

Public Review: Mitigation789 09-2020

Additional proposed harmonized updates to Sections 7, 8 and 9 for:

- SGM-SF 2017 *Soil Gas Mitigation Standards in Existing Homes*;
- RMS-MF 2018 *Radon Mitigation Standards for Multifamily Buildings*; and
- RMS-LB 2018 *Radon Mitigation Standards for Schools and Large Buildings*.

COMMENT DEADLINE: October 26th, 2020

REQUESTED PROCESS AND FORM FOR FORMAL PUBLIC REVIEW COMMENTS

Submittals (MS Word preferred) may be attached by email to StandardsAssist@gmail.com

- 1) Do not submit marked-up or highlighted copies of the entire document.
- 2) If a new provision is proposed, text of the proposed provision must be submitted in writing. If modification of a provision is proposed, the proposed text must be submitted utilizing the strikeout/underline format.
- 3) For substantiating statements: Be brief. Provide abstract of lengthy substantiation. (If appropriate, full text may be enclosed for project committee reference.)

REQUESTED FORMAT

Title of Public Review Draft: **Mitigation789 09-2020**

- **Name:** _____ **Affiliation:** _____
- **Clause or Subclause:** _____
- **Comment/Recommendation:** _____
- **Substantiating Statements:** _____
- Check here if your comment is supportive in nature and does not require substantive changes in the current proposal in order to resolve your comment.

Repeat the five bullet items above for each comment.

Requested registration of your contact information and copyright release.

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Commenters are responsible for informing the standards assistant staff a when changing contact information or other preferences.

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Introduction For Reviewers

Most proposed revisions for Sections 7, 8 and 9 were publicly reviewed recently regarding harmonized replacement of content for Sections 7, 8 and 9 in: SGM-SF 2017 Soil Gas Mitigation Standards in Existing Homes; RMS-MF 2018 Radon Mitigation Standards for Multifamily Buildings; and Radon Mitigation Standards for Schools and Large Buildings.

These standards are under review for harmonization in accordance with AARST’s continuous maintenance procedures.

As a result of public comments and additional work, the following additional improvements are proposed.

- 7.4.1.1 *Below the roof*
- 9.3 Electrical Requirements
- 9.4 Labeling

Currently published versions of these standards are available to review and purchase at www.standards.aarst.org.



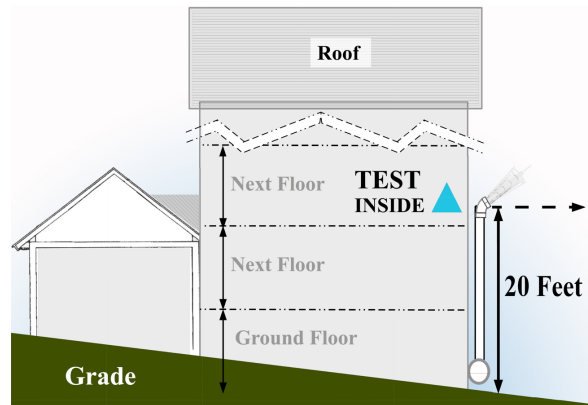
Introduction and rationale for changes in 7.4.11

The underlined sentence is an addition to 7.4.11 that addresses a public comment. With exhausts required to be pointed away from the building when below the roof, the engineering calculations result in the same distances required where exhausts are located above an operable opening. Clarity regarding such a situation had not been previously provided.

7.4.11 *Below the roof*

The *point of exhaust* shall be permitted to be located below the edge of the roof if the configuration complies with all other requirements of Section 7.4 and all of the following requirements are met:

- a) The justification for not locating the exhaust above the edge of the roof shall be recorded in the operations and maintenance plan and shall be based upon either:
 1. the inability to comply with other requirements of Section 7.4 if the *point of exhaust* were located above the roof, or
 2. the edge of the roof exceeds 20 feet (6m) above grade nearest to the *point of exhaust*;
- b) The *point of exhaust* shall be not less than 20 feet (6m) above grade nearest to the *point of exhaust*; ~~and~~
- c) not less than 4 feet (120 cm) directly below operable openings in structures; and
- d) Testing shall be conducted within the occupiable area that immediately adjoins the 45° *Directional spread* required in Section 7.4.3. This testing is required no later than in conjunction with the initial post-*mitigation* test and shall be recommended for inclusion in all future post-*mitigation* tests.



Introduction and rationale for changes in Section 9.3 (Electrical)

The proposed revision below replaces Section 9.3.

The advent of what manufacturers are calling “low-voltage” fans resulted in extensive meetings regarding health and safety for systems and electrical wiring that are to be permanent installations. A number of these code compatible provisions are to ensure that wiring and electrical power supplies are not installed with lax safety that may occur if applying electrical codes intended for temporary fan use applications.

9.3 Electrical Requirements

All electrical components shall be installed in compliance with electrical code requirements.¹ In addition, the electrical installation for *mitigation systems* shall comply with all provisions in this [Section 9.3](#).

