

## Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

<b>A. Project Information</b>			
Building number, street name 1771 Lakeshore Road		Unit no.	Lot/con.
Municipality Sarnia, ON	Postal Code	Plan number/other description	
<b>B. Individual who reviews and takes responsibility for design activities</b>			
Name <b>PAUL CAMPBELL</b>		Firm <b>ABRAM SHEET METAL INC</b>	
Street address <b>1606 LONDON ROAD</b>		Unit no.	Lot/con.
Municipality <b>SARNIA</b>	Postal Code <b>N7W 1A8</b>	Province <b>ONTARIO</b>	E-mail <b>paul@abram.net</b>
Telephone number <b>(519) 542-3475</b>	Fax number <b>(519) 542-3120</b>	Cell number ( )	
<b>C. Design activities undertaken by individual identified in Section B. [Building Code Table 2.20.2.1]</b>			
<input type="checkbox"/> House	<input checked="" type="checkbox"/> HVAC – House	<input type="checkbox"/> Building Structural	
<input type="checkbox"/> Small Buildings	<input type="checkbox"/> Building Services	<input type="checkbox"/> Plumbing – House	
<input type="checkbox"/> Large Buildings	<input type="checkbox"/> Detection, Lighting and Power	<input type="checkbox"/> Plumbing – All Buildings	
<input type="checkbox"/> Complex Buildings	<input type="checkbox"/> Fire Protection	<input type="checkbox"/> On-site Sewage Systems	
Description of designer's work			
<b>D. Declaration of Designer</b>			
I <u>PAUL CAMPBELL</u> declare that (choose one as appropriate): (print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 2.17.4. of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 2.17.5. of the Building Code. Individual BCIN: <u>35091</u>			
Basis for exemption from registration: <u>OBC 2.17.4.1 (4)(b) - 1997</u> <u>OBC Div C 3.2.4.1 (4)(b) - 2006</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification:			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge.			
2. I have authority to bind the corporation or partnership (if applicable).			
<u>January 27, 2021</u>			
Date		Signature of Designer	

\*For the purposes of this form, "individual" means the "person" referred to in Clause 2.17.4.7. (1)(d), Article 2.17.5.1. and all other persons who are exempt from qualification under Subsections 2.17.4. and 2.17.5.

**NOTE:**

1. Firm and Individual BCIN numbers are not required for building permit applications submitted prior to January 1, 2006

## RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2012 - 9.32

<b>1. Location</b> Municipality: <u>Sarnia, ON</u> Civic Address: <u>1771 Lakeshore Road</u>	<b>10. TVC System</b> <input checked="" type="checkbox"/> HRV/ERV <input type="checkbox"/> Central Exhaust <input type="checkbox"/> Multiple Fans																									
<b>2. Builder</b> Name: <u>Innovative Construction</u> Address: <u>esint@innconstruct.com</u> City: _____ Postal Code: _____ Ph: <u>519-464-7959</u> Fax: _____	<b>11. Principal Ventilation Capacity (PVC)</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Master Bedroom</td> <td style="text-align: center;">1</td> <td>@ 30 CFM (15 L/s)</td> <td style="text-align: right;">30</td> <td>CFM</td> </tr> <tr> <td>Other Bedrooms</td> <td style="text-align: center;">4</td> <td>@ 15 CFM (7.5 L/s)</td> <td style="text-align: right;">60</td> <td>CFM</td> </tr> <tr> <td colspan="3"><b>Total Principal Ventilation Capacity (PVC)</b></td> <td style="text-align: right;"><b>90</b></td> <td><b>CFM</b></td> </tr> </table>	Master Bedroom	1	@ 30 CFM (15 L/s)	30	CFM	Other Bedrooms	4	@ 15 CFM (7.5 L/s)	60	CFM	<b>Total Principal Ventilation Capacity (PVC)</b>			<b>90</b>	<b>CFM</b>										
Master Bedroom	1	@ 30 CFM (15 L/s)	30	CFM																						
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<b>Total Principal Ventilation Capacity (PVC)</b>			<b>90</b>	<b>CFM</b>																						
<b>3. Designer</b> Name: <u>Paul Campbell</u> Address: <u>1606 London Line</u> City: <u>Sarnia</u> Postal Code: <u>N7W 1A8</u> Ph: <u>519-542-3475</u> Fax: <u>519-542-3120</u> Designer BCIN: <u>35091</u> HRAI #: <u>0170</u> Firm BCIN: Exempt OBC Div C 3.2.4.2 (4)(b) <input checked="" type="checkbox"/> E-mail: <u>paul@abram.net</u>	<b>12. Principal Ventilation Fan</b> Location: <u>Mechanical Room</u> Manufacturer: <u>VANEE</u> Model: <u>65H-HRV</u> <input checked="" type="checkbox"/> HVI Rated Rated Airflow: Low: <u>66</u> CFM High: <u>129</u> CFM Sones: _____ ESP: _____ " w.c.  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>75</u> % Sensible Efficiency @ 0 C°</td> <td style="text-align: right;"><u>64</u> CFM</td> </tr> <tr> <td style="text-align: center;"><u>60</u> % Sensible Efficiency @ -25 C°</td> <td style="text-align: right;"><u>57</u> CFM</td> </tr> </table> (If HRV/ERV was used, the system must also comply with SB-12)	<u>75</u> % Sensible Efficiency @ 0 C°	<u>64</u> CFM	<u>60</u> % Sensible Efficiency @ -25 C°	<u>57</u> CFM																					
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<u>60</u> % Sensible Efficiency @ -25 C°	<u>57</u> CFM																									
<b>4. Heating Systems</b> <input checked="" type="checkbox"/> Forced Air <input type="checkbox"/> Non-Forced Air  <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> Oil <input type="checkbox"/> Electricity	<b>13. Supplemental Exhaust Fan Capacity (SEF)</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Required Total Ventilation Capacity</td> <td style="text-align: right;">160</td> <td>CFM</td> </tr> <tr> <td>Less Rated Principal Ventilation Capacity</td> <td style="text-align: right;">129</td> <td>CFM</td> </tr> <tr> <td>Required Supplemental Ventilation Capacity</td> <td style="text-align: right;">31</td> <td>CFM</td> </tr> </table>	Required Total Ventilation Capacity	160	CFM	Less Rated Principal Ventilation Capacity	129	CFM	Required Supplemental Ventilation Capacity	31	CFM																
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Required Supplemental Ventilation Capacity	31	CFM																								
<b>5. House Style</b> <input checked="" type="checkbox"/> One Dwelling Unit <input type="checkbox"/> House with Two Dwelling Units  Ventilation System: <input type="checkbox"/> Shared <input checked="" type="checkbox"/> Dedicated	<b>14. Additional Equipment</b> Location: <u>Ensuite</u> Sones: <u>1</u> Manufacturer: <u>REVERSOMATIC</u> <input type="checkbox"/> HVI Rated Model: <u>SA-90</u> <input type="checkbox"/> TVC Rated Airflow: <u>90</u> CFM ESP: _____ " w.c.  Location: _____ Sones: _____ Manufacturer: _____ <input type="checkbox"/> HVI Rated Model: _____ <input type="checkbox"/> TVC Rated Airflow: _____ CFM ESP: _____ " w.c.  Location: _____ Sones: _____ Manufacturer: _____ <input type="checkbox"/> HVI Rated Model: _____ <input type="checkbox"/> TVC Rated Airflow: _____ CFM ESP: _____ " w.c.																									
<b>6. Combustion Appliances</b> <input checked="" type="checkbox"/> a) Direct Vent <input type="checkbox"/> b) Induced Draft <input type="checkbox"/> c) Natural Draft <input type="checkbox"/> d) Solid Fuel Appliances <input type="checkbox"/> e) No Combustion Appliances	<b>7. Type of House</b> <input checked="" type="checkbox"/> Type 1: a) or b) type appliances only <input type="checkbox"/> Type 2: a) or b) type appliances with a d) type appliance <input type="checkbox"/> Type 3: any type c) appliance = part 6 design <input type="checkbox"/> Type 4: electric space heat (same as Type 1)																									
<b>8. System Design Option</b> <input type="checkbox"/> Exhaust only forced air system (coupled to forced air) <input checked="" type="checkbox"/> HRV/ERV with extended exhaust or simplified (coupled to forced air) <input type="checkbox"/> HRV/ERV full ducting (not coupled to forced air)	<b>9. Total Ventilation Capacity (TVC)</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Bsmt &amp; Master Bedroom</td> <td style="text-align: center;">2</td> <td>@ 20 CFM (10 L/s)</td> <td style="text-align: right;">40</td> <td>CFM</td> </tr> <tr> <td>Other Bedrooms</td> <td style="text-align: center;">4</td> <td>@ 10 CFM (5 L/s)</td> <td style="text-align: right;">40</td> <td>CFM</td> </tr> <tr> <td>Bathrooms &amp; Kitchen</td> <td style="text-align: center;">5</td> <td>@ 10 CFM (5 L/s)</td> <td style="text-align: right;">50</td> <td>CFM</td> </tr> <tr> <td>Other Habitable Rooms</td> <td style="text-align: center;">3</td> <td>@ 10 CFM (5 L/s)</td> <td style="text-align: right;">30</td> <td>CFM</td> </tr> <tr> <td colspan="3"><b>Total Ventilation Capacity (TVC)</b></td> <td style="text-align: right;"><b>160</b></td> <td><b>CFM</b></td> </tr> </table>	Bsmt & Master Bedroom	2	@ 20 CFM (10 L/s)	40	CFM	Other Bedrooms	4	@ 10 CFM (5 L/s)	40	CFM	Bathrooms & Kitchen	5	@ 10 CFM (5 L/s)	50	CFM	Other Habitable Rooms	3	@ 10 CFM (5 L/s)	30	CFM	<b>Total Ventilation Capacity (TVC)</b>			<b>160</b>	<b>CFM</b>
Bsmt & Master Bedroom	2	@ 20 CFM (10 L/s)	40	CFM																						
Other Bedrooms	4	@ 10 CFM (5 L/s)	40	CFM																						
Bathrooms & Kitchen	5	@ 10 CFM (5 L/s)	50	CFM																						
Other Habitable Rooms	3	@ 10 CFM (5 L/s)	30	CFM																						
<b>Total Ventilation Capacity (TVC)</b>			<b>160</b>	<b>CFM</b>																						
<b>15. Designer Consent</b> I, <u>PAUL CAMPBELL</u> certify this ventilation system is designed to be in accordance with OBC-2012 9.32 Date: <u>January 27, 2021</u> Signature: <u>[Signature]</u>																										

