

# King George County Community Development

## Residential Plans Examiner Review Form For HVAC System Design (Loads, Equipment, Ducts) Provided by Mechanical Contractor

Contractor \_\_\_\_\_  
Mechanical License # \_\_\_\_\_  
Building permit # \_\_\_\_\_  
Home Address (street or lot #, block, subdivision)  
\_\_\_\_\_  
\_\_\_\_\_

### REQUIRED ATTACHMENTS

Manual J Form (and supporting worksheets):

**ATTACHED**

Yes \_\_\_ No \_\_\_

Air Distribution worksheet must be available to inspector on  
mechanical Rough-in inspection of duct work

### HVAC LOAD CALCULATION (IRC M1401.3)

#### Design Conditions

##### **Winter Design Conditions**

Outdoor Temperature \_\_\_\_\_ F  
Indoor Temperature \_\_\_\_\_ F  
Total Heat loss \_\_\_\_\_ Btu

##### **Summer Design Conditions**

Outdoor Temperature \_\_\_\_\_ F  
Indoor Temperature \_\_\_\_\_ F  
Grains difference \_\_\_\_\_ GR @ \_\_\_\_\_ % Rh  
Sensible heat gain \_\_\_\_\_ Btu  
Latent heat gain \_\_\_\_\_ Btu  
Total heat gain \_\_\_\_\_ Btu

#### Building Construction Information (this information must match information provided by builder)

##### **Building**

Orientation (Front door faces) \_\_\_\_\_  
North, East, West, South, Northeast, Northwest, Southeast, Southwest  
Number of bedrooms \_\_\_\_\_  
Conditioned floor area \_\_\_\_\_ Sq Ft  
Number of occupants \_\_\_\_\_

##### **Windows**

Eave overhang depth \_\_\_\_\_ Ft  
Internal Shade \_\_\_\_\_  
blinds, drapes, etc.  
Number of skylights \_\_\_\_\_

### HVAC EQUIPMENT SELECTION (IRC M1401.3)

#### Heating Equipment Data

Equipment type \_\_\_\_\_  
Furnace, heat pump, boiler, etc.  
Model \_\_\_\_\_  
Heating output capacity \_\_\_\_\_ Btu  
Auxiliary heat output capacity \_\_\_\_\_ Btu

#### Cooling Equipment Data

Equipment type \_\_\_\_\_  
air conditioner, heat pump, etc.  
Model \_\_\_\_\_  
Sensible cooling capacity \_\_\_\_\_ Btu  
Latent cooling capacity \_\_\_\_\_ Btu  
Total cooling capacity \_\_\_\_\_ Btu

#### Blower Data

Heating CFM \_\_\_\_\_ CFM  
Cooling CFM \_\_\_\_\_ CFM

### DUCT INSPECTION OPTION (N1103.2.2.1)

Testing options for ductwork: Select one - (see page 2 for details)

- (1) Post construction test- Approved testing agency required
- (2) Rough-in test- Approved testing agency required
- (3) County inspected (only when all duct work and air handler are within the conditioned space)

**All ductwork must be Tested per Section N1103.3.3 of the 2015 VRC**

**N1103.2.2 Sealing.** All ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with either the *International Mechanical Code* or Section M1601.4.1 of the Virginia Residential Code. Verification of compliance with this section shall be in accordance with either Section N1103.3.3 or Section N1103.3.4.

**N1103.3.3 Testing option. Duct tightness shall be verified by one of the following:**

**1. Rough-in-Test:** The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area where the air handler is installed at the time of test. Where the air handler is not installed at the time of test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.

**2. Post Construction Test:** Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.

**Exception:** A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.

When one of these options are chosen, testing shall be performed by approved qualified individuals, testing agencies or contractors. Testing and results shall be as prescribed in Section N1103.3.3 and approved recognized industry standards. **If choosing this option individual testing must be approved by Building Official. The contractor installing the HVAC can be the person who does the testing**

Print Name: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**King George County Plan Review  
Residential Data Collection Checklist  
Provided by Builder/Applicant  
2015 Virginia Energy Conservation Code  
Climate Zone 4 Except Marine**

Building permit #: \_\_\_\_\_ Date: \_\_\_\_\_

Building Contact: Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Site Address: \_\_\_\_\_

Subdivision: \_\_\_\_\_ Lot #: \_\_\_\_\_

Building Type: 1- and 2-Family, Detached:  Single Family  Modular  Townhouse

Compliance Approach (check all that apply):

- Prescriptive (VRC Table N1102.1)
- U-factor alternative (VRC N1102.1.4)
- Total UA Alternative (VRC) 1101.13 Trade off) (RES-check)

