Shoreline Fire Department Standards

SHFDS 1.0
Fire Alarm Systems
Revised 11/17/2025

1.1 General

1.1.1 Scope

This standard covers the installation, performance, modification, acceptance testing and maintenance of fire alarm systems and their components in new and existing buildings and structures in the Cities of Shoreline, Lake Forest Park, Kenmore and the Town of Woodway. All fire alarm systems shall conform to this standard and the following:

- State of Washington, Washington Administrative Code (WAC), Chapter 51-54A
- City of Shoreline, Lake Forest Park, Kenmore, and the Town of Woodway Municipal Code (RMC)
- 2021 IFC Chapter 80, Referenced Standards
- 2019 NFPA 72, National Fire Alarm and Signaling Code
- Cities of Shoreline, Lake Forest Park, Kenmore and the Town of Woodway Fire Fee Schedule.
- Shoreline Fire Department Standards (SHFDS)
- Nationally recognized standards, as accepted by the fire code official (FCO)

Throughout this standard, the editions listed shall be the applicable code or standard in addition to other required codes and standards.

1.1.2 Conflicts

The most specific and/or restrictive provision shall apply if conflicts occur between the requirements found in these documents, as determined by the FCO.

1.1.3 Primary Reference

This Shoreline Fire Department Standard shall constitute the primary reference document for permitting, design, installation, testing, maintenance, and monitoring of all fire alarm systems in the Cities of Shoreline, Lake Forest Park, Kenmore, and The Town of Woodway.

1.2 Definitions

1.2.2 Term Not Defined

Where terms are not defined in this standard or a referenced code or standard, such terms shall have ordinarily accepted meanings such as context implies.

1.2.3 Referenced Standards

See the definitions from the IFC Chapter 2 with WAC and SMC amendments and NFPA 72 Chapter 3. The definitions contained in the referenced codes and standards and those listed below in SHFDS 1.2 are applicable to this standard.

1.2.4 Devices

The following definition of a device is provided to assist in the determination of what constitutes a device for the purpose of calculating fire alarm permit fees and the determination of which alarm permit is to be used.

For the purposes of determining fire alarm permit fees, each of the following shall count as one device:

1. Audio and/or visual notification devices
2. Cards or modules (such as DACTs, SDACTs, and IntelliTaps)
3. Detection devices (such as smoke, heat, and beam detectors)
4. Manual initiation devices
5. Sprinkler system initiation and monitoring devices
6. Remote annunciators
7. Relay or monitoring modules (such as for a water tamper, kitchen hood, DAS alarm point)
8. Magnetic hold-open devices
9. Line-type detectors, per continuous line
10. Other devices. An alarm device not otherwise defined shall be counted for purposes of alarm permit fees per the FCO

If only a fire alarm control unit (FACU) is replaced and the addition of an automatic smoke detection device and a manual initiating device are required, these devices shall be counted toward the total device count for fees.

FACUs, transmitters, and power sub-panels have additional fees and are not counted as a part of the total device count for fees.

Alarm sub-panels (e.g. pre-action or clean agent-releasing panels) will be assessed fees as power sub-panels.

Replacing or modifying cards or components of an FACU or a transmitter may be treated as replacing the entire device.

1.2.5 Fire Alarm Annual Compliance

The Shoreline Fire Department requires annual documentation of testing and compliance through The Compliance Engine which also serves as the documentation of central station service. This annual servicing and documentation upload to The Compliance Engine is required for all fire alarm systems.

1.2.6 Like for Like

Like-for-Like applies when replacing an existing device with a new device in the same location, with the same functionality and/or compatibility with the existing system and has no effect on system functionality. Like-for-Like may not be associated with a tenant improvement.

Like-for-Like is considered the "Maintenance Mode of Work." FACU replacement requires a fire alarm permit and is not considered Like-for-Like.

1.2.7 Matrix

A complete sequence of operations, also known as an input/output matrix. A matrix shall include all system inputs and outputs, with inputs labeled by group or zone. See the matrix included on the example zone map on the Shoreline Fire Departments Permit Page Fire System Permits - Shoreline Fire Department.