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)





**Load Short Form**  
**Entire House**  
**Abram Sheet Metal Inc**

Job: 1771 Lakeshore Road  
Date: January 27, 2021  
By: Paul Campbell

Cert.#: 0170(RHLG, RASD)

1606 London Line, Sarria, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: pau@abram.net Web: www.abram.net License: 35091

**Project Information**

For: Eelco Sint, Innovative Construction  
412 Baird Street, Corunna, ON  
Phone: 519-862-1806  
Email: esint@innconstruct.com

**Design Information**

	Htg	Clg		Infiltration
Outside db (°F)	3	88	Method	F280
Inside db (°F)	72	75	Exposure category	Exposed
Design TD (°F)	69	13	Construction category	Present (1961-) (ACH=3.57)
Daily range	-	M	Number of stories	1.0
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	30	33		

**HEATING EQUIPMENT**

Make Daikin  
Trade DAIKIN  
Model DM96VE0804CN  
AHRI ref 9101246

Efficiency 96.1 AFUE  
Heating input 80000 Btuh  
Heating output 77000 Btuh  
Temperature rise 48 °F  
Actual air flow 1500 cfm  
Air flow factor 0.022 cfm/Btuh  
Static pressure 0.50 in H2O  
Space thermostat

**COOLING EQUIPMENT**

Make Daikin  
Trade ASPEN  
Cond DX18TC0481A\*  
Coil C(A,C,D,E)60A34+D\*96VC0804CNA\*+TDR  
AHRI ref 10092848

Efficiency 12.0 EER, 17.5 SEER  
Sensible cooling 36000 Btuh  
Latent cooling 9000 Btuh  
Total cooling 45000 Btuh  
Actual air flow 1500 cfm  
Air flow factor 0.046 cfm/Btuh  
Static pressure 0.50 in H2O  
Load sensible heat ratio 0.77

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Guest Room	270	3385	115	73	5
Future Bedroom	193	2129	850	46	39
Future Bath	144	2281	77	49	4
Hall 2	48	0	0	0	0
Storage 1	182	3011	121	65	6
Future Home Gym	374	2376	49	52	2
Family Room	1031	9653	3156	209	146
Storage	200	2659	115	58	5
Mechanical Room	185	0	0	0	0
PR	42	2384	166	52	8
Future Elevator	33	0	0	0	0
Hall 1	58	0	0	0	0
Front Entry	369	7321	1992	159	92
Bedroom 3	156	4598	2289	100	106

Bedroom 2		186	2938	694	64	32
Master Bedroom		216	3408	378	74	18
Great Room		540	7623	6549	165	304
Dining		210	8180	11968	177	555
Laundry		191	4332	2326	94	108
Powder Room		39	273	89	6	4
MF Elevator		39	0	0	0	0
Kitchen		328	0	0	0	0
Bathroom		55	144	53	3	2
Ensuite		113	1466	475	32	22
Closet		119	1023	886	22	41
Entire House	d	5317	69183	32348	1500	1500
Other equip loads			0	0		
Equip. @ 1.00 RSM				32348		
Latent cooling				9704		
TOTALS		5317	69183	42053	1500	1500

