

<b>Department of Inspections Licenses and Permits</b>  3430 Court House Drive Ellicott City, MD 21043  Permits (410) 313-2455 Opt. #4 Inspections (410) 313-1840	<b>HOWARD COUNTY RESIDENTIAL HEATING-VENTILATION-AIR CONDITIONING AND REFRIGERATION PERMIT APPLICATION</b>	HVACR PERMIT # <b>M20000736</b>  BUILDING PERMIT #
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SITE BUILDING ADDRESS: <b>7912 Savage Guilford Rd</b> SUITE/APT: _____  SUBDIVISION: _____  TYPE OF IMPROVEMENTS: _____  USE: _____	OWNERS NAME: <b>Kevin Favorite</b> ADDRESS: <b>7912 Savage Guilford Road</b> CITY: <b>Jessup</b> STATE: <b>MD</b> ZIP CODE: <b>20794</b> HOME PHONE: <b>Areal Favorite 301-385-4411</b> CELL PHONE: <b>301-377-8235</b>
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<table> <tr> <th><u>CHECK ONE</u></th> <th><u>HOW MANY</u></th> </tr> <tr> <td>SINGLE FAMILY DWELLING <input checked="" type="checkbox"/></td> <td><u>3</u> ZONES</td> </tr> <tr> <td>SINGLE FAMILY TOWNHOUSE <input type="checkbox"/></td> <td>____ ZONES</td> </tr> <tr> <td>MULTI-FAMILY / HOTEL/MOTEL <input type="checkbox"/></td> <td>____ ROOMS</td> </tr> <tr> <td>ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS) <input type="checkbox"/></td> <td>____ ROOMS</td> </tr> </table>	<u>CHECK ONE</u>	<u>HOW MANY</u>	SINGLE FAMILY DWELLING <input checked="" type="checkbox"/>	<u>3</u> ZONES	SINGLE FAMILY TOWNHOUSE <input type="checkbox"/>	____ ZONES	MULTI-FAMILY / HOTEL/MOTEL <input type="checkbox"/>	____ ROOMS	ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS) <input type="checkbox"/>	____ ROOMS	COMPANY NAME: <b>H6H Mechanical Inc</b> LICENSEE NAME: <b>Manuel Gomes</b> ADDRESS: <b>2107 Emmorton Park Rd. #111</b> CITY: <b>Edgewood</b> STATE: <b>MD</b> ZIP CODE: <b>21040</b> PHONE: <b>410-808-0117</b> HVACR LICENSE NO: <b>6620</b>
<u>CHECK ONE</u>	<u>HOW MANY</u>										
SINGLE FAMILY DWELLING <input checked="" type="checkbox"/>	<u>3</u> ZONES										
SINGLE FAMILY TOWNHOUSE <input type="checkbox"/>	____ ZONES										
MULTI-FAMILY / HOTEL/MOTEL <input type="checkbox"/>	____ ROOMS										
ASSISTED LIVING HOMES (16 OR FEWER RESIDENTS) <input type="checkbox"/>	____ ROOMS										

<u>New Construction</u> <input type="checkbox"/> Heating and Air Conditioning <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Heating  <u>Replacement</u> <input type="checkbox"/> Heating <input type="checkbox"/> Air Conditioning <input checked="" type="checkbox"/> Heating and Air Conditioning	<u>Additions and Alterations</u> <input type="checkbox"/> Heating <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Heating and Air Conditioning  <b>Climate Master Geo.</b> <b>1- TEV049BGDO2CRTS Packaged</b> <b>2- TES049BGDO2CNS + 2- THH049CGSMBS air handlers</b> <b>**Make and Model of Equipment is required**</b>	<input checked="" type="checkbox"/> Geo Thermal System <input type="checkbox"/> Gas Conversion (Make and Model of Equipment) <input type="checkbox"/> Ductless Mini Splits <input type="checkbox"/> Thru The Wall Systems <input type="checkbox"/> Other Work (Describe): _____
****Replacement Geo Thermal Systems are not required; However, if a tax credit is being sought a permit is required****		

<u>Zones</u>  Permit Fee = # of Zones x \$40 = <u>120.00</u> Technology Fee (10% of Permit Fee) = <u>12.00</u> Plus Application Fee <u>\$50.00</u> Total Fees Due = <u>182.00</u>	<u>Rooms</u>  Permit Fee = # of Rooms x \$80 = _____ Technology Fee (10% of Permit Fee) = _____ Plus Application Fee \$50 <u>\$50.00</u> Total Fees Due = _____
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I HAVE CAREFULLY EXAMINED AND READ THIS APPLICATION AND KNOW IT IS TRUE AND CORRECT. THE WORK DESCRIBED HEREIN WILL BE PERFORMED BY A STATE HVAC LICENSED PERSON(S), AND ALL WORK WILL BE PERFORMED IN COMPLIANCE WITH APPLICABLE CODES AND STANDARDS OF HOWARD COUNTY THE STATE OF MARYLAND.

