

2.05 Fire/Smoke Damper Submittal Guidelines for New Buildings and Tenant Improvements (2019)

Reference: 2019 SFBC, § 717; Department of Building Inspection, AB-047; 2019 SFMC, § 608

Purpose: The SFBC specifies the smoke detector requirements for combination fire/smoke and/or smoke damper (FSD/SD) actuation. Depending on building design, the sequence of operation for those dampers can vary greatly. In order to facilitate the testing of these devices, the Fire Department requires the following information to be submitted on both the mechanical and fire alarm plans. Buildings with a Smoke Control System or Smoke Management System shall comply with applicable Building and Fire Department Administrative Bulletins for Smoke Control Systems.

For “Non-Infringement Statements”, refer to DBI AB-047.

Any time a new fire/smoke damper is shown, the following information shall be provided for each individual FSD/SD or group of FSD/SD sharing the same specification in matrix format as shown in Figure 1 on Page 3 of this administrative bulletin. Each row of the FSD/SD matrix shall correspond to each individual FSD/SD designation (or group designation). Each column of the matrix shall include the the following information:

1. Location of smoke detectors or duct detectors for (FSD/SD) actuation and a description of which method is being utilized per the SFBC, § 717.3.3.2;
2. Indicate whether the FSD/SD is utilized as part of a Smoke Control System or Smoke Management System;
3. Provide information on whether the damper is normally closed or normally open, and description of how protection is provided when the power fails to the damper (i.e. fails closed).
4. Duct and plenum detectors must be listed for the air velocity, temperature, and humidity anticipated at the point where it is installed. The Mechanical Engineer of Record shall identify airflow, velocity, max/min temperatures, and humidity at the location where in-duct or plenum smoke detectors are installed.
5. Operating temperature of the fire-damper or fire/smoke damper actuating device;
6. Indication when an override switch and position monitoring is provided in the Fire Command Center (FCC) on the Fire Fighter Smoke Control Panel (FFSCP);

7. Description of how protection is provided when the building fan systems are shut down (i.e. Building Management Systems) if duct detectors are used to activate smoke dampers (i.e. dampers are arranged to close when fans are shut down);
8. The manufacturer and model number of each FSD/SD;

Please note that the requirements as stipulated by this administrative bulletin are in addition to the requirements of SFDBI AB-047. Separately from the FSD/SD Matrix required by this administrative bulletin, the designer of record shall also provide a Smoke Control Sequence of Operation Matrix that details the FSD/SD position as well as Fan status and flowrate for all FSD/SD's and Fans utilized as part of the Smoke Control System or Smoke Management System.

In addition to the above requirements, FSD/SD's shall be accessible for inspection and servicing. Concealed detectors that are used to activate dampers must have a remote alarm indicator complying with 2016 NFPA 72, §23.8.5 and §17.4.7. Access panels that penetrate fire-resistance rated construction shall be listed fire door assemblies complying with SFBC §716.

Figure 1 – Example Fire/Smoke Damper Information Matrix (next page):

Example -- Fire/Smoke Damper Information Matrix

Designation ^a	Location (Floor/Room) ^b	Associated Fan or HVAC System ^c	Manufacturer & Model # ^d	Smoke Control ^e	Normal Position ^f	Interlocked ^g	Fail-Safe Operation ^h	Method of Actuation ⁱ	Air Velocity ^j	Air Temperature ^k	Humidity ^l	Actuation Temperature ^m	Manual Control ⁿ	Position Monitoring ^o
FSD1-1	1st Flr/Corridor	AHU-1	Greenheck FSD-211	no	open	Yes	Yes	717.3.2.2(1)	500 FPM	68°F	65% to 75%	160°F	No	No
FSD1-2	1st Flr/Trash	EF-1	Ruskin FSD60	no	open	Yes	Yes	717.3.2.2(3)	1,000 FPM	68°F	65% to 75%	160°F	No	No
FSD1-3	1st Flr/Office	EF-2	Ruskin FSD35	no	open	Yes	Yes	717.3.2.2(3)	1,500 FPM	68°F	65% to 75%	160°F	No	No
FSD2-1	2nd Flr/Corridor	AHU-1	Greenheck FSD-211	no	open	Yes	Yes	717.3.2.2(4)	500 FPM	68°F	65% to 75%	160°F	No	No
FSD2-2	2nd Flr/Trash	EF-1	Ruskin FSD60	no	open	Yes	Yes	717.3.2.2(1)	1,000 FPM	68°F	65% to 75%	160°F	No	No
FSD2-3	2nd Flr/Unit #A	SF-1	Ruskin FSD35	no	open	Yes	Yes	717.3.2.2(1)	1,500 FPM	68°F	65% to 75%	160°F	No	No
FSD3-1	3rd Flr/Corridor	AHU-1	Greenheck FSD-211	no	open	Yes	Yes	717.3.2.2(4)	500 FPM	68°F	65% to 75%	160°F	No	No
FSD3-2	3rd Flr/Trash	EF-1	Ruskin FSD60	no	open	Yes	Yes	717.3.2.2(1)	1,000 FPM	68°F	65% to 75%	160°F	No	No
FSD3-3	2nd Flr/Unit #B	SF-1	Ruskin FSD35	no	open	Yes	Yes	717.3.2.2(1)	1,500 FPM	68°F	65% to 75%	160°F	No	No

