



# Manual S Compliance Report

## Entire House

### Air Ducks Heating & Air, Inc.

Job:  
Date: Nov 09, 2022  
By:

2601 NW 74th Place, Gainesville, Fla 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: Airducksac.com License: CAC1817288

## Project Information

For: William Wesemen Construction  
347 SE Sunset Glen, High Springs, Fla 32643

## Cooling Equipment

### Design Conditions

|                    |        |                    |            |                   |        |
|--------------------|--------|--------------------|------------|-------------------|--------|
| Outdoor design DB: | 91.9°F | Sensible gain:     | 25961 Btuh | Entering coil DB: | 77.4°F |
| Outdoor design WB: | 76.2°F | Latent gain:       | 5306 Btuh  | Entering coil WB: | 63.7°F |
| Indoor design DB:  | 75.0°F | Total gain:        | 31267 Btuh |                   |        |
| Indoor RH:         | 50%    | Estimated airflow: | 1173 cfm   |                   |        |

### Manufacturer's Performance Data at Actual Design Conditions

|                    |            |              |                        |
|--------------------|------------|--------------|------------------------|
| Equipment type:    | Split AC   |              |                        |
| Manufacturer:      | Trane      | Model:       | 4TTR4036L1+4TXCC007DS3 |
| Actual airflow:    | 1173 cfm   |              |                        |
| Sensible capacity: | 29920 Btuh | 115% of load |                        |
| Latent capacity:   | 5280 Btuh  | 100% of load |                        |
| Total capacity:    | 35200 Btuh | 113% of load | SHR: 85%               |

## Heating Equipment

### Design Conditions

|                    |        |            |            |                   |        |
|--------------------|--------|------------|------------|-------------------|--------|
| Outdoor design DB: | 33.0°F | Heat loss: | 33369 Btuh | Entering coil DB: | 66.9°F |
| Indoor design DB:  | 68.0°F |            |            |                   |        |

### Manufacturer's Performance Data at Actual Design Conditions

|                  |             |              |                   |
|------------------|-------------|--------------|-------------------|
| Equipment type:  | Gas furnace |              |                   |
| Manufacturer:    | Trane       | Model:       | S8X1C080M5PSAA    |
| Actual airflow:  | 1173 cfm    |              |                   |
| Output capacity: | 79532 Btuh  | 238% of load | Temp. rise: 45 °F |

Meets all requirements of ACCA Manual S.





# Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form  
RPER 1  
15 Mar 09

## Header Information

|                                                    |                                  |                                                  |                                                          |
|----------------------------------------------------|----------------------------------|--------------------------------------------------|----------------------------------------------------------|
| Contractor:                                        | Air Ducks Heating & Air, Inc.    | REQUIRED ATTACHMENTS                             | ATTACHED                                                 |
| Mechanical license:                                | CAC1817288                       | Manual J1 Form (and supporting worksheets):      | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Building plan #:                                   |                                  | or MJ1AE Form* (and supporting worksheets):      | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Home address (Street or Lot#, Block, Subdivision): | 347 SE Sunset Glen, Entire House | OEM performance data (heating, cooling, blower): | Yes <input type="checkbox"/> No <input type="checkbox"/> |
|                                                    |                                  | Manual D Friction Rate Worksheet:                | Yes <input type="checkbox"/> No <input type="checkbox"/> |
|                                                    |                                  | Duct distribution sketch:                        | Yes <input type="checkbox"/> No <input type="checkbox"/> |

## HVAC LOAD CALCULATION (IRC M1401.3)

### Design Conditions

#### Winter Design Conditions

Outdoor temperature: 33 °F  
Indoor temperature: 68 °F  
Total heat loss: 33369 Btuh

#### Summer Design Conditions

Outdoor temperature: 92 °F  
Indoor temperature: 75 °F  
Grains difference: 47 gr/lb @50% RH  
Sensible heat gain: 26792 Btuh  
Latent heat gain: 5476 Btuh  
Total heat gain: 32268 Btuh

### Building Construction Information

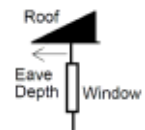
#### Building

Orientation: Front Door faces South  
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms: 0  
Conditioned floor area: 1972 ft<sup>2</sup>  
Number of occupants: 17

#### Windows

Eave overhang depth: 0 ft  
Internal shade: blinds  
Blinds, drapes, etc.  
Number of skylights: 0



## HVAC EQUIPMENT SELECTION (IRC M1401.3)

### Heating Equipment Data

Equipment type: Gas furnace  
Furnace, Heat pump, Boiler, etc.  
Model: Trane  
S8X1C080M5PSAA  
Heating output capacity: 79532 Btuh  
Heat pumps - capacity at winter design outdoor conditions  
Aux. heating output capacity: 0 Btuh