SIGNATURE OF LICENSEE: Manuel Gomes DATE: 10/12/2020

PRINT NAME OF LICENSEE: Manuel Gomes

Email Address: mannygomes@hghmechanical.com

**RECEIVED**  
 OCT 13 2020  
 LIC. & PERMITS DIVISION

Make check payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY

T:\Updated Forms\HVAC application Rev:09.2019

<b>Validation</b> Check Number: <u>29748</u> Money Order#: _____ Invoice Number: <u>635558</u>
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Approved OK (K...)

M20000736

**HGH Mechanical, Inc.**

2107 Emmorton Park Road #111 Edgewood, Md. 21040  
Phone: 410-679-3794 Fax: 410-679-8290 E-mail: mannygomes@hghmechanical.com  
02-6620

**PROPOSAL FOR:**

**Kevin Favorite  
7912 Savage Guildford Road  
Jessup, Md 21794**

10/12/2020

## HGH Mechanical, Inc.

2107 Emmorton Park Road #111 Edgewood, Md. 21040  
Phone: 410-679-3794 Fax: 410-679-8290 E-mail: mannygomes@hghmechanical.com  
02-6620

### Heat Load Summary Report for Kevin Favorite

Room Name	Square Ft.	Heating Loss BTUH	Hydronic Heat Linear Ft.	Latent / Sensible Gain BTUH	Cooling Gain BTUH	Cooling Tons	Cooling CFM
Basement left	810	15794	26.32	227 / -3025	-2798	0.	-93
Basement Right	360	8941	14.9	454 / -932	-478	0.	-16
1st floor	810	15289	25.48	1886 / 11408	13294	1.11	443
1st floor Right	360	6301	10.5	763 / 5772	6534	0.54	218
2nd floor left	1500	18990	31.65	2478 / 12752	15231	1.27	508
2nd floor Right	360	10212	17.02	1203 / 10636	11839	0.99	395
3rd floor	972	19960	33.27	1779 / 16325	18104	1.51	603
3rd Right	360	7950	13.25	763 / 7278	8041	0.67	268
<b>TOTALS</b>	<b>5532</b>	<b>103438</b>	<b>172.4</b>	<b>9553 / 60214</b>	<b>69766</b>	<b>6.09</b>	<b>2326</b>

#### Disclaimer

These computed results should be treated as estimates only and should be viewed as only one of the many tools required for a professional installation. The installing contractor's experience and expert judgement are also major factors in sizing and installing a complete system. The weather, customer usage, duct installation, and structure design may vary on each estimate and should be taken into account. Correct system sizing is based on the systems ability to meet both latent and sensible heat requirements, not just total BTUs.

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02-6620

## Heat Load Detail Report for Kevin Favorite

Room 1 of 8

### Room Specifications: Basement left

Room Length (Ft.) :	18	Sq. Ft windows facing NE & NW: --	Watts Incandescent Light:	200
Room Width (Ft.) :	45	Sq. Ft windows facing South: --	Watts Fluorescent Light:	--
Room Height (Ft.) :	8	Sq. Ft windows facing SE & SW: --	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	81	Number of Exterior Doors: 1	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) : --		Sq. Ft. Exterior Doors: 21	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North: 30		Number of People in Room: 1	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W: 60			BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Concrete Slab Exposed Walls: Below Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	-8424	Appliance/Elec Motor Latent Heat Gain (BTUH) :	200
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	932
Floor Heat Gain (BTUH) :	-13	Ventilation Latent Heat Gain (BTUH) :	27
Glass Heat Gain (BTUH) :	-624	Ventilation Sensible Gain (BTUH) :	-56
Exterior Door & North Window Heat Gain (BTUH) :	0	Summer Total Latent Heat Gain:	227
Solar Heat Gain (BTUH) :	5160	Summer Total Sensible Heat Gain (BTUH) :	-3025
Total Transmission Heat Gain (BTUH) :	-3901	TOTAL SUMMER COOLING LOAD (BTUH) :	-2798

