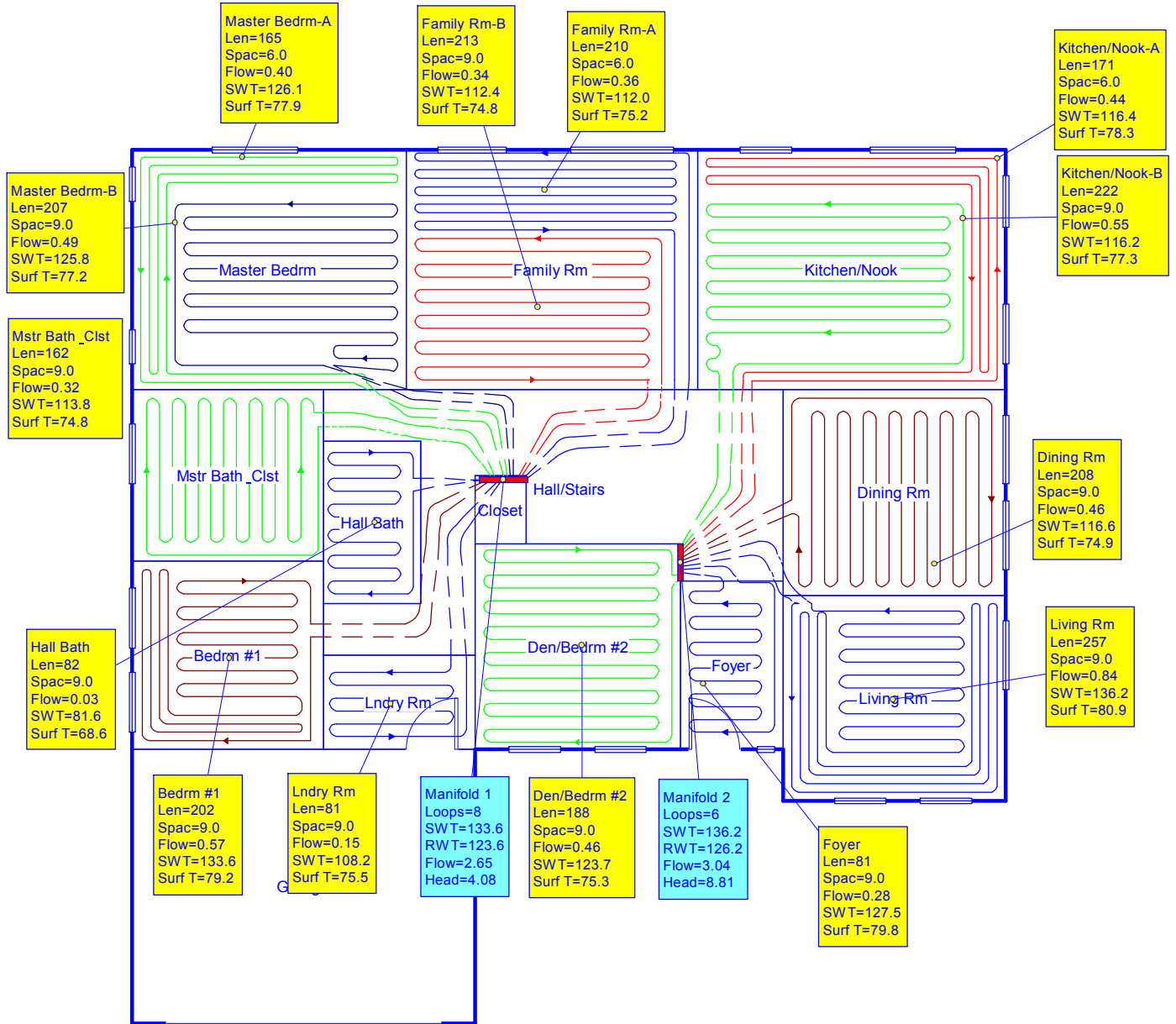
Manifold name: Manifold 2
Manifold location: Main floor

	Loop number							
	1	2	3	4	5	6		
Name	Den/Bedrm #2	Kitchen/Nook-A	Kitchen/Nook-B	Foyer	Living Rm	Dining Rm		
Heating zone	Entire House	Entire House	Entire House	Entire House	Entire House	Entire House		
Heated area (ft ²)	144	107	145	59	156	156		
Room temperature (°F)	68	68	68	68	68	68		
Cover R (ft ² -°F/Btuh)	2.20	0.80	0.80	0.80	1.20	1.80		
Surface temperature (°F)	75	78	77	80	81	75		
Radiant panel CST	43D0	43D0	43D0	43D0	43D0	43D0		
Radiant panel type	Overpour	Overpour	Overpour	Overpour	Overpour	Overpour		
Tube spacing (in)	9.0	6.0	9.0	9.0	6.0	9.0		
Tube type/size	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX	1/2" BPEX		
Distance to manifold (ft)	1	14	14	6	12	10		
Loop length (ft)	188	171	222	81	257	208		
Temperature drop (°F)	10.0	10.0	10.0	10.0	10.0	10.0		
Flow (gpm)	0.46	0.44	0.55	0.28	0.84	0.46		
Head loss (ft H2O)	1.82	1.55	2.93	0.34	7.07	2.04		
Supply temperature (°F)	124	116	116	128	136	117		
Balance valve (turns from closed)								

