Department of
Licenses and Inspections
CITY OF PHILADELPHIA

HVAC EQUIPMENT DESIGN FORM - MULTIFAMILY

Use this checklist for **Groups R-2, R-3, and R-4 three stories or less** in height above grade plane.

House Address: _____ Permit #: _____ Date: _____

Permit holder: _____ Phone: _____

Homes pursuing ENERGY STAR certification may attach a completed ENERGY STAR National HVAC Design Report in lieu of completing the remainder of this form. Otherwise, complete the following information.

Mandatory Items:

- ☐ **R403.1.1** Thermostats are programmable
- ☐ **R403.3.1** Ducts in unconditioned spaces ≥ 3" diameter insulated to ≥ R-8 in attics and ≥ R-6 elsewhere
- ☐ **R403.3.1** Ducts in unconditioned spaces < 3" diameter insulated to ≥ R-6 in attics and ≥ R-4.2 elsewhere
- ☐ **R403.2.2.1** Air handler has manufacturer's designation of ≤ 2% air leakage when tested per ASHRAE 193
- ☐ **R403.3.3** The *Duct and Envelope Testing* form will be submitted to the inspector
- ☐ **R403.3.5** Building cavities are not used as ducts (IBC-scope buildings only)
- ☐ **R403.4** HVAC pipe insulation is R-3 minimum (e.g. hydronic systems, refrigerant lines) and outdoor insulation is protected
- ☐ **R403.7** Manual J report, including heating and cooling design loads, is attached
- ☐ **R403.7** Heating and cooling equipment have been selected in accordance with Manual S, based on loads calculated in accordance with Manual J:

Equipment Sizing and Selection:

Design loads:	**Equipment specifications:**
Design cooling load _____ (Btu/h)	Cooling system output capacity _____ (Btu/h)
	Cooling equipment make (optional): _____
	Cooling equipment model (optional): _____
Design heating load: _____ (Btu/h)	Heating system output capacity: _____ (Btu/h)
	Heating equipment make (optional): _____
	Heating equipment model (optional): _____

- ☐ **Manual S.** Specified cooling equipment capacity is ≤ 1.15 times the design load or the next larger nominal size, whichever is greater. (Exception: Heat pumps may exceed the design load by 1.25 times or the next nominal size.)
- ☐ **Manual S.** Specified heating equipment capacity is ≤ 1.40 times the design load or the next larger nominal size, whichever is greater

- ☐ **IMC 403.3.2** Whole-house mechanical ventilation worksheet has been completed (see reverse)

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House Address:_____ Permit #:_____ Date:_____

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WHOLE-HOUSE MECHANICAL VENTILATION DESIGN WORKSHEET

1. Fill in the conditioned floor area and number of bedrooms for the dwelling:

Conditioned Floor Area = _____ ft^2 Number of bedrooms = _____

2. Determine the required outdoor airflow rater per IMC 403.3.2.1 Equation 4-9:

$$Q_{OA} = 0.01A_{floor} + 7.5(N_{br}+1)$$

Where:

Q_{OA} = outdoor airflow rate, cfm

A_{floor} = floor area, ft^2

N_{br} = number of bedrooms (but not less than one)

Show calculation below:

Q_{OA} = **_____ CFM**

3a. Does the fan operate continuously or intermittently? ☐ Continuous ☐ Intermittent

3b. If the fan is to be operated intermittently *on a pre-set schedule*, controls shall operate the fan for at least 1 hour of each 4-hour period and the airflow must be increased such that the average cfm over each 4-hour period is not less than the cfm prescribed by Equation 4-9. Describe control schedule below and fill in the design outdoor airflow rate:

Q_{OA} intermittent = _____ CFM

4. R403.6.1. Fan efficacy. Enter the following information regarding the specified fan:

Rated fan airflow = _____ CFM Fan make: _____

HVI-rated fan efficacy = _____ CFM/Watt Fan model: _____