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	11150	Latent Ventilation Heat Losses (BTUH) :	1046
Sensible Ventilation Heat Losses (BTUH) :	3598	Hydronic Heat (Linear Ft.) :	26
		TOTAL WINTER HEATING LOAD (BTUH) :	15794

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

### Disclaimer

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Phone: 410-679-3794 Fax: 410-679-8290 E-mail: mannygomes@hghmechanical.com  
02-6620

## Heat Load Detail Report for Kevin Favorite

Room 2 of 8

### Room Specifications: Basement Right

Room Length (Ft.) :	18	Sq. Ft windows facing NE & NW:	--	Watts Incandescent Light:	200
Room Width (Ft.) :	20	Sq. Ft windows facing South:	30	Watts Fluorescent Light:	--
Room Height (Ft.) :	8	Sq. Ft windows facing SE & SW:	--	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	38	Number of Exterior Doors:	1	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :--		Sq. Ft. Exterior Doors:	21	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	--	Number of People in Room:	2	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W:	30			BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Concrete Slab Exposed Walls: Below Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft) :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	-3952	Appliance/Elec Motor Latent Heat Gain (BTUH) :	400
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	1182
Floor Heat Gain (BTUH) :	-6	Ventilation Latent Heat Gain (BTUH) :	54
Glass Heat Gain (BTUH) :	-624	Ventilation Sensible Gain (BTUH) :	-112
Exterior Door & North Window Heat Gain (BTUH) :	0	Summer Total Latent Heat Gain:	454
Solar Heat Gain (BTUH) :	2580	Summer Total Sensible Heat Gain (BTUH) :	-932
Total Transmission Heat Gain (BTUH) :	-2002	TOTAL SUMMER COOLING LOAD (BTUH) :	-478

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	5638	Latent Ventilation Heat Losses (BTUH) :	744
Sensible Ventilation Heat Losses (BTUH) :	2559	Hydronic Heat (Linear Ft.) :	15
		TOTAL WINTER HEATING LOAD (BTUH) :	8941

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

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02-6620

## Heat Load Detail Report for Kevin Favorite

Room 3 of 8

### Room Specifications: 1st floor

Room Length (Ft.) :	18	Sq. Ft windows facing NE & NW: --	Watts Incandescent Light:	300
Room Width (Ft.) :	45	Sq. Ft windows facing South: --	Watts Fluorescent Light:	--
Room Height (Ft.) :	9	Sq. Ft windows facing SE & SW: --	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	81	Number of Exterior Doors: 1	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :--		Sq. Ft. Exterior Doors: 21	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	30	Number of People in Room: 2	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W:	60		BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	1108	Appliance/Elec Motor Latent Heat Gain (BTUH) :	400
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	1523
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	1486
Glass Heat Gain (BTUH) :	935	Ventilation Sensible Gain (BTUH) :	2275
Exterior Door & North Window Heat Gain (BTUH) :	407	Summer Total Latent Heat Gain:	1886
Solar Heat Gain (BTUH) :	5160	Summer Total Sensible Heat Gain (BTUH) :	11408
Total Transmission Heat Gain (BTUH) :	7610	TOTAL SUMMER COOLING LOAD (BTUH) :	13294

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	7350	Latent Ventilation Heat Losses (BTUH) :	1114
Sensible Ventilation Heat Losses (BTUH) :	6825	Hydronic Heat (Linear Ft.) :	25
		TOTAL WINTER HEATING LOAD (BTUH) :	15289

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

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02-6620

## Heat Load Detail Report for Kevin Favorite

Room 4 of 8

### Room Specifications: 1st floor Right

Room Length (Ft.) :	20	Sq. Ft windows facing NE & NW:	--	Watts Incandescent Light:	200
Room Width (Ft.) :	18	Sq. Ft windows facing South:	30	Watts Fluorescent Light:	--
Room Height (Ft.) :	9	Sq. Ft windows facing SE & SW:	--	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	38	Number of Exterior Doors:	--	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :	--	Sq. Ft. Exterior Doors:	--	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	--	Number of People in Room:	2	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W:	30			BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside %(Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	520	Appliance/Elec Motor Latent Heat Gain (BTUH) :	400
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	1182
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	363
Glass Heat Gain (BTUH) :	935	Ventilation Sensible Gain (BTUH) :	555
Exterior Door & North Window Heat Gain (BTUH) :	0	Summer Total Latent Heat Gain:	763
Solar Heat Gain (BTUH) :	2580	Summer Total Sensible Heat Gain (BTUH) :	5772
Total Transmission Heat Gain (BTUH) :	4035	TOTAL SUMMER COOLING LOAD (BTUH) :	6534

