



CLARK COUNTY FIRE DEPARTMENT
Fire Prevention Bureau
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Permit Type: 105.7.23
Control Number: E.0
Effective Date: 12/15/11

TITLE: SMOKE CONTROL PANEL

SCOPE: Clark County Fire Department requirements for the submittal and design of a Fire Fighter Smoke Control Panel. Note that smoke control and smoke removal systems can share panel(s).

For new work in existing buildings, see the "New Work in Existing Buildings" guideline.

PURPOSE: To standardize plan/permit requirements of the Fire Department in accordance with the Clark County Fire Code. Permits are valid through the duration of construction. Work must commence within 180 days, and remain active with no period of inactivity exceeding 180 days, or the permit becomes invalid.

DEFINITIONS:

Assessor's Parcel Number (APN): A unique number assigned to each property by the Clark County Assessor's office.

CCDS: CCDS is an acronym for Clark County Development Services.

Fire Fighter Smoke Control Panel: A Fire Fighter Smoke Control Panel (FFSCP), also known as a smoke control annunciator, is a panel that provides fire fighters with the ability to manually control or override automatic control of mechanical smoke control systems.

Narrative: The narrative shall describe the sequence and operation for all LED's and switches. It shall describe the initial and override sequences for all switches shown on the graphic panel. The narrative shall be formatted as an instruction sheet. A copy of the approved narrative shall be laminated and attached onto or next to the FFSCP for use by the Fire Department in an emergency.

PERMIT FEES:

Permit fees shall be assessed in accordance with the Permit Fee Schedule as adopted in the Clark County Fire Code. For applications that are expedited, additional fees shall apply.

SPECIFICATIONS AND SUBMITTAL REQUIREMENTS:

An application must be completed for each submittal. A minimum of three sets of plans, three sets of specifications and three copies of the required narrative (see below for the narrative definition) shall be submitted with the permit application. A copy of the CCDS-approved smoke control diagrams shall be submitted as well. The plans shall be drawn to an indicated scale. Plans shall show compliance in accordance with Chapter 9 of the Clark County Fire Code as adopted and amended. On the plans, indicate the project name, address, and APN (Assessor's Parcel Number). All submittals must be legible and readable or the plan shall be issued a correction letter for cause.

Fire Fighter Smoke Control Panels are required to be installed for facilities that are required to have mechanical smoke control systems per the International Building Code. The FFSCP shall be located within the Fire Command Center, or other location as approved by the fire code official.

The FFSCP shall provide graphics depicting the facility protection and smoke control fan locations. The panel shall provide control switches to allow manual override and control of smoke control systems within the facility. Light Emitting Diodes (LED) shall be provided on the panel for the purposes of annunciation of smoke control systems, smoke control fans, smoke control dampers, and additional items as described.

The building layout must be graphically represented to clearly indicate location and boundaries of smoke zones with respect to adjacent areas. All walls and doors comprising the egress system for all smoke control zones must be shown on the graphics layout. The majority of graphics will need to be shown on a plan view. An exception is allowed for high-rise buildings having common floor plans and one smoke zone per high-rise floor, where a section view of the tower can be allowed in conjunction with plan views of typical tower floors.

FFSCP Panel Requirements:

1. Show a north directional arrow.
2. Show a building layout at an indicated scale on a contrasting background; black and white are acceptable colors for the graphic outlines and for the panel background.
3. The maximum height of any portion of the panel shall be 7'-0" above the finished floor and the minimum height of any portion of the panel shall be 2'-6" from the floor.
4. Include a panel title block, indicating the facility name and address, and the title: "Fire Fighter Smoke Control Panel."

5. Label each smoke zone area; the label shall include the floor level, i.e., SZ 16-1 shall be the first smoke zone on the 16th floor. Note: when the floor level above grade is different than the floor designation, provide both numbers; ie if the 3rd level above grade is designated as level 15 in the elevators; provide both designations on the panel.
6. Designate between active and passive smoke zones by shading/background.
7. Show all floor and roof levels for all areas.
8. Label the locations of the Fire Command Center, Fire Pump, Emergency Generators, elevators providing access to all floor and roof levels, stairs providing access to all floor and roof levels, and Secondary Response Point.
9. Show the location of all fan units providing smoke control function (both automatic and mop-up fans) and clearly indicate the direction of airflow from each smoke zone to the fan unit protecting that zone. Labels must be provided for each fan and for each opening associated with a fan. Therefore, if there is a fan on the building roof that serves the first level by exhausting air through an opening on the first level, the fan unit, clearly labeled, must be shown on the roof graphic, and the exhaust opening must be shown on the first level, clearly labeled as an exhaust opening associated with the fan.
10. Label fans with a Hand/Auto switch allowing for manual control at the unit.
11. Contain LED's as required. LED annunciation is required for each smoke zone (including passive zones utilizing only dampers), each smoke control fan, each group of smoke control dampers/doors, each stair pressurization fan, each elevator pressurization fan, each mop-up system, for "Abnormal Switch Position", and for power. For smoke fans and pressurization fans, the associated LED shall be close to the graphical representation of the fan.
12. Contain switches for manual control/override of each smoke zone (including passive zones utilizing only dampers), each stair pressurization system, each elevator pressurization system, each mop-up system, and each elevator hoist way vent damper.
13. Contain a button for lamp test.
14. Provide a legend for all symbols, including fans, supply/exhaust openings, etc, and for the LED's provided on the panel.

