Load Short Form
Entire House
HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	n/a		
Trade	n/a		
Model	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Heating input			
Heating output		0	Btuh
Temperature rise		0	°F
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Space thermostat	n/a		

COOLING EQUIPMENT

Make	n/a		
Trade	n/a		
Cond	n/a		
Coil	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Sensible cooling		0	Btuh
Latent cooling		0	Btuh
Total cooling		0	Btuh
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Load sensible heat ratio		0	

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Sys-Moms	552	6412	5830	300	300
Sys - Guests	1123	8864	4364	300	300
Sys - Common	2231	20550	18097	875	875
Entire House	3906	35826	27984	1475	1827
Other equip loads		4464	1318		
Equip. @ 1.00 RSM			29302		
Latent cooling			985		
TOTALS	3906	40291	30287	1475	1827

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

Load Short Form
Sys - Common
HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	Mitsubishi		
Trade			
Model	SUZ-KA30NAHZ		
AHRI ref			
Efficiency		9 HSPF	
Heating input			
Heating output		0	Btuh @ 47°F
Temperature rise		0	°F
Actual air flow		875	cfm
Air flow factor		0.043	cfm/Btuh
Static pressure		0.50	in H2O
Space thermostat			
Capacity balance point = 0 °F			

COOLING EQUIPMENT

Make	Mitsubishi		
Trade			
Cond	SUZ-KA30NAHZ		
Coil	SVZ-KP30NA		
AHRI ref			
Efficiency		15 SEER	
Sensible cooling		0	Btuh
Latent cooling		0	Btuh
Total cooling		0	Btuh
Actual air flow		875	cfm
Air flow factor		0.046	cfm/Btuh
Static pressure		0.50	in H2O
Load sensible heat ratio		0.95	

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Z - Primary Ste	622	5285	7218	225	333
Z - Common	1312	13138	17230	559	795
Z - Gym	297	2127	2129	91	98
Sys - Common	2231	20550	18097	875	875
Other equip loads		2695	795		
Equip. @ 1.00 RSM			18892		
Latent cooling			965		
TOTALS	2231	23246	19857	875	875

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

Load Short Form
Sys - Guests

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	Mitsubishi		
Trade			
Model	SUZ-KA09NAHZ		
AHRI ref			
Efficiency	10.8 HSPF		
Heating input			
Heating output	0	Btuh @ 47°F	
Temperature rise	0	°F	
Actual air flow	300	cfm	
Air flow factor	0.034	cfm/Btuh	
Static pressure	0.28	in H2O	
Space thermostat			

Capacity balance point = 0 °F

COOLING EQUIPMENT

Make	Mitsubishi		
Trade			
Cond	SUZ-KA09NAHZ		
Coil	PEAD-09AA7		
AHRI ref			
Efficiency	17.8 SEER		
Sensible cooling	0	Btuh	
Latent cooling	0	Btuh	
Total cooling	0	Btuh	
Actual air flow	300	cfm	
Air flow factor	0.069	cfm/Btuh	
Static pressure	0.28	in H2O	
Load sensible heat ratio	1.00		

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Office	193	1714	1505	58	103
Circ East	273	3575	1172	121	81
Pwdr 2	63	0	0	0	0
Guest 1	197	1018	636	34	44
Guest 2	197	1737	751	59	52
WIC 2	36	0	0	0	0
WIC 1	33	0	0	0	0
Bath 1	66	410	150	14	10
Room28	66	410	150	14	10

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

Sys - Guests	1123	8864	4364	300	300
Other equip loads		844	249		
Equip. @ 1.00 RSM			4613		
Latent cooling			0		
TOTALS	1123	9708	4613	300	300

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

Load Short Form

Sys-Moms

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	Mitsubishi		
Trade			
Model	SUZ-KA09NAHZ		
AHRI ref			
Efficiency	10.8 HSPF		
Heating input			
Heating output	0	Btuh @ 47°F	
Temperature rise	0	°F	
Actual air flow	300	cfm	
Air flow factor	0.047	cfm/Btuh	
Static pressure	0.28	in H2O	
Space thermostat			

Capacity balance point = 0 °F

COOLING EQUIPMENT

Make	Mitsubishi		
Trade			
Cond	SUZ-KA09NAHZ		
Coil	PEAD-A09AA7		
AHRI ref			
Efficiency	17.8 SEER		
Sensible cooling	0	Btuh	
Latent cooling	0	Btuh	
Total cooling	0	Btuh	
Actual air flow	300	cfm	
Air flow factor	0.051	cfm/Btuh	
Static pressure	0.28	in H2O	
Load sensible heat ratio	1.00		

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Mom's Bed	176	2247	1879	105	97
Mom's	300	3629	3460	170	178
Mom's Bath	77	535	491	25	25
Sys-Moms	552	6412	5830	300	300
Other equip loads		925	273		
Equip. @ 1.00 RSM			6103		
Latent cooling			0		
TOTALS	552	7337	6103	300	300

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

Load Short Form

Z - Common

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	n/a		
Trade	n/a		
Model	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Heating input			
Heating output		0	Btuh
Temperature rise		0	°F
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Space thermostat	n/a		

COOLING EQUIPMENT

Make	n/a		
Trade	n/a		
Cond	n/a		
Coil	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Sensible cooling		0	Btuh
Latent cooling		0	Btuh
Total cooling		0	Btuh
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Load sensible heat ratio		0	

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Laundry	86	1319	815	56	38
Mud	137	1326	1172	56	54
Dining	331	3421	2359	146	109
Kitchen/Great	570	7072	12884	301	595
Vestibule	144	0	0	0	0
Pantry	45	0	0	0	0

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

Z - Common	1312	13138	17230	559	795
Other equip loads		0	0		
Equip. @ 1.00 RSM			17230		
Latent cooling			995		
TOTALS	1312	13138	18226	559	795

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

Load Short Form

Z - Gym

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	n/a		
Trade	n/a		
Model	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Heating input			
Heating output		0	Btuh
Temperature rise		0	°F
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Space thermostat	n/a		

COOLING EQUIPMENT

Make	n/a		
Trade	n/a		
Cond	n/a		
Coil	n/a		
AHRI ref	n/a		
Efficiency		n/a	
Sensible cooling		0	Btuh
Latent cooling		0	Btuh
Total cooling		0	Btuh
Actual air flow		0	cfm
Air flow factor		0	cfm/Btuh
Static pressure		0	in H2O
Load sensible heat ratio		0	

ROOM NAME	Area (ft^2)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Gym	261	2127	2129	91	98
Pwdr 1	36	0	0	0	0
Z - Gym	297	2127	2129	91	98
Other equip loads		0	0		
Equip. @ 1.00 RSM			2129		
Latent cooling			0		
TOTALS	297	2127	2129	91	98

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

Load Short Form

Z - Primary Ste

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Information

	Htg	Clg
Outside db (°F)	29	87
Inside db (°F)	70	75
Design TD (°F)	41	12
Daily range	-	M
Inside humidity (%)	35	50
Moisture difference (gr/lb)	20	-1

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

HEATING EQUIPMENT

Make	n/a
Trade	n/a
Model	n/a
AHRI ref	n/a
Efficiency	n/a
Heating input	
Heating output	0 Btuh
Temperature rise	0 °F
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	n/a

COOLING EQUIPMENT

Make	n/a
Trade	n/a
Cond	n/a
Coil	n/a
AHRI ref	n/a
Efficiency	n/a
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
P. Bed	321	3165	4152	135	192
P. Bath	182	1543	2198	66	101
Hall 1	119	578	867	25	40
Z - Primary Ste	622	5285	7218	225	333
Other equip loads		0	0		
Equip. @ 1.00 RSM			7218		
Latent cooling			0		
TOTALS	622	5285	7218	225	333

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

Building Analysis
Entire House
HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Conditions

Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

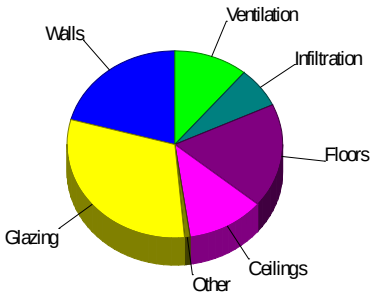
Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Method	Simplified
Construction quality	Tight
Fireplaces	0

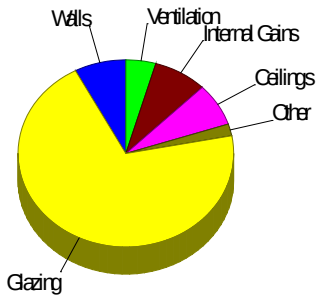
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.3	8342	20.7
Glazing	10.3	12381	30.7
Doors	16.0	336	0.8
Ceilings	1.2	4714	11.7
Floors	1.9	7247	18.0
Infiltration	0.7	2806	7.0
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		4464	11.1
Adjustments		0	
Total		**40291**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	2269	7.7
Glazing	17.2	20593	70.3
Doors	8.9	188	0.6
Ceilings	0.6	2170	7.4
Floors	0	0	0
Infiltration	0.1	414	1.4
Ducts		0	0
Ventilation		1318	4.5
Internal gains		2350	8.0
Blower		0	0
Adjustments		0	
Total		**29302**	**100.0**



Latent Cooling Load = 985 Btuh
Overall U-value = 0.064 Btuh/ft²-°F

WARNING: window to floor area ratio = 30.7% - more than 25%.
ERROR: negative wall area in Vestibule - check windows.

HVAC DESIGN PROS

Building Analysis
Sys - Common
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

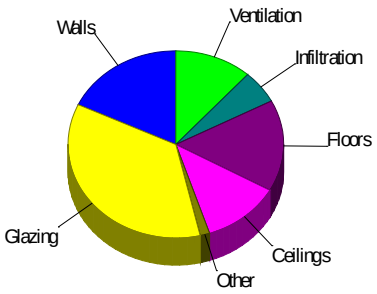
Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Method	Simplified
Construction quality	Tight
Fireplaces	0

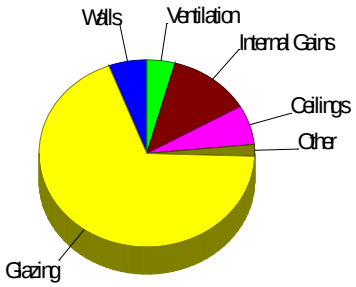
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.4	4189	18.0
Glazing	10.4	8277	35.6
Doors	16.0	336	1.4
Ceilings	1.2	2742	11.8
Floors	1.6	3674	15.8
Infiltration	0.7	1332	5.7
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		2695	11.6
Adjustments		0	
Total		**23246**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	1084	5.7
Glazing	16.3	12994	68.8
Doors	8.9	188	1.0
Ceilings	0.6	1285	6.8
Floors	0	0	0
Infiltration	0.1	197	1.0
Ducts		0	0
Ventilation		795	4.2
Internal gains		2350	12.4
Blower		0	0
Adjustments		0	
Total		**18892**	**100.0**



Latent Cooling Load = 965 Btuh
Overall U-value = 0.067 Btuh/ft²-°F

WARNING: window to floor area ratio = 35.8% - more than 25%.
ERROR: negative wall area in Vestibule - check windows.

HVAC DESIGN PROS

Building Analysis
Sys - Guests
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

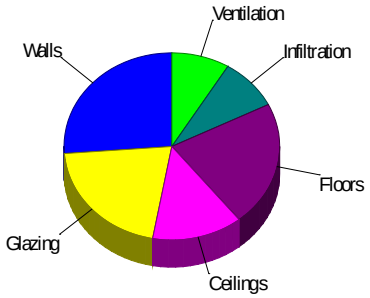
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7
Infiltration:		
Method	Simplified	
Construction quality	Tight	
Fireplaces	0	

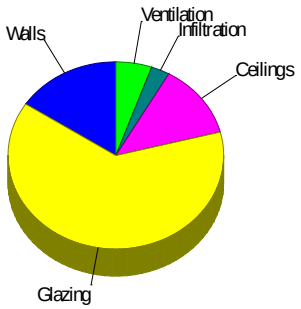
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.3	2544	26.2
Glazing	10.3	2033	20.9
Doors	0	0	0
Ceilings	1.2	1316	13.6
Floors	1.9	2103	21.7
Infiltration	0.7	867	8.9
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		844	8.7
Adjustments		0	
Total		**9708**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	726	15.7
Glazing	14.7	2920	63.3
Doors	0	0	0
Ceilings	0.5	591	12.8
Floors	0	0	0
Infiltration	0.1	128	2.8
Ducts		0	0
Ventilation		249	5.4
Internal gains		0	0
Blower		0	0
Adjustments		0	
Total		**4613**	**100.0**



Latent Cooling Load = 0 Btuh
Overall U-value = 0.055 Btuh/ft²-°F

Data entries checked.

HVAC DESIGN PROS

Building Analysis
Sys-Moms
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

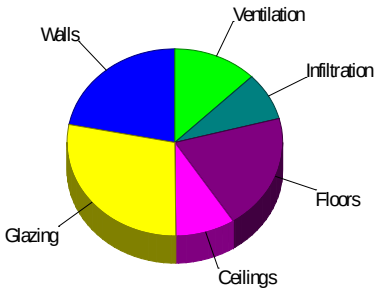
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7
Infiltration:		
Method	Simplified	
Construction quality	Tight	
Fireplaces	0	

Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.3	1609	21.9
Glazing	10.3	2071	28.2
Doors	0	0	0
Ceilings	1.2	656	8.9
Floors	2.7	1470	20.0
Infiltration	0.7	606	8.3
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		925	12.6
Adjustments		0	
Total		**7337**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	459	7.5
Glazing	24.7	4987	81.7
Doors	0	0	0
Ceilings	0.5	295	4.8
Floors	0	0	0
Infiltration	0.1	89	1.5
Ducts		0	0
Ventilation		273	4.5
Internal gains		0	0
Blower		0	0
Adjustments		0	
Total		**6103**	**100.0**

Latent Cooling Load = 0 Btuh
Overall U-value = 0.070 Btuh/ft²-°F

WARNING: window to floor area ratio = 36.6% - more than 25%.

HVAC DESIGN PROS

Building Analysis
Z - Common
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

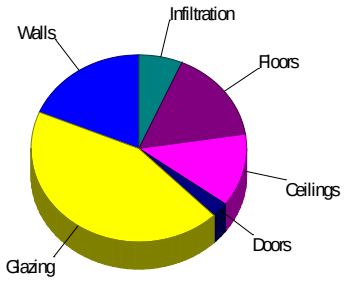
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7
Infiltration:		
Method	Simplified	
Construction quality	Tight	
Fireplaces	0	

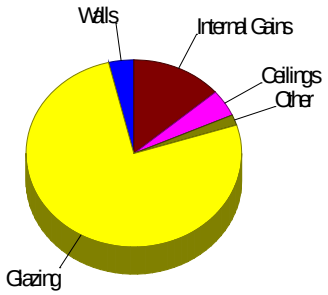
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.4	2451	18.7
Glazing	10.4	5735	43.7
Doors	16.0	336	2.6
Ceilings	1.3	1654	12.6
Floors	1.6	2103	16.0
Infiltration	0.7	858	6.5
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	
Total		**13138**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	649	3.8
Glazing	23.8	13120	76.1
Doors	8.9	188	1.1
Ceilings	0.6	797	4.6
Floors	0	0	0
Infiltration	0.1	127	0.7
Ducts		0	0
Ventilation		0	0
Internal gains		2350	13.6
Blower		0	0
Adjustments		0	
Total		**17230**	**100.0**



Latent Cooling Load = 995 Btuh
Overall U-value = 0.071 Btuh/ft²-°F

WARNING: window to floor area ratio = 42.0% - more than 25%.
ERROR: negative wall area in Vestibule - check windows.

