

Air System Sizing Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

Air System Information

Air System Name HVAC
Equipment Class PKG ROOF
Air System Type SZCAV

Number of zones 1
Floor Area 502.2 m²
Location Fort McMurray, Alberta

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone L/s Sizing Sum of space airflow rates
Space L/s Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load 9.7 kW
Sensible coil load 9.7 kW
Coil L/s at Jul 1800 1266 L/s
Max block L/s 1266 L/s
Sum of peak zone L/s 1266 L/s
Sensible heat ratio 1.000
L/(s kW) 130.2
m²/kW 51.6
W/m² 19.4
Water flow @ 5.6 K rise N/A

Load occurs at Jul 1800
OA DB / WB 26.6 / 16.8 °C
Entering DB / WB 24.6 / 18.0 °C
Leaving DB / WB 17.7 / 15.8 °C
Coil ADP 16.7 °C
Bypass Factor 0.120
Resulting RH 57 %
Design supply temp. 12.8 °C
Zone T-stat Check 1 of 1 OK
Max zone temperature deviation 0.0 K

Central Heating Coil Sizing Data

Max coil load 28.3 kW
Coil L/s at Des Htg 1266 L/s
Max coil L/s 1266 L/s
Water flow @ 11.1 K drop N/A

Load occurs at Des Htg
W/m² 56.3
Ent. DB / Lvg DB 11.8 / 32.0 °C

Supply Fan Sizing Data

Actual max L/s 1266 L/s
Standard L/s 1161 L/s
Actual max L/(s·m²) 2.52 L/(s·m²)

Fan motor BHP 0.00 BHP
Fan motor kW 0.00 kW
Fan static 0 Pa

Outdoor Ventilation Air Data

Design airflow L/s 204 L/s
L/(s·m²) 0.41 L/(s·m²)

L/s/person 8.87 L/s/person

Zone Sizing Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

Air System Information

Air System Name HVAC
Equipment Class PKG ROOF
Air System Type SZCAV

Number of zones 1
Floor Area 502.2 m²
Location Fort McMurray, Alberta

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated

Zone L/s Sizing Sum of space airflow rates
Space L/s Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (L/s)	Minimum Supply Airflow (L/s)	Zone L/(s·m ²)	Reheat Coil Load (kW)	Reheat Coil Water L/s @ 11.1 K	Zone Htg Unit Coil Load (kW)	Zone Htg Unit Water L/s @ 11.1 K	Mixing Box Fan Airflow (L/s)
Zone 1	1266	1266	2.52	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m ²)
Zone 1	10.1	Jul 2000	16.8	502.2

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/(s·m ²)
Zone 1							
BATHROOM	1	1.2	Jul 2200	113	0.8	367.2	0.31
BATHROOM ADA	1	0.3	Jul 2200	59	0.9	5.5	10.78
Crridor	1	2.3	Jul 2000	385	5.9	35.2	10.95
KITCHEN	1	2.4	Jul 2200	193	1.2	10.5	18.41
PRESCHOOLER	1	1.3	Jul 2000	174	2.7	28.9	6.02
SCHOOL AGED	1	1.3	Jul 2000	174	2.7	28.9	6.02
TODDLER	1	1.3	Jul 2000	168	2.6	26.0	6.45

Ventilation Sizing Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
Design Ventilation Airflow Rate **204** L/s

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (m²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s·m²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
Zone 1									
BATHROOM	1	367.2	1.0	112.7	2.50	0.30	0.0	0.0	112.7
BATHROOM ADA	1	5.5	1.0	59.3	2.50	0.30	0.0	0.0	4.2
Crridor	1	35.2	5.0	385.4	0.00	0.30	0.0	0.0	10.6
KITCHEN	1	10.5	4.0	193.3	3.80	0.60	0.0	0.0	21.5
PRESCHOOLER	1	28.9	4.0	173.9	2.50	0.30	0.0	0.0	18.7
SCHOOL AGED	1	28.9	4.0	173.9	2.50	0.30	0.0	0.0	18.7
TODDLER	1	26.0	4.0	167.8	2.50	0.30	0.0	0.0	17.8
Totals (incl. Space Multipliers)				1266.2					204.0