**Project Information**

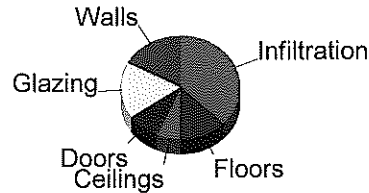
For: Eelco Sint, Innovative Construction  
 412 Baird Street, Corunna, ON  
 Phone: 519-862-1806  
 Email: esint@innconstruct.com

**Design Conditions**

<b>Location:</b> Sarnia, ON, CA Elevation: 627 ft Latitude: 43°N	<b>Indoor:</b> Indoor temperature (°F) 72 Design TD (°F) 69 Relative humidity (%) 30 Moisture difference (gr/lb) 29.8	<b>Heating</b>	<b>Cooling</b>	<b>75</b>	<b>13</b>	<b>50</b>	<b>33.0</b>
<b>Outdoor:</b> Dry bulb (°F) 3 Daily range (°F) - Wet bulb (°F) - Wind speed (mph) 15.0	<b>Heating</b>	<b>Cooling</b>		<b>Infiltration:</b> Method F280 Exposure category Exposed Construction category Present (1961-) (ACH=3.57) Number of stories 1.0			

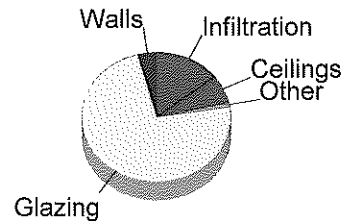
**Heating**

Component	Btuh/ft²	Btuh	% of load
Walls	0.7	11704	16.9
Glazing	23.2	12261	17.7
Doors	11.1	6060	8.8
Ceilings	1.6	4507	6.5
Floors	3.2	8809	12.7
Infiltration	24.0	25843	37.4
Ducts		0	0
Hydronic		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
<b>Total</b>		<b>69183</b>	<b>100.0</b>



**Cooling**

Component	Btuh/ft²	Btuh	% of load
Walls	0.1	1291	4.0
Glazing	45.0	23744	73.4
Doors	0.7	404	1.3
Ceilings	0.8	2283	7.1
Floors	0	0	0
Infiltration	4.3	4626	14.3
Ducts		0	0
Ventilation		0	0
Internal gains		0	0
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>32348</b>	<b>100.0</b>



Latent Cooling Load = 9704 Btuh  
 Overall U-value = 0.022 Btuh/ft²-°F

ERROR: negative wall area in Guest Room - check windows.



**Component Constructions**  
**Entire House**  
**Abram Sheet Metal Inc**

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert.#: 0170(RHLG, RASD)  
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**Project Information**

For: Eelco Sint, Innovative Construction  
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**Design Conditions**

<b>Location:</b> Sarnia, ON, CA Elevation: 627 ft Latitude: 43°N	<b>Indoor:</b> Indoor temperature (°F) 72 Design TD (°F) 69 Relative humidity (%) 30 Moisture difference (gr/lb) 29.8	<b>Heating</b> 72	<b>Cooling</b> 75
<b>Outdoor:</b> Dry bulb (°F) 3 Daily range (°F) - Wet bulb (°F) - Wind speed (mph) 15.0	<b>Heating</b> 3	<b>Cooling</b> 88	
	<b>Infiltration:</b> Method F280 Exposure category Exposed Construction category Present (1961-) (ACH=3.57) Number of stories 1.0		

**Construction descriptions**

	Or	Area R²	R-value R²·F/Btuh	Insul R R²·F/Btuh	A/R Btuh/°F	Htg TD/R Btuh/R²	Loss Btuh	Clg TD/R Btuh/R²	Gain Btuh
<b>Walls</b>									
4J12: Fm wall, brk 4" ext, r-19 cav ins, 1/2" gypsum board int fnsh, r-5 ext bd ins, 2"x4" wood frm, 16" o.c. stud	n	568	18.3	12.7	31.0	3.76	2137	0.05	29
	e	681	18.3	12.7	37.1	3.76	2561	0.60	409
	s	262	18.3	12.7	14.3	3.76	986	0.22	57
	w	626	18.3	12.7	34.1	3.76	2355	0.60	376
	all	2137	18.3	12.7	117	3.76	8040	0.41	872
7A11: Blk wall, 2"x4" wood int frm, 8" thk, r-13 cav ins	n	228	10.8	0	21.1	6.39	1458	0.09	20
	e	221	10.8	0	20.5	6.39	1413	1.02	226
	w	196	10.8	0	18.2	6.39	1253	1.02	200
	all	573	10.8	0	53.1	6.39	3664	0.73	419
<b>Partitions</b> (none)									
<b>Windows</b>									
19E0: 2 glazing, clr low-e outr, argon gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 6.67 ft head ht	n	115	3.0	0	38.7	23.2	2672	26.6	3056
	e	103	3.0	0	34.6	23.2	2387	69.2	7109
	e	10	3.0	0	3.4	23.2	232	69.2	692
	s	225	3.0	0	75.8	23.2	5227	41.6	9355
	s	60	3.0	0	20.2	23.2	1394	41.6	2495
	w	15	3.0	0	5.1	23.2	348	69.2	1038
	all	528	3.0	0	178	23.2	12261	45.0	23744
<b>Doors</b>									
23G0: Door, mtl fbrgl type	n	109	6.2	8.7	17.4	11.1	1200	0.15	16
	s	105	6.2	8.7	16.8	11.1	1161	0.64	67
	s	240	6.2	8.7	38.5	11.1	2654	0.64	154
	w	60	6.2	8.7	9.5	11.1	658	1.77	105
	w	35	6.2	8.7	5.6	11.1	387	1.77	62
	all	548	6.2	8.7	87.8	11.1	6060	0.74	404
<b>Ceilings</b>									
10A21: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 5/8" gypsum board int fnsh		2558	42.2	50.7	60.6	1.64	4184	0.83	2120



10A30: Attic ceiling, asphalt shingles roof mat, r-38 ceil ins, 5/8" gypsum board int fnsh	185	39.5	42.0	4.7	1.75	323	0.88	164
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**Floors**

17A0: Bg floor, heavy dry or light damp soil, 5' depth	2758	F0.0/W10.0	0	0	3.19	8809	0	0
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# Right-F280™ Worksheet