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	4364	Latent Ventilation Heat Losses (BTUH) :	272
Sensible Ventilation Heat Losses (BTUH) :	1665	Hydronic Heat(Linear Ft.) :	11
		TOTAL WINTER HEATING LOAD (BTUH) :	6301

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

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02-6620

## Heat Load Detail Report for Kevin Favorite

Room 5 of 8

### Room Specifications: 2nd floor left

Room Length (Ft.) :	25	Sq. Ft windows facing NE & NW:	--	Watts Incandescent Light:	200
Room Width (Ft.) :	60	Sq. Ft windows facing South:	60	Watts Fluorescent Light:	--
Room Height (Ft.) :	10	Sq. Ft windows facing SE & SW:	--	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	81	Number of Exterior Doors:	--	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :--		Sq. Ft. Exterior Doors:	--	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	30	Number of People in Room:	4	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W:	60			BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside %(Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	1231	Appliance/Elec Motor Latent Heat Gain (BTUH) :	800
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	1682
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	1678
Glass Heat Gain (BTUH) :	1870	Ventilation Sensible Gain (BTUH) :	2570
Exterior Door & North Window Heat Gain (BTUH) :	239	Summer Total Latent Heat Gain:	2478
Solar Heat Gain (BTUH) :	5160	Summer Total Sensible Heat Gain (BTUH) :	12752
Total Transmission Heat Gain (BTUH) :	8500	TOTAL SUMMER COOLING LOAD (BTUH) :	15231

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	10021	Latent Ventilation Heat Losses (BTUH) :	1259
Sensible Ventilation Heat Losses (BTUH) :	7710	Hydronic Heat(Linear Ft.) :	32
		TOTAL WINTER HEATING LOAD (BTUH) :	18990

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

### Disclaimer

These computed results should be treated as estimates only and should be viewed as only one of the many tools required for a professional installation. The installing contractor's experience and expert judgement are also major factors in sizing and installing a complete system. The weather, customer usage, duct installation, and structure design may vary on each estimate and should be taken into account. Correct system sizing is based on the systems ability to meet both latent and sensible heat requirements, not just total BTUs.



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## Heat Load Detail Report for Kevin Favorite

Room 6 of 8

### Room Specifications: 2nd floor Right

Room Length (Ft.) :	18	Sq. Ft windows facing NE & NW:	--	Watts Incandescent Light:	300
Room Width (Ft.) :	20	Sq. Ft windows facing South:	60	Watts Fluorescent Light:	--
Room Height (Ft.) :	10	Sq. Ft windows facing SE & SW:	--	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	38	Number of Exterior Doors:	--	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :--	--	Sq. Ft. Exterior Doors:	--	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	30	Number of People in Room:	3	BTUH Appliance Sensible Heat:	400
Sq. Ft windows facing E & W:	60			BTUH Appliance Latent Heat:	200

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Thermostat Setting Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft) :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	578	Appliance/Elec Motor Latent Heat Gain (BTUH) :	800
Ceiling or Roof Heat Gain (BTUH) :	0	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	2173
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	403
Glass Heat Gain (BTUH) :	1870	Ventilation Sensible Gain (BTUH) :	617
Exterior Door & North Window Heat Gain (BTUH) :	239	Summer Total Latent Heat Gain:	1203
Solar Heat Gain (BTUH) :	5160	Summer Total Sensible Heat Gain (BTUH) :	10636
Total Transmission Heat Gain (BTUH) :	7847	TOTAL SUMMER COOLING LOAD (BTUH) :	11839

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	8060	Latent Ventilation Heat Losses (BTUH) :	302
Sensible Ventilation Heat Losses (BTUH) :	1850	Hydronic Heat (Linear Ft.) :	17
		TOTAL WINTER HEATING LOAD (BTUH) :	10212

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

### Disclaimer

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## Heat Load Detail Report for Kevin Favorite

Room 7 of 8

### Room Specifications: 3rd floor

Room Length (Ft.) :	36	Sq. Ft windows facing NE & NW:	--	Watts Incandescent Light:	300
Room Width (Ft.) :	27	Sq. Ft windows facing South:	60	Watts Fluorescent Light:	--
Room Height (Ft.) :	9	Sq. Ft windows facing SE & SW:	--	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	126	Number of Exterior Doors:	--	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) :--	--	Sq. Ft. Exterior Doors:	--	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North:	60	Number of People in Room:	3	BTUH Appliance Sensible Heat:	400
Sq. Ft windows facing E & W:	60			BTUH Appliance Latent Heat:	200