HVAC DESIGN PROS

Building Analysis
Z - Gym
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

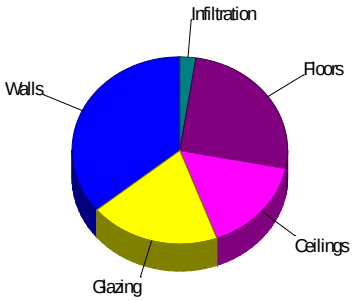
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7
Infiltration:		
Method	Simplified	
Construction quality	Tight	
Fireplaces	0	

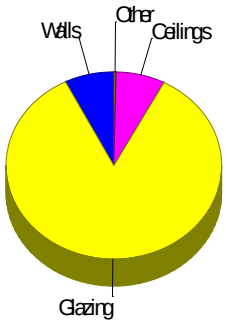
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.5	766	36.0
Glazing	10.3	417	19.6
Doors	0	0	0
Ceilings	1.2	348	16.4
Floors	1.8	546	25.7
Infiltration	0.7	51	2.4
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	
Total		**2127**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.5	158	7.4
Glazing	44.5	1808	84.9
Doors	0	0	0
Ceilings	0.5	156	7.3
Floors	0	0	0
Infiltration	0.1	8	0.4
Ducts		0	0
Ventilation		0	0
Internal gains		0	0
Blower		0	0
Adjustments		0	
Total		**2129**	**100.0**



Latent Cooling Load = 0 Btuh
Overall U-value = 0.054 Btuh/ft²-°F

Data entries checked.

HVAC DESIGN PROS

Building Analysis
Z - Primary Ste
HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

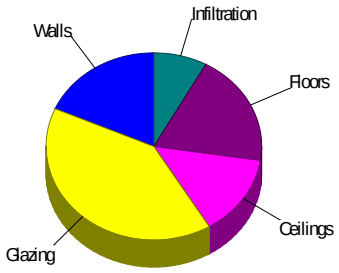
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7
Infiltration:		
Method	Simplified	
Construction quality	Tight	
Fireplaces	0	

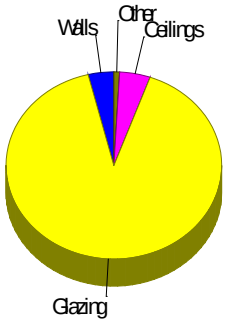
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.3	972	18.4
Glazing	10.3	2125	40.2
Doors	0	0	0
Ceilings	1.2	740	14.0
Floors	1.6	1025	19.4
Infiltration	0.7	423	8.0
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	
Total		**5285**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.6	277	3.8
Glazing	31.6	6546	90.7
Doors	0	0	0
Ceilings	0.5	332	4.6
Floors	0	0	0
Infiltration	0.1	62	0.9
Ducts		0	0
Ventilation		0	0
Internal gains		0	0
Blower		0	0
Adjustments		0	
Total		**7218**	**100.0**



Latent Cooling Load = 0 Btuh
Overall U-value = 0.063 Btuh/ft²-°F

WARNING: window to floor area ratio = 33.3% - more than 25%.

Component Constructions
Entire House

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Method	Simplified
Construction quality	Tight
Fireplaces	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								
12E-0sw: Frm wall, wd ext, 1/2" wood shth, r-19 cav ins, 1/2" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	11	0.068	19.0	2.79	31	0.94	10
	e	35	0.068	19.0	2.79	98	0.94	33
	s	9	0.068	19.0	2.79	25	0.94	8
	w	35	0.068	19.0	2.79	98	0.94	33
	all	90	0.068	19.0	2.79	250	0.94	84
Frm wall, wd ext, 1/2" wood shth, r-23 cav ins, 1/2" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	775	0.056	23.0	2.28	1764	0.65	503
	e	779	0.056	23.0	2.28	1774	0.65	506
	s	788	0.056	23.0	2.28	1792	0.65	512
	w	608	0.056	23.0	2.28	1385	0.65	395
	all	2950	0.056	23.0	2.28	6715	0.65	1916
Partitions								
Garage 2x6 R21: R21 Garage Party Wall		533	0.063	21.0	2.59	1377	0.50	269
Windows								
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 6.67 ft head ht	n	50	0.270	0	11.1	554	8.91	445
	s	37	0.270	0	11.1	408	17.5	643
	s	38	0.250	0	10.3	389	17.2	653
	all	125	0.250	0	10.8	1350	14.0	1741
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 2 ft overhang (2 ft window ht, 1.5 ft sep.); 6.67 ft head ht	n	16	0.250	0	10.3	164	8.66	139
	n	18	0.250	0	10.3	181	8.66	153
	n	18	0.250	0	10.3	183	8.66	155
	n	18	0.250	0	10.3	186	8.66	157
	s	15	0.270	0	11.1	170	8.91	137
	s	6	0.250	0	10.3	62	8.66	52
	all	91	0.250	0	10.4	945	8.70	792
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 2 ft overhang (5 ft window ht, 1.5 ft sep.); 6.67 ft head ht	n	42	0.250	0	10.3	427	8.66	361
	n	60	0.250	0	10.3	615	8.66	520
	e	20	0.250	0	10.3	205	30.5	610
	e	22	0.250	0	10.3	222	30.5	661
	e	30	0.250	0	10.3	308	30.5	915
	s	33	0.250	0	10.3	342	12.8	426
	w	30	0.250	0	10.3	308	30.5	915
	all	237	0.250	0	10.3	2426	18.6	4409

1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 2 ft overhang (8 ft window ht, 1.5 ft sep.); 6.67 ft head ht	n	48	0.250	0	10.3	492	8.66	416
	e	96	0.250	0	10.3	984	30.7	2946
	s	24	0.250	0	10.3	246	14.4	346
	s	52	0.250	0	10.3	533	14.4	750
	s	96	0.250	0	10.3	984	14.4	1386
	w	24	0.250	0	10.3	246	30.7	736
	w	31	0.250	0	10.3	314	30.7	941
	all	371	0.250	0	10.3	3799	20.3	7521
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 2 ft overhang (3 ft window ht, 1.5 ft sep.); 6.67 ft head ht	e	12	0.250	0	10.3	123	30.2	363
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 2 ft overhang (4 ft window ht, 1.5 ft sep.); 6.67 ft head ht	e	16	0.250	0	10.3	164	30.4	486
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 3 ft overhang (2 ft window ht, 1.5 ft sep.); 6.67 ft head ht	s	18	0.250	0	10.3	185	8.66	156
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 3 ft overhang (5 ft window ht, 1.5 ft sep.); 6.67 ft head ht	s	36	0.250	0	10.3	367	9.26	332
	s	75	0.250	0	10.3	769	9.26	695
	all	111	0.250	0	10.3	1136	9.26	1027
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 3 ft overhang (8 ft window ht, 1.5 ft sep.); 6.67 ft head ht	s	28	0.250	0	10.3	287	12.2	343
	s	111	0.250	0	10.2	1141	12.2	1363
	all	139	0.250	0	10.2	1428	12.2	1706
1D-c2ow: 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 13.5 ft overhang (8 ft window ht, 1.5 ft sep.); 6.67 ft head ht	s	48	0.250	0	10.3	492	8.66	416
8Acw-2w: Sky glazing, small, wood curb, no shaft lgt shaft, wd sash; NFRC rated (SHGC=0.30); 1 ft overhang (1 ft window ht, 1.5 ft sep.)		4	0.250	0	10.3	41	61.0	244
		4	0.250	0	10.3	43	61.0	254
		12	0.250	0	10.3	120	61.0	711
		13	0.250	0	10.2	129	61.0	768
	all	32	0.250	0	10.2	332	61.0	1978