Engineer's Team

Air System Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1800			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 26.6 °C / 16.8 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	19 m²	1260	-	19 m²	-	-
Wall Transmission	370 m²	1559	-	370 m²	10832	-
Roof Transmission	125 m²	214	-	125 m²	695	-
Window Transmission	19 m²	76	-	19 m²	3540	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	18 m²	36	-	18 m²	1699	-
Floor Transmission	125 m²	0	-	125 m²	0	-
Partitions	229 m²	0	-	229 m²	0	-
Ceiling	6 m²	0	-	6 m²	0	-
Overhead Lighting	753 W	586	-	0	0	-
Task Lighting	753 W	660	-	0	0	-
Electric Equipment	2300 W	2287	-	0	0	-
People	23	1685	1503	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1254	75	0%	0	0
>> Total Zone Loads	-	9616	1578	-	16766	0
Zone Conditioning	-	9207	1578	-	16111	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1266 L/s	0	-	1266 L/s	0	-
Ventilation Load	204 L/s	522	-1546	204 L/s	12165	0
Supply Fan Load	1266 L/s	0	-	1266 L/s	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	9729	33	-	28276	0
Central Cooling Coil	-	9729	0	-	0	0
Central Heating Coil	-	0	-	-	28276	-
>> Total Conditioning	-	9729	0	-	28276	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Zone Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

Zone 1	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 23.7 °C / 15.9 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
	OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C		
ZONE LOADS	Details	Sensible (W)	Latent (W)	Details	Sensible (W)	Latent (W)
Window & Skylight Solar Loads	19 m²	1432	-	19 m²	-	-
Wall Transmission	370 m²	1961	-	370 m²	10832	-
Roof Transmission	125 m²	220	-	125 m²	695	-
Window Transmission	19 m²	-42	-	19 m²	3540	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	18 m²	-20	-	18 m²	1699	-
Floor Transmission	125 m²	0	-	125 m²	0	-
Partitions	229 m²	0	-	229 m²	0	-
Ceiling	6 m²	0	-	6 m²	0	-
Overhead Lighting	753 W	591	-	0	0	-
Task Lighting	753 W	663	-	0	0	-
Electric Equipment	2300 W	2287	-	0	0	-
People	23	1686	1503	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	1317	75	0%	0	0
>> Total Zone Loads	-	10094	1578	-	16766	0

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.1.A. Component Loads For Space "BATHROOM" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200 COOLING OA DB / WB 20.8 °C / 14.8 °C OCCUPIED T-STAT 23.9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB -33.4 °C / -33.6 °C OCCUPIED T-STAT 21.1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	20 m²	113	-	20 m²	591	-
Roof Transmission	6 m²	8	-	6 m²	31	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-8	-	2 m²	167	-
Floor Transmission	6 m²	0	-	6 m²	0	-
Partitions	18 m²	0	-	18 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	551 W	395	-	0	0	-
Task Lighting	551 W	464	-	0	0	-
Electric Equipment	50 W	44	-	0	0	-
People	1	44	35	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	159	2	0%	0	0
>> Total Zone Loads	-	1217	37	-	789	0

TABLE 1.1.B. Envelope Loads For Space "BATHROOM" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)
N EXPOSURE						
WALL	7	0.537	-	14	-	196
S EXPOSURE						
WALL	7	0.537	-	50	-	196
E EXPOSURE						
WALL	3	0.537	-	16	-	73
DOOR	2	1.703	-	-8	-	167
W EXPOSURE						
WALL	4	0.537	-	33	-	126
H EXPOSURE						
ROOF	6	0.102	-	8	-	31

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.2.A. Component Loads For Space "BATHROOM ADA" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 20.8 °C / 14.8 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
	OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	24 m²	142	-	24 m²	714	-
Roof Transmission	6 m²	8	-	6 m²	31	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-8	-	2 m²	167	-
Floor Transmission	6 m²	0	-	6 m²	0	-
Partitions	13 m²	0	-	13 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	8 W	6	-	0	0	-
Task Lighting	8 W	7	-	0	0	-
Electric Equipment	50 W	44	-	0	0	-
People	1	44	35	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	36	2	0%	0	0
>> Total Zone Loads	-	279	37	-	912	0

