Central Exhaust System
Duct Leakage Testing Protocols

January, 2025

ENERGY STAR for Residential New Construction

Introduction

Item 6.7 of the ENERGY STAR Multifamily New Construction National Rater Field Checklist, Version 1.1 / 1.2 / 1.3 requires duct leakage testing of central exhaust ductwork serving four or more dwelling units, and that the systems meet applicable leakage limits. This document provides testing protocols for this Item to ensure that the intent is consistently met.

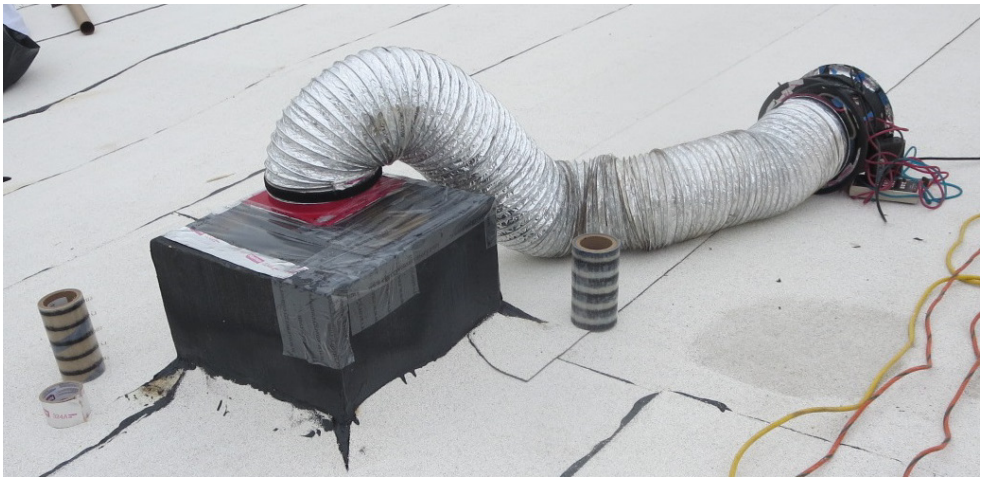

Figure 1: Photograph of a duct leakage tester set up at roof curb of exhaust riser.

Measuring Duct Leakage of a Central Exhaust System:

To measure duct leakage of central exhaust systems, follow these practices to ensure accurate testing:

- Follow the procedures outlined in the duct leakage tester operation manual for a single point total duct leakage reading in the main duct shaft using a calibrated fan. Unlike total duct leakage testing of typical ducted dwelling-unit mechanical systems, this test may be conducted at 50 Pascals or the design / operating pressure.
- The duct leakage tester is not required to be connected to a specific location in the shaft, however, typical central exhaust duct tightness tests are conducted from the roof with the duct leakage tester connected to the roof curb, as shown in **Figures 1, 2 and 3**. Often, a transition plate, such as cardboard, sheet metal, precut plastic, or similar is needed to effectively seal the duct tester to the roof curb opening.
- Follow the procedures in Section 5.2 of ANSI / RESNET / ICC 380 for preparing the building or dwelling unit and the duct system for testing.

- Follow the duct leakage tester equipment manufacturer's directions on proper operation of the testing device. For example, a manufacturer may specify that when conducting a central exhaust duct leakage depressurization test, the flow conditioner and one of the flow rings must always be installed.
- The static pressure probe shall be installed at least 5 ft. downstream of the duct leakage tester or in accordance with ANSI / RESNET / ICC 380 section 5.3.2.
- Report the CFM results of the single-point test and note the test pressure that was utilized for the testing.

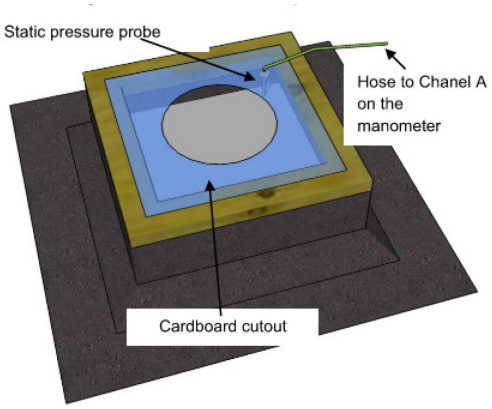

Figure 2: Diagram of a roof curb set up for duct leakage testing shown in isometric view.

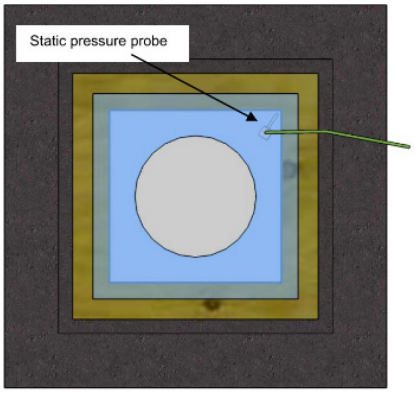

Figure 3: Diagram of a roof curb set up for duct leakage testing shown in top view.