**DS 2025-041 – Initial Engineers P.A.**

**Issue:** The petitioner Alfonso Fernandez-Frage is seeking a declaratory statement regarding competing control operation requirements of sections 606.2 and 606.4 of the Florida Building Code ("FBC), Mechanical, 8th Edition (2023), and ASHRAE 15, as referenced in section 1101.6 of the FBC, Mechanical.

Petitioner presents the following question:

When the smoke detector and refrigerant leak detector are both activated, should the shut down requirement of 606.4 supersede the ASHRAE 15 run requirement?

**Background:**

According to the petitioner, the building in question is a doctor's office where a direct expansion air conditioning system with A2L refrigerant is required. The project's mechanical system is a high-probability system as defined in section 5.2.1 of ASHRAE 15.

**8th Edition (2023) Florida Building Code, Building**

**102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**102.4 Referenced codes and standards.** The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such referenced in Sections 102.4.1and 102.4.2.

> **102.4.1 Conflicts.** Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.
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> **102.4.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the Florida Codes listed in Section 101.4, the provisions of this code or the Florida Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

**8th Edition (2023) Florida Building Code, Mechanical**

**606.1 Controls required.** Air distribution systems shall be equipped with smoke detectors *listed* and *labeled* for installation in air distribution systems, as required by this section. Duct smoke detectors shall comply with UL 268A. Other smoke detectors shall comply with UL 268.

**606.2 Where required.** Smoke detectors shall be installed where indicated in Sections 606.2.1 through 606.2.3. To prevent the recirculation of dangerous quantities of smoke, a detector approved for air duct use shall be installed on the supply side of air-handling systems

> **606.2.1** To prevent the recirculation of dangerous quantities of smoke, a detector approved for air duct use shall be installed on the supply side of air-handling systems as required by NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating*

*Systems*. Smoke detectors listed for use in air distribution systems shall be located downstream of the air filters and ahead of any branch connections in air supply systems having the capacity greater than 2000 cubic feet per minute.

**Exception:** Smoke detectors are not required in the supply air system where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the *Florida Fire Prevention Code.* The area smoke detection system shall comply with Section 606.4.

**606.3 Installation.** Smoke detectors required by this section shall be installed in accordance with NFPA 72. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system. Smoke detectors shall not be required for fan units whose sole function is to remove air from the inside of the building to the outside of the building. Access shall be provided to smoke detectors for inspection and maintenance.

**606.4 Controls operation.** Upon activation, the smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of appliances used in the system. Air distribution systems that are part of a smoke control system shall switch to the smoke control mode upon activation of a detector.

**Florida Building Code, Mechanical, Section 1101.6 – General**

**Per 2024 Supplement to the 8th Edition (2023) Florida Building Code. (Supplement 5)**

**1101.6 General.** Refrigeration systems shall comply with the requirements of this code and, except as modified by this code, ASHRAE 15. Ammonia-refrigerating systems shall comply with this code and, except as modified by this code, ASHRAE 15 and IIAR 2.

Exception: Refrigeration systems that use A2L refrigerant shall be designed and installed in accordance with ASHRAE 15.

**ASHRAE 15 – 2022**

**7.6 Group A2L Refrigerants for Human Comfort.** *High-probability systems* using Group A2L *refrigerants* for human comfort applications *shall* comply with this section.

**7.6.1 Refrigerant Quantity Limits.** The maximum *refrigerant* charge of any *independent circuit* of each refrigeration system *shall* be as *specified* in Sections 7.6.1.1 and 7.6.1.2.

**7.6.1.1* Refrigeration Systems with Air Circulation.** Where a *high-probability system* for human comfort using Group A2L *refrigerants* has either

a. *air circulation* initiated by a *refrigerant detector* in compliance with Section 7.6.2.4 or
b. continuous *air circulation*,

the *refrigerant* charge quantity *shall* be limited per Equation 7-8. Control of continuous *air circulation shall* be performed by the *listed* equipment and *shall* operate continuously other than short periods for maintenance and service:

**7.6.2.4*** The *refrigerant detection system shall* comply with the following:

a. Utilize a set point, nonadjustable in the field, to generate an output signal to initiate *mitigation actions.*
b. Field recalibration of the *refrigerant detection system shall not* be permitted.
c. Be capable of detecting the presence of a *specified refrigerant* corresponding to the *refrigerant designation* of the *refrigerant* contained in the refrigeration system.
d. Have access for replacement of *refrigerant detection system* components.
e. Have self-diagnostics to determine operational status of the sensing element.
f. Energize *air circulation* fans of the equipment upon failure of a self-diagnostic check.
g. Generate an output signal in not more than 30 seconds when exposed to a *refrigerant* concentration of
25% *LFL* (+0%, –1%).