### Cooling Equipment Data

Equipment type: Split AC  
Air Conditioner, Heat pump, etc.  
Model: Trane  
4TTR4036L1+4TXCC007DS3  
Total cooling capacity: 0 Btuh  
Sensible cooling capacity: 0 Btuh  
Latent cooling capacity: 0 Btuh

### Blower Data

Heating cfm: 1173  
Cooling cfm: 1173  
Static pressure: 0.50 in H<sub>2</sub>O  
Fan's rated external static pressure for design airflow

## HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

|                                                           |                                                                                   |                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|
| Design airflow: 1173 cfm                                  | Longest supply duct: 308 ft                                                       | Duct Materials Used           |
| Equipment design ESP: 0.50 in H <sub>2</sub> O            | Longest return duct: 68 ft                                                        | Trunk duct: Fiberglass board  |
| Total device pressure losses: 0 in H <sub>2</sub> O       | Total effective length (TEL): 376 ft                                              | Branch duct: Round flex vinyl |
| Available static pressure (ASP): 0.50 in H <sub>2</sub> O | Friction rate: 0.133 in/100ft<br><small>Friction Rate = ASP ÷ (TEL × 100)</small> |                               |

I declare the load calculation, equipment, equipment selection and duct design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's printed name: WWW  
Contractor's signature: WWW Date: 11-15-2022

Reserved for County, Town Municipality or Authority having jurisdiction use.

\*Home qualifies for MJ1AE Form based on Abridged Edition Checklist



# Load Short Form

## Entire House

### Air Ducks Heating & Air, Inc.

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Date: Nov 09, 2022  
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## Project Information

For: William Wesemen Construction  
347 SE Sunset Glen, High Springs, Fla 32643

## Design Information

|                             | Htg | Clg | Infiltration         | Simplified |
|-----------------------------|-----|-----|----------------------|------------|
| Outside db (°F)             | 33  | 92  | Method               | Average    |
| Inside db (°F)              | 68  | 75  | Construction quality | 0          |
| Design TD (°F)              | 35  | 17  | Fireplaces           |            |
| Daily range                 | -   | M   |                      |            |
| Inside humidity (%)         | 50  | 50  |                      |            |
| Moisture difference (gr/lb) | 29  | 47  |                      |            |

### HEATING EQUIPMENT

|                  |                |
|------------------|----------------|
| Make             | Trane          |
| Trade            | Trane          |
| Model            | S8X1C080M5PSAA |
| AHRI ref         | 202451629      |
| Efficiency       | 80 AFUE        |
| Heating input    | 80000 Btuh     |
| Heating output   | 79532 Btuh     |
| Temperature rise | 62 °F          |
| Actual air flow  | 1173 cfm       |
| Air flow factor  | 0.035 cfm/Btuh |
| Static pressure  | 0.50 in H2O    |
| Space thermostat |                |

### COOLING EQUIPMENT

|                          |                   |
|--------------------------|-------------------|
| Make                     | Trane             |
| Trade                    | TRANE             |
| Cond                     | 4TTR4036L1        |
| Coil                     | 4TXCC007DS3       |
| AHRI ref                 | 202451629         |
| Efficiency               | 13.0 EER, 16 SEER |
| Sensible cooling         | 29920 Btuh        |
| Latent cooling           | 5280 Btuh         |
| Total cooling            | 35200 Btuh        |
| Actual air flow          | 1173 cfm          |
| Air flow factor          | 0.045 cfm/Btuh    |
| Static pressure          | 0.50 in H2O       |
| Load sensible heat ratio | 0.83              |

| ROOM NAME   | Area (ft²) | Htg load (Btuh) | Clg load (Btuh) | Htg AVF (cfm) | Clg AVF (cfm) |
|-------------|------------|-----------------|-----------------|---------------|---------------|
| Master      | 207        | 4389            | 2273            | 154           | 103           |
| Closet      | 20         | 615             | 254             | 22            | 11            |
| Closet2     | 20         | 29              | 51              | 1             | 2             |
| Master bath | 101        | 1201            | 622             | 42            | 28            |
| W/C         | 16         | 23              | 41              | 1             | 2             |
| Bed 1       | 182        | 4045            | 2161            | 142           | 98            |
| Dining      | 294        | 3369            | 2235            | 118           | 101           |
| Living      | 504        | 8150            | 8738            | 286           | 395           |
| Laundry     | 70         | 1066            | 1377            | 37            | 62            |
| Kitchen     | 140        | 517             | 2515            | 18            | 114           |
| Bed 2       | 168        | 3019            | 2008            | 106           | 91            |
| Bath        | 117        | 2461            | 1230            | 87            | 56            |
| Bed 3       | 180        | 4484            | 2457            | 158           | 111           |
| Hall        | 39         | 0               | 0               | 0             | 0             |