9.3.1 *Secured in place*

All electrical wiring and electrical components shall be supported and firmly secured in place. ASD duct piping shall not be used as a chase for routing wire to a fan.

9.3.2 *Disconnect*

A means of electrical disconnect shall be provided in the line of sight within 6 feet (1.8 m) of each *mitigation system* fan. Disconnects shall be labeled in accordance with [Section 9.4.5](#).

Note—A lockout switch cover with a removable clasp or lock is commonly employed and permitted where a building owner is concerned about inadvertent deactivation of the fan.

9.3.3 *Outdoors*

All outdoor wiring for ASD fans shall be protected in conduit and shall not be plugged to exterior outlets or receptacles.

9.3.4 *Indoors*

Wiring and components inside the building shall be installed to meet requirements a), b), c) and d) of this [Section 9.3.4](#).

- a) All electrical wiring and components inside the building shall be located not lower than the majority of wall outlets that serve occupied spaces.
- b) 120 volt outlets used for plugged connections in finished areas and unfinished basements shall be provided a cover that inhibits accidental disconnection and allows lockout from access to plugs.
- c) Indoor wiring shall be protected on surfaces of unfinished basement walls and finished wall surfaces by:
 1. openable metallic or nonmetallic surface raceways, such as molded raceway products;
 2. metallic sheathed cable; or
 3. conduit.

Exception 1: Where cable or cords exit the raceway or conduit within 12 inches (300 mm) from the wiring device wall opening with no less than 6 inches (150 mm) of a cable end available to permit disconnection.

Exception 2: For portions of indoor wiring that do not operate in excess of 30 volts rms, 42 volts peak or 60 volts dc, and not in excess of 100 watts.

- d) Wiring and cables shall not be installed less than 1.25 inches (32 mm) from the nearest edge of any framing member or furring strip where screws and nails are likely to penetrate, unless protected by bushings, conduit or steel plates that are not less than 1/16th inch (1.6 mm) thick. Wire and cables passing through metal shall be protected with bushings or grommets.

9.3.5 *Fan upgrades*

If upgrading or replacing with a fan that requires higher or lower voltage than the fan originally installed, the upgrade shall include replacing all wiring, power supplies and other electronic components that are not compatible with the new fan model being installed.

¹ As required by local statutes. For further information, see the National Electric Code® (NEC) as published by the National Fire Protection Association (NFPA).

Introduction and rationale for changes in Section 9.4 (Labeling)

The proposed revision below replaces Section 9.4 with the exception of provisions relative to collateral mitigation as currently published in RMS-MF 2018 and RMS-LB 2018.

Comments from a previous public reviewer resulted in different primary labels when owner/occupants maintain the systems compared to when systems are maintained by people who are not occupants.

9.4 Labeling

9.4.1 Label materials and lettering

All labels shall be made of durable materials. All label lettering and other annotation on systems shall be of a color in contrast to the color of the background on which the lettering is applied. The minimum lettering size shall conform to requirements a) and b) of this **Section 9.4.1**.

- a) Label titles shall be with lettering of a height not less than 1/4 inch (6 mm).
- b) Additional informational text shall be with lettering of a height not less than 1/8 inch (3 mm).

9.4.2 Primary labels

A system description label shall be placed on a primary component of each system, such as on duct piping near an ASD fan monitor, or within 12 inches (30 cm) of the electric service panel or other prominent location. System monitor devices shall have a label on or in close proximity to the mechanism that describes how to interpret the monitor and actions to take if a monitor indicates fan failure or degraded fan performance.

9.4.2.1 Primary Label Information

The label title shall portray the system purpose, such as "Radon Reduction System" or "Soil Gas Control System." Information required on, or in immediate proximity to, the label(s) shall include content required in a) or b) of this **Section 9.4.2.1**.

a) Owner/Occupied Maintenance

For systems installed in individually owned and occupied dwellings or units where system maintenance and monitoring for continued effectiveness will be the responsibility of the owner, the primary label shall include:

1. The date of installation;
2. Maintenance and monitoring instructions, to include:
 - a. A description of the system monitors and actions to take if the system monitors indicate system degradation or failure, and
 - b. A recommendation to verify continued system effectiveness over time, such as
 - a recommendation to conduct a radon test at least every 2 years, or
 - other monitoring procedures as specified in an OM&M plan for radon or chemical vapor intrusion systems;
3. State and federal informational resources, to include websites or phone numbers; and

Fig. 9.3.2.1a Example

<p>RADON REDUCTION SYSTEM Installed: _____ WC" _____ Maintenance</p> <p>(1) Routinely Check Pressure Gauge The fan is active if oil level on the left is different from the right. If the fan appears to be off: ✓ Check hose connection on gauge ✓ Check electrical (switch or breaker) ✓ If still indicating a problem, Call for service.</p> <p>(2) Retest for radon every 2 years</p> <p>For Service: 1-800-RN2-2222 R. Smith RPP# 54321</p> <p>Health Department Contacts: www.epa.gov/radon; the radon hotline 1-800-SOS-RADON (Persons with hearing or speech difficulties should call 711.); or at www.epa.gov/radon/find-information-about-local-radon-zones-and-state-contact-information</p>