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Attic or Crawl Space Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	1724	Appliance/Elec Motor Latent Heat Gain (BTUH) :	800
Ceiling or Roof Heat Gain (BTUH) :	3421	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	2173
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	979
Glass Heat Gain (BTUH) :	1870	Ventilation Sensible Gain (BTUH) :	1499
Exterior Door & North Window Heat Gain (BTUH) :	479	Summer Total Latent Heat Gain:	1779
Solar Heat Gain (BTUH) :	5160	Summer Total Sensible Heat Gain (BTUH) :	16325
Total Transmission Heat Gain (BTUH) :	12654	TOTAL SUMMER COOLING LOAD (BTUH) :	18104

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	14729	Latent Ventilation Heat Losses (BTUH) :	734
Sensible Ventilation Heat Losses (BTUH) :	4497	Hydronic Heat (Linear Ft.) :	33
		TOTAL WINTER HEATING LOAD (BTUH) :	19960

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

### Disclaimer

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## Heat Load Detail Report for Kevin Favorite

Room 8 of 8

### Room Specifications: 3rd Right

Room Length (Ft.) :	18	Sq. Ft windows facing NE & NW: --	Watts Incandescent Light:	200
Room Width (Ft.) :	20	Sq. Ft windows facing South: 30	Watts Fluorescent Light:	--
Room Height (Ft.) :	9	Sq. Ft windows facing SE & SW: --	Duct Length from A/H to room:	--
Exposed Wall Length (Ft.) :	38	Number of Exterior Doors: --	Number of Large Electric Motors:	--
Wall against unconditioned room (Ft.) : --		Sq. Ft. Exterior Doors: --	Average Electric Motor Horsepower:	--
Sq. Ft windows facing North: 30		Number of People in Room: 2	BTUH Appliance Sensible Heat:	--
Sq. Ft windows facing E & W: 30			BTUH Appliance Latent Heat:	--

### Indoor/Outdoor Design Temperatures (degrees Farenheit)

Summer:		Winter:	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

Applicable Temperatures: Above Ceiling: Attic or Crawl Space Below Floor: Thermostat Setting Exposed Walls: Above Ground

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Humidity Difference Inside/Outside % (Summer) :	20
Humidity Difference Inside/Outside % (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Calculated Room Results - Summer Heat Gains

Wall Heat Gain (BTUH) :	520	Appliance/Elec Motor Latent Heat Gain (BTUH) :	400
Ceiling or Roof Heat Gain (BTUH) :	1267	Appliance/Elec Motor Sensible Heat Gain (BTUH) :	1182
Floor Heat Gain (BTUH) :	0	Ventilation Latent Heat Gain (BTUH) :	363
Glass Heat Gain (BTUH) :	935	Ventilation Sensible Gain (BTUH) :	555
Exterior Door & North Window Heat Gain (BTUH) :	239	Summer Total Latent Heat Gain:	763
Solar Heat Gain (BTUH) :	2580	Summer Total Sensible Heat Gain (BTUH) :	7278
Total Transmission Heat Gain (BTUH) :	5541	TOTAL SUMMER COOLING LOAD (BTUH) :	8041

### Calculated Room Results - Winter Heat Losses

Transmission Heat Losses (BTUH) :	6013	Latent Ventilation Heat Losses (BTUH) :	272
Sensible Ventilation Heat Losses (BTUH) :	1665	Hydronic Heat (Linear Ft.) :	13
		TOTAL WINTER HEATING LOAD (BTUH) :	7950

### Calculated Totals for Entire Structure

Size of Structure (Sq. Ft.):	5532	Total Sensible Heat Gain (BTUH):	60214
Total Heat Loss (BTUH):	103438	Total Cooling Gain (BTUH):	69766
Total Hydronic Heat (Linear Ft.):	172.4	Total Cooling Requirement (Tons):	6.09
Total Latent Heat Gain (BTUH):	9553	Total Cooling CFM:	2326

### Disclaimer

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## Project Default Calculation Values for Kevin Favorite