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

|                   |   |      |       |       |      |      |
|-------------------|---|------|-------|-------|------|------|
| Garage            |   | 320  | 0     | 0     | 0    | 0    |
| Entire House      | d | 2378 | 33369 | 25961 | 1173 | 1173 |
| Other equip loads |   |      | 0     | 0     |      |      |
| Equip. @ 0.97 RSM |   |      |       | 25157 |      |      |
| Latent cooling    |   |      |       | 5306  |      |      |
| TOTALS            |   | 2378 | 33369 | 30463 | 1173 | 1173 |

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



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Page 2

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# Project Summary

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## Project Information

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347 SE Sunset Glen, High Springs, Fla 32643

Notes:

## Design Information

Weather: Gainesville Rgnl, FL, US

### Winter Design Conditions

|            |       |
|------------|-------|
| Outside db | 33 °F |
| Inside db  | 68 °F |
| Design TD  | 35 °F |

### Summer Design Conditions

|                     |          |
|---------------------|----------|
| Outside db          | 92 °F    |
| Inside db           | 75 °F    |
| Design TD           | 17 °F    |
| Daily range         | M        |
| Relative humidity   | 50 %     |
| Moisture difference | 47 gr/lb |

### Heating Summary

|                                |            |
|--------------------------------|------------|
| Structure                      | 25755 Btuh |
| Ducts                          | 7614 Btuh  |
| Central vent (0 cfm)<br>(none) | 0 Btuh     |
| Humidification                 | 0 Btuh     |
| Piping                         | 0 Btuh     |
| Equipment load                 | 33369 Btuh |

### Sensible Cooling Equipment Load Sizing

|                                |            |
|--------------------------------|------------|
| Structure                      | 16574 Btuh |
| Ducts                          | 9387 Btuh  |
| Central vent (0 cfm)<br>(none) | 0 Btuh     |
| Blower                         | 0 Btuh     |
| Use manufacturer's data        | n          |
| Rate/swing multiplier          | 0.97       |
| Equipment sensible load        | 25157 Btuh |

### Infiltration

|                      |            |
|----------------------|------------|
| Method               | Simplified |
| Construction quality | Average    |
| Fireplaces           | 0          |

### Latent Cooling Equipment Load Sizing

|                                |           |
|--------------------------------|-----------|
| Structure                      | 3321 Btuh |
| Ducts                          | 1985 Btuh |
| Central vent (0 cfm)<br>(none) | 0 Btuh    |
| Equipment latent load          | 5306 Btuh |

|                           | Heating | Cooling |
|---------------------------|---------|---------|
| Area (ft <sup>2</sup> )   | 1972    | 1972    |
| Volume (ft <sup>3</sup> ) | 18171   | 18171   |
| Air changes/hour          | 0.38    | 0.20    |
| Equiv. AVF (cfm)          | 115     | 61      |

|                                       |            |
|---------------------------------------|------------|
| <b>Equipment Total Load (Sen+Lat)</b> | 30463 Btuh |
| Req. total capacity at 0.85 SHR       | 2.5 ton    |

### Heating Equipment Summary

|                  |                |
|------------------|----------------|
| Make             | Trane          |
| Trade            | Trane          |
| Model            | S8X1C080M5PSAA |
| AHRI ref         | 202451629      |
| Efficiency       | 80 AFUE        |
| Heating input    | 80000 Btuh     |
| Heating output   | 79532 Btuh     |
| Temperature rise | 62 °F          |
| Actual air flow  | 1173 cfm       |
| Air flow factor  | 0.035 cfm/Btuh |
| Static pressure  | 0.50 in H2O    |
| Space thermostat |                |

### Cooling Equipment Summary

|                          |                   |
|--------------------------|-------------------|
| Make                     | Trane             |
| Trade                    | TRANE             |
| Cond                     | 4TTR4036L1        |
| Coil                     | 4TXCC007DS3       |
| AHRI ref                 | 202451629         |
| Efficiency               | 13.0 EER, 16 SEER |
| Sensible cooling         | 29920 Btuh        |
| Latent cooling           | 5280 Btuh         |
| Total cooling            | 35200 Btuh        |
| Actual air flow          | 1173 cfm          |
| Air flow factor          | 0.045 cfm/Btuh    |
| Static pressure          | 0.50 in H2O       |
| Load sensible heat ratio | 0.83              |