## Entire House

### Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert #: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1		Room name		Entire House		Guest Room		Future Bedroom												
2		Exposed wall		577.5 ft		33.0 ft		24.5 ft												
3		Room dimensions		9.3 ft		18.0 x 15.0 ft		1.0 x 193.0 ft												
4		Room height		d		8.0 ft		heat/cool												
5	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)			
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool		
W	G	4J12	18.34	n	3.8	0.1	792	568	2137	29	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	115	0	2672	3056	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	109	109	1200	16	0	0	0	0	0	0	0	0	0	
W		7A11	10.79	n	6.4	0.1	228	228	1458	20	0	0	0	0	30	30	192	3	0	
W	G	4J12	18.34	e	3.8	0.6	784	681	2561	409	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	103	0	2387	7109	0	0	0	0	0	0	0	0	0	
W	G	7A11	10.79	e	6.4	1.0	231	221	1413	226	45	45	288	46	44	34	214	34	0	
	G	19E0	2.97	e	23.2	69.2	10	0	232	692	0	0	0	0	10	0	232	692	0	
W	G	4J12	18.34	s	3.8	0.2	592	262	986	57	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	225	0	5227	9355	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	105	105	1161	67	0	0	0	0	0	0	0	0	0	
W	G	7A11	10.79	s	6.4	0.4	228	-72	-460	-27	54	-66	-422	-24	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	60	0	1394	2495	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	240	240	2654	154	120	120	1327	77	0	0	0	0	0	
W	G	4J12	18.34	w	3.8	0.6	701	626	2355	376	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	15	0	348	1038	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	60	60	658	105	0	0	0	0	0	0	0	0	0	
W	G	7A11	10.79	w	6.4	1.0	231	196	1253	200	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	35	35	387	62	0	0	0	0	0	0	0	0	0	
C		10A21	42.19	-	1.6	0.8	2558	2558	4184	2120	0	0	0	0	0	0	0	0	0	
C		10A30	39.53	-	1.7	0.9	185	185	323	164	0	0	0	0	0	0	0	0	0	
F		17A0	n/a	-	n/a	0.0	2758	2758	8809	0	270	270	921	0	193	193	676	0	0	
6	Total conductive loss/gain								43340	27723							1315	729		
7	a) Infiltration								25843	4626							784	122		
	b) Ventilation								0	0							0	0		
8	Internal gains:		People@		240		0		0	0	0		0		0		0	0		
			Appliances@		1604		0		0	0	0		0		0		0	0		
	Subtotal (lines 6 to 8)								69183	32348							2099	850		
9	Less external load								0	0							0	0		
10	Less transfer								0	0							0	0		
11	Subtotal								69183	32348							2129	850		
12	Distribution losses		Ducts		0%		0%		0	0	0%		0%		0%		0	0		
			Hydronic		0%		0%		0	0	0%		0%		0%		0	0		
	Redistribution								0	0							30	0		
13	Total room load								69183	32348							2129	850		
14	Air required (cfm)								1500	1500							46	39		



**Right-F280™ Worksheet**  
**Entire House**  
**Abram Sheet Metal Inc**

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1	Room name					Future Bath				Hall 2				Storage 1					
	Exposed wall					33.0 ft				0 ft				44.0 ft					
	Room dimensions					12.5 x 11.5 ft				4.0 x 12.0 ft				11.0 x 16.5 ft					
4	Room height					8.0 ft				8.0 ft				8.0 ft					
	Ty	CST	R-value	Or	TD/R (Btu/h/ft²)		Area (ft²) or perim (ft)		Load (Btu/h)		Area (ft²) or perim (ft)		Load (Btu/h)		Area (ft²) or perim (ft)		Load (Btu/h)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	38	38	240	3	0	0	0	0	33	33	211	3	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	27	27	173	28	0	0	0	0	50	50	317	51	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	w	6.4	1.0	35	35	221	35	0	0	0	0	50	50	317	51	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A21	42.19	-	1.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	144	144	790	0	48	48	50	0	182	182	1042	0	
6	Total conductive loss/gain									1423	66			50	0			1887	104
7	a) Infiltration									848	11			30	0			1125	17
	b) Ventilation									0	0			0	0			0	0
8	Internal gains:					People@	240	0	0	0	0	0	0	0	0	0	0	0	0
						Appliances@	1604	0	0	0	0	0	0	0	0	0	0	0	0
	Subtotal (lines 6 to 8)									2271	77			80	0			3011	121
9	Less external load									0	0			0	0			0	0
10	Less transfer									0	0			0	0			0	0
11	Subtotal									2281	77			0	0			3011	121
12	Distribution losses					Ducts	0%	0%		0	0			0	0			0	0
						Hydronic	0%			0	0			0	0			0	0
	Redistribution									10	0			-80	0			0	0
13	Total room load									2281	77			0	0			3011	121
14	Air required (cfm)									49	4			0	0			65	6

**Right-F280™ Worksheet**  
**Entire House**  
 Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert #: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: pau@abram.net Web: www.abram.net License: 35091

		Future Home Gym 28.0 ft 1.0 x 373.5 ft 8.0 ft heat/cool						Family Room 69.0 ft 1.0 x 1030.5 ft 8.0 ft heat/cool						Storage 28.5 ft 16.0 x 12.5 ft 8.0 ft heat/cool						
5	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)			
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool		
	W	4J12	18.34	n	3.8	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	47	47	297	4	18	18	115	2	0	0	0	0	0	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	66	66	422	67	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	102	-78	-499	-29	48	48	307	18	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	60	0	1394	2495	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	120	120	1327	77	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	w	6.4	1.0	38	38	240	38	21	21	134	21	38	3	16	3	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	35	35	387	62	0	
	C	10A21	42.19	-	1.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	374	374	932	0	1031	1031	2412	0	200	200	761	0	0	
6	Total conductive loss/gain								1469	42			5306	2633			1471	82		
7	a) Infiltration								876	7			3164	439			877	14		
	b) Ventilation								0	0			0	0			0	0		
8	Internal gains:		People@		240		0		0		0		0		0		0		0	
			Appliances@		1604		0		0		0		0		0		0		0	
	Subtotal (lines 6 to 8)								2346	49			8469	3073			2348	96		
9	Less external load								0	0			0	0			0	0		
10	Less transfer								0	0			0	0			0	0		
11	Subtotal								2376	49			9853	3156			2659	115		
12	Distribution losses		Ducts		0%		0%		0	0	0%		0%	0	0%		0	0		
			Hydronic		0%		0%		0	0	0%		0%	0	0%		0	0		
	Redistribution								30	0			1183	83			311	19		
13	Total room load								2376	49			9853	3156			2659	115		
14	Air required (cfm)								52	2			209	146			58	5		