### Indoor/Outdoor Design Temperatures (Degrees Farenheit)

Summer		Winter	
Inside (Thermostat setting) :	76	Inside (Thermostat setting) :	72
Outside (Above ground):	95	Outside (Above ground) :	15
Outside (Below ground):	50	Outside (Below ground) :	40
Unconditioned Space :	80	Unconditioned Space :	45
Above Ceiling (Attic/Crawl Space) :	140	Above Ceiling (Attic/Crawl Space) :	25
Concrete Slab (Ground temperature) :	60	Concrete Slab (Ground temperature) :	55
Unconditioned Basement :	75	Unconditioned Basement :	60
Below Floor Crawl Space :	85	Below Floor Crawl Space :	45

### Design Conditions

Occupant Sensible Load (BTUH per person) :	250
Occupant Latent Load (BTUH per person) :	200
Duct Insulation Factor :	1
Duct Temperature Difference (Summer) :	20
Duct Temperature Difference (Winter) :	45
Space Humidity Difference Inside/Outside (Summer) :	20
Space Humidity Difference Inside/Outside (Winter) :	15
Fresh Air Per Person (CFM) :	2
Air Change Factor (Air change per hour) :	.5
Space Shading Factor :	.4
Air Handler Design Cooling (CFM per ton) :	400
Hydronic Heat (BTUH per linear ft) :	600

### Insulation Values (U-Factors)

Exposed Walls (Above Ground) :	.080
Exposed Walls (Below Ground) :	.5
Partitions :	.075
Roof/Ceiling :	.055
Floor (Above basement) :	.083
Floor (Concrete slab) :	.001
Floor (Between conditioned spaces) :	.287
Doors :	.500
Windows :	.900

### Duct and Grill Sizing

Supply Ducts		Supply Grills	
0 to 50 CFM :	5" Round Metal	8x4" Supply Grille	
50 to 100 CFM :	6" Round Metal	10x6" Supply Grille	
100 to 150 CFM :	7" Round Metal	12x6" Supply Grille	
151 to 200 CFM :	8" Round Metal	12x6" Supply Grille	
201 to 275 CFM :	9" Round Metal	14x6" Supply Grille	
276 to 350 CFM :	10" Round Metal	14x8" Supply Grille	
351 to 600 CFM :	12" Round Metal	12x12" Supply Grille	
601 to 900 CFM :	14" Round Metal	18x10" Supply Grille	
901 to 1200 CFM :	16" Round Metal	18x12" Supply Grille	
Return Ducts		Return Grills	
0 to 50 CFM :	5" Round Metal	8x4" Return Grille	
51 to 100 CFM :	6" Round Metal	10x4" Return Grille	
101 to 125 CFM :	7" Round Metal	10x6" Return Grille	
126 to 175 CFM :	8" Round Metal	12x6" Return Grille	
176 to 225 CFM :	9" Round Metal	12x8" Return Grille	
226 to 300 CFM :	11" Round Metal	12x10" Return Grille	
301 to 400 CFM :	12" Round Metal	16x10" Return Grille	
401 to 500 CFM :	14" Round Metal	18x12" Return Grille	
501 to 600 CFM :	15" Round Metal	20x12" Return Grille	
601 to 700 CFM :	16" Round Metal	24x12" Return Grille	
701 to 800 CFM :	17" Round Metal	18x18" Return Grille	
801 to 900 CFM :	18" Round Metal	20x18" Return Grille	
901 to 1000 CFM :	19" Round Metal	24x18" Return Grille	
1001 to 1200 CFM :	21" Round Metal	30x18" Return Grille	
1201 to 1400 CFM :	23" Round Metal	24x24" Return Grille	
1401 to 1500 CFM :	24" Round Metal	36x18" Return Grille	
1501 to 1600 CFM :	25" Round Metal	36x18" Return Grille	
1601 to 1800 CFM :	26" Round Metal	40x18" Return Grille	
1801 to 2000 CFM :	27" Round Metal	36x24" Return Grille	
2001 to 2500 CFM :	31" Round Metal	48x20" Return Grille	
2501 to 3000 CFM :	34" Round Metal	48x24" Return Grille	
3001 to 3500 CFM :	36" Round Metal	60x24" Return Grille	
3501 to 4000 CFM :	39" Round Metal	60x30" Return Grille	

These are the current default system design conditions. These values can be adjusted by the user on a global or room-by-room basis. To review the actual values for a specified room, print the Detailed Load Analysis Report. It is not uncommon, particularly in complex or multi-story structures, for temperatures, U-factors, and other design conditions to vary between floors and or rooms.