Doors

11D0: Door, wd sc type	n	21	0.390	0	16.0	336	8.93	188

Ceilings

18A-30xd: Flat ceiling, tar and gravel roof mat, frm deck, r-20 deck ins, 1/2" gypsum board int fnsh, 12" thkns, r-30 ceil ins		534	0.034	30.0	1.39	744	0.73	388
18A-38xd: Flat ceiling, tar and gravel roof mat, frm deck, r-20 deck ins, 1/2" gypsum board int fnsh, 12" thkns, r-38 ceil ins		3339	0.029	38.0	1.19	3970	0.53	1782

Floors

22B-10tpm: Bg floor, heavy dry or light damp soil, on grade depth, r-10 edge ins		498	0.355	10.0	14.6	7247	0	0

Project Summary
Sys - Common
HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Notes:

Design Information

Weather: Portland Intl, OR, US

Winter Design Conditions

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

Summer Design Conditions

Outside db	87	°F
Inside db	75	°F
Design TD	12	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	-1	gr/lb

Heating Summary

Structure	20550	Btuh
Ducts	0	Btuh
Central vent (60 cfm)	2695	Btuh
Outside air		
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	23246	Btuh

Sensible Cooling Equipment Load Sizing

Structure	18097	Btuh
Ducts	0	Btuh
Central vent (60 cfm)	795	Btuh
Outside air		
Blower	0	Btuh
Use manufacturer's data	y	
Rate/swing multiplier	1.00	
Equipment sensible load	18892	Btuh

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

	Heating	Cooling
Area (ft²)	2231	2231
Volume (ft³)	22284	22284
Air changes/hour	0.08	0.04
Equiv. AVF (cfm)	30	15

Latent Cooling Equipment Load Sizing

Structure	993	Btuh
Ducts	0	Btuh
Central vent (60 cfm)	-28	Btuh
Outside air		
Equipment latent load	965	Btuh
Equipment Total Load (Sen+Lat)	19857	Btuh
Req. total capacity at 0.95 SHR	1.7	ton

Heating Equipment Summary

Make	Mitsubishi
Trade	
Model	SUZ-KA30NAHZ
AHRI ref	

Efficiency	9 HSPF	
Heating input		
Heating output	0	Btuh @ 47°F
Temperature rise	0	°F
Actual air flow	875	cfm
Air flow factor	0.043	cfm/Btuh
Static pressure	0.50	in H2O
Space thermostat		

Capacity balance point = 0 °F

Cooling Equipment Summary

Make	Mitsubishi
Trade	
Cond	SUZ-KA30NAHZ
Coil	SVZ-KP30NA
AHRI ref	

Efficiency	15 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	875	cfm
Air flow factor	0.046	cfm/Btuh
Static pressure	0.50	in H2O
Load sensible heat ratio	0.95	

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

Project Summary
Sys - Guests
HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Notes:

Design Information

Weather: Portland Intl, OR, US

Winter Design Conditions

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

Summer Design Conditions

Outside db	87	°F
Inside db	75	°F
Design TD	12	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	-1	gr/lb

Heating Summary

Structure	8864	Btuh
Ducts	0	Btuh
Central vent (19 cfm) Outside air	844	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	9708	Btuh

Sensible Cooling Equipment Load Sizing

Structure	4364	Btuh
Ducts	0	Btuh
Central vent (19 cfm) Outside air	249	Btuh
Blower	0	Btuh
Use manufacturer's data	y	
Rate/swing multiplier	1.00	
Equipment sensible load	4613	Btuh

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

	Heating	Cooling
Area (ft²)	1123	1123
Volume (ft³)	10105	10105
Air changes/hour	0.11	0.06
Equiv. AVF (cfm)	19	10

Latent Cooling Equipment Load Sizing

Structure	-5	Btuh
Ducts	0	Btuh
Central vent (19 cfm) Outside air	-9	Btuh
Equipment latent load	0	Btuh
Equipment Total Load (Sen+Lat)	4613	Btuh
Req. total capacity at 0.98 SHR	0.4	ton

Heating Equipment Summary

Make	Mitsubishi
Trade	
Model	SUZ-KA09NAHZ
AHRI ref	

Efficiency	10.8 HSPF	
Heating input		
Heating output	0	Btuh @ 47°F
Temperature rise	0	°F
Actual air flow	300	cfm
Air flow factor	0.034	cfm/Btuh
Static pressure	0.28	in H2O
Space thermostat		

Capacity balance point = 0 °F

Cooling Equipment Summary

Make	Mitsubishi
Trade	
Cond	SUZ-KA09NAHZ
Coil	PEAD-09AA7
AHRI ref	

Efficiency	17.8 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	300	cfm
Air flow factor	0.069	cfm/Btuh
Static pressure	0.28	in H2O
Load sensible heat ratio	1.00	

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

Project Summary
Sys-Moms
HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Notes:

Design Information

Weather: Portland Intl, OR, US

Winter Design Conditions

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

Summer Design Conditions

Outside db	87	°F
Inside db	75	°F
Design TD	12	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	-1	gr/lb

Heating Summary

Structure	6412	Btuh
Ducts	0	Btuh
Central vent (21 cfm)	925	Btuh
Outside air		
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	7337	Btuh

Sensible Cooling Equipment Load Sizing

Structure	5830	Btuh
Ducts	0	Btuh
Central vent (21 cfm)	273	Btuh
Outside air		
Blower	0	Btuh
Use manufacturer's data	y	
Rate/swing multiplier	1.00	
Equipment sensible load	6103	Btuh

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

	Heating	Cooling
Area (ft²)	552	552
Volume (ft³)	4968	4968
Air changes/hour	0.16	0.08
Equiv. AVF (cfm)	13	7

Latent Cooling Equipment Load Sizing

Structure	-3	Btuh
Ducts	0	Btuh
Central vent (21 cfm)	-10	Btuh
Outside air		
Equipment latent load	0	Btuh
Equipment Total Load (Sen+Lat)	6103	Btuh
Req. total capacity at 0.98 SHR	0.5	ton

Heating Equipment Summary

Make	Mitsubishi	
Trade		
Model	SUZ-KA09NAHZ	
AHRI ref		
Efficiency	10.8 HSPF	
Heating input		
Heating output	0	Btuh @ 47°F
Temperature rise	0	°F
Actual air flow	300	cfm
Air flow factor	0.047	cfm/Btuh
Static pressure	0.28	in H2O
Space thermostat		

Capacity balance point = 0 °F

Cooling Equipment Summary

Make	Mitsubishi	
Trade		
Cond	SUZ-KA09NAHZ	
Coil	PEAD-A09AA7	
AHRI ref		
Efficiency	17.8 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	300	cfm
Air flow factor	0.051	cfm/Btuh
Static pressure	0.28	in H2O
Load sensible heat ratio	1.00	

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

HVAC DESIGN PROS

AED Assessment

Sys - Common

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:

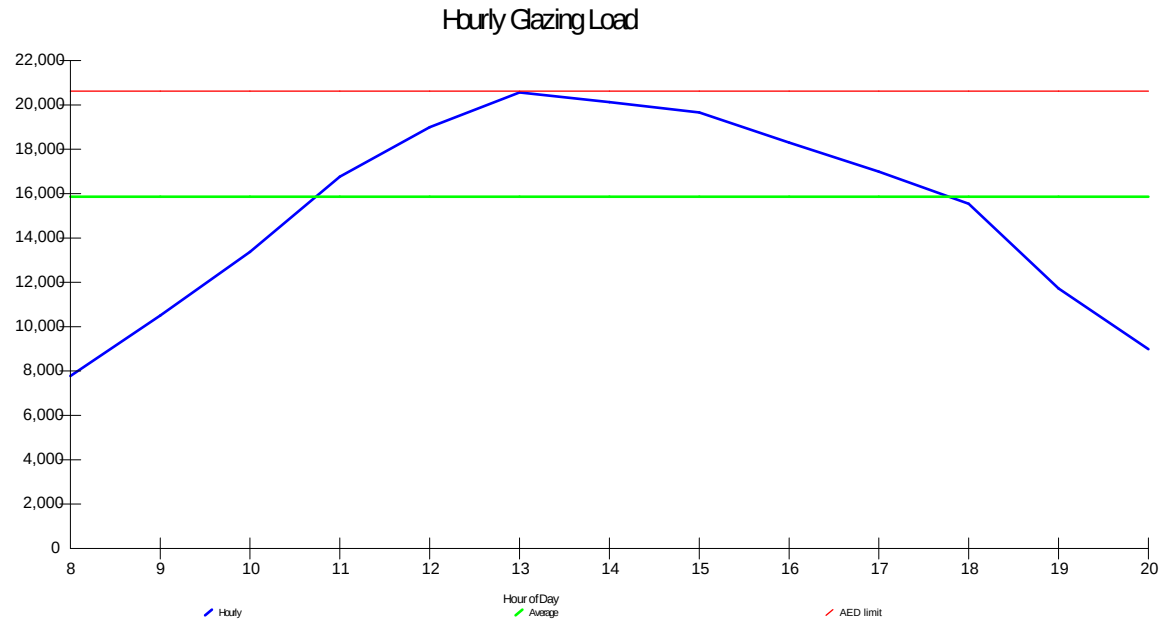
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 29.7%.

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

AED excursion: 0 Btuh

HVAC DESIGN PROS

AED Assessment

Sys - Guests

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:

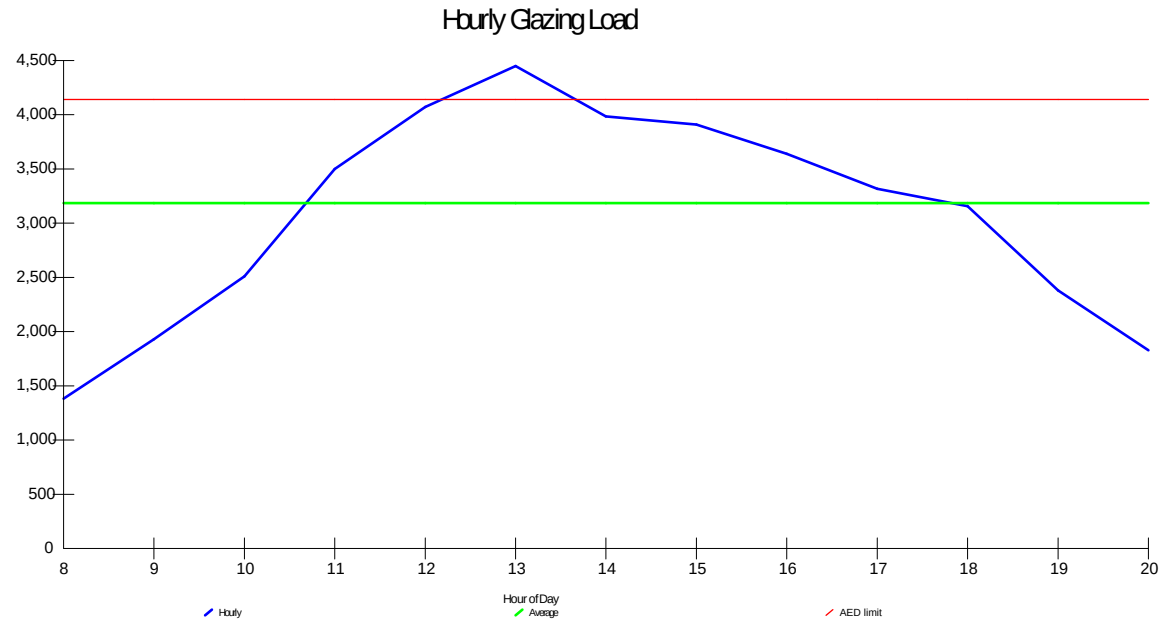
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 39.6%.

Zone does not have adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 307 Btuh (PFG - 1.3*AFG)

HVAC DESIGN PROS

AED Assessment

Sys-Moms

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:

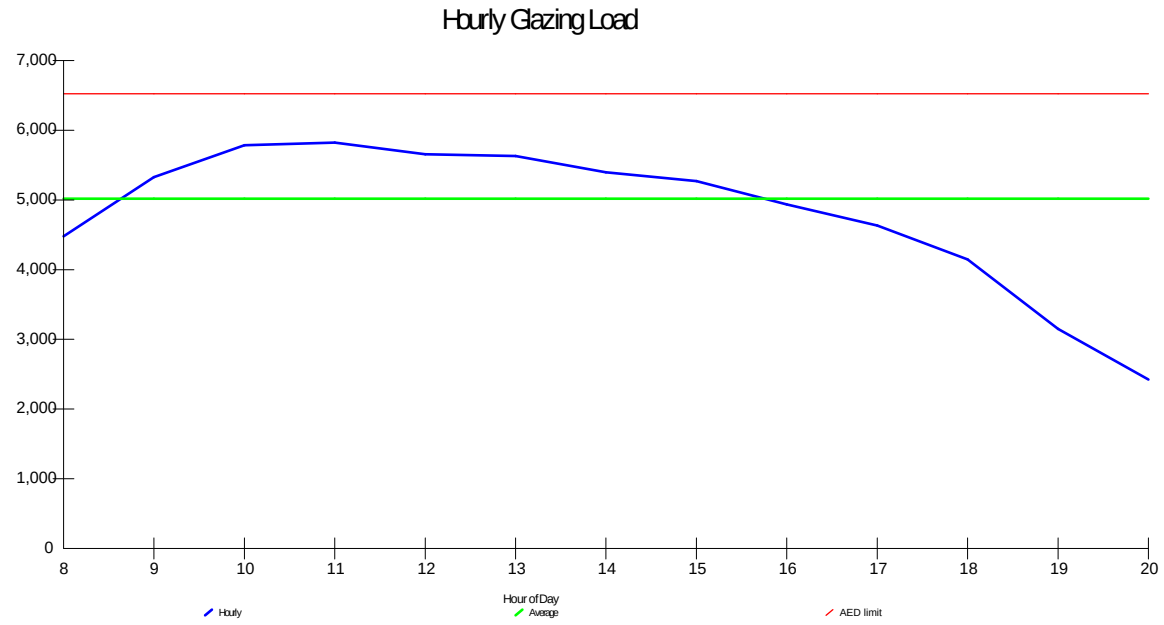
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 16.0%.

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

AED excursion: 0 Btuh

HVAC DESIGN PROS

AED Assessment

Z - Common

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

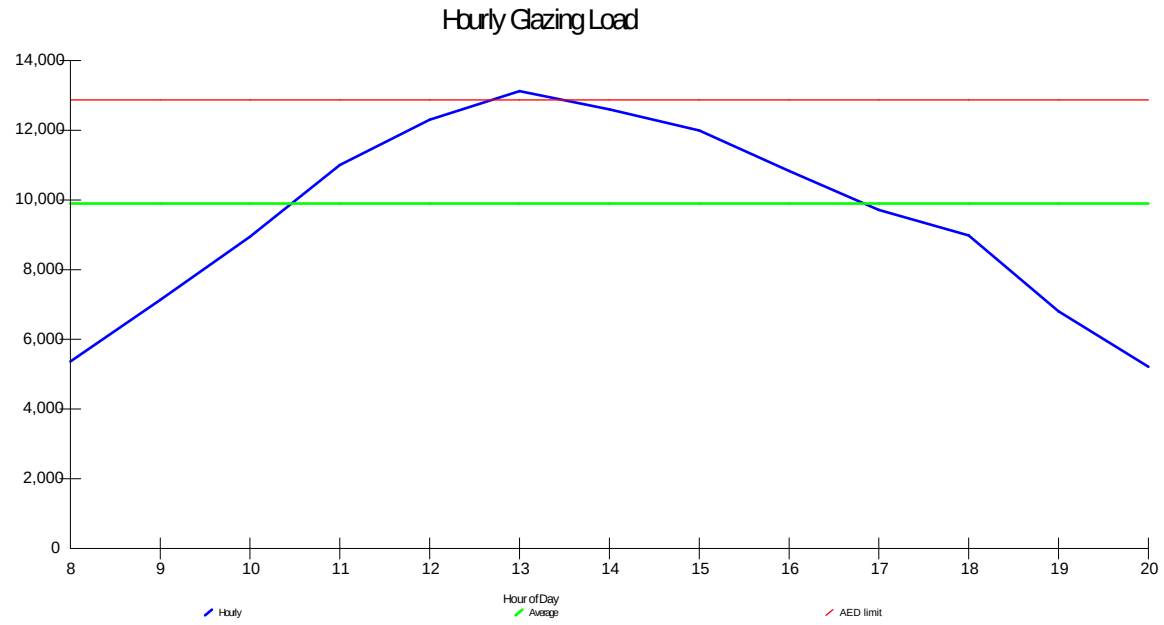
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 32.5%.

Zone does not have adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 5173 Btuh (PFG - ALP)

HVAC DESIGN PROS

AED Assessment

Z - Gym

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Design Conditions

Location:

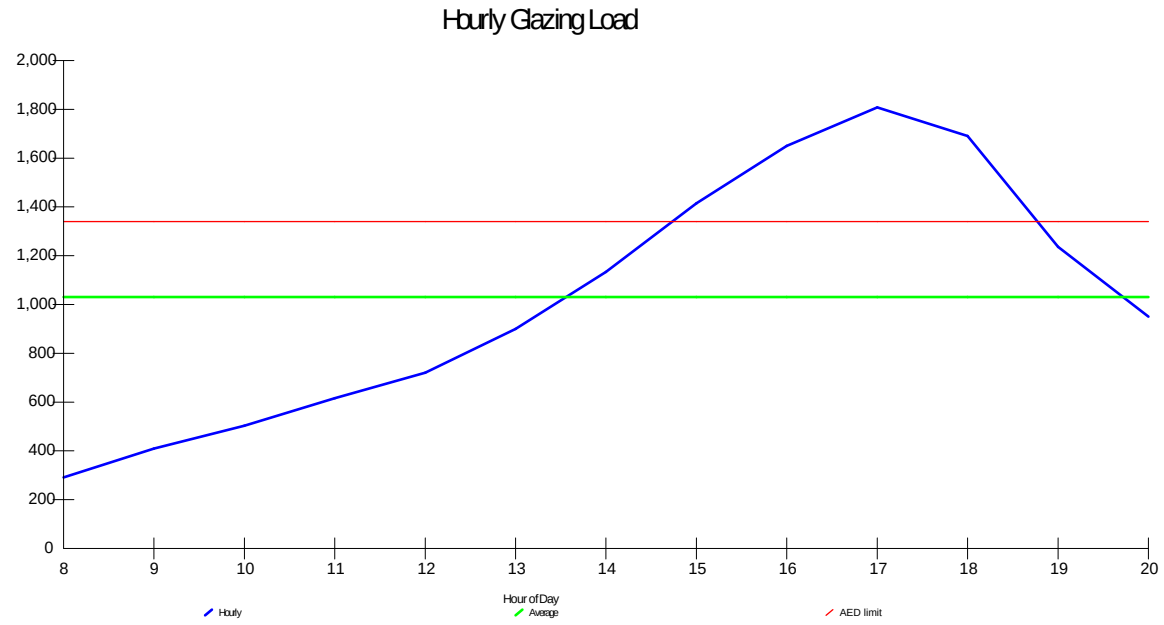
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 75.3%.

Zone does not have adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 571 Btuh (PFG - ALP)

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Design Conditions

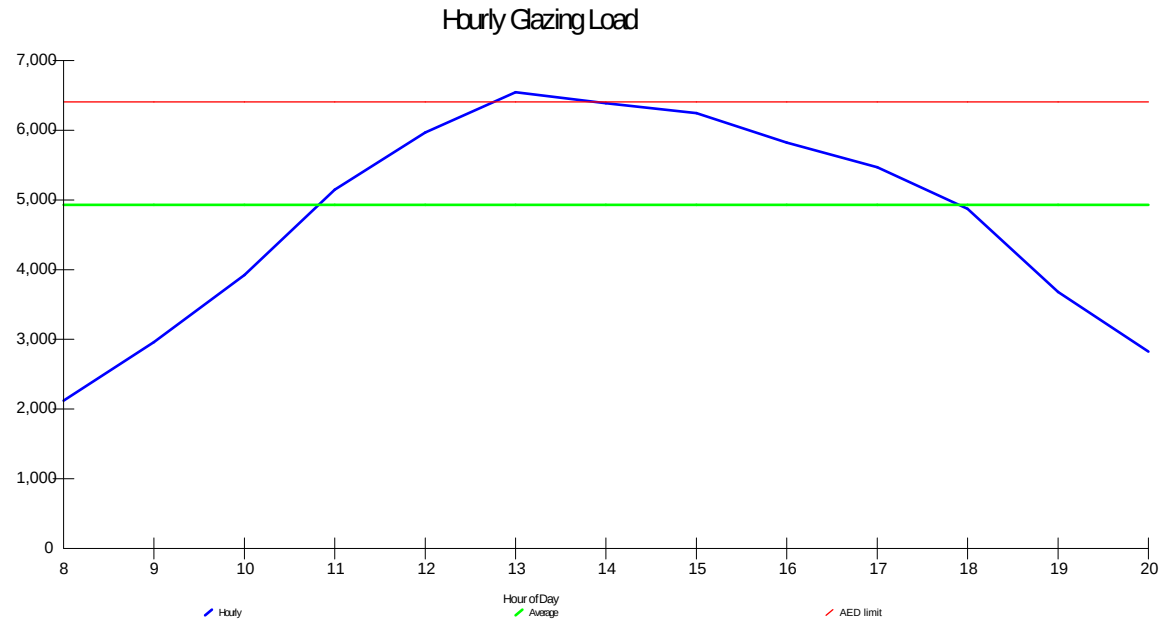
Location:
Portland Intl, OR, US
Elevation: 19 ft
Latitude: 46°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	29	87
Daily range (°F)	-	21 (M)
Wet bulb (°F)	-	66
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	41	12
Relative humidity (%)	35	50
Moisture difference (gr/lb)	19.7	-0.7

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 32.8%.

Zone does not have adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 2737 Btuh (PFG - ALP)

Manual S Compliance Report

Sys - Common

HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Cooling Equipment

Design Conditions

Outdoor design DB:	87.1°F	Sensible gain:	18892	Btuh	Entering coil DB:	75.8°F
Outdoor design WB:	66.4°F	Latent gain:	965	Btuh	Entering coil WB:	62.8°F
Indoor design DB:	75.0°F	Total gain:	19857	Btuh		
Indoor RH:	50%	Estimated airflow:	875	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Mitsubishi		Model:	SUZ-KA30NAHZ+SVZ-KP30NA	
Actual airflow:	875	cfm			
Sensible capacity:	25496	Btuh	135% of load		
Latent capacity:	0	Btuh	0% of load		
Total capacity:	25496	Btuh	128% of load	SHR:	0k%

Heating Equipment

Design Conditions

Outdoor design DB:	29.0°F	Heat loss:	23246	Btuh	Entering coil DB:	67.1°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP					
Manufacturer:	Mitsubishi		Model:	SUZ-KA30NAHZ+SVZ-KP30NA		
Actual airflow:	875	cfm				
Output capacity:	26106	Btuh	112% of load		Capacity balance:	0 °F
Supplemental heat required:	0	Btuh			Economic balance:	0 °F

Meets all requirements of ACCA Manual S.

Manual S Compliance Report

Sys - Guests

HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Cooling Equipment

Design Conditions

Outdoor design DB:	87.1°F	Sensible gain:	4613	Btuh	Entering coil DB:	75.8°F
Outdoor design WB:	66.4°F	Latent gain:	0	Btuh	Entering coil WB:	62.8°F
Indoor design DB:	75.0°F	Total gain:	4613	Btuh		
Indoor RH:	50%	Estimated airflow:	300	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Mitsubishi		Model:	SUZ-KA09NAHZ+PEAD-09AA7	
Actual airflow:	300	cfm			
Sensible capacity:	8686	Btuh	188% of load		
Latent capacity:	0	Btuh	0% of load		
Total capacity:	8686	Btuh	188% of load	SHR:	0k%

Heating Equipment

Design Conditions

Outdoor design DB:	29.0°F	Heat loss:	9708	Btuh	Entering coil DB:	67.4°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP						
Manufacturer:	Mitsubishi		Model:	SUZ-KA09NAHZ+PEAD-09AA7			
Actual airflow:	300	cfm					
Output capacity:	10246	Btuh	106% of load		Capacity balance:	0	°F
Supplemental heat required:	0	Btuh			Economic balance:	0	°F

Meets all requirements of ACCA Manual S.

Manual S Compliance Report

Sys-Moms

HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Cooling Equipment

Design Conditions

Outdoor design DB:	87.1°F	Sensible gain:	6103	Btuh	Entering coil DB:	75.9°F
Outdoor design WB:	66.4°F	Latent gain:	0	Btuh	Entering coil WB:	62.8°F
Indoor design DB:	75.0°F	Total gain:	6103	Btuh		
Indoor RH:	50%	Estimated airflow:	300	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Mitsubishi		Model:	SUZ-KA09NAHZ+PEAD-A09AA7	
Actual airflow:	300	cfm			
Sensible capacity:	8686	Btuh	142% of load		
Latent capacity:	0	Btuh	0% of load		
Total capacity:	8686	Btuh	142% of load	SHR:	0k%

Heating Equipment

Design Conditions

Outdoor design DB:	29.0°F	Heat loss:	7337	Btuh	Entering coil DB:	67.1°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP					
Manufacturer:	Mitsubishi		Model:	SUZ-KA09NAHZ+PEAD-A09AA7		
Actual airflow:	300	cfm				
Output capacity:	10246	Btuh	140% of load		Capacity balance:	0 °F
Supplemental heat required:	0	Btuh			Economic balance:	0 °F

Meets all requirements of ACCA Manual S.

Static Pressure and Friction Rate

Sys - Common

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Available Static Pressure

	Heating (in H2O)	Cooling (in H2O)
External static pressure	0.50	0.50
Pressure losses		
Coil	0	0
Heat exchanger	0	0
Supply diffusers	0	0
Return grilles	0	0
Filter	0.10	0.10
Humidifier	0	0
Balancing damper	0	0
Other device	0.12	0.12
Available static pressure	0.28	0.28

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	4	13
Measured length of trunk	40	3
Equivalent length of fittings	270	55
Total length	314	71
Total effective length		385

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.073	OK	0.073	OK
Return Ducts	0.073	OK	0.073	OK

Fitting Equivalent Length Details

Supply	4G=80, 2P0=50, 12L1=10, 8E=10, 9B1=80, 8B6=15, 8B6=15, 1D=10: TotalEL=270
Return	6F=25, 8E=10, 8E=10, 5E1=10: TotalEL=55

Static Pressure and Friction Rate

Sys - Guests

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

Available Static Pressure

	Heating (in H2O)	Cooling (in H2O)
External static pressure	0.28	0.28
Pressure losses		
Coil	0	0
Heat exchanger	0	0
Supply diffusers	0	0
Return grilles	0	0
Filter	0.06	0.06
Humidifier	0	0
Balancing damper	0	0
Other device	0.09	0.09
Available static pressure	0.13	0.13

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	1	1
Measured length of trunk	19	0
Equivalent length of fittings	175	20
Total length	195	21
Total effective length		216

Friction Rate

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

Fitting Equivalent Length Details

Supply	4G=80, 2P0=50, 8AA=20, 9N=15, 1D=10: TotalEL=175
Return	6K=10, 5E1=10: TotalEL=20

Static Pressure and Friction Rate

Sys-Moms

HVAC Design Pros, LLC

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Job:
Date: Jan 04, 2022
By:

Project Information

For:

Available Static Pressure

	Heating (in H2O)	Cooling (in H2O)
External static pressure	0.28	0.28
Pressure losses		
Coil	0	0
Heat exchanger	0	0
Supply diffusers	0	0
Return grilles	0	0
Filter	0.05	0.05
Humidifier	0	0
Balancing damper	0	0
Other device	0.09	0.09
Available static pressure	0.13	0.13

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	2	7
Measured length of trunk	3	0
Equivalent length of fittings	170	30
Total length	175	37
Total effective length		212

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.064	OK	0.064	OK
Return Ducts	0.064	OK	0.064	OK

Fitting Equivalent Length Details

Supply 4G=80, 2A0=35, 9L=20, 1A=35: TotalEL=170

Return 6K=10, 8E=10, 5E1=10: TotalEL=30

Duct System Summary

Sys - Common

HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

	Heating	Cooling
External static pressure	0.50 in H2O	0.50 in H2O
Pressure losses	0.22 in H2O	0.22 in H2O
Available static pressure	0.28 in H2O	0.28 in H2O
Supply / return available pressure	0.228 / 0.052 in H2O	0.228 / 0.052 in H2O
Lowest friction rate	0.073 in/100ft	0.073 in/100ft
Actual air flow	875 cfm	875 cfm
Total effective length (TEL)	385 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
Dining	h	3421	146	109	0.102	6.7	6x 6	ShMt	42.8	180.0	st4
Gym	c	2129	91	98	0.151	5.6	6x 6	ShMt	35.8	115.0	st5
Hall 1	c	867	25	40	0.079	4.0	0x 0	ShMt	45.3	245.0	st9
Kitchen/Great	c	6442	151	297	0.094	8.9	8x 10	ShMt	57.8	185.0	st6
Kitchen/Great-A	c	6442	151	297	0.095	8.8	8x 10	ShMt	45.8	195.0	st6
Laundry	h	1319	56	38	0.077	4.0	0x 0	ShMt	47.8	250.0	st4B
Mud	h	1326	56	54	0.073	4.0	0x 0	ShMt	43.8	270.0	st4A
P. Bath	c	2198	66	101	0.094	6.0	0x 0	ShMt	46.8	195.0	st9
P. Bed	c	4152	135	192	0.093	7.5	8x 6	ShMt	49.3	195.0	st9

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st9	Peak AVF	225	333	0.079	600	9.6	8 x 10	ShtMetl	st7
st4	Peak AVF	258	201	0.073	465	8.9	8 x 10	ShtMetl	st1
st4A	Peak AVF	113	92	0.073	574	6.0	0 x 0	ShtMetl	st4
st4B	Peak AVF	56	38	0.077	644	4.0	0 x 0	ShtMetl	st4A
st6	Peak AVF	301	595	0.094	765	11.5	8 x 14	ShtMetl	st5
st1	Peak AVF	875	1227	0.073	736	15.8	8 x 30	ShtMetl	
st7	Peak AVF	225	333	0.079	600	9.6	8 x 10	ShtMetl	st5
st5	Peak AVF	617	1026	0.079	770	14.6	8 x 24	ShtMetl	st1

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	0x 0	875	1227	71.0	0.073	690	15.8	8x 32		ShMt	rrs1

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	875	1227	0.073	690	15.8	16 x 16	ShtMetl	
rrs1	Peak AVF	875	1227	0.073	690	15.8	16 x 16	ShtMetl	rt1

Duct System Summary

Sys - Guests

HVAC Design Pros, LLC

Job:
Date: **Jan 04, 2022**
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

	Heating	Cooling
External static pressure	0.28 in H2O	0.28 in H2O
Pressure losses	0.15 in H2O	0.15 in H2O
Available static pressure	0.13 in H2O	0.13 in H2O
Supply / return available pressure	0.117 / 0.013 in H2O	0.117 / 0.013 in H2O
Lowest friction rate	0.060 in/100ft	0.060 in/100ft
Actual air flow	300 cfm	300 cfm
Total effective length (TEL)	216 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 1	h 410	14	10	0.060	4.0	0x 0	ShMt	19.5	175.0	st21
Circ East	h 3575	121	81	0.087	6.0	0x 0	ShMt	15.5	120.0	st16A
Guest 1	c 636	34	44	0.093	4.0	0x 0	ShMt	21.5	105.0	st21
Guest 2	h 1737	59	52	0.098	4.0	0x 0	ShMt	14.5	105.0	st18
Office	c 1505	58	103	0.063	6.0	0x 0	ShMt	27.5	160.0	st16
Room28	h 410	14	10	0.061	4.0	0x 0	ShMt	16.5	175.0	st18

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st18	Peak AVF	73	62	0.061	370	6.0	0 x 0	ShtMetl	st20
st21	Peak AVF	48	54	0.060	619	4.0	0 x 0	ShtMetl	st17
st16A	Peak AVF	121	81	0.087	616	6.0	0 x 0	ShtMetl	st16
st16	Peak AVF	179	184	0.063	527	8.0	0 x 0	ShtMetl	st2
st17	Peak AVF	121	116	0.060	616	6.0	0 x 0	ShtMetl	st2
st20	Peak AVF	73	62	0.061	370	6.0	0 x 0	ShtMetl	st17
st2	Peak AVF	300	300	0.060	550	10.0	0 x 0	ShtMetl	

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
rb3	0x 0	300	300	21.0	0.060	540	9.7	8x 10		ShMt	

Duct System Summary

Sys-Moms

HVAC Design Pros, LLC

Job:
Date: Jan 04, 2022
By:

PO Box 1036, Saluda, NC 28773 Phone: 828-549-8755 Email: info@HvacDesignPros.com

Project Information

For:

	Heating	Cooling
External static pressure	0.28 in H2O	0.28 in H2O
Pressure losses	0.15 in H2O	0.15 in H2O
Available static pressure	0.13 in H2O	0.13 in H2O
Supply / return available pressure	0.111 / 0.024 in H2O	0.111 / 0.024 in H2O
Lowest friction rate	0.064 in/100ft	0.064 in/100ft
Actual air flow	300 cfm	300 cfm
Total effective length (TEL)	212 ft	

Supply Branch Detail Table

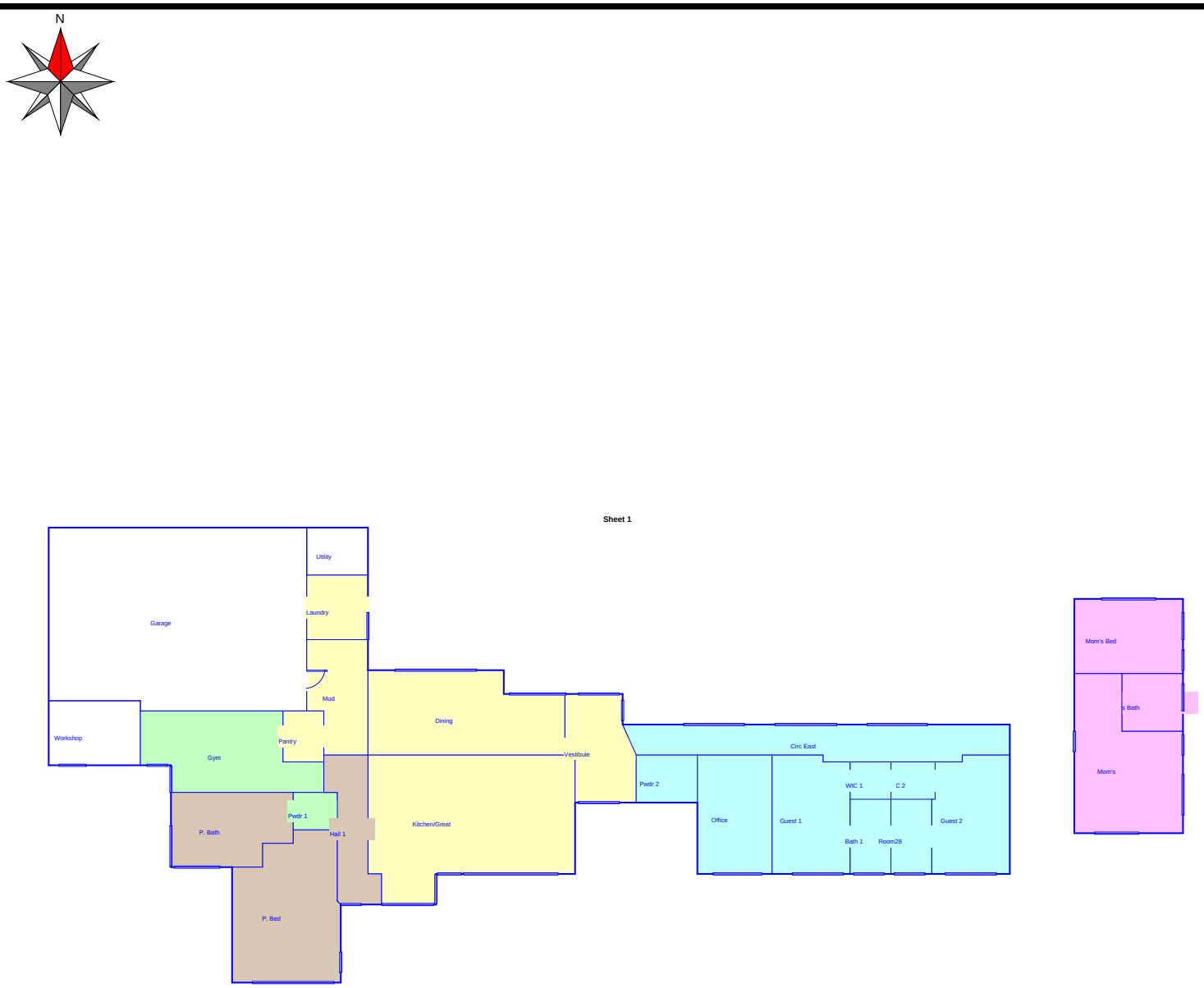
Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Mom's	c 3460	170	178	0.104	7.2	8x 6	ShMt	7.5	100.0	st3
Mom's Bath	c 491	25	25	0.064	4.0	0x 0	ShMt	4.5	170.0	st3
Mom's Bed	h 2247	105	97	0.161	5.4	8x 4	ShMt	4.0	65.0	st3

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st3	Peak AVF	300	300	0.064	550	10.0	0 x 0	ShtMetl	

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
rb2	0x 0	300	300	37.0	0.064	540	9.6	8x 10		ShMt	



Job #: **Performed for:**	**HVAC Design Pros, LLC** PO Box 1036 Saluda, NC 28773 Phone: 828-549-8755 info@HvacDesignPros.com	Scale: 1 : 278 Page 1 Right-Suite® Universal 2021 21.0.08 RSU02866 2022-Feb-08 12:40:12 ...P\Gurevich, Leon\Gurevich_v2.rup