# Right-F280™ Worksheet

## Entire House

Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

				Mechanical Room				PR				Future Elevator							
				46.0 ft				0 ft				0 ft							
				1.0 x 185.3 ft				6.5 x 6.5 ft				5.0 x 6.5 ft							
				8.0 ft				8.0 ft				8.0 ft							
				heat/cool				heat/cool				heat/cool							
	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	63	63	403	5	0	0	0	0	0	0	0	0	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	24	24	153	9	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	w	6.4	1.0	51	51	326	52	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A21	42.19	-	1.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A30	39.53	-	1.7	0.9	185	185	323	164	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	185	185	1085	0	42	42	44	0	33	33	34	0	
6	Total conductive loss/gain								2291	230			44	0			34	0	
7	a) Infiltration								1366	38			26	0			20	0	
	b) Ventilation								0	0			0	0			0	0	
8	Internal gains:		People@	240			0	0	0	0			0	0			0	0	
			Appliances@	1604			0	0	0	0			0	0			0	0	
	Subtotal (lines 6 to 8)								3657	269			70	0			54	0	
9	Less external load								0	0			0	0			0	0	
10	Less transfer								0	0			0	0			0	0	
11	Subtotal								0	0			2384	166			0	0	
12	Distribution losses		Ducts	0%	0%			0	0	0%	0%			0	0			0	0
			Hydronic	0%	0%			0	0	0%	0%			0	0			0	0
	Redistribution								-3657	-269			2313	166			-54	0	
13	Total room load								0	0			2384	166			0	0	
14	Air required (cfm)								0	0			52	8			0	0	

# Right-F280™ Worksheet

## Entire House

Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
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Cert.#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

				Hall 1 0 ft 14.5 x 4.0 ft 8.0 ft heat/cool				Front Entry 61.0 ft 11.0 x 33.5 ft 12.0 ft heat/cool				Bedroom 3 33.0 ft 12.5 x 12.5 ft 9.0 ft heat/cool							
	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	0	0	0	0	132	65	243	3	113	50	186	3	
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	36	0	836	957	63	0	1464	1674	
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	32	32	348	5	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	198	198	745	119	81	81	305	49	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	402	381	1434	229	104	65	245	39	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	21	21	232	37	39	39	426	68	
	W	7A11	10.79	w	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A21	42.19	-	1.6	0.8	0	0	0	0	369	369	603	305	156	156	256	129	
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	58	58	60	0	0	0	0	0	0	0	0	0	
6	Total conductive loss/gain								60	0			4441	1655			2880	1962	
7	a) Infiltration								36	0			2648	276			1718	327	
	b) Ventilation								0	0			0	0			0	0	
8	Internal gains:		People@	240					0	0			0	0			0	0	
			Appliances@	1604					0	0			0	0			0	0	
	Subtotal (lines 6 to 8)								97	0			7089	1931			4598	2289	
9	Less external load								0	0			0	0			0	0	
10	Less transfer								0	0			0	0			0	0	
11	Subtotal								0	0			7321	1992			4598	2289	
12	Distribution losses		Ducts	0%	0%					0	0			0	0			0	0
			Hydronic	0%	0%					0	0			0	0			0	0
	Redistribution								-97	0			232	61			0	0	
13	Total room load								0	0			7321	1992			4598	2289	
14	Air required (cfm)								0	0			159	92			100	106	

**Right-F280™ Worksheet**  
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 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1		Room name		Bedroom 2		Master Bedroom		Great Room											
2		Exposed wall		15.5 ft		30.0 ft		29.5 ft											
3		Room dimensions		15.5 x 12.0 ft		18.0 x 12.0 ft		1.0 x 539.5 ft											
4		Room height		14.0 ft		9.0 ft		12.0 ft											
	Ty	CST	R-value	Or	TD/R (Btu/h/ft²)		Area (ft²) or perim (ft)		Load (Btu/h)		Area (ft²) or perim (ft)		Load (Btu/h)		Area (ft²) or perim (ft)		Load (Btu/h)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	217	145	546	7	0	0	0	0	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	16	0	372	425	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	56	56	619	8	0	0	0	0	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	108	108	406	65	114	114	429	69	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	162	57	214	12	240	120	452	26	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	120	0	2788	4989	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	105	105	1161	67	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	w	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A21	42.19	-	1.6	0.8	186	186	304	154	216	216	353	179	540	540	882	447	
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0	
6	Total conductive loss/gain								1841	595							4551	5531	
7	a) Infiltration								1098	99							2713	923	
	b) Ventilation								0	0							0	0	
8	Internal gains:		People@	240			0		0				0		0		0		
			Appliances@	1604			0		0				0		0		0		
	Subtotal (lines 6 to 8)								2938	694			3408		378		7264		
9	Less external load								0	0			0		0		0		
10	Less transfer								0	0			0		0		0		
11	Subtotal								2938	694			3408		378		7623		
12	Distribution losses				Ducts	0%	0%	0		0		0%		0%		0%		0	
	Redistribution				Hydronic	0%	0%	0		0		0%		0%		0%		359	
13	Total room load								2938	694			3408		378		7623		
14	Air required (cfm)								64	32			74		18		165		

# Right-F280™ Worksheet

## Entire House

Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1		Room name		Dining				Laundry				Powder Room						
2		Exposed wall		29.0 ft				40.0 ft				0 ft						
3		Room dimensions		14.0 x 15.0 ft				1.0 x 190.5 ft				5.5 x 7.0 ft						
4		Room height		10.0 ft				10.0 ft				10.0 ft						
5	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
W	4J12	18.34	n	3.8	0.1	0	0	0	0	180	159	598	8	0	0	0	0	
G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0	0	0	0	0	
D	23G0	6.24	n	11.1	0.2	0	0	0	0	21	21	232	3	0	0	0	0	
W	7A11	10.79	n	6.4	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
W	4J12	18.34	e	3.8	0.6	125	35	132	21	0	0	0	0	0	0	0	0	
G	19E0	2.97	e	23.2	69.2	90	0	2091	6227	0	0	0	0	0	0	0	0	
W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
W	4J12	18.34	s	3.8	0.2	140	50	188	11	50	35	132	8	0	0	0	0	
G	19E0	2.97	s	23.2	41.6	90	0	2091	3742	15	0	348	624	0	0	0	0	
D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	
G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
W	4J12	18.34	w	3.8	0.6	25	25	94	15	170	155	583	93	0	0	0	0	
G	19E0	2.97	w	23.2	69.2	0	0	0	0	15	0	348	1038	0	0	0	0	
D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
W	7A11	10.79	w	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
C	10A21	42.19	-	1.6	0.8	210	210	343	174	191	312	158	39	39	63	32	32	
C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	
F	17A0	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0	
6	Total conductive loss/gain							4939	10190			2554	1931			63	32	
7	a) Infiltration							2945	1700			1523	322			38	5	
	b) Ventilation							0	0			0	0			0	0	
8	Internal gains:		People@	240	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Appliances@	1604	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Subtotal (lines 6 to 8)							7884	11890			4077	2254			101	37	
9	Less external load							0	0			0	0			0	0	
10	Less transfer							0	0			0	0			0	0	
11	Subtotal							8180	11968			4332	2326			273	89	
12	Distribution losses		Ducts	0%	0%			0	0	0%	0%	0	0	0%	0%	0	0	
			Hydronic	0%				0	0	0%		0	0	0%		0	0	
	Redistribution							296	78			256	72			173	51	
13	Total room load							8180	11968			4332	2326			273	89	
14	Air required (cfm)							177	555			94	108			6	4	