**5.2 Refrigeration System Classification.** For the purpose of applying the data shown in ASHRAE Standard 34 3, Table 4-1 or 4-2, a *refrigerating system shall* be classified according to the degree of probability that a leakage of *refrigerant* will enter an *occupancy*-classified area as follows.

**5.2.1 High-Probability System.** A high-probability system is any system in which the basic design or the location of components is such that a leakage of *refrigerant* from a failed connection, seal, or component will enter the *occupied space*. Typical high-probability systems are (a) *direct systems* or (b) *indirect open spray systems* in which the *refrigerant* is capable of producing pressure greater than the *secondary coolant*

**ASHRAE 15-2022, Section 7.6.4**

**7.6.4* Mechanical Ventilation.** Mechanical ventilation for *refrigerant* safety mitigation *shall* comply with this section. Where a *ventilated enclosure* is provided to control a *refrigerant* leak, the refrigeration system and *ventilated enclosure shall* be *listed* and installed in accordance with UL 60335-2-40 [5]/CSA C22.2
No. 60335-2-40 [6] and *shall not* be required to comply with this section.

a. Mechanical ventilation *shall* be provided that will remove leaked *refrigerant* from the space where *refrigerant* leaking from the refrigeration system is expected to accumulate. The space *shall* be provided with an exhaust or transfer fan. Fans used to *exhaust air* from the space or transfer air to a separate indoor space
*shall* comply with Equation 7-10:

b.* Mechanical ventilation *shall* be permitted to be continuous or activated by a *refrigerant detector*. Building fire and smoke systems *shall* be permitted to override this function.

**1. Continuous Ventilation.** Where continuous ventilation is provided, ventilation function *shall* be continuously verified per Section 7.6.4(b)(3).

**2. Refrigerant Detector Activated Ventilation.** Where ventilation is activated by a *refrigerant detector*, the *refrigerant detector shall* be in accordance with Section 7.6.2.4. Upon *refrigerant detector* activation, the mechanical ventilation *shall* be activated and *shall* continue to operate for at least 5 minutes after the *refrigerant detector* has sensed a drop in the *refrigerant* concentration below the set point value. For mechanical ventilation systems used solely for *refrigerant* safety mitigation, ventilation function of *refrigerant detector* activated ventilation *shall* be verified in accordance with Section 7.6.4(b)(3) by a monthly self test.

**3. Verification of Ventilation Function.** Ventilation function *shall* be verified by a method that confirms operation of the required fans. On detection of a ventilation system failure, *compressor* operation *shall* be stopped and a notification *shall* be provided. The notification *shall* be to an operator workstation through a building automation system or by a local audible alarm.

**Staff Analysis:**

**Question:**

When the smoke detector and the refrigerant leak detector are both activated, should the 606.4 shut down requirement supersede the ASHRAE run requirement?

**Answer:**

**Option #1/Petitioner:**

I believe the answer to the question is that 606.4 supersedes ASHRAE 15. The condition being ameliorated by 606.4 suggests that a fire is already present, whereas ASHRAE 15's requirements are attempts to prevent fire or mitigate its spread. The code mandate that deals with an extant fire should take precedence over the mandate that's intended to prevent fire.

**Option #2/Staff:**

The answer to the Petitioner's question is yes. Pursuant to section 102.4.1 of the Florida Building Code, Building, 8th Edition (2023), where conflicts occur between provisions of the FBC and referenced codes and standards, the provisions of the Florida Building Code shall apply. Therefore, for the project in question, when the smoke detector and the refrigerant leak detector are both activated, the shut down requirement of section 606.4 of the Florida Building Code, Mechanical, 8th Edition (2023) supersedes that of the ASHRAE 15 run requirement.