1.2.8 Over The Counter Permits

An over the counter fire alarm permit does not require a full fire alarm submittal or a full review period. This permit may be obtained for the installation or modification of up to 12 fire alarm field devices. Cut sheets, scope of work and site plan must be submitted for review and approval prior to removal, moving of or installation of any fire alarm devices. For additional information on over the counter permit requirements please contact the Shoreline Fire Department Fire Marshal's Office (206) 533-6565.

1.2.9 Standard Fire Alarm Permit

Any fire alarm permit involving more than 12 devices and/or an FACU replacement will require a full fire alarm review.

1.2.9.1 Zone Map

For new systems and system modifications as determined by the FCO, a zone map includes a sequence of operations matrix and floor plans showing all initiating devices on all floors and shall be provided for review and approval for posting adjacent to the FACU at time of final inspection. If the shop drawings show initiating devices such that a layperson could identify what a device is and where it is, then the shop drawings may suffice as a zone map with FCO approval.

1.3 Qualifications

1.3.1 Scope

All work to a fire alarm system in the Cities of Shoreline, Lake Forest Park, Kenmore, and The Town of Woodway must be completed by qualified personnel and as a part of a compliant NFPA 72 Central Station Service Alarm Systems contractual arrangement.

1.3.2 Business License Requirement

All companies monitoring, installing, maintaining, or servicing fire alarm systems within the Cities of Shoreline, Lake Forest Park, Kenmore, and The Town of Woodway shall have a valid business license and all required State of Washington NICET licensing. Work without a permit may result in fines and work without proper licensing may result in a stop work order.

1.3.3 WAC Qualifications

All alarm work in the Cities of Shoreline, Lake Forest Park, Kenmore, and The Town of Woodway must be in accordance with current WAC requirements (see WAC 51-54A-0907):

1. Testing/maintenance: All inspection, testing, maintenance, and programing not defined as "electrical construction trade" by chapter 19.28 RCW shall be completed by a NICET II or higher or ESA/NTS Certified Fire Alarm Technician (CFAT) Level II Fire in fire alarms (effective July 1, 2018).

2. Design review: All construction documents shall be designed and/or reviewed by a NICET III or higher, an ESA/NTS Certified Fire Alarm Designer (CFAD) Level III Fire in fire alarms, or a licensed professional engineer (PE) in Washington State 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 current design requirements of the State of Washington and the local jurisdiction.

1.4 Modes of Alarm Work

1.4.1 Scope

All work to a fire alarm system in the Cities of Shoreline, Lake Forest Park, Kenmore and The Town of Woodway must conform to normal, maintenance, or emergent modes of work.

1.4.2 Normal

The normal mode of alarm work requires a permit and is not covered by maintenance or emergent work.

1.4.3 Maintenance

Work performed to ensure that equipment continues to operate properly. Maintenance work does not require a permit. Refer to Like-for Like definition for more details.

Maintenance work is allowed if it meets the definition and does not include the following:

1. Addition of new devices to a system.
2. Upgrading devices or replacing devices in a way that does not conform to the definition of Like-for-Like.
3. An FACU replacement, excluding the replacement or modifications of cards or internal components.
4. A secondary/sub-panel replacement (annunciators, pre-action panels).
5. A secondary/sub-power panel replacement (e.g., NAC panels).

1.4.4 Emergent

The minimum work necessary to return a damaged or impaired system to a functional state. Emergent work shall not include voluntary system modifications.

Emergent work shall be the result of an unanticipated equipment failure and may begin without a permit with approval of the Fire Code Official. Following notification and approval from the Fire Code Official, a permit submittal is required by the next business day unless otherwise approved by the Fire Code Official.

If the system is impaired and requires emergent work, a fire watch shall be put in place and the Fire Code Official shall be notified in accordance with SHFDS 19.0.

Email confirmation that central station monitoring is receiving proper alarm signals shall be provided to the Fire Code Official at fmo@shorelinefire.com before a premise can be taken off fire watch.

