



Duct System Summary

AHU-1 Main

LoadCalcs

Job: Project
Date: Date
By: Designer
Plan: XX-XXX

Lancaster, KY40444 Phone: 813-539-5118 Email: info@lcalcs.com Web: www.lcalcs.com

Project Information

For: Project
Address, City, State Zip

	Heating	Cooling
External static pressure	0.60 in H ₂ O	0.60 in H ₂ O
Pressure losses	0.31 in H ₂ O	0.31 in H ₂ O
Available static pressure	0.29 in H ₂ O	0.29 in H ₂ O
Supply / return available pressure	0.210 / 0.080 in H ₂ O	0.210 / 0.080 in H ₂ O
Lowest friction rate	0.066 in/100ft	0.066 in/100ft
Actual air flow	1597 cfm	1597 cfm
Total effective length (TEL)	441 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
Bar	h 1487	68	38	0.078	5.0	0x0	VIFx	69.4	200.0	st12A
Bonus	h 4114	189	131	0.107	9.0	0x0	VIFx	32.1	165.0	st13A
Bonus-A	h 4114	189	131	0.102	9.0	0x0	VIFx	36.3	170.0	st13A
Breakfast	h 2257	104	102	0.099	6.0	0x0	VIFx	31.5	180.0	st12
Breakfast-A	h 2257	104	102	0.120	6.0	0x0	VIFx	25.0	150.0	st12
Dining	h 1937	89	80	0.066	6.0	0x0	VIFx	69.5	250.0	st12B
Dining-A	h 1937	89	80	0.071	6.0	0x0	VIFx	62.2	235.0	st12B
Foyer	h 1358	62	51	0.072	5.0	0x0	VIFx	61.0	230.0	st12B
H Bath	h 1083	50	14	0.152	4.0	0x0	VIFx	3.5	135.0	st13
H Cios	h 1806	83	42	0.116	6.0	0x0	VIFx	25.5	155.0	st12
Hall	h 3944	181	149	0.173	8.0	0x0	VIFx	6.2	115.0	st3
Kitchen	c 1403	16	86	0.084	6.0	0x0	VIFx	50.5	200.0	st12A
Kitchen-A	c 1403	16	86	0.115	6.0	0x0	VIFx	28.4	155.0	st12
Living Room	c 2071	52	127	0.085	7.0	0x0	VIFx	52.1	195.0	st12
Living Room-A	c 2071	52	127	0.093	7.0	0x0	VIFx	45.0	180.0	st12
M Hall	c 3208	159	196	0.080	9.0	0x0	VIFx	54.1	210.0	st12
Office	h 2080	95	27	0.139	6.0	0x0	VIFx	16.5	135.0	st13
Pantry	c 484	0	30	0.086	4.0	0x0	VIFx	55.5	190.0	st12A



Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st12A	Peak AVF	324	364	0.066	727	10.5	12 x 6	RectFbg	st12
st12	Peak AVF	893	1146	0.066	764	16.6	12 x 18	RectFbg	st3
st12B	Peak AVF	240	210	0.066	721	9.6	8 x 6	RectFbg	st12A
st3	Peak AVF	1597	1597	0.066	1150	6.2	20 x 10	RectFbg	
st13	Peak AVF	523	303	0.102	753	10.8	10 x 10	RectFbg	st3
st13A	Peak AVF	378	261	0.102	680	10.2	10 x 8	RectFbg	st13

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
rb7	0x 0	95	27	121.5	0.066	357	7.0	0x 0		VIFx	rt10
rb6	0x 0	378	261	99.5	0.080	481	12.0	0x 0		VIFx	rt10
rb2	0x 0	1124	1309	53.0	0.151	496	22.0	0x 0		VIFx	rt9

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt3	Peak AVF	1597	1597	0.066	500	22.0	20 x 23	RectFbg	
rt9	Peak AVF	1124	1309	0.151	410	22.0	20 x 23	RectFbg	rt3
rt10	Peak AVF	473	288	0.066	608	11.9	14 x 8	RectFbg	rt3