TABLE 1.2.B. Envelope Loads For Space "BATHROOM ADA" In Zone "Zone 1"

				COOLING	COOLING	HEATING
	Area	U-Value	Shade	TRANS	SOLAR	TRANS
	(m²)	(W/(m²·K))	Coeff.	(W)	(W)	(W)
N EXPOSURE						
WALL	7	0.537	-	14	-	196
S EXPOSURE						
WALL	7	0.537	-	50	-	196
E EXPOSURE						
WALL	5	0.537	-	30	-	135
DOOR	2	1.703	-	-8	-	167
W EXPOSURE						
WALL	6	0.537	-	49	-	187
H EXPOSURE						
ROOF	6	0.102	-	8	-	31

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.3.A. Component Loads For Space "Crridor" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 23.7 °C / 15.9 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
	OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	11 m²	817	-	11 m²	-	-
Wall Transmission	105 m²	522	-	105 m²	3079	-
Roof Transmission	26 m²	45	-	26 m²	142	-
Window Transmission	11 m²	-24	-	11 m²	2019	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	7 m²	-8	-	7 m²	687	-
Floor Transmission	26 m²	0	-	26 m²	0	-
Partitions	63 m²	0	-	63 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	53 W	53	-	0	0	-
Task Lighting	53 W	53	-	0	0	-
Electric Equipment	100 W	100	-	0	0	-
People	5	410	396	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	295	20	0%	0	0
>> Total Zone Loads	-	2263	415	-	5926	0

TABLE 1.3.B. Envelope Loads For Space "Crridor" In Zone "Zone 1"

	Area (m²)	U-Value (W/(m²·K))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS (W)	SOLAR (W)	TRANS (W)
N EXPOSURE						
WALL	37	0.537	-	59	-	1095
WINDOW 1	11	3.339	0.811	-24	817	2019
DOOR	4	1.703	-	-4	-	344
S EXPOSURE						
WALL	49	0.537	-	346	-	1419
DOOR	4	1.703	-	-4	-	344
E EXPOSURE						
WALL	8	0.537	-	57	-	246
W EXPOSURE						
WALL	11	0.537	-	60	-	319
H EXPOSURE						
ROOF	26	0.102	-	45	-	142

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.4.A. Component Loads For Space "KITCHEN" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2200			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 20.8 °C / 14.8 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
	OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	0 m²	0	-	0 m²	-	-
Wall Transmission	33 m²	197	-	33 m²	975	-
Roof Transmission	11 m²	15	-	11 m²	58	-
Window Transmission	0 m²	0	-	0 m²	0	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-8	-	2 m²	176	-
Floor Transmission	11 m²	0	-	11 m²	0	-
Partitions	0 m²	0	-	0 m²	0	-
Ceiling	6 m²	0	-	6 m²	0	-
Overhead Lighting	16 W	16	-	0	0	-
Task Lighting	16 W	16	-	0	0	-
Electric Equipment	1500 W	1500	-	0	0	-
People	4	328	316	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	310	16	0%	0	0
>> Total Zone Loads	-	2373	332	-	1209	0

TABLE 1.4.B. Envelope Loads For Space "KITCHEN" In Zone "Zone 1"

	Area (m²)	U-Value (W/(m²·K))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS (W)	SOLAR (W)	TRANS (W)
N EXPOSURE						
WALL	8	0.537	-	18	-	246
DOOR	2	1.703	-	-8	-	176
S EXPOSURE						
WALL	10	0.537	-	76	-	301
E EXPOSURE						
WALL	7	0.537	-	47	-	214
W EXPOSURE						
WALL	7	0.537	-	56	-	214
H EXPOSURE						
ROOF	11	0.102	-	15	-	58

