



Setting the Standards for
Home Energy Efficiency



Results of RESNET Board Executive Committee Electronic Ballot on Authorizing Submission of Proposed Amendment on the ANSI/RESNET/ICC Standard 380 to the International Code Council for the 2018 IECC Final Hearing

July 18, 2016

Shall the RESNET Board Executive Committee authorize the submission of the public comment drafted by Eric Makela and edited by Philip Fairey on R403.3.3 Duct Testing (Attachment A) to the International Code Council for the consideration at the 2018 IECC Final Hearing?

Yes (4)

No (0)

Abstain (0)

Roy Honican
Lee O'Neal
Jim Petersen
Kelly Stephens

The proposed amendment to be considered at the 2018 IECC Final Hearing will be submitted to the ICC.

Attachment A

Duct Leakage Testing Public Comment - Draft

R403.3.3 Duct testing (Mandatory). Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380-2016 to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.
2. Post-construction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.

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

A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*.

R403.3.4 Duct Leakage (Prescriptive). The total leakage of the ducts, where measured in accordance with Section R403.3.3 shall be as follows:

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 m²) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the 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 m²) of conditioned floor area.
2. Post-construction 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 m²) of conditioned floor area.

RESNET	Residential Energy Services Network, Inc. P.O. Box 4561 Oceanside, CA 92052-4561
Standard reference number	Title
BRS/RESNET/ICC 380-2015	Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems. Republished January <u>June</u> 2016. Addendum A-2015 and Addendum B-2015.

Reason Statement

R403.3.3 Duct testing, currently provides no guidance for testing duct systems to determine if they meet the maximum duct leakage rate. The current code language sets a duct leakage metric and essentially leaves it up to those that are testing the system to determine how to arrive at the results. The lack of guidance can lead to inconsistent test results from house to house. This code change proposal solves this problem by requiring testing to conform to ANSI/RESNET/ICC Standard 380-2016 - Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems. This standard provides a standardized methodology that is currently in use throughout the industry. The methodology will provide consistent results that can be replicated by testing organizations and enforcement personnel.

This proposal was disapproved at the 2018 IECC Code Change Hearings for the following reasons:

1. Unenforceable language was found in Standard 380 during a review of the standard even after the ICC staff review reported: “Appears to be written in enforceable language. Does not appear to require proprietary materials or agencies. Promulgated according to a consensus procedure.”
2. It was felt that there should be more than one testing option available for compliance with the code, and
3. The standard did not address multi-family buildings.

Unenforceable Language. The RESNET Standards committee reviewed and addressed the few instances in question in the Standard. Standard 380 was republished in June, 2016 with the corrections.

Testing Options. Standard 380 includes a reference to Test Method A from ASTM E1554-13 as an alternative duct leakage test method. ASTM E1554-13 is for testing air distribution systems in low-rise residential and commercial buildings. This allows the user to follow either test method for duct leakage testing.

Multi-family Buildings. Section 2 Scope of Standard 380 states “The procedure for measuring the airtightness of heating and cooling air distribution systems is also *applicable to dwelling units in multifamily buildings*, where each dwelling unit has its own duct system separate from other dwelling units.”

It is very common for each dwelling unit to have its own duct system separate from other dwelling units in low-rise multi-family as they typically install a separate heating and cooling system for each apartment. The IECC has special provisions for HVAC systems serving multiple dwelling units. Section R403.8 requires that systems serving multiple dwelling units must comply with Section C403 Building Mechanical Systems. Section C403 contains requirements for Duct and Plenum insulation and Sealing (Section C403.2.9) which includes Duct Construction (Section C403.2.9.1).

ASTM E1554-13, which applies to low-rise residential and commercial buildings, can be used to test duct systems in the non-dwelling unit areas of multi-family buildings e.g. offices, lobbies, common areas, etc.

Why ANSI/RESNET/ICC Standard 380 Instead of Other Standards. ANSI/RESNET/ICC Standard 380 has been developed as an American National Standard under the auspices of ANSI to provide a consensus-based national standard for consistent measurement of several air-flow related residential building metrics. It builds on existing American National Standards to provide standard procedures essential to the evaluation of the energy performance of residential buildings energy. It also references ASTM Standard E1554-13 which allows 4 different test methods (A, B, C, and D) for performing duct leakage tests.