Duct System Summary

AHU-2 Master/BR2

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	Heating	Cooling
External static pressure	0.60 in H ₂ O	0.60 in H ₂ O
Pressure losses	0.31 in H ₂ O	0.31 in H ₂ O
Available static pressure	0.29 in H ₂ O	0.29 in H ₂ O
Supply / return available pressure	0.129 / 0.161 in H ₂ O	0.129 / 0.161 in H ₂ O
Lowest friction rate	0.065 in/100ft	0.065 in/100ft
Actual air flow	623 cfm	623 cfm
Total effective length (TEL)	449 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 2	c 646	26	38	0.090	4.0	0x0	VFX	13.0	130.0	st5
Bedroom 2	h 2930	88	71	0.075	6.0	0x0	VFX	22.5	150.0	st5
Bedroom 2-A	h 2930	88	71	0.075	6.0	0x0	VFX	22.5	150.0	st5
Clos 2	c 453	18	26	0.086	4.0	0x0	VFX	19.5	130.0	st5
M Bath	c 1086	54	63	0.079	5.0	0x0	VFX	32.5	130.0	st4
M Bedroom	h 4008	120	108	0.065	7.0	0x0	VFX	54.1	145.0	st4
M Bedroom-A	h 4008	120	108	0.075	7.0	0x0	VFX	45.5	125.0	st4
M Clos	h 1972	59	39	0.079	5.0	0x0	VFX	22.0	140.0	st4
Utility	c 1181	37	69	0.083	5.0	0x0	VFX	11.0	145.0	st4
WC	c 508	15	30	0.081	4.0	0x0	VFX	24.0	135.0	st4

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st4	Peak AVF	404	417	0.065	750	11.4	10 x 8	RectFbg	st1
st5	Peak AVF	219	206	0.075	657	8.7	8 x 6	RectFbg	st1
st1	Peak AVF	623	623	0.065	561	6.2	16 x 10	RectFbg	



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
rb5	0x 0	219	206	239.5	0.067	402	10.0	0x 0		VIFx	rt4
rb4	0x 0	308	309	249.5	0.065	393	12.0	0x 0		VIFx	rt5
rb3	0x 0	96	108	74.5	0.216	404	7.0	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
rt4	Peak AVF	219	206	0.067	438	8.9	12 x 6	RectFbg	rt1
rt5	Peak AVF	308	309	0.065	618	10.2	12 x 6	RectFbg	rt1
rt1	Peak AVF	623	623	0.065	280	5.9	16 x 20	RectFbg	



Duct System Summary

AHU-3 Second

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	Heating	Cooling
External static pressure	0.60 in H ₂ O	0.60 in H ₂ O
Pressure losses	0.31 in H ₂ O	0.31 in H ₂ O
Available static pressure	0.29 in H ₂ O	0.29 in H ₂ O
Supply / return available pressure	0.191 / 0.099 in H ₂ O	0.191 / 0.099 in H ₂ O
Lowest friction rate	0.113 in/100ft	0.113 in/100ft
Actual air flow	620 cfm	620 cfm
Total effective length (TEL)	258 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 3	c 809	41	46	0.134	4.0	0x0	VfX	17.5	125.0	st7
Bath 4	c 794	41	45	0.117	4.0	0x0	VfX	23.2	140.0	st8
Bedroom 3	h 2023	91	76	0.134	6.0	0x0	VfX	7.5	135.0	st9
Bedroom 4	h 1483	67	53	0.122	5.0	0x0	VfX	32.0	125.0	st8
Bedroom 4-A	h 1483	67	53	0.122	5.0	0x0	VfX	32.0	125.0	st8
Clos 3	h 1312	59	42	0.113	5.0	0x0	VfX	24.7	145.0	st7
Clos 4	c 602	2	34	0.119	4.0	0x0	VfX	20.0	140.0	st8
Den	c 1835	86	104	0.117	6.0	0x0	VfX	28.0	135.0	st10
Den-A	c 1835	86	104	0.115	6.0	0x0	VfX	31.0	135.0	st10
Stairs	h 1731	78	61	0.120	5.0	0x0	VfX	14.0	145.0	st10

