



# Fire Alarm Submittal and Testing Requirements



**Permit/Design Standards:** Section 105.7.7 of the Washington State Fire Code requires a Construction Permit to install or modify a Fire Alarm and detection system. Section 907.2 requires any work performed under said permit to conform with National Fire Protection Association (NFPA) 72. The purpose of this document is to provide the reader with a summary of that information required to be included in any fire alarm plans submitted to this office. *Failure to include any/all information identified here may result in delays if the plans are rejected and require resubmittal.*

**Designer Certification Requirements:** Section 907.11.2 of the Washington Fire Code requires all construction documents to be reviewed by a National Institute for Certification in Engineering Technologies (NICET) III, an Electronic Security Association/National Training School (ESA/NTS) Certified Fire Alarm Designer (CFAD) Level III Fire in fire alarms, or a licensed Professional Engineer (PE) in Washington prior to being submitted for permitting. The reviewing professional shall submit a stamped, signed, and dated letter; or a verification method approved by the local authority having jurisdiction indicating the system has been reviewed and meets or exceeds the design requirements of the State of Washington and the local jurisdiction

**Fire Alarm Panels:** All new fire alarm panels shall be the addressable type. Each building shall have one panel. A fire wall or other means of separation for this purpose does not constitute two separate buildings requiring individual panels. Combination fire/security panels are not allowed. Fire alarm panels shall be located in the electrical room and a separate annunciator installed within 5' of the building's front door. For sprinklered buildings, panels shall be located in the Fire Control Room (IFC 907.6.4.1)

**Campus Style Fire Alarm Systems:** All buildings that are part of a campus style fire alarm system shall have their own fire alarm control panel. Campus style alarm systems are limited to buildings within a single parcel number and mailing address as identified by the Mason County Auditor's Office. The means of communication shall be a one-way private radio alarm system programmed to transmit point identification via a radio signal or as otherwise allowed by the Fire Marshal. The fire alarm system shall be listed as a Central Station Fire Alarm System and meet the Central Station service requirements in this standard. Plans for each system shall be submitted under separate cover.

**Submitting Plans:** The preferred method for submitting plans is through the County SMARTGOV portal however, plans may also be submitted in person. If so, one paper copy and one flash drive of all documents shall be provided. Each system with its own Fire Alarm Control Panel (FACP), shall be considered one system and constitute one submittal.

## **Electronic Submittal File Standards**

**Acceptable File Types:** Plans, calculations, specifications and supporting documents shall be uploaded or submitted as a PDF file.

**Document Orientation:** All plans must be uploaded in "Landscape" format (in the horizontal position). All other documents can be in the "Portrait" format. Plans size shall be 24" x 36"

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## Over the Counter Permits

The project is eligible for an “Over-the-Counter” permit if the scope of work includes the addition, replacement, relocation, or removal of 7 or less notification devices only. Submittals must include:

- Floor plan (with a note on the plan indicating, *Battery calculations are not adversely affected by this project and will be verified utilizing a 24-hour stand-by and 5-minute ring battery test at the time of final inspection.*)
- Cut sheets for all equipment & devices
- Evidence of system designer qualifications (NICET, CFAD, PE)
- A copy of the UL or FM Certificate for Central Station service to be used

Once issued, work may proceed, providing a State Electrical Permit (from L & I) has been secured.

## Plans and Documentation

To allow for an accurate and timely review, Fire Alarm plans shall provide the following information:

- Name of protected premises, owner, and occupant (where applicable)
- Name and contact information of installer or contractor
- Name and contact information of the system designer including the certification type and number (I.E. NICET, PE, etc.)
- Location of protected premises
- Occupancy classification as shown on the building plans or certificate of occupancy and the occupant load of each floor/area
- A written narrative indicating the system’s intent and description
- Floor plan drawings that are drawn to scale and include the following:
  - A Point of Compass
  - Floor or level identification
  - A graphic representation of the scale used (usually 1/8” = 1’)
  - Room and area descriptions
  - All windows and doors
  - All partitions (distinguished from walls) extending to within 15 percent of the ceiling height
  - System devices/component locations including mounting height for wall mounted devices
  - Locations of fire alarm primary power and means of disconnection
  - Locations of monitor/control interfaces to other systems
  - System riser locations including the number of circuits in each riser
  - Type and number of system components/devices on each circuit, floor or level
  - Type and quantity of conductors and conduit for each circuit
  - Identification of any ceilings over 10 feet in height where fire detection is being proposed.
  - Details of ceiling geometries including beams and solid joists where automatic fire detection is being proposed
  - The use of symbols as described in NFPA 170 or if otherwise, annotated on a symbol identification chart (Legend)

