

Project Information

For:

Cooling Equipment

Design Conditions

Outdoor design DB:	93.0°F	Sensible gain:	32365 Btuh	Entering coil DB:	76.8°F
Outdoor design WB:	75.2°F	Latent gain:	8070 Btuh	Entering coil WB:	63.8°F
Indoor design DB:	75.0°F	Total gain:	40435 Btuh		
Indoor RH:	50%	Estimated airflow:	1583 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Heil	Model:	HSH548AKA20+FXM4X4800AL	
Actual airflow:	1583 cfm			
Sensible capacity:	34770 Btuh	107% of load		
Latent capacity:	9330 Btuh	116% of load		
Total capacity:	44100 Btuh	109% of load	SHR:	79%

Heating Equipment

Design Conditions

Outdoor design DB:	40.9°F	Heat loss:	34608 Btuh	Entering coil DB:	67.8°F
Indoor design DB:	70.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Heil	Model:	HSH548AKA20+FXM4X4800AL	
Actual airflow:	1583 cfm			
Output capacity:	47000 Btuh	136% of load		Capacity balance: 33 °F
Supplemental heat required:	0 Btuh			Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:		Model:		
Actual airflow:	1583 cfm			
Output capacity:	8.0 kW	79% of load	Temp. rise:	16 °F

Meets all requirements of ACCA Manual S.

Project Information

For:

Notes: Load Calculation was obtained via electronic copy of drawing

Design Information

Weather: Orlando Sanford, FL, US

Winter Design Conditions

Outside db 41 °F
 Inside db 70 °F
 Design TD 29 °F

Summer Design Conditions

Outside db 93 °F
 Inside db 75 °F
 Design TD 18 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 39 gr/lb

Heating Summary

Structure 27056 Btuh
 Ducts 4372 Btuh
 Central vent (100 cfm) 3180 Btuh
 Outside air
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 34608 Btuh

Sensible Cooling Equipment Load Sizing

Structure 25842 Btuh
 Ducts 4556 Btuh
 Central vent (100 cfm) 1967 Btuh
 Outside air
 Blower 0 Btuh
 Use manufacturer's data y
 Rate/swing multiplier 1.00
 Equipment sensible load 32365 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 4414 Btuh
 Ducts 1040 Btuh
 Central vent (100 cfm) 2615 Btuh
 Outside air
 Equipment latent load 8070 Btuh

	Heating	Cooling
Area (ft ²)	2318	2318
Volume (ft ³)	21616	21616
Air changes/hour	0.32	0.16
Equiv. AVF (cfm)	115	58

Equipment Total Load (Sen+Lat) 40435 Btuh
 Req. total capacity at 0.79 SHR 3.4 ton

Heating Equipment Summary

Make Heil
 Trade QUIETCOMFORT DX 1500 R410A HP
 Model HSH548AKA20
 AHRI ref 9630975
 Efficiency 8.5 HSPF
 Heating input
 Heating output 47000 Btuh @ 47°F
 Temperature rise 27 °F
 Actual air flow 1583 cfm
 Air flow factor 0.050 cfm/Btuh
 Static pressure 0.50 in H2O
 Space thermostat
 Capacity balance point = 33 °F

Cooling Equipment Summary

Make Heil
 Trade QUIETCOMFORT DX 1500 R410A HP
 Cond HSH548AKA20
 Coil FXM4X4800AL
 AHRI ref 9630975
 Efficiency 12.5 EER, 15 SEER
 Sensible cooling 37525 Btuh
 Latent cooling 9975 Btuh
 Total cooling 47500 Btuh
 Actual air flow 1583 cfm
 Air flow factor 0.052 cfm/Btuh
 Static pressure 0.50 in H2O
 Load sensible heat ratio 0.80

Backup:
 Input = 8 kW, Output = 27297 Btuh, 100 AFUE

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Project Information

For:

Design Conditions

Location:		Indoor:		Heating	Cooling
Orlando Sanford, FL, US		Indoor temperature (°F)		70	75
Elevation:	56 ft	Design TD (°F)		29	18
Latitude:	29°N	Relative humidity (%)		50	50
Outdoor:		Moisture difference (gr/lb)		24.6	38.7
	Heating	Cooling	Infiltration:		
Drybulb (°F)	41	93	Method		
Daily range (°F)	-	17 (M)	Construction quality		
Wet bulb (°F)	-	75	Fireplaces		
Wind speed (mph)	15.0	7.5	Simplified		
			Average		
			0		

Construction descriptions

	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
BLOCK WALL R 5: Blk wall, 8" thk, 3/8" wood shth, 1/2" gypsum board	n	511	0.200	5.0	5.82	2973	3.42	1746
int fnsh	e	372	0.200	5.0	5.82	2167	3.42	1273
	s	346	0.200	5.0	5.82	2011	3.42	1181
	w	402	0.200	5.0	5.82	2337	3.42	1372
	all	1630	0.200	5.0	5.82	9489	3.42	5572
Partitions								
12C-0sw: Frm wall, stucco ext, r-13 cav ins, 2"x4" wood frm, 16" o.c.		355	0.091	13.0	2.65	940	1.47	522
stud								
Windows								
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n		10	0.400	0	11.6	116	10.0	100
mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds								
45°, medium; 50% outdoor insect screen; 1.4 ft overhang (2 ft w indow								
ht, 1.4 ft sep.); 6.67 ft head ht								
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n		12	0.400	0	11.6	140	10.0	121
mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds								
45°, medium; 50% outdoor insect screen; 10 ft overhang (2 ft w indow								
ht, 1.4 ft sep.); 6.67 ft head ht								
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n		36	0.400	0	11.6	419	10.0	362
mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds								
45°, medium; 50% outdoor insect screen; 1.4 ft overhang (6 ft w indow								
ht, 1.4 ft sep.); 6.67 ft head ht								
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n		18	0.400	0	11.6	210	10.0	181
mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds								
45°, medium; 50% outdoor insect screen; 10.8 ft overhang (6 ft								
window ht, 1.4 ft sep.); 8 ft head ht								
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n		72	0.400	0	11.6	838	10.0	724
mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds								
45°, medium; 50% outdoor insect screen; 14 ft overhang (6 ft w indow								
ht, 1.4 ft sep.); 8 ft head ht								

CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm n mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 1.4 ft overhang (8 ft w indow ht, 1.4 ft sep.); 8 ft head ht	48	0.400	0	11.6	559	10.0	482	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm e mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 1.4 ft overhang (4 ft w indow ht, 1.4 ft sep.); 8 ft head ht	8	0.400	0	11.6	93	25.3	203	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm e mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 1.4 ft overhang (5 ft w indow w ht, 1.4 ft sep.); 8 ft head ht	20	0.400	0	11.6	233	25.3	506	
	10	0.400	0	11.6	116	25.3	253	
	30	0.400	0	11.6	349	25.3	760	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm e mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 13.8 ft overhang (6 ft window ht, 1.4 ft sep.); 8 ft head ht	18	0.400	0	11.6	210	10.0	181	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm s mat, clr innr, 1/2" gap, 1/4" thk; 50% blinds 45°, medium; 50% outdoor insect screen; 7 ft overhang (8 ft window ht, 1.4 ft sep.); 8 ft head ht	16	0.400	0	11.6	186	9.94	159	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm s mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 1.4 ft overhang (6 ft w indow ht, 1.4 ft sep.); 8 ft head ht	18	0.400	0	11.6	210	10.0	181	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm s mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 7 ft overhang (6 ft w indow ht, 1.4 ft sep.); 8 ft head ht	54	0.400	0	11.6	629	10.0	543	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm w mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 13.8 ft overhang (6 ft window ht, 1.4 ft sep.); 6.67 ft head ht	18	0.400	0	11.6	210	10.0	181	
CODE MINIMUM: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm w mat, clr innr, 1/2" gap, 1/4" thk; NFRC rated (SHGC=0.25); 50% blinds 45°, medium; 50% outdoor insect screen; 1.4 ft overhang (8 ft w indow ht, 1.4 ft sep.); 6.67 ft head ht	23	0.400	0	11.6	264	25.3	574	
Doors								
11N0: Door, mtl eps core type	s	21	0.350	8.7	10.2	214	10.9	228
	n	21	0.350	8.7	10.2	214	10.9	228
	all	42	0.350	8.7	10.2	428	10.9	456
Ceilings								
16DR-38ml: Attic ceiling, mtl roof mat, r-38 ceil ins, 1/2" gypsum board int fnsh	2319	0.026	38.0	0.76	1755	0.90	2083	
Floors								
22A-tpl: Bg floor, light dry soil, on grade depth	220	0.989	0	28.8	6332	0	0	