**Right-F280™ Worksheet**  
**Entire House**  
 Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert.#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1 Room name				MF Elevator				Kitchen				Bathroom							
2 Exposed wall				0 ft				6.0 ft				0 ft							
3 Room dimensions				5.5 x 7.0 ft				1.0 x 327.5 ft				5.0 x 11.0 ft							
4 Room height				10.0 ft				10.0 ft				9.0 ft							
5	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	0	0	0	0	60	60	226	3	0	0	0	0	
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	n	6.4	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	e	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	W	7A11	10.79	w	6.4	1.0	0	0	0	0	0	0	0	0	0	0	0	0	
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0	0	0	0	0	
	C	10A21	42.19	-	1.6	0.8	39	39	63	32	328	328	536	271	55	55	90	46	
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0	0	0	0	0	
	F	17A0	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0	
6	Total conductive loss/gain								63	32			761		274		90		46
7	a) Infiltration								38	5			454		46		54		8
	b) Ventilation								0	0			0		0		0		0
8	Internal gains:		People@		240		0		0		0		0		0		0		0
			Appliances@		1604		0		0		0		0		0		0		0
	Subtotal (lines 6 to 8)								101	37			1215		320		144		53
9	Less external load								0	0			0		0		0		0
10	Less transfer								0	0			0		0		0		0
11	Subtotal								0	0			0		0		144		53
12	Distribution losses		Ducts		0%		0%		0	0	0%		0%		0%		0%		0
			Hydronic		0%		0%		0	0	0%		0%		0%		0%		0
	Redistribution								-101	-37			-1215		-320		0		0
13	Total room load								0	0			0		0		144		53
14	Air required (cfm)								0	0			0		0		3		2

# Right-F280™ Worksheet

## Entire House

Abram Sheet Metal Inc

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

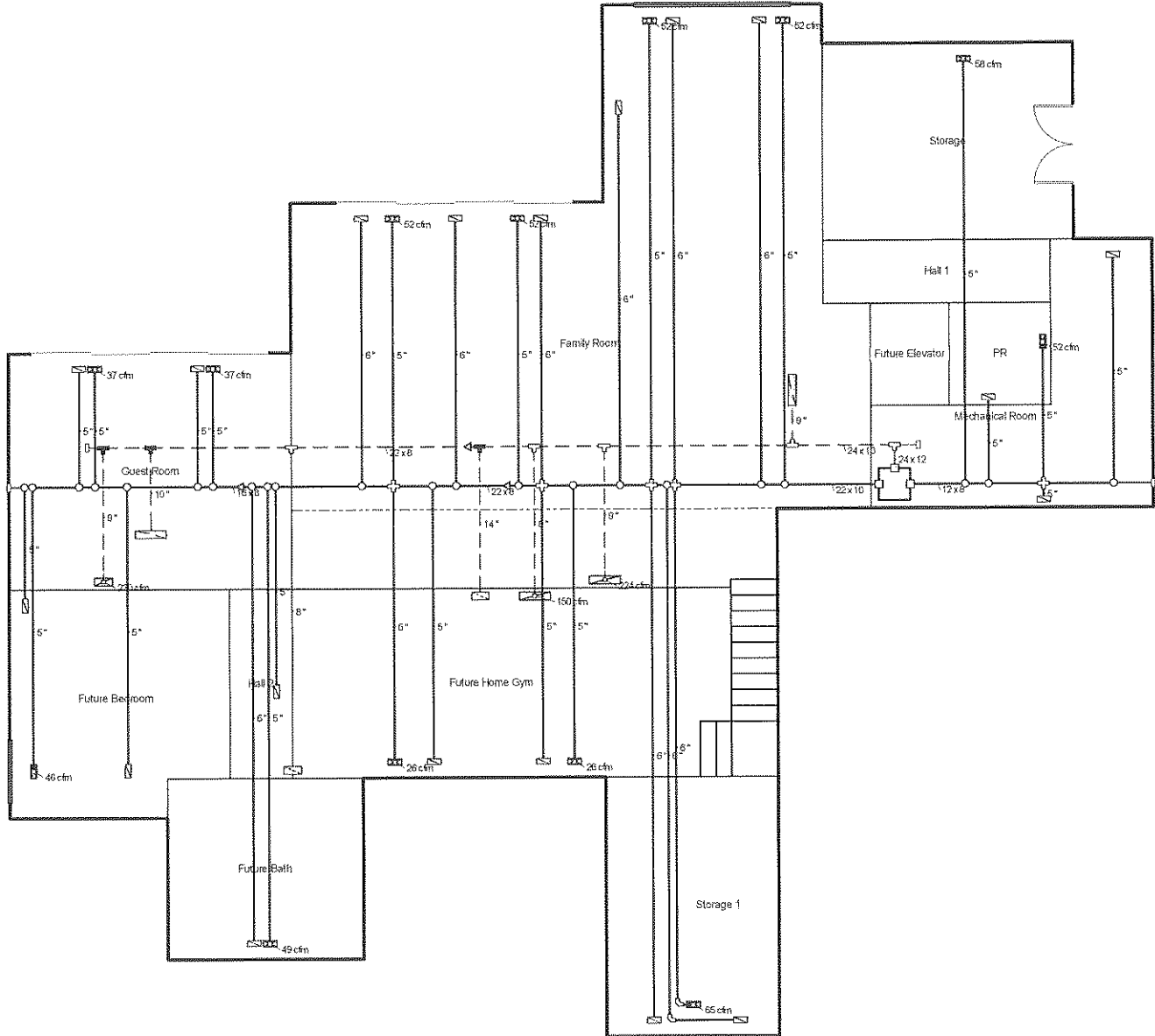
Cert#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