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.5.A. Component Loads For Space "PRESCHOOLER" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000 COOLING OA DB / WB 23.7 °C / 15.9 °C OCCUPIED T-STAT 23.9 °C			HEATING DATA AT DES HTG HEATING OA DB / WB -33.4 °C / -33.6 °C OCCUPIED T-STAT 21.1 °C		
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	205	-	3 m²	-	-
Wall Transmission	63 m²	351	-	63 m²	1856	-
Roof Transmission	26 m²	46	-	26 m²	145	-
Window Transmission	3 m²	-6	-	3 m²	507	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-2	-	2 m²	167	-
Floor Transmission	26 m²	0	-	26 m²	0	-
Partitions	51 m²	0	-	51 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	43 W	43	-	0	0	-
Task Lighting	43 W	43	-	0	0	-
Electric Equipment	200 W	200	-	0	0	-
People	4	287	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	175	12	0%	0	0
>> Total Zone Loads	-	1343	252	-	2675	0

TABLE 1.5.B. Envelope Loads For Space "PRESCHOOLER" In Zone "Zone 1"

	Area	U-Value	Shade	COOLING	COOLING	HEATING
	(m²)	(W/(m²·K))	Coeff.	TRANS	SOLAR	TRANS
				(W)	(W)	(W)
N EXPOSURE						
WALL	12	0.537	-	19	-	357
WINDOW 1	3	3.339	0.811	-6	205	507
DOOR	2	1.703	-	-2	-	167
S EXPOSURE						
WALL	17	0.537	-	120	-	492
E EXPOSURE						
WALL	17	0.537	-	117	-	503
W EXPOSURE						
WALL	17	0.537	-	95	-	503
H EXPOSURE						
ROOF	26	0.102	-	46	-	145

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.6.A. Component Loads For Space "SCHOOL AGED" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 23.7 °C / 15.9 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
		OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C	
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	205	-	3 m²	-	-
Wall Transmission	63 m²	351	-	63 m²	1856	-
Roof Transmission	26 m²	46	-	26 m²	145	-
Window Transmission	3 m²	-6	-	3 m²	507	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-2	-	2 m²	167	-
Floor Transmission	26 m²	0	-	26 m²	0	-
Partitions	34 m²	0	-	34 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	43 W	43	-	0	0	-
Task Lighting	43 W	43	-	0	0	-
Electric Equipment	200 W	200	-	0	0	-
People	4	287	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	175	12	0%	0	0
>> Total Zone Loads	-	1343	252	-	2675	0

TABLE 1.6.B. Envelope Loads For Space "SCHOOL AGED" In Zone "Zone 1"

	Area (m²)	U-Value (W/(m²·K))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS (W)	SOLAR (W)	TRANS (W)
N EXPOSURE						
WALL	12	0.537	-	19	-	357
WINDOW 1	3	3.339	0.811	-6	205	507
DOOR	2	1.703	-	-2	-	167
S EXPOSURE						
WALL	17	0.537	-	120	-	492
E EXPOSURE						
WALL	17	0.537	-	117	-	503
W EXPOSURE						
WALL	17	0.537	-	95	-	503
H EXPOSURE						
ROOF	26	0.102	-	46	-	145

Space Design Load Summary for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

TABLE 1.7.A. Component Loads For Space "TODDLER" In Zone "Zone 1"

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 2000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 23.7 °C / 15.9 °C			HEATING OA DB / WB -33.4 °C / -33.6 °C		
		OCCUPIED T-STAT 23.9 °C			OCCUPIED T-STAT 21.1 °C	
		Sensible	Latent		Sensible	Latent
SPACE LOADS	Details	(W)	(W)	Details	(W)	(W)
Window & Skylight Solar Loads	3 m²	205	-	3 m²	-	-
Wall Transmission	60 m²	337	-	60 m²	1762	-
Roof Transmission	26 m²	46	-	26 m²	145	-
Window Transmission	3 m²	-6	-	3 m²	507	-
Skylight Transmission	0 m²	0	-	0 m²	0	-
Door Loads	2 m²	-2	-	2 m²	167	-
Floor Transmission	26 m²	0	-	26 m²	0	-
Partitions	50 m²	0	-	50 m²	0	-
Ceiling	0 m²	0	-	0 m²	0	-
Overhead Lighting	39 W	39	-	0	0	-
Task Lighting	39 W	39	-	0	0	-
Electric Equipment	200 W	200	-	0	0	-
People	4	287	240	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	15% / 5%	172	12	0%	0	0
>> Total Zone Loads	-	1317	252	-	2581	0