Project Information

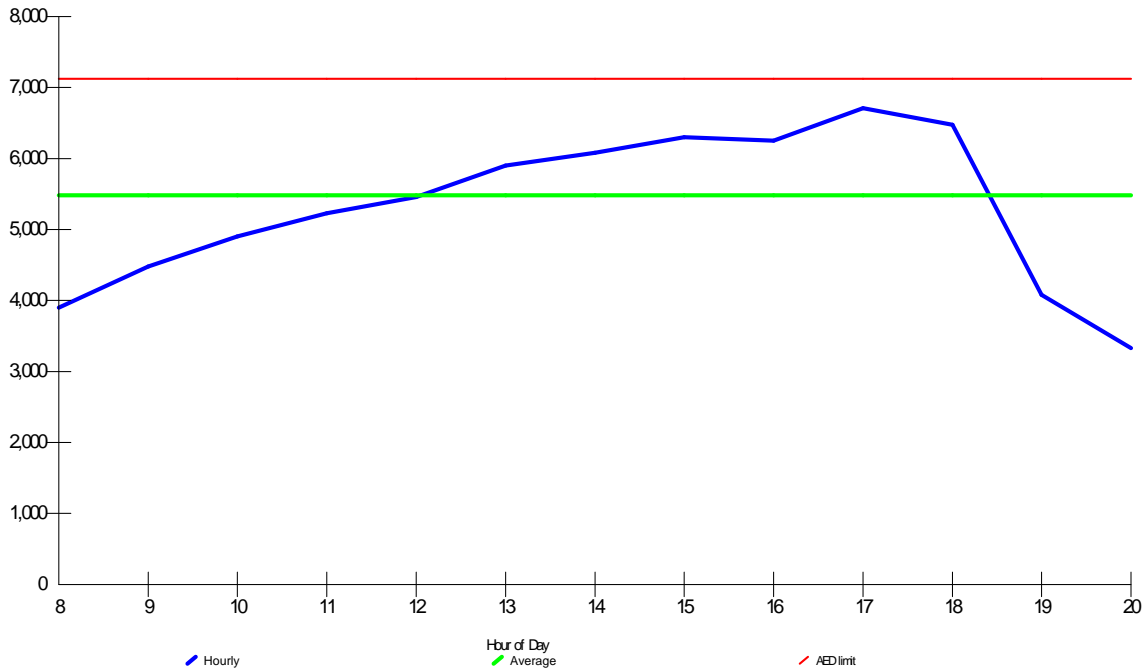
For:

Design Conditions

Location:		Indoor:		Heating	Cooling	
Orlando Sanford, FL, US		Indoor temperature (°F)		70	75	
Elevation:	56 ft	Design TD (°F)		29	18	
Latitude:	29°N	Relative humidity (%)		50	50	
Outdoor:		Heating	Cooling	Moisture difference (gr/lb)	24.6	38.7
Dry bulb (°F)		41	93	Infiltration:		
Daily range (°F)		-	17 (M)			
Wet bulb (°F)		-	75			
Wind speed (mph)		15.0	7.5			

