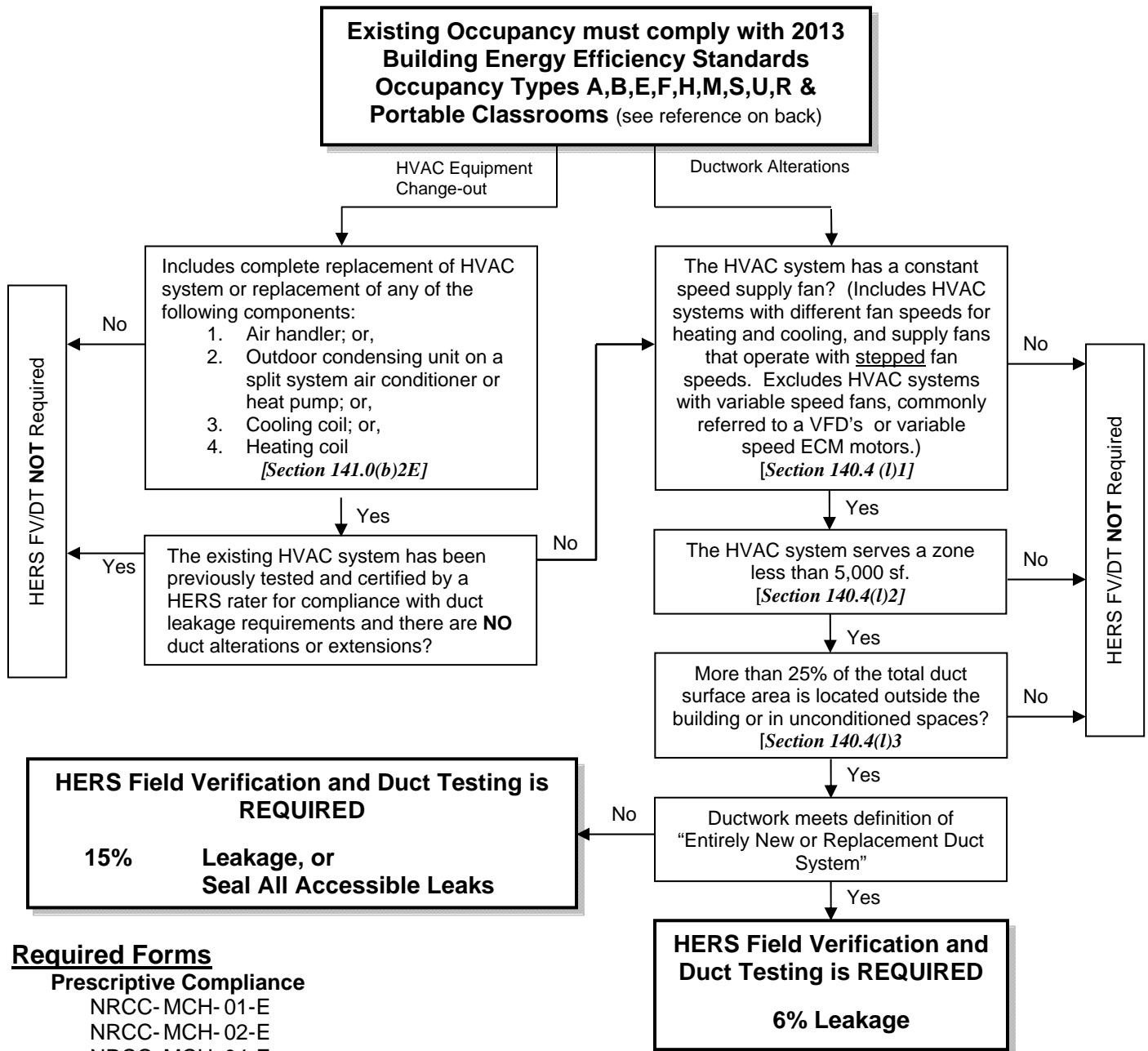


# Non-Residential HERS Duct Testing Flowchart Prescriptive Compliance Approach

## Change-outs / Alterations / Duct Extensions & Modifications



### Required Forms

#### Prescriptive Compliance

- NRCC- MCH- 01-E
- NRCC- MCH- 02-E
- NRCC- MCH- 04-E
- NRCI- MCH- 01-E
- NRCA- MCH- 04-H

#### Performance Compliance

- NRCC- PRF- 01- E
- (All forms listed above)



#### Exceptions:

1. When existing ductwork is constructed, insulated or sealed with asbestos. *[Section 141.0(b)2D or Section 141.0(b)2E exception 3]*
2. The building is altered such that the ductwork no longer meets the requirements of *Section 140.4(l) 1,2 & 3.*
3. When the existing system has been documented to previous comply with duct leakage verification and no cutwork is being altered. *[Section 140.4(b)2E]*
4. When the enforcing agency has determined that duct sealing and leakage testing will damage the historical fabric of a "Qualified Historic Building". *[Exception 1 to Section 100.0 (a)]*
5. The enforcing agency has determined the work is temporary and will be removed by a specific date listed on the permit. *[Exception 2 to Section 100.0 (a)]*