TABLE 1.7.B. Envelope Loads For Space "TODDLER" In Zone "Zone 1"

	Area (m²)	U-Value (W/(m²·K))	Shade Coeff.	COOLING	COOLING	HEATING
				TRANS (W)	SOLAR (W)	TRANS (W)
N EXPOSURE						
WALL	11	0.537	-	17	-	311
WINDOW 1	3	3.339	0.811	-6	205	507
DOOR	2	1.703	-	-2	-	167
S EXPOSURE						
WALL	15	0.537	-	109	-	445
E EXPOSURE						
WALL	17	0.537	-	117	-	503
W EXPOSURE						
WALL	17	0.537	-	95	-	503
H EXPOSURE						
ROOF	26	0.102	-	46	-	145

System Psychrometrics for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

July DESIGN COOLING DAY, 1800

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°C)	Specific Humidity (kg/kg)	Airflow (L/s)	CO2 Level (ppm)	Sensible Heat (W)	Latent Heat (W)
Ventilation Air	Inlet	26.6	0.00905	204	400	522	-1546
Vent - Return Mixing	Outlet	24.6	0.01140	1266	922	-	-
Central Cooling Coil	Outlet	17.7	0.01140	1266	922	9729	0
Central Heating Coil	Outlet	17.7	0.01140	1266	922	0	-
Supply Fan	Outlet	17.7	0.01140	1266	922	0	-
Cold Supply Duct	Outlet	17.7	0.01140	1266	922	-	-
Zone Air	-	24.3	0.01186	1266	1022	9207	1578
Return Plenum	Outlet	24.3	0.01186	1266	1022	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.207; At site altitude = 1.107 W/(L/s-K)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 2947.6; At site altitude = 2703.5 W/(L/s)

Site Altitude = 723.0 m

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (W)	T-stat Mode	Zone Cond (W)	Zone Temp (°C)	Zone Airflow (L/s)	CO2 Level (ppm)	Terminal Heating Coil (W)	Zone Heating Unit (W)
Zone 1	9616	Cooling	9207	24.3	1266	1022	0	0

System Psychrometrics for HVAC

Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°C)	Specific Humidity (kg/kg)	Airflow (L/s)	CO2 Level (ppm)	Sensible Heat (W)	Latent Heat (W)
Ventilation Air	Inlet	-33.4	0.00009	204	400	-12165	0
Vent - Return Mixing	Outlet	11.8	0.00009	1266	449	-	-
Central Cooling Coil	Outlet	11.8	0.00009	1266	449	0	0
Central Heating Coil	Outlet	32.0	0.00009	1266	449	28276	-
Supply Fan	Outlet	32.0	0.00009	1266	449	0	-
Cold Supply Duct	Outlet	32.0	0.00009	1266	449	-	-
Zone Air	-	20.5	0.00009	1266	458	-16111	0
Return Plenum	Outlet	20.5	0.00009	1266	458	0	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.207; At site altitude = 1.107 W/(L/s-K)

Air Density x Heat of Vaporization x Conversion Factor: At sea level = 2947.6; At site altitude = 2703.5 W/(L/s)

Site Altitude = 723.0 m

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (W)	T-stat Mode	Zone Cond (W)	Zone Temp (°C)	Zone Airflow (L/s)	CO2 Level (ppm)	Terminal Heating Coil (W)	Zone Heating Unit (W)
Zone 1	-16766	Heating	-16111	20.5	1266	458	0	0