**Please attach all information showing compliance as checked above (Res check etc.)**

**Insulation/fenestration values used in connection with the sizing of heating and cooling equipment in accordance with the Manual J must match information provided on this form**

**NOTES**

1. VRC N1101.10 – An R-Value identification mark shall be applied to each piece of building thermal envelope insulation
2. VRC N1101.10.1.1 – The thickness of blown in or sprayed roof/ceiling insulation shall be written in inches on markers that are installed at least one for every 300 ft<sup>2</sup> throughout the attic space
3. VRC N1101.10.3 – Fenestration product rating- U-factor of fenestration products (windows, doors and skylights shall be determined in accordance with NFRC 100 by accredited, independent laboratory, and labeled and certified by the manufacturer. **(You must have each product label on during inspection)**
4. VRC 1101.11 – All materials, systems and equipment shall be installed in accordance with the manufacturer's installations instructions and the provisions of the Code
5. VRC 1103.1.1 – Programmable thermostat. The thermostat controlling the primary heating or cooling system shall be capable of controlling the system on a daily basis.
6. VRC 1104.1 – a minimum of 75 percent of the lamps in permanently installed lighting fixtures shall be high- efficacy lamps
7. VRC 303.4 – Dwelling units shall be provided with mechanical ventilation in accordance with section M1507.

**Ductwork**

**Ductwork Shall be Pressure Tested per N1103.3.3**

**King George County Air Distribution Worksheet**  
*Must be present at mechanical rough-in inspections*

**Air Distribution:** All ductwork shall be designed and installed per the Virginia Uniform Statewide Building Code. Separate Certification and air distribution forms are required for each zone of multiple zone houses.

Room/ Area	Area SF	Heating CFM	Cooling CFM	Quantity & Outlet size	Quantity & Feeder Duct Size	Heat Loss Btuh	Sensible Heat Gain Btuh	Return Air Duct	Return Air Grille
<b>Totals</b>									

**Mechanical Ventilation per M 1507**

- Outdoor air connected to return side of the air handler.
- Continuous Whole House Ventilation
- Intermittent Whole House Ventilation

I hereby certify as the  Architect/ engineer,  owner,  master tradesman, that the above information is accurate and in conformance with ACCA's Manual J, the ASHRAE Handbook of Fundamentals or other approved/ recognized standards.

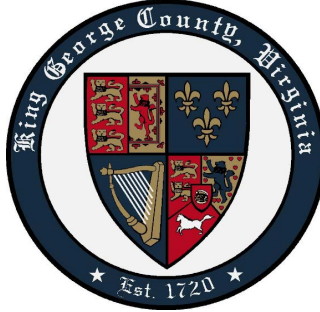
Name: \_\_\_\_\_ License #: \_\_\_\_\_

Company: \_\_\_\_\_ Telephone#: \_\_\_\_\_

Date \_\_\_\_\_

# King George County, Virginia

Department of  
Community Development  
10459 Courthouse Drive, Suite104  
King George, VA 22485



Rick Herron, CBO, Building Official  
(540)775-7111 (office)  
(540)775-3139 (fax)

## Duct Leakage Certification

Permit Number: \_\_\_\_\_ - \_\_\_\_\_

Date: \_\_\_\_\_

House Address: \_\_\_\_\_

Lot Lumber: \_\_\_\_\_

Conditioned Floor Area (ft) \_\_\_\_\_ Source: Plans      Estimated      Measured

### Reference: 2015 VRC Section N1103.3.3.

Duct tightness testing is not required. The ducts and the air handler are located within the building thermal envelope.

Air handler located in the conditioned space? YES \_\_\_ NO \_\_\_

Air Handler present during the test? YES \_\_\_ NO \_\_\_

### Mark all that apply

Rough-in, total duct leakage with air handler installed (floor area x.04)= \_\_\_\_\_ cfm@25 Pa

Rough-in, total duct leakage with air handler not installed (floor area x.03)= \_\_\_\_\_ cfm@25 Pa

Post Construction, total duct leakage (floor area x.04)= \_\_\_\_\_ cfm@25 Pa

Post Construction, leakage to outdoors (floor area x.04)= \_\_\_\_\_ cfm@25 Pa

Test result \_\_\_\_\_ cfm@25 Pa      Pass      Fail

**\*The Total leakage shall be less than or equal to 4 CFP 100' of conditioned space\***

Duct Tester Location \_\_\_\_\_ Pressure Tap Location \_\_\_\_\_

**I certify that these duct leakage rates are accurate and determined using standard testing protocol.**

Company Name: \_\_\_\_\_ Technician: \_\_\_\_\_

Technician Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Phone Number: \_\_\_\_\_ License Number: \_\_\_\_\_