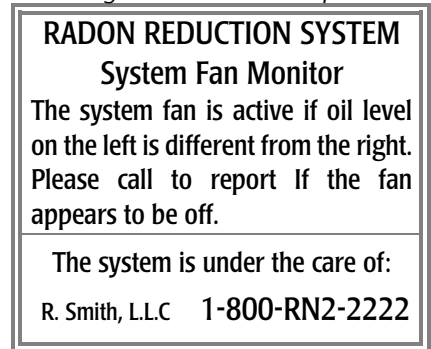
4. The installer's name, phone number and applicable certification/license identification.

b) Independent Maintenance

Where system maintenance and monitoring are the responsibility of someone other than the occupant:

1. Informational content on a primary label that is observable to building maintenance staff or occupants shall include:
 - a. A description of system monitor(s) or monitoring systems and, as applicable, actions to take if the system monitor indicates system degradation, and
 - b. The name and contact information of the party responsible for maintenance and repairs.
2. The client shall be advised in writing that it is the responsibility of the client to ensure the current party who owns maintenance obligations is identified on, or in immediate proximity to, this primary label.
3. The OM&M manual shall observe that it is incumbent upon current and future parties responsible for system maintenance and monitoring to keep this label up-to-date.

Fig. 9.3.2.1 b Example



9.4.3 System equipment

System equipment shall be marked or identified with a label title that portrays the system purpose, such as "Radon Reduction System" or "Soil Gas Control System." The labeling shall also comply with requirements in a), b) and c) of this Section 9.4.3.

a) Mechanical Equipment

ASD fans and other system air handling and mechanical equipment shall be labeled.

b) System monitors.

The system monitoring device(s) shall be provided a label in close proximity to the mechanism, such as a primary label or other label, that includes:

1. Information on how to interpret the monitor; and
2. What to do if a monitor indicates fan failure or degraded fan performance; and

c) System controls.

Where systems include controls for any mechanical equipment, including dampers, system controls shall have a label on or in close proximity to the control mechanism. General instructions for operation shall be provided.

9.4.4 Label duct piping

Interior duct piping shall be marked with not less than one label at each floor level to portray the system purpose, such as "Radon Reduction System" or "Soil Gas Control System."

Informative advisory—For ASD systems, duct piping labels **should** be affixed at intervals not greater than 10 feet (3 m) along the developed length of piping.

9.4.5 Label electrical disconnects

Disconnects such as switches or outlets providing power to plugged connections for *mitigation system* fans **shall** be labeled or marked to indicate their purpose. The label title **shall** identify that the disconnect as a component of a *radon* or, as applicable, *soil gas mitigation system*, such as “Radon Fan – Do Not Turn Off,” or “Radon Fan – Do Not Unplug.”

Informative advisory—The circuit breaker(s) protecting the *mitigation system* fan circuit(s) **should** also be labeled with the text such as “Radon Fan” or “Soil Gas Fan.”

9.4.6 Label sealed components

Certain components that are sealed to resist air movement between soil and indoor air shall be labeled in accordance with requirements in a), b), c) and d) of this **Section 9.4.6**.

a) Label Sump Covers

Sump lids shall be identified with a label that portrays the lid as a component of a *radon* or, as applicable, *soil gas mitigation system*. Instructions, such as “Component of a Radon Reduction System. Do not tamper with or disconnect” are recommended but not required.

b) Label *Crawl Spaces* or Membranes

Where *soil gas retarder* membranes have been installed, a label or marking **shall** be located in a conspicuous place or places such as at access panels or immediately visible once entering the *crawl space*, such as on membrane material near the access location. The label shall include:

1. A label title that states “Radon Reduction System” or “Soil Gas Control System” or otherwise indicates the presence of a *mitigation system* component; and
2. Instructions, such as “Do Not Alter. Damage or alteration to plastic membrane sheeting can negatively impact system performance”.

c) Label Access Locations into *Non-habitable Airspaces* and *Sealed Isolation Assemblies*

Where *mitigation* methods address air within a *non-habitable airspace* or other *sealed isolation assembly* that can be accessed, labels shall be provided in a conspicuous place on the outside of access ports, hatches and doors into the airspace or immediately visible once entering the airspace. The label shall include:

1. A label title that states “Radon Reduction System” or “Soil Gas Control System” or otherwise indicates a presence of a *mitigation system* component;
2. Instructions, such as “Keep closed. Leaving open can negatively impact building safety” or similar instructional wording; and
3. Essential health and safety guidance where there are known health and safety hazards, such as:
 - a. “Warning—Entry into this airspace can be hazardous. Precautions to ventilate this area are recommended”; and
 - b. Applicable descriptions of recommended personal safety procedures, such as the possible need for protective gloves, clothing, respirators or other personal safety equipment.