System Psychrometrics for HVAC

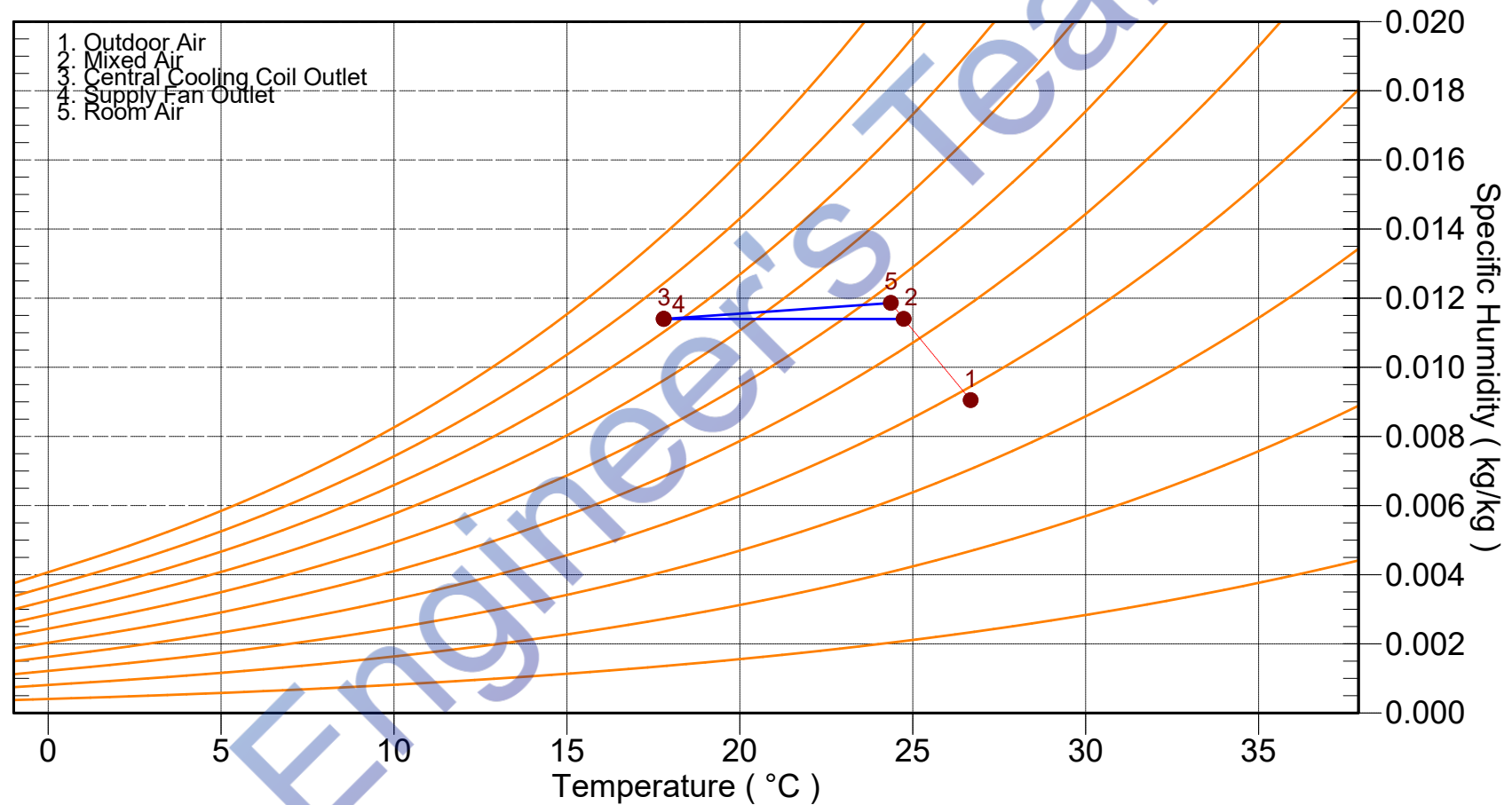
Project Name: 171_Ali-1
Prepared by: Engineer's Team LTD

05/15/2025
03:22PM

Location: Fort McMurray, Alberta

Altitude: 723.0 m.

Data for: July DESIGN COOLING DAY, 1800



Location: Fort McMurray, Alberta
Altitude: 723.0 m.
Data for: WINTER DESIGN HEATING