1 Room name				Ensuite				Closet											
2 Exposed wall				19.5 ft				8.0 ft											
3 Room dimensions				1.0 x 113.0 ft				1.0 x 119.0 ft											
4 Room height				9.0 ft				9.0 ft											
5	Ty	CST	R-value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area or perim		Load		
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	
5	W	4J12	18.34	n	3.8	0.1	90	90	339	5	0	0	0	0					
	G	19E0	2.97	n	23.2	26.6	0	0	0	0	0	0	0	0					
	D	23G0	6.24	n	11.1	0.2	0	0	0	0	0	0	0	0					
	W	7A11	10.79	n	6.4	0.1	0	0	0	0	0	0	0	0					
	W	4J12	18.34	e	3.8	0.6	86	82	308	49	72	63	237	38					
	G	19E0	2.97	e	23.2	69.2	4	0	87	259	9	0	209	623					
	W	7A11	10.79	e	6.4	1.0	0	0	0	0	0	0	0	0					
	G	19E0	2.97	e	23.2	69.2	0	0	0	0	0	0	0	0					
	W	4J12	18.34	s	3.8	0.2	0	0	0	0	0	0	0	0					
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0					
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0					
	W	7A11	10.79	s	6.4	0.4	0	0	0	0	0	0	0	0					
	G	19E0	2.97	s	23.2	41.6	0	0	0	0	0	0	0	0					
	D	23G0	6.24	s	11.1	0.6	0	0	0	0	0	0	0	0					
	W	4J12	18.34	w	3.8	0.6	0	0	0	0	0	0	0	0					
	G	19E0	2.97	w	23.2	69.2	0	0	0	0	0	0	0	0					
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0					
	W	7A11	10.79	w	6.4	1.0	0	0	0	0	0	0	0	0					
	D	23G0	6.24	w	11.1	1.8	0	0	0	0	0	0	0	0					
	C	10A21	42.19	-	1.6	0.8	113	113	185	94	119	119	195	99					
	C	10A30	39.53	-	1.7	0.9	0	0	0	0	0	0	0	0					
	F	17A0	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0					
6	Total conductive loss/gain								918	407			641	759					
7	a) Infiltration								547	68			382	127					
	b) Ventilation								0	0			0	0					
8	Internal gains:		People@		240		0		0		0		0						
			Appliances@		1604		0		0		0		0						
	Subtotal (lines 6 to 8)								1466	475			1023	886					
9	Less external load								0	0			0	0					
10	Less transfer								0	0			0	0					
11	Subtotal								1466	475			1023	886					
12	Distribution losses		Ducts		0%		0%		0	0	0%		0%	0	0				
			Hydronic		0%		0%		0	0	0%		0%	0	0				
	Redistribution								0	0			0	0					
13	Total room load								1466	475			1023	886					
14	Air required (cfm)								32	22			22	41					





Basement



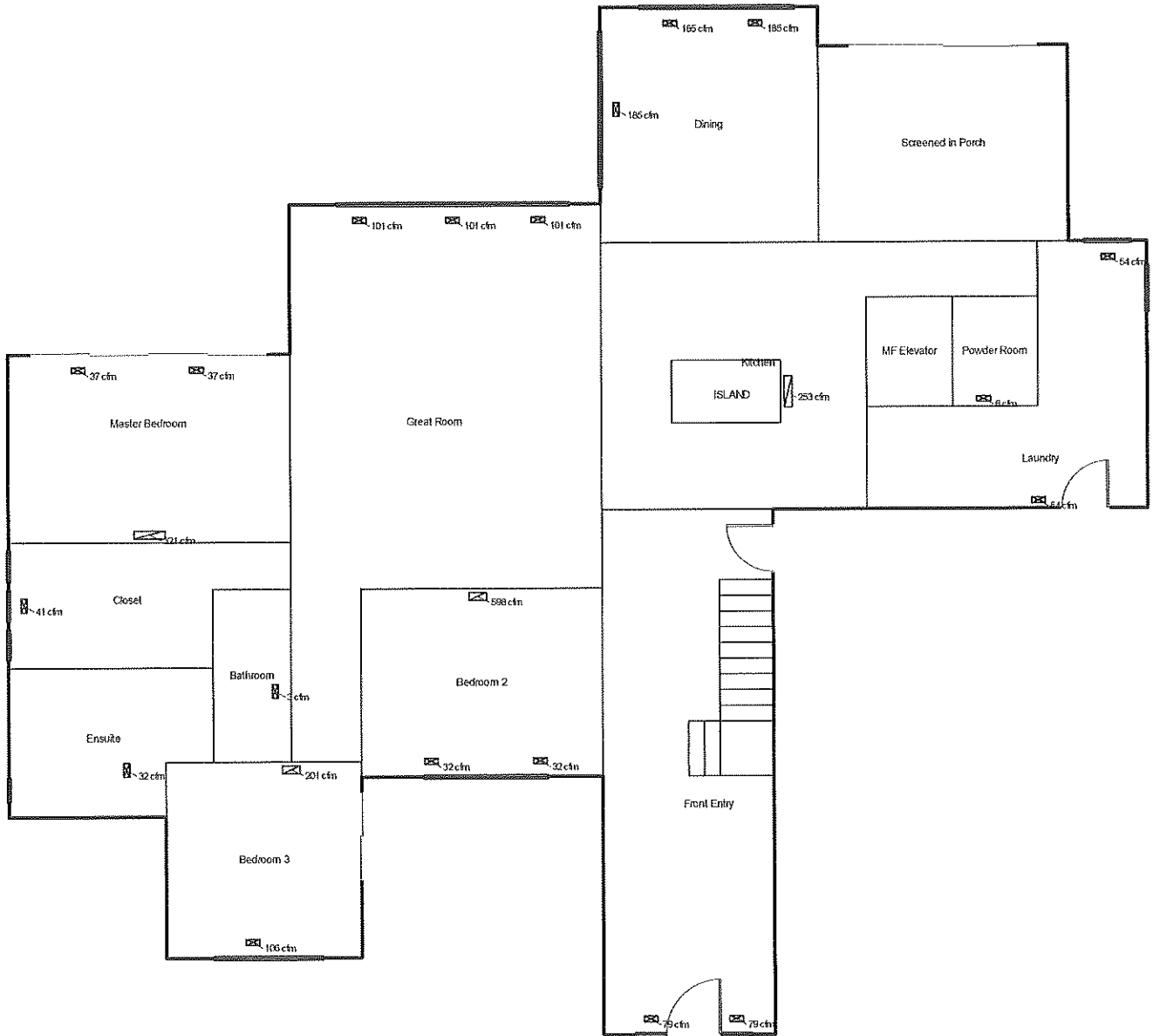
**Job #: 1771 Lakeshore Road**  
**Performed by Paul Campbell for:**  
Eelco Sint  
412 Baird Street  
Corunna, ON  
Phone: 519-862-1806  
esint@innconstruct.com

**Abram Sheet Metal Inc**  
1606 London Line  
Sarnia, ON N7W 1A8  
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Main Floor



**Job #: 1771 Lakeshore Road**  
**Performed by Paul Campbell for:**

Eelco Sint  
412 Baird Street  
Corunna, ON  
Phone: 519-862-1806  
esint@innconstruct.com