Control Switches and Buttons:

Manual control switches must be provided at the panel. The switches shall allow for manual activation of smoke control sequences and override of active smoke control sequences. Control switches shall be provided for each individual active and passive smoke zone, for each stair and elevator pressurization system, for mop-up systems, and for elevator hoist way vents.

Control switches shall be adjacent to LED's associated with each switch. Switches shall be three-position, even for dual-mode smoke zones. Each physical position of the control switch shall be labeled, utilizing "smoke mode-auto-off" labels for smoke zones, "press-auto-off" labels for pressurization systems, "manual purge-auto-off" labels for mop-up systems, and "open-auto-close" labels for elevator hoist way vents. Switches shall be located on the FFSCP reasonably close to the graphical depiction of the associated area/component. There is no requirement for a separate control switch for a smoke control fan or smoke fire dampers that are part of an automatic sequence.

Control switches shall be provided for:

- **Each smoke zone:** The switch for the smoke zone is required to have "smoke mode-auto-off" positions labeled. In "smoke mode" the switch is required to activate all smoke control components, including fans, dampers, and doors, that are required to automatically activate to provide the smoke control function, as dictated on the smoke control diagrams. In the "off" position, the switch is required to move all fans and dampers to a "passive" mode by shutting down all fans and closing all dampers serving that zone. This switch in the "off" position shall not inhibit any stair pressurization or elevator pressurization systems from activating again under a separate scenario. In the "auto" position, the FACP function is allowed to dictate the status of the smoke control system.
- **Each pressurization system:** A switch is required to provide manual control of the fan(s) providing air supply to pressurize an enclosure, such as an egress stair and an elevator machine room. The switch for each pressurization system is required to have "press-auto-off" positions labeled. In "press", the switch will activate all pressurization fans required for the pressurized enclosure. This switch in "press" will override automatic controls, including duct detector shut down of the fan. In the "off" position, the fan must be released from all initiation commands from the FACP; no other activation of a smoke control system by the FACP will override the "off" position and turn the fan back on. In the "auto" position, the FACP function will dictate the fan function.

- **Each mop-up system:** The switch for each mop-up system that is only manually activated for mop-up purpose is required to have “manual purge–auto–off” positions labeled. In “manual purge” the switch will activate fans and dampers that are required to configure to achieve the exhaust mode. In the “auto” position, the normal building function will dictate the functioning of all fans and dampers. In the “off” position the switch is required to move all fans and dampers to a passive mode by shutting down all fans and closing all dampers serving that zone.
- **Each elevator hoist way vent:** the switch for each elevator hoist way vent is required to have “open–auto–close” positions labeled. In “open” the switch will open the elevator hoist way vent dampers. In the “auto” position, the FACP will dictate the status of the vent dampers, with respect to the lobby smoke detectors associated with the hoist way. In the “close” position the switch is required to move the damper to a passive mode by closing the damper.

LED Operation:

Status of smoke control systems and components are required to be indicated on the Fire Fighter Smoke Control Panel. Status shall be provided for general conditions, each individual smoke zone, each smoke control fan, each pressurization fan, and all dampers/doors. Status shall be indicated using LED’s. Acceptable LED colors are red, yellow, green, and blue. Red-yellow-green LED sets shall be provided for each smoke zone, smoke control fan (including mop-up fans), damper/group of dampers, and each pressurization fan. Dual-mode zones and fans shall be provided with red-yellow-green-blue LED sets.