1.5 Fire Alarm Permits

1.5.1 Scope

All fire alarm permits applied for in the Cities of Shoreline, Lake Forest Park, Kenmore and The Town of Woodway shall conform to this standard and all referenced codes and standards.

1.5.2 Qualified Applicants

The permit applicant shall be UL UUFX-listed or the ETL or FM equivalent for central station service.

The applicant shall be either the prime contractor or an alarm contractor with written approval from the prime contractor. There shall be only one prime contractor for a system, identified on the permit and contractually responsible for the operation and maintenance of the system.

All businesses operating within the Cities of Shoreline, Lake Forest Park, Kenmore and the Town of Woodway including fire alarm companies shall have a valid business license for which City they are operating in.

1.5.3 Permit Required

A valid permit shall be required for any installation or modification of any component of a fire alarm system in the Cities of Shoreline, Kenmore, Lake Forest Park, or the Town of Woodway except for valid maintenance work. Permits for the City of Shoreline are obtained through the City of Shoreline, valid permits for the City of Kenmore and Lake Forest Park are obtained through the Shoreline Fire Department, Fire Marshal's Office webpage @ Fire System Permits - Shoreline Fire Department. Permits for The Town of Woodway are to be obtained at The Town of Woodway Town Hall Building: 23920 113th Place W. Woodway, WA 98020

1.5.4 Alarm Work Under Electrical Permit

Work begun under an electrical permit proceeds at the installer's risk and shall not include the placement or programming of devices or equipment. The only low-voltage fire alarm work allowed under an electrical permit is stringing wire and placement of mounting plates or back boxes. Fire alarm systems will not be tested/inspected by SHFD before associated low-voltage electrical permit have a status of "ok to test" or "approved".

1.5.5 Permit Applications

New fire alarm systems shall not be installed nor shall modifications be made to existing systems until a complete application has been submitted and both a fire alarm and an electrical permit have been issued. An approved copy of plans and permit conditions must be on site while alarm

work is ongoing. Installing fire alarm equipment without a permit may result in a work without permit fee.

1.5.6 Over the Counter Permit

An Over-the-Counter permit may be obtained instead of a standard full review fire alarm permit for the installation or modification of 12 devices or less on a fire alarm system. Refer to the City of Shoreline: City of Shoreline | Home or the Shoreline Fire Department website: Fire System Permits - Shoreline Fire Department for Over-the-Counter permit application requirements.

Multiple Over-the- Counter permits are not intended to be used in the same building to avoid a standard permit process.

Over-the-Counter permits are not to involve an FACU, control unit, annunciator or any special systems (VESDA, pre-action, clean agent system) in their scope. Over-the-Counter permits are allowed for fire alarm modifications to monitor UL 300 Kitchen Hood Suppression Systems.

Over-the-Counter permit applications must be submitted in one of the following ways:

- City of Shoreline online permitting system for work within the City of Shoreline.
- The Shoreline Fire Department website for the Cities of Kenmore and Lake Forest Park.
- The Town of Woodway via The Town of Woodway Town Hall Building.

Over-the-Counter permits do not need to be obtained for valid Like-for-Like maintenance, as defined by this standard.

Over-the-Counter permits are non-refundable. If an Over-the-Counter permit is issued but found to not meet the requirements, the permit will be voided and a standard fire alarm permit will be required to be submitted.

1.5.7 Standard Fire Alarm Permit

The standard fire alarm permit submittal shall be used for all fire alarm work that does not qualify as an Over-the-Counter Permit. Standard fire alarm permit submittals must conform to the electronic plan standard and include all required information listed on eh application submittal checklist.

1.5.8 Work Without a Permit

Work completed on a fire alarm system without a permit may result in the following:

1. Loss of a City of Shoreline business license.
2. The requirement to complete the work after obtaining an issued permit.
3. Charged an additional permit fee for work without permit.
4. Removal of non-compliant work.
5. A stop-work order.

1.6 Design Requirements

1.6.1 Scope

All design for permitted alarm work to a new or existing system shall conform to this standard and all referenced codes and standards. No devices shall input to an FACU or receive output from an FACU without proper permitting, plan review, and FCO field approval.