Footnotes:

- a.) Use a unique designation for each damper or group of dampers with differing characteristics in this column. Damper designations should correspond with callouts shown on HVAC duct plans.
- b.) If utilized as part of a mechanical Smoke Control or Smoke Management System indicate "Yes" in this column. Otherwise, indicate "No" if damper is passive, and activated only by local smoke detection complying with SFBC 717.3.3.2. Any damper that has a required position as part of the building smoke control sequence of operation should indicate "Yes" under this column.
- c.) Indicate associated air handling unit or fan in this column.
- d.) Indicate the manufacturer and model number of the FSD/SD in this column. The manufacturers and model numbers shown above are examples only, and the designer of record may select any manufacturer and model number provided that the selected damper is listed per UL 555/555S and compliant with SFBC §717.
- e.) If the FSD/SD is utilized as part of a Smoke Control System or Smoke Management System, then enter "Yes" in this column. If the FSD/SD is passive, and actuates only upon local smoke detection complying with SFBC §717.3.3.2, then enter a "No" in this column.
- f.) Indicate the normal position (non-fire-event) as "open" or "closed" in this column.
- g.) Indicate "Yes" in this column if the FSD/SD is interlocked with the associated fan or HVAC system to close upon shut-down or loss of power to the associated fan or HVAC system. If not, then enter "No" in this column. Generally, FSD/SD's installed in a ducted system would be associated with some fan or air handler, and should be interlocked. FSD/SD's located in air transfer openings would not need to be interlocked.
- h.) Generally, FSD/SD's should be arranged to fail-closed upon loss of power. Indicate a "Yes" in this column if this is the case or a "No" if the FSD/SD fails-open upon loss of power. If the FSD/SD is arranged to fail-open, then further explanation/justification shall be required. Generally, the only situation where it may be acceptable for an FSD/SD to fail-open is if the FSD/SD is utilized as part of an engineered Smoke Control System or Smoke Management System, and this arrangement is justified by the Smoke Control Report and associated Rational Analysis complying with SFBC §909 and SFDBI AB-047.
- i.) Indicate the method of smoke damper actuation. This shall be one of the five (5) methods stipulated under SFBC §717.3.3.2. Please note that FSD/SD's that are utilized as part of an engineered Smoke Control System or Smoke Management System are permitted to be actuated closed by **additional** other methods as determined by the Smoke Control Report, but all FSD/SD's are still required to be actuated by one of the approved methods stipulated under SFBC §717.3.3.2.
- j.) In this column, indicate the maximum anticipated air flow velocity or range of air flow velocities in feet per minute (FPM) anticipated at the location of the damper. The FSD/SD and associated smoke detector installed in accordance with SFBC §717.3.3.2 shall be listed for the anticipated air flow velocities.
- k.) In this column, indicate the maximum anticipated air temperature or range of air temperatures in degrees-Fahrenheit anticipated at the location of the damper.
- l.) In this column, indicated the anticipated range of relative humidity anticipated at the location of the damper.
- m.) In this column, indicate the actuation temperature of the FSD/SD fusible link or temperature sensing device (Firestat). This temperature shall comply with SFBC §717.3.3.1.
- n.) Indicate "Yes" if manual control is provided for the FSD/SD. This is generally only required by SFBC §909.16.2(2) where the FSD/SD is part of an engineered Smoke Control System or Smoke Management System. Not all dampers in a building that is equipped with a Smoke Control System or Smoke Management System will be required to have manual control, and this would be determined by the Smoke Control Report.
- o.) Indicate "Yes" if position of the FSD/SD is monitored by limit or proximity switches as required for dampers that are utilized as part of an engineered Smoke Control System or Smoke Management System per SFBC §909.12.1.