

DOCKETED

Docket Number:	15-BSTD-05
Project Title:	2016 Nonresidential Compliance Manual and Documents
TN #:	205933
Document Title:	Davor Novosel Comments: On Acceptance Test Requirements
Description:	N/A
Filer:	System
Organization:	Davor Novosel
Submitter Role:	Public
Submission Date:	8/31/2015 11:08:48 AM
Docketed Date:	8/31/2015

Comment Received From: Davor Novosel

Submitted On: 8/31/2015

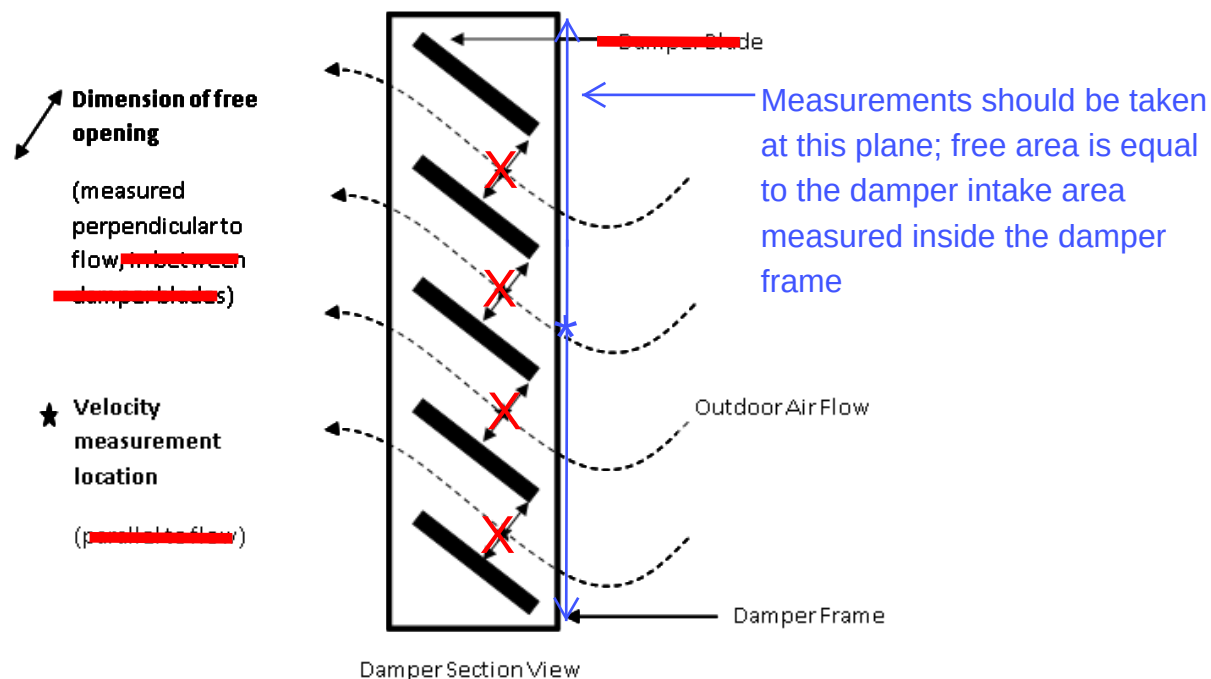
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This comment concerns Acceptance Test Requirements “NA7.5.1 Outdoor Air: Variable Air and Constant Volume Systems, 2016 Nonresidential Compliance Manual DRAFT, pages 13-38, 13-44 and 13-45. The proposed changes are indicated on the attached pdf-files excerpted from the said NRC Draft document.

Additional submitted attachment is included below.

- If ~~When taking~~ velocity measurements are taken at the plane of the intake between damper blades where flow is restricted (i.e. to achieve faster flows), free area ~~should shall~~ be measured as the actual open space between dampers and should not include frames or damper blades. See diagram below for illustration of free opening measurements.



- Hot wire anemometers are more appropriate than velocity pressure probes for measuring low speed flows (i.e. less than 250 feet per minute). When measuring flow with a hot wire anemometer, make sure to position the measurement device such that it is perpendicular to the flow direction of flow.
- Take multiple measurements and average results in order to minimize effects of fluctuations in system operation and environmental conditions (i.e. wind).

Your body can serve as an obstruction to air flow and ~~affect-effect~~ measurements. To increase measurement accuracy, position your body away from the intake and airflow of air.

Step 1: Disable demand control ventilation, if applicable.

Step 12: Verify unit is not in economizer mode. Disable the air economizer, if applicable.

For systems with an air economizer, disabling the economizer will prevent the outdoor air damper from modulating during the test due to atmospheric conditions rather than supply airflow variations. Disabling the economizer is necessary only if

air plenum). For systems where return air plenum is used to distribute outside air to a zonal heating or cooling unit, confirm that outside air supply is connected either:

- Within five ~~feet~~ of the unit
- Within 15 ~~feet~~ of the unit, with the air directed substantially toward the unit, and with a discharge velocity of at least 500 ~~feet~~ per minute.