1.6.2 Equipment

All equipment, devices, and wiring shall be listed by UL, FM, or another nationally recognized testing agency and shall be used in accordance with their listings. Listed fire alarm component must be listed for use at the time of permit application.

1.6.3 Use per Listing

No use of or modification to a device shall be allowed if such use or modification would void or be contrary to its listing. Devices must be listed for their use and installed as per listing.

1.6.4 Mounting and Junction Boxes

All equipement shall be securely mounted to the structure. Back boxes and straps are required for installation on drop in tile and “t” bar ceiling or similar construction. All junction boxes used for low voltage fire alarm wiring shall have red painted boxes and cover plates.

1.6.5 Exterior Bell

There shall be an exterior A/V device listed for exterior use, located on the upper 25% of the building or between the first and second floor of buildings two or more stories in height. The exterior A/V device shall be located adjacent to the building address facing the primary fire access roadway, or as directed by the FCO. The exterior A/V shall activate audible and visual alarms for any alarm or waterflow condition.

1.6.6 Coverage

Fire alarm coverage shall be per this standard, all referenced codes and standards, and all municipal code standards within the jurisdiction under contract for Shoreline Fire Department Services.

1.6.6.1 ADA Coverage Compliance

Per NFPA 72 18.5.2.1, 18.5.2.3 and ADA 702 visual notification will be required to be installed in all ADA, Type A designated units in R2 buildings and as required by other governing codes.

1.6.7 Pull Station Covers

Pull stations that are subject to repeated false alarm shall be fitted with an approved, local-alarming cover.

1.6.8 Duct Detectors

Unless otherwise approved by a FCO or required by code, duct detectors for the control of air handling equipment shall be reported as supervisory signal and not as alarm signals.

1.6.9 Electronic Access Control

All access control doors along any means of egress shall failsafe to allow egress and ingress on building alarm. This shall include security doors in stairwells, exterior doors accessing lobbies, exterior doors to stairwell or courtyards, or any other electronically locking doors essential to occupant egress or ingress for emergency response. Specific doors or access points required to open or unlock in an alarm state may be called out at time of plan review or field inspection. Garage gate style doors leading to parking garages shall open on alarm.

Grade-level exterior doors and openings that are required means of egress shall be readily accessible for emergency ingress by the fire department. Shoreline Fire Department interprets “readily accessible” to mean a door that opens via a key or key fob located in a Knox Box.

Interior electronic access-controlled doors along primary means of egress providing access to exit corridors, stairways, building lobbies and or garage overhead doors shall unlock on activation of the fire alarm system and power failure.

1.7.0 Key Boxes

All buildings with required fire protection systems shall install an approved emergency key box. All entrance door keys, fobs, access cards, and FACU/riser keys shall be labeled and provided by the owner or occupants for installation into the key box unless otherwise approved by the FCO.

The only approved key box system for use within the jurisdiction or influence of the Shoreline Fire Department is from the Knox Company and can be ordered through Emergency Key Box - Knox Rapid Access System. For additional questions or assistance with key box ordering please contact the Fire Marshal’s Office at 206.533.6565.

1.7.1 Two-Way Communication Systems

Per IFC chapter 10, two-way communication systems shall communicate between required locations and a fire control room (where applicable) or a central location point as approved by the FCO.

1.7.2 FACU Requirements

1.7.2.1 Location and number of FACU's

The fire alarm control unit, secondary control units, remote power supplies, and transmitters shall be in approved location that are no higher than 5' 6" above the finished floor to the top of the viewing window of controls.

The FACU shall be installed in the Fire Control Room/Sprinkler Riser Room with direct access. See SHFDS 2.2.6 for Fire Control Room/Sprinkler Riser Room requirements.

Only One FACU is allowed per building unless otherwise approved by the FCO.

Buildings on podiums and associated garages, commercial spaces, and common areas present unique challenges that will require working with a FCO to find a solution as a part of the plan review process. Generally, any building with a distinct base address will require a separate FACU, transmitter and alarm/riser room. A common garage or podium structure may or may not share an alarm room, address, or transmitter with buildings it supports. FACU outputs in one of the buildings may or may not be