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- The sequence of operation in an input/output matrix
- Manufacturers' "Cut Sheets" for all equipment used
- Manufacturers' published literature including operation and maintenance instructions
- Battery capacity and de-rating instructions
- Voltage-drop calculations for notification appliance circuits
- Control unit diagrams shall be provided for all control equipment, power supplies, battery chargers, annunciators and include the following:
  - Identification of the control equipment depicted
  - Location of control equipment
  - All field wiring terminals and terminal identifications
  - All indicators and manual controls
  - Field connections to supervising station signaling equipment, releasing equipment or emergency safety control interfaces
  - A dedicated circuit with a red colored breaker and approved locking device
- For software-based systems, a copy of site-specific software including specific instructions
- Minimum sound levels that must be produced by audible devices in applicable covered areas
- Notification design documentation requirements found in Chapter 18 including:
  - Ambient sound pressure levels and audible design pressures levels
  - Analysis and design documentation for narrow band tone signaling
  - Documentation of acoustically distinguishable spaces
  - Maximum sound pressure levels not exceeding 110dB and for public mode appliances or 15dB over ambient sound levels (IFC 907.5.2.1.1)
- Detection design documentation for Heat, Smoke, Gas and Radiant Energy detectors shall be in accordance with Chapter 17
- Any mechanical systems installed in the building such as smoke removal, duct detectors, elevator functions, access control systems, exiting control systems, delayed egress systems and the interconnection/integration of said systems
- A copy of the UL or FM Certificate for Central Station service to be used

**Means of Signal Communication:** All fire alarm, trouble and supervisory signals shall be transmitted to the listed monitoring company utilizing a private one-way radio, a cellular data transmitter or an Internet Protocol Digital Alarm Communicator Transmitter (IPDACT) listed for fire alarm signal transmission. Utilizing phone lines or an internet transmission is not allowed unless it is proven to the Authority Having Jurisdiction (AHJ) that cellular, radio transmission or a listed IPDACT is not feasible. All methods shall comply with NFPA 72 chapter 26. A cellular transmitter utilizing a sole path shall have a 60-minute polling time programmed into the transmitter. All addressable fire alarm systems shall be required to utilize a communicator that is capable of transmitting point identification fire alarm signals to the monitoring company.

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**One Way Radio Installation:** Radio installations are required to be supervised by the FACP utilizing the trouble relay output on the radio being wired as a trouble input on the FACP. This configuration is required to show on a riser/wiring diagram indicating the integration of the radio trouble output with the FACP. The submittal documents are also required to indicate the transmission of point identification data to the monitoring company for all addressable fire alarm control panels. Trouble, supervisory and alarm zone inputs to the radio for transmission of non-point identification transmission is limited to existing non-addressable fire alarm systems. All radios are required to be mounted in the same room as the FACP and be readily accessible to responding personnel and be no more than 6' above the finished floor level.

**Cellular Data Transmitter:** A cellular data transmitter shall be listed for fire alarm signal transmission. The cellular transmitter is required to be supervised by the FACP and shall cause it to indicate a trouble signal when the cellular transmitter is not in a normal mode/configuration. The cellular transmitter is required to be installed in the same room as the FACP, be readily accessible to responding personnel and not more than 6' above the finished floor level. AC power shall be the same circuit as the FACP with battery back-up.

**IPDACT Data Signal Transmission:** IPDACT shall be listed for fire alarm signal transmission. The installation of an IPDACT data transmitter shall not be allowed unless both cellular transmission and one-way radio signal data transmission is proven not to be functional in the occupancy. The installation of an IPDACT shall have a 60-minute polling time programmed into the device and is required to be shown to the inspector. The location of the IPDACT shall be in the same room as the FACP, with AC power on the same circuit as the FACP. Battery back-up is required, lasting 24 hours minimum.

**Central Station Service:** All new fire alarm systems shall be listed as a Central Station Service Fire Alarm System, having the elements of Central Station Service as found in NFPA 72 26.3.2. contracted to listed companies. A listed Central Station Service monitoring facility shall be utilized to perform elements 2,3 & 4 of Central Station Service and a prime contractor shall be utilized to perform elements 1, 5 & 6. A fire alarm certificate issued by the organization that listed the prime contractor shall be posted within 3 feet of the FACP. All trouble and supervisory signals lasting longer than 24 hours shall be reported to the Mason County Fire Marshal (360-427-9670 x 309).

**Notification Requirements:** All new fire alarm systems including dedicated function fire alarms and spec buildings shall provide alarm notification for the building. Notification circuits shall comply with IFC 907.5 and NFPA 72.

**Exterior Notification:** Buildings with an automatic fire sprinkler system shall have a horn/strobe device installed in a conspicuous location visible from the apparatus access roadway on the address side of the building set at 110 candela minimum. The device shall activate on all alarm signals received by the fire alarm panel. This is in addition to the 120 VAC stand-alone bell mounted outside of the riser room entry door. Buildings without an automatic fire sprinkler system shall have a horn/strobe device installed in a conspicuous location visible from the fire apparatus roadway on the address side of the building set at 110 candela minimum.

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**Buildings in Excess of 20,000 square feet:** Buildings that are greater than 20,000 square feet shall have no less than one exterior weatherproof audible/visual notification appliance on each side of the building that is visible from the fire apparatus access roadway with a spacing of not more than 200 feet between notification appliances.

**Acceptance Test Procedures:** Prior to conducting an acceptance test of a fire alarm system, the installer shall provide a completed *Record of Completion* form to the Fire Marshal's office in accordance with NFPA 72, 7.5.6 and figure 7.8.2(a). When testing of the system is performed in the presence of the Fire Official, Figure 7.8.2(g) or other approved form shall be used to record testing. The installer shall provide a copy of this form to the building owner or his/her representative and the AHJ. If any deviations from the approved plans are found to exist during the testing, shop drawings shall be updated to reflect the actual installation of all system components as specified in 7.5.5 and 14.6. After testing is conducted, the process shall not be considered complete until a printout of all alarms conducted during the testing is provided to the Fire Marshal's office by the Central Station company monitoring the system.

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