Test for Adequate Exposure Diversity

Hourly Glazing Load



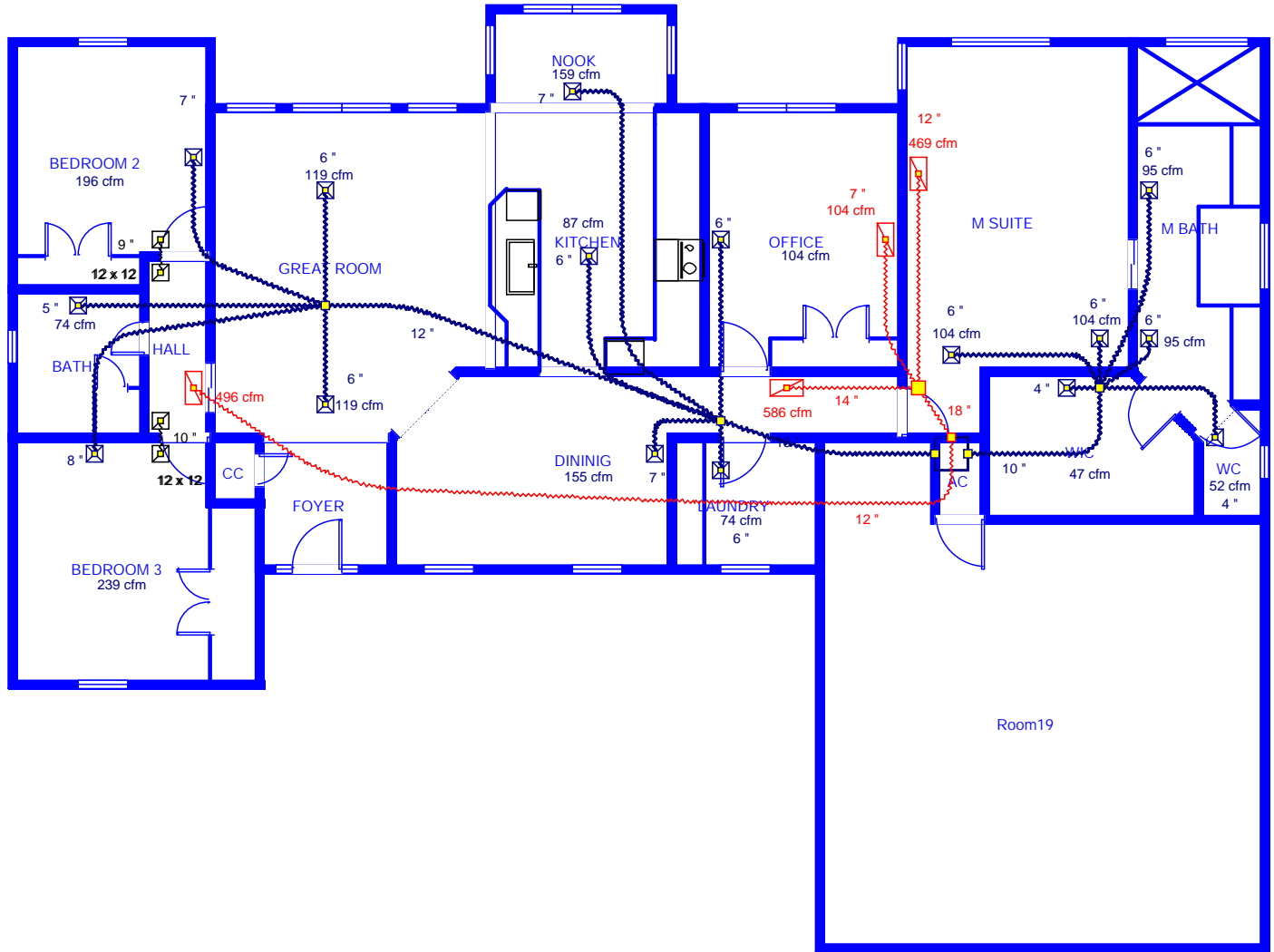
Maximum hourly glazing load exceeds average by 22.4%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh



Sheet 1



Job #:
Performed by TRICIA HIGGINS for:

SPEEDY CALC'S LLC

2805 STATEN DRIVE
DELTONA, FL 32738
Phone: 407 314-8495 Fax: 407 322-5788
WWW.SPEEDYCALCS.COM SPEEDYCALCS@YAHOOO.

Scale: 1 : 127

Page 1
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Duct System Summary

Entire House

SPEEDY CALC'S LLC

Job:
Date:
By: **TRICIA HIGGINS**

2805 STATEN DRIVE, DELTONA, FL 32738 Phone: 407 314-8495 Fax: 407 322-5788 Email: SPEEDYCALCS@YAHOOO.COM Web: WWW.SPEEDYCALCS.COM