**Abram Sheet Metal Inc**

1606 London Line  
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Scale: 1 : 128

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...Lakeshore - January 26, 2021.rup



**Duct System Summary**  
**Entire House**  
**Abram Sheet Metal Inc**

Job: 1771 Lakeshore Road  
 Date: January 27, 2021  
 By: Paul Campbell

Cert.#: 0170(RHLG, RASD)  
 1606 London Line, Sarnia, ON N7W 1A8 Phone: 519-542-3475 Fax: 519-542-3120 Email: paul@abram.net Web: www.abram.net License: 35091

**Project Information**

For: Eelco Sint, Innovative Construction  
 412 Baird Street, Corunna, ON  
 Phone: 519-862-1806  
 Email: esint@innconstruct.com

	<b>Heating</b>	<b>Cooling</b>
External static pressure	<b>0.50</b> in H2O	<b>0.50</b> in H2O
Pressure losses	0.15 in H2O	0.15 in H2O
Available static pressure	0.35 in H2O	0.35 in H2O
Supply / return available pressure	0.142 / 0.208 in H2O	0.142 / 0.208 in H2O
Lowest friction rate	0.071 in/100ft	0.071 in/100ft
Actual air flow	1500 cfm	1500 cfm
Total effective length (TEL)	493 ft	

*Bold/italic values have been manually overridden*



## 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
Bathroom	h 144	3	2	0.091	5.0	0x0	ShMt	51.5	105.0	st2A
Bedroom 2	h 1469	32	16	0.079	5.0	0x0	ShMt	46.0	135.0	st2A
Bedroom 2-A	h 1469	32	16	0.110	5.0	0x0	ShMt	39.0	90.0	st2
Bedroom 3	c 2289	100	106	0.092	<b>6.0</b>	<b>0x0</b>	ShMt	69.0	85.0	st2A
Closet	c 886	22	41	0.094	5.0	0x0	ShMt	62.0	90.0	st2B
Dining	c 3989	59	185	0.094	<b>6.0</b>	<b>0x0</b>	ShMt	40.5	110.0	st2
Dining-A	c 3989	59	185	0.076	<b>6.0</b>	<b>0x0</b>	ShMt	37.0	150.0	st2
Dining-B	c 3989	59	185	0.078	<b>6.0</b>	<b>0x0</b>	ShMt	42.5	140.0	st2
Ensuite	h 1466	32	22	0.073	5.0	0x0	ShMt	66.0	130.0	st2B
Family Room	h 2413	52	37	0.082	5.0	0x0	ShMt	48.0	125.0	st2A
Family Room-A	h 2413	52	37	0.087	5.0	0x0	ShMt	44.0	120.0	st2
Family Room-B	h 2413	52	37	0.073	5.0	0x0	ShMt	35.5	160.0	st2
Family Room-C	h 2413	52	37	0.118	5.0	0x0	ShMt	40.0	80.0	st2
Front Entry	h 3661	79	46	0.084	6.0	0x0	ShMt	48.5	120.0	st2
Front Entry-A	h 3661	79	46	0.074	6.0	0x0	ShMt	52.0	140.0	st2
Future Bath	h 2281	49	4	0.087	5.0	0x0	ShMt	68.0	95.0	st2A
Future Bedroom	h 2129	46	39	0.083	5.0	0x0	ShMt	72.0	100.0	st2B
Future Home Gym	h 1188	26	1	0.082	5.0	0x0	ShMt	48.5	125.0	st2A
Future Home Gym-A	h 1188	26	1	0.104	5.0	0x0	ShMt	37.0	100.0	st2
Great Room	c 2183	55	101	0.086	<b>6.0</b>	<b>0x0</b>	ShMt	50.0	115.0	st2A
Great Room-A	c 2183	55	101	0.075	<b>6.0</b>	<b>0x0</b>	ShMt	44.0	145.0	st2A
Great Room-B	c 2183	55	101	0.111	6.0	0x0	ShMt	38.5	90.0	st2
Guest Room	h 1692	37	3	0.080	5.0	0x0	ShMt	57.5	120.0	st2B
Guest Room-A	h 1692	37	3	0.071	5.0	0x0	ShMt	50.0	150.0	st2B
Laundry	c 1163	47	54	0.132	5.0	0x0	ShMt	27.5	80.0	st1
Laundry-A	c 1163	47	54	0.143	5.0	0x0	ShMt	9.5	90.0	st1
Master Bedroom	h 1704	37	9	0.084	5.0	0x0	ShMt	58.5	110.0	st2B
Master Bedroom-A	h 1704	37	9	0.074	5.0	0x0	ShMt	51.0	140.0	st2B
PR	h 2384	52	8	0.132	5.0	0x0	ShMt	17.5	90.0	st1
Powder Room	h 273	6	4	0.129	5.0	0x0	ShMt	10.5	100.0	st1
Storage	h 2659	58	5	0.101	5.0	0x0	ShMt	30.5	110.0	st1
Storage 1	h 3011	65	6	0.072	6.0	0x0	ShMt	47.0	150.0	st2

## Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st2	Peak AVF	1291	1375	0.071	900	<b>18.2</b>	<b>10 x 22</b>	ShtMetl	
st2B	Peak AVF	247	125	0.071	278	<b>18.2</b>	<b>8 x 16</b>	ShtMetl	st2A
st2A	Peak AVF	620	494	0.071	507	<b>18.2</b>	<b>8 x 22</b>	ShtMetl	st2
st1	Peak AVF	209	125	0.101	314	<b>7.5</b>	<b>8 x 12</b>	ShtMetl	

*Bold/italic values have been manually overridden*

### 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	0x0	201	164	210.5	0.099	576	8.0	0x 0		ShMt	rt3A
rb1	0x0	230	115	290.5	0.072	521	9.0	0x 0		ShMt	rt3A
rb2	0x0	239	321	244.5	0.085	589	10.0	0x 0		ShMt	rt3A
rb6	0x0	203	598	292.5	0.071	560	14.0	0x 0		ShMt	rt3
rb4	0x0	150	78	249.0	0.083	430	8.0	0x 0		ShMt	rt3
rb3	0x0	224	22	203.5	0.102	507	9.0	0x 0		ShMt	rt3
rb7	0x0	253	200	146.5	0.142	572	9.0	0x 0		ShMt	rt3

### 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	1500	1500	0.071	900	<b>18.1</b>	<b>10 x 24</b>	ShtMetl	rt1
rt1	Peak AVF	1500	1500	0.071	750	<b>18.8</b>	<b>12 x 24</b>	ShtMetl	
rt3A	Peak AVF	671	601	0.072	549	<b>18.1</b>	<b>8 x 22</b>	ShtMetl	rt3

*Bold/italic values have been manually overridden*