# Non-Residential Prescriptive Compliance Approach

## Change-outs / Alterations / Duct Extensions & Modifications

### Occupancy Types Covered by 2013 Building Energy Efficiency Standards

- "A" - Assembly, Theaters, Auditoriums
- "B" - Offices, Banks, Beauty Salons, Retail (excluding Department Stores & Shopping Centers)
- "E" - Educational Buildings (K-12)
- "F" - Factories
- "H" - Hazardous Uses
- "M" - Department Stores & Shopping Centers
- "S" - Storage
- "U" - Garage, Carports, Sheds
- "R" - Hotels, Motels, High-rise Residential, Long-term Care (Excludes private residences and apartments/condominiums in buildings less than 4 stories.

Portable Classrooms

#### Excludes the following:

1. "I" - Institutional, Hospitals, Prisons, etc.
2. Historic buildings where the Building Department Official or the California State Historic Building and Safety Board determine compliance would adversely impact the historic fabric of the facility, but does not include non-historic additions to historic buildings. *Exception 1 to Standards § 100.0 (a).*
3. Enforcement agencies, at their discretion, may exempt temporary buildings or structures erected in response to a natural disaster. Temporary buildings or structures shall be completely removed upon the expiration of the time limit stated in the permit. *Exception 2 to Standards § 100.0 (a).*
4. Mobile homes and modular building licensed and permitted by the State of California.

## 2013 Building Energy Efficiency Standards – Sections 141.0(b) 2D & E

- D. **Altered Duct Systems.** When new or replacement space-conditioning system ducts are installed to serve an existing building, the new ducts shall meet the requirements of Section 120.4. If the space conditioning system meets the criteria of Sections 140.4(1)1, 2, and 3, the duct system shall be sealed as confirmed through field verification and diagnostic testing in accordance with the procedures for duct sealing of an existing duct system as specified in Reference Nonresidential Appendix NA2, to meet one of the following requirements:

- i. If the new ducts form an entirely new or replacement duct system directly connected to the air handler, the measured duct leakage shall be equal to, or less than 6 percent of the system air handler airflow as confirmed by field verification and diagnostic testing utilizing the procedures in Reference Nonresidential Appendix Section NA2.1.4.2.1.

Entirely new or replacement duct systems installed as part of an alteration shall be constructed of at least 75 percent new duct material, and up to 25 percent may consist of reused parts from the building's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage.

- ii. If the new ducts are an extension of an existing duct system, the combined new and existing duct system shall meet one of the following requirements:
  - a. The measured duct leakage shall be equal to or less than 15 percent of the system air handler airflow as confirmed by field verification and diagnostic testing utilizing the procedures in Reference Nonresidential Appendix Section NA2.1.4.2.1; or
  - b. If it is not possible to comply with the duct leakage criterion in subsection 141.0(b)2Diia, then all accessible leaks shall be sealed and verified through a visual inspection and a smoke test performed by a certified HERS rater utilizing the methods specified in Reference Nonresidential Appendix NA2.1.4.2.2.

**EXCEPTION to Section 141.0(b)2Dii: Duct Sealing.** Existing duct systems that are extended, which are constructed, insulated or sealed with asbestos are exempt from the requirements of subsection 141.0(b)2Dii.

- E. **Altered Space-Conditioning Systems.** When a space-conditioning system is altered by the installation or replacement of space-conditioning system equipment (including replacement of the air handler, outdoor condensing unit of a split system air conditioner or heat pump, or cooling or heating coil):

- i. For all altered units where the existing thermostat does not comply with Reference Joint Appendix JA5, the existing thermostat shall be replaced with a thermostat that complies with Reference Joint Appendix JA5. All newly installed space-conditioning systems requiring a thermostat shall be equipped with a thermostat that complies with Reference Joint Appendix JA5; and
- ii. The duct system that is connected to the new or replaced space-conditioning system equipment shall be sealed, if the duct system meets the criteria of Sections 140.4(1)1, 2, and 3, as confirmed through field verification and diagnostic testing, in accordance with the applicable procedures for duct sealing of altered existing duct systems as specified in Reference Nonresidential Appendix NA2, and conforming to the applicable leakage compliance criteria in Section 141.0(b)2D.

**EXCEPTION 1 to Section 141.0(b)2E: Duct Sealing.** Buildings altered so that the duct system no longer meets the criteria of Sections 144 (1)1, 2, and 3 are exempt from the requirements of subsection 141.0(b)2E.

**EXCEPTION 2 to Section 141.0(b)2E: Duct Sealing.** Duct systems that are documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2 are exempt from the requirements of subsection 141.0(b)2E.

**EXCEPTION 3 to Section 141.0(b)2E: Duct Sealing.** Existing duct systems constructed, insulated or sealed with asbestos are exempt from the requirements of subsection 141.0(b)2E.