Project Information

For:

	Heating	Cooling
External static pressure	0.50 in H2O	0.50 in H2O
Pressure losses	0.16 in H2O	0.16 in H2O
Available static pressure	0.34 in H2O	0.34 in H2O
Supply / return available pressure	0.238 / 0.102 in H2O	0.238 / 0.102 in H2O
Lowest friction rate	0.106 in/100ft	0.106 in/100ft
Actual air flow	1583 cfm	1583 cfm
Total effective length (TEL)	322 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
BATH	c 1422	60	74	0.111	5.0	0x0	VIFx	53.6	160.0	st3
BEDROOM 2	h 3900	196	154	0.109	7.0	0x0	VIFx	53.1	165.0	st3
BEDROOM 3	h 4752	239	196	0.106	8.0	0x0	VIFx	59.7	165.0	st3
DININIG	h 3076	155	98	0.171	7.0	0x0	VIFx	19.3	120.0	st2
GREAT ROOM	c 2294	84	119	0.116	6.0	0x0	VIFx	45.6	160.0	st3
GREAT ROOM-A	c 2294	84	119	0.116	6.0	0x0	VIFx	44.6	160.0	st3
KITCHEN	c 1666	21	87	0.160	6.0	0x0	VIFx	28.9	120.0	st2
LAUNDRY	h 1467	74	67	0.181	6.0	0x0	VIFx	16.3	115.0	st2
M BATH	h 1878	95	81	0.164	6.0	0x0	VIFx	24.7	120.0	st1
M BATH-A	h 1878	95	81	0.174	6.0	0x0	VIFx	16.6	120.0	st1
M SUITE	c 1989	71	104	0.167	6.0	0x0	VIFx	22.2	120.0	st1
M SUITE-A	c 1989	71	104	0.183	6.0	0x0	VIFx	15.0	115.0	st1
NOOK	h 3149	159	95	0.144	7.0	0x0	VIFx	39.5	125.0	st2
OFFICE	c 2006	91	104	0.171	6.0	0x0	VIFx	24.3	115.0	st2
WC	c 1004	51	52	0.167	4.0	0x0	VIFx	22.0	120.0	st1
WIC	c 901	37	47	0.184	4.0	0x0	VIFx	14.0	115.0	st1

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	419	469	0.164	860	10.0	0 x 0	VinIFlx	
st2	Peak AVF	1164	1114	0.106	833	16.0	0 x 0	VinIFlx	
st3	Peak AVF	664	662	0.106	845	12.0	0 x 0	VinIFlx	st2



Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb4	0x0	496	423	96.8	0.060	631	12.0	0x 0		VIFx	
rb1	0x0	577	586	81.6	0.060	548	14.0	0x 0		VIFx	rt1
rb5	0x0	91	104	88.2	0.060	391	7.0	0x 0		VIFx	rt1
rb2	0x0	419	469	86.6	0.060	597	12.0	0x 0		VIFx	rt1

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt1	Peak AVF	1087	1160	0.060	656	18.0	0 x 0	VinIFlx	



Project Information

For:

Available Static Pressure

	Heating (in H2O)	Cooling (in H2O)
External static pressure	0.50	0.50
Pressure losses		
Coil	0.10	0.10
Heat exchanger	0	0
Supply diffusers	0.03	0.03
Return grilles	0.03	0.03
Filter	0	0
Humidifier	0	0
Balancing damper	0	0
Other device	0	0
Available static pressure	0.34	0.34

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	21	52
Measured length of trunk	39	0
Equivalent length of fittings	165	45
Total length	225	97
Total effective length		322

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.106	OK	0.106	OK
Return Ducts	0.060	OK	0.060	OK

Fitting Equivalent Length Details

Supply 4X=35, 11C=40, 11G=5, 11C=40, 11G=5, 1A=35, 11G=5: TotalEL=165

Return 5E1=10, 6M=20, 11G=5, 11G=5, 11G=5: TotalEL=45