- There shall be a yellow indicator light that will illuminate when any switch on the FFSCP has been turned from “auto” or set to any position that will override automatic function of a smoke control system or component. The label adjacent to the yellow LED shall state “Abnormal Switch Position.”
- There shall be a green indicator light that will illuminate to indicate that the FFSCP is powered. The label adjacent to this green LED shall state “Power On.”
- A legend of LED’s shall be provided, and the LED legend shall be continuously lit. The legend shall indicate the following colors and labels:
 - Red LED – Smoke Mode
 - Yellow LED – Trouble
 - Green LED – Normal
 - Blue LED – Ancillary Smoke Mode (only for dual mode fans and zones)

- The various LED's shall operate as follows:
 - **Red Only:** Shall be illuminated when the FACP or the associated manual switch is activating the smoke control zone and/or components and all components required to activate have been monitored to be in the required position/operation for that scenario.
 - **Green Only:** Shall be illuminated to indicate normal mode when there is no initiation by the FACP or associated manual switch for the smoke zone and components and all required status for smoke control components indicate that the components are ready for operation.
 - **Blue Only:** Shall be illuminated when the FACP or the associated manual switch is initiating the smoke control zone and/or components into its ancillary smoke control mode and the monitoring for the fan and dampers required to achieve the ancillary smoke control mode indicates that the system is operating in its required mode. An ancillary smoke control mode means that the smoke zone served by the smoke control system is not in alarm, but the system must configure to support smoke control for another smoke zone that is in alarm.
 - **Yellow Only:** There shall be no situation where only a yellow LED is illuminated. The yellow LED shall only illuminate in conjunction with a blue LED, red LED or green LED.
 - **Red and Yellow:** A combination of the red and yellow LED's shall illuminate to indicate that the smoke zone and/or component is being initiated by the FACP or the associated manual switch, and positive status indicating proper configuration of smoke zone components has not been received.
 - **Green and Yellow:** A combination of green and yellow LED's shall illuminate when a smoke zone is not initiated and the smoke control components do not report normal operating status. For instance, this may occur when a damper is closed due to loss of power, or there is a loss of power required for a smoke control fan.
 - **Blue and Yellow:** A combination of the blue and yellow LED's shall illuminate to indicate that an auxiliary smoke control sequence is being initiated by the FACP or the associated manual switch, and positive status indicating proper configuration of components for the ancillary smoke control mode has not been received.

- Smoke control sequences shall be programmed such that operation of fans and dampers associated with the smoke control system does not result in physical damage in any smoke control system components.
 - **Multiple configurations:** In no case is the smoke control system required to configure for more than one smoke zone at the same time.
 - **Operation and timing:** Upon automatic activation of a device programmed to initiate a smoke control system, the smoke control system shall automatically configure all smoke control components in a manner to avoid damage to all components. All components shall be configured to smoke control status and annunciation of status shall be indicated on the FFSCP within 90 seconds of the initiating alarm being received at the FACU.
 - **Automatic activation:** Under automatic-only activation, the smoke control system shall configure components in the zone where the first device that initiates smoke control is activated.
 - **Manual activation:** Under manual-only activation, the smoke control system shall configure components to their proper smoke mode operation in the zone associated with the manual switch.
 - **Stacked automatic and manual activations:** For stacking of automatic and manual switch activation, the manual switch shall have override capability over the automatic sequence.
 - **Switch overrides:** Switches for pressurization fans shall not override manual or automatic function for smoke control systems covering areas or zones. Similarly, switches for a smoke zone shall not override manual or automatic function for pressurization fans.

PERMIT REVISIONS AND RESUBMITTALS:

Revisions to approved plans are required to be submitted and approved. Revisions will be assessed additional plan review fees. A copy of the previously approved plan shall accompany the revised submittal to facilitate the review. Clearly indicate all changes to the revised plans by clouding the change with a delta number to signify the date of plan change. When several changes have been made, a detailed list of changes is required.

Re-submittals to address a Letter of Correction will require a full submittal. These plans require a copy of the red lined plan from the previous submittal to facilitate the review. Clearly indicate all changes by clouding the change with the delta number to signify the date of plan change.

PLANS CHECK STATUS INSTRUCTIONS:

The status of the review can be checked by logging on to:

www.clarkcountynv.gov/depts/fire

INSPECTIONS THAT MAY BE REQUIRED AND SCHEDULING INSTRUCTIONS:

If approved, an inspection will need to be scheduled. To schedule an inspection, go to: www.clarkcountynv.gov/depts/fire. A fire inspector will review your site in accordance with the approved plans and this guideline.

The Clark County Fire Department's Fire Prevention Bureau (FPB) may witness and accept inspection, testing and maintenance of fire and life safety systems conducted by approved individuals as required by and within the scope and authority of the Clark County Fire Code.

This Guideline does not take the place of the Fire Code and does not take precedence over any Fire Code requirement or position taken by the Fire Chief. When a conflict exists between the requirements of this Guideline and the Fire Code or the opinion of the Fire Chief, the Fire Code or opinion of the Fire Chief prevails.

Technical Assistance, when required by the fire chief, will require a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.

Acceptance of Alternative Materials and Methods requires a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.