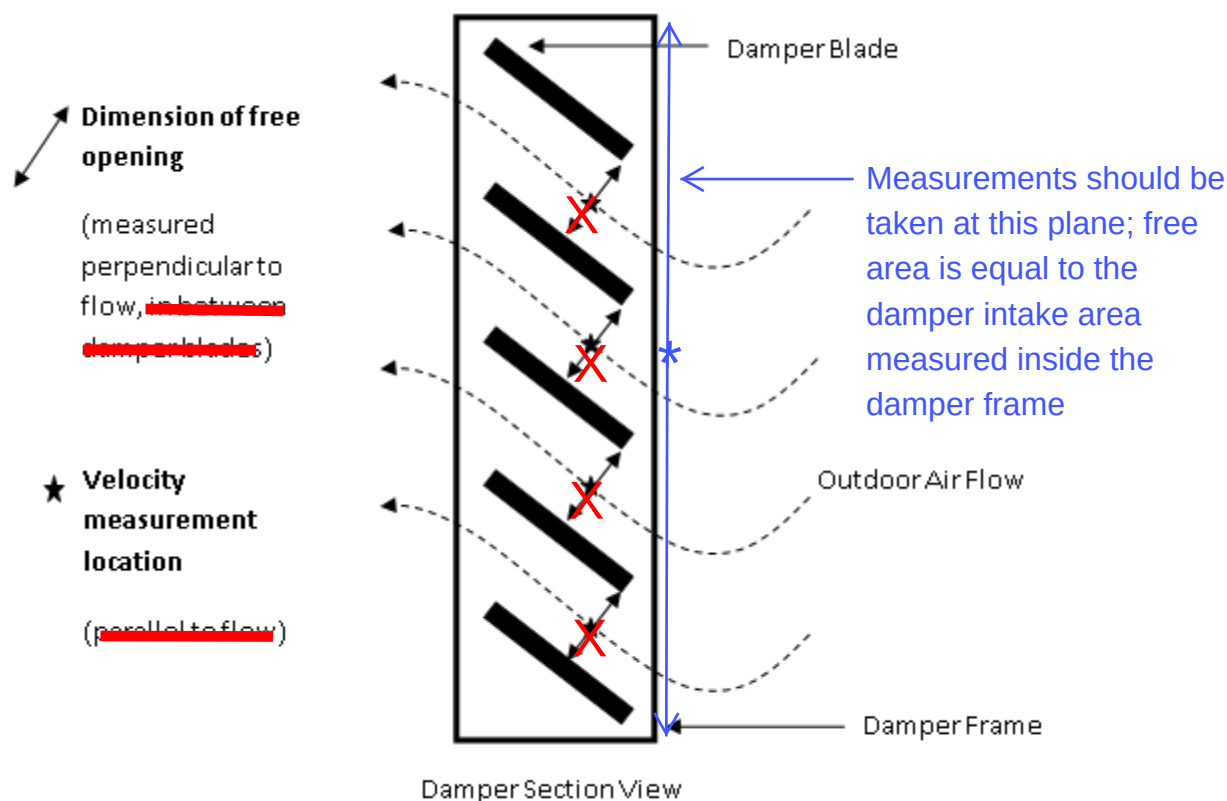
6. Confirm that pre-occupancy purge has been programmed into the system for the 1-hour period immediately before the building is normally occupied per ~~the Standards §120.1(c)2.~~ Confirmation This is most easily accomplished by scheduling the unit to start one hour prior to actual occupancy. The purge amount must be the lesser of the minimum outdoor air rate or three complete building air changes (ACH).

C. Functional Testing

Follow the best practice guidelines below in order to increase accuracy of outdoor air flow measurements:

- Traverse measurements taken in supply, return or outdoor air ducts should be located in an area of steady, laminar flow. ~~If~~ Where possible, take measurements at least six to eight duct diameters away from turbulence, air intakes, bends, or restrictions.
- ~~If~~ When using face velocity measurements to calculate outdoor air flow, care should be taken to accurately measure free area dimensions of intake.
- ~~If~~ When velocity measurements are taken ~~at the plane of the intake between damper blades where flow is restricted (i.e. to achieve faster flows), free area should be measured as the actual open space between dampers and should not include frames or damper blades.~~ See diagram below for illustration of free opening measurements.
- Hot wire anemometers are more appropriate than velocity pressure probes for measuring low speed flows (i.e. less than 250 feet per minute). When measuring flow with a hot wire anemometer, make sure to position the measurement device ~~such that it is perpendicular to flow direction of flow.~~
- Take multiple measurements and average results in order to minimize ~~affects~~ effects of fluctuations in system operation and environmental conditions (i.e. wind).

Your body can serve as an obstruction to air flow and ~~affect-effect~~ measurements. ~~To increase measurement accuracy,~~ Position your body away from the intake and flow of air.



Step 1: Disable demand control ventilation, when applicable.

Step 12: Disable the air economizer if when applicable and test at full supply airflow

~~If~~ When the system has an outdoor air economizer, force the economizer to the minimum position and stop outside air damper modulation.

For systems with an air economizer, disabling the economizer will prevent the outdoor air damper from modulating during the test due to atmospheric conditions rather than supply airflow variations. Disabling the economizer is necessary only if the system is in cooling mode and outdoor air temperature is below the economizer high limit setpoint. The economizer can be disabled in a number of ways depending on the control strategy used to modulate the outdoor air dampers:

1. Use the high-limit switch by reducing the setpoint (return air value or outdoor air value if a comparative or changeover strategy, respectively, is used) below the current OSA dry-bulb or enthalpy measurement
2. Disable the economizer damper control loop through software if it is a DDC system.

Verify and Document

- Document the measured outdoor air reading. Document the required outdoor airflow rate found on Mechanical Plan Check document NRCC-MCH-03-E Column M, or mechanical equipment schedules. In "Testing Calculation and