Totals for Manifold 2

S/R tubing	3/4" BPEX	Total flow (gpm)	3.04
S/R Tubing length(ft)	34	Total panel output (Btuh)	12570
S/R Tubing head loss (ft H2O)	1.74	Total tubing required (ft)	1127
Max loop head loss (ft H2O)	7.07	Max. supply temp. (°F)	136
Manifold head loss (ft H2O)	0		

Main floor

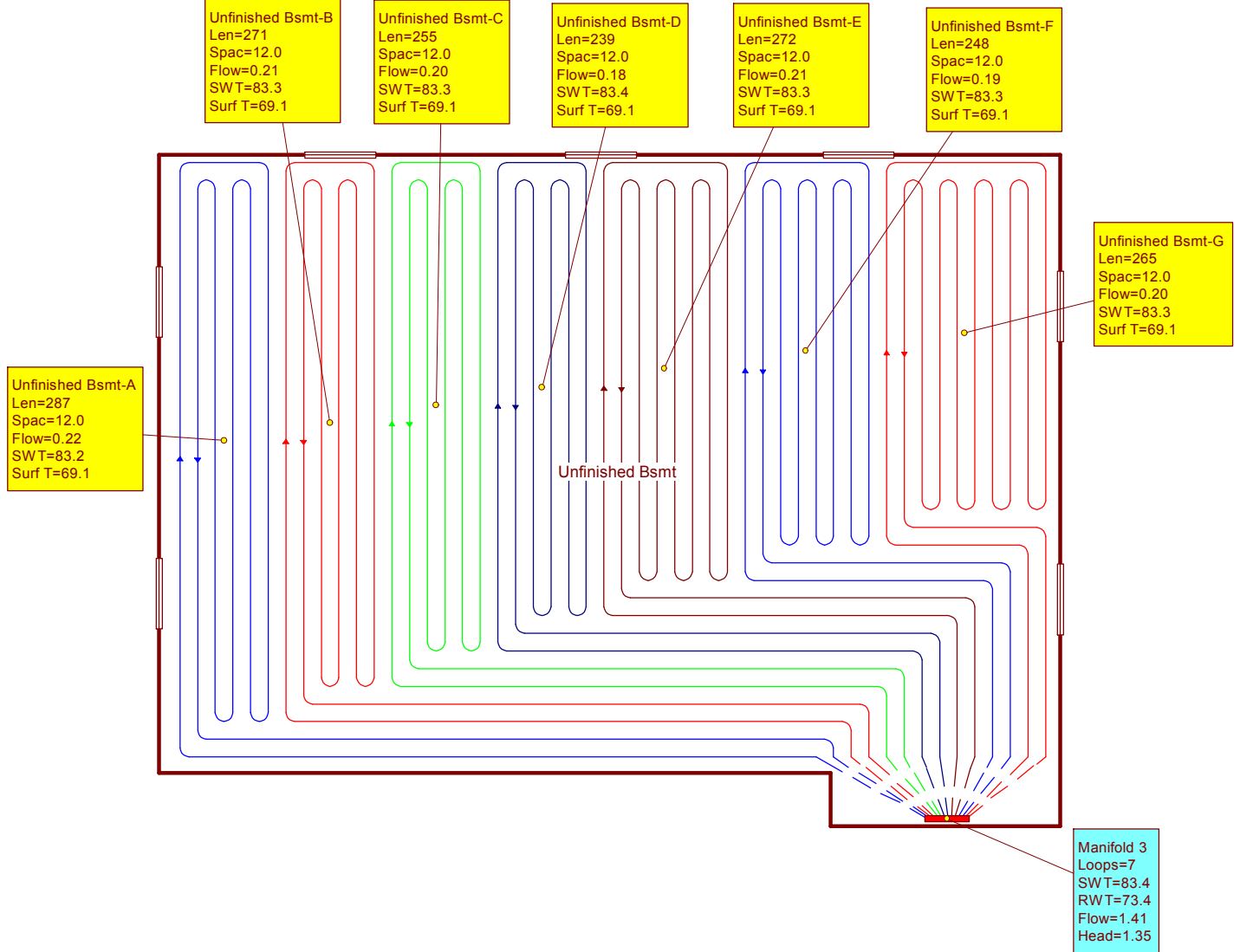


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Basement



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