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st7	Peak AVF	101	88	0.113	604	6.0	6 x 4	RectFbg	st9
st8	Peak AVF	177	186	0.117	744	7.5	6 x 6	RectFbg	st9
st9	Peak AVF	369	350	0.113	886	9.8	10 x 6	RectFbg	st2
st10	Peak AVF	251	270	0.115	649	8.7	10 x 6	RectFbg	st2
st2	Peak AVF	620	620	0.113	558	12.0	16 x 10	RectFbg	



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
rb9	0x 0	142	133	88.0	0.113	407	8.0	0x 0		VIFx	rt7
rb8	0x 0	227	217	82.5	0.120	417	10.0	0x 0		VIFx	rt7
rb1	0x 0	251	270	74.5	0.133	495	10.0	0x 0		VIFx	rt2

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt7	Peak AVF	369	350	0.113	665	9.8	10 x 8	RectFbg	rt2
rt2	Peak AVF	620	620	0.113	279	14.0	16 x 20	RectFbg	



Static Pressure and Friction Rate

AHU-1 Main

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Available Static Pressure

	Heating (in H ₂ O)	Cooling (in H ₂ O)
External static pressure	0.60	0.60
Pressure losses		
Coil	0.07	0.07
Heat exchanger	0	0
Supply diffusers	0.03	0.03
Return grilles	0.03	0.03
Filter	0.15	0.15
Humidifier	0	0
Balancing damper	0.03	0.03
Other device	0	0
Available static pressure	0.29	0.29

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	5	7
Measured length of trunk	64	15
Equivalent length of fittings	250	100
Total length	320	122
Total effective length		441

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.066	OK	0.066	OK
Return Ducts	0.066	OK	0.066	OK

Fitting Equivalent Length Details

Supply	4W=35, 2B0=20, 2B1=30, 2B0=20, 12O1=10, 12O1=10, 8E=10, 2B2=35, 8E=10, 2P2=60, 1B=10: TotalEL=250
Return	6O=10, 6C1=10, 11G=5, 11G=5, 11G=5, 11G=5, 8E=10, 5A=40, 6CA=10: TotalEL=100



Static Pressure and Friction Rate

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Available Static Pressure

	Heating (in H ₂ O)	Cooling (in H ₂ O)
External static pressure	0.60	0.60
Pressure losses		
Coil	0.07	0.07
Heat exchanger	0	0
Supply diffusers	0.03	0.03
Return grilles	0.03	0.03
Filter	0.15	0.15
Humidifier	0	0
Balancing damper	0.03	0.03
Other device	0	0
Available static pressure	0.29	0.29

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	11	6
Measured length of trunk	43	38
Equivalent length of fittings	145	205
Total length	199	250
Total effective length		449

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.065	OK	0.065	OK
Return Ducts	0.065	OK	0.065	OK

Fitting Equivalent Length Details

Supply	4W=35, 2B0=20, 11G=5, 11G=5, 11G=5, 11G=5, 11G=5, 2A2=55, 1B=10: TotalEL=145
Return	6O=10, 6C6=115, 6C2=30, 5B=40, 6CA=10: TotalEL=205



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Static Pressure and Friction Rate

AHU-3 Second

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Available Static Pressure

	Heating (in H ₂ O)	Cooling (in H ₂ O)
External static pressure	0.60	0.60
Pressure losses		
Coil	0.07	0.07
Heat exchanger	0	0
Supply diffusers	0.03	0.03
Return grilles	0.03	0.03
Filter	0.15	0.15
Humidifier	0	0
Balancing damper	0.03	0.03
Other device	0	0
Available static pressure	0.29	0.29

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	10	8
Measured length of trunk	15	10
Equivalent length of fittings	145	70
Total length	170	88
Total effective length		258

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.113	OK	0.113	OK
Return Ducts	0.113	OK	0.113	OK

Fitting Equivalent Length Details

Supply 4W=35, 2B0=20, 11G=5, 11G=5, 11G=5, 11G=5, 2P2=60, 1B=10: TotalEL=145

Return 6O=10, 6C1=10, 5B=40, 6CA=10: TotalEL=70