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2022-Nov-09 18:00:39

Page 1





# Duct System Summary

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|                                    | Heating                           | Cooling                           |
|------------------------------------|-----------------------------------|-----------------------------------|
| External static pressure           | 0.50 in H <sub>2</sub> O          | 0.50 in H <sub>2</sub> O          |
| Pressure losses                    | 0 in H <sub>2</sub> O             | 0 in H <sub>2</sub> O             |
| Available static pressure          | 0.50 in H <sub>2</sub> O          | 0.50 in H <sub>2</sub> O          |
| Supply / return available pressure | 0.409 / 0.091 in H <sub>2</sub> O | 0.409 / 0.091 in H <sub>2</sub> O |
| Lowest friction rate               | 0.133 in/100ft                    | 0.133 in/100ft                    |
| Actual air flow                    | 1173 cfm                          | 1173 cfm                          |
| Total effective length (TEL)       | 376 ft                            |                                   |

## Supply Branch Detail Table

| Name        | Design (Btuh) | Htg (cfm) | Clg (cfm) | Design FR | Diam (in) | H x W (in) | Duct Matl | Actual Ln (ft) | Ftg.Eqv Ln (ft) | Trunk |
|-------------|---------------|-----------|-----------|-----------|-----------|------------|-----------|----------------|-----------------|-------|
| Bath        | h 2461        | 87        | 56        | 0.238     | 6.0       | 0x0        | VIFx      | 32.0           | 140.0           | st1   |
| Bed 1       | h 4045        | 142       | 98        | 0.139     | 8.0       | 0x0        | VIFx      | 54.0           | 240.0           | st1   |
| Bed 2       | h 3019        | 106       | 91        | 0.246     | 6.0       | 0x0        | VIFx      | 16.0           | 150.0           | st1   |
| Bed 3       | h 4484        | 158       | 111       | 0.140     | 8.0       | 0x0        | VIFx      | 42.0           | 250.0           | st1   |
| Closet      | h 615         | 22        | 11        | 0.210     | 4.0       | 0x0        | VIFx      | 45.0           | 150.0           | st1   |
| Closet2     | c 51          | 1         | 2         | 0.221     | 4.0       | 0x0        | VIFx      | 35.0           | 150.0           | st1   |
| Dining      | h 3369        | 118       | 101       | 0.246     | 6.0       | 0x0        | VIFx      | 16.0           | 150.0           | st1   |
| Kitchen     | c 2515        | 18        | 114       | 0.251     | 6.0       | 0x0        | VIFx      | 13.0           | 150.0           | st1   |
| Laundry     | c 1377        | 37        | 62        | 0.264     | 6.0       | 0x0        | VIFx      | 5.0            | 150.0           | st1   |
| Living      | c 4369        | 143       | 197       | 0.170     | 8.0       | 0x0        | VIFx      | 36.0           | 205.0           | st1   |
| Living-A    | c 4369        | 143       | 197       | 0.176     | 8.0       | 0x0        | VIFx      | 27.0           | 205.0           | st1   |
| Master      | h 4389        | 154       | 103       | 0.232     | 8.0       | 0x0        | VIFx      | 26.0           | 150.0           | st1   |
| Master bath | h 1201        | 42        | 28        | 0.222     | 6.0       | 0x0        | VIFx      | 44.0           | 140.0           | st1   |
| W/C         | c 41          | 1         | 2         | 0.133     | 4.0       | 0x0        | VIFx      | 48.0           | 260.0           | st1   |

## Supply Trunk Detail Table

| Name | Trunk Type | Htg (cfm) | Clg (cfm) | Design FR | Veloc (fpm) | Diam (in) | H x W (in) | Duct Material | Trunk |
|------|------------|-----------|-----------|-----------|-------------|-----------|------------|---------------|-------|
| st1  | Peak AVF   | 1173      | 1173      | 0.133     | 538         | 20.0      | 0 x 0      | RectFbg       |       |

## Return Branch Detail Table

| Name | Grille<br>Size (in) | Htg<br>(cfm) | Clg<br>(cfm) | TEL<br>(ft) | Design<br>FR | Veloc<br>(fpm) | Diam<br>(in) | H x W<br>(in) | Stud/Joist<br>Opening (in) | Duct<br>Matl | Trunk |
|------|---------------------|--------------|--------------|-------------|--------------|----------------|--------------|---------------|----------------------------|--------------|-------|
| rb1  | 0x 0                | 177          | 116          | 51.6        | 0.176        | 225            | 12.0         | 0x 0          |                            | VIFx         |       |
| rb2  | 0x 0                | 161          | 131          | 68.5        | 0.133        | 296            | 10.0         | 0x 0          |                            | VIFx         |       |
| rb3  | 0x 0                | 244          | 167          | 63.0        | 0.144        | 448            | 10.0         | 0x 0          |                            | VIFx         |       |
| rb5  | 0x 0                | 268          | 402          | 49.2        | 0.185        | 288            | 16.0         | 0x 0          |                            | VIFx         |       |
| rb4  | 0x 0                | 323          | 357          | 38.9        | 0.234        | 655            | 10.0         | 0x 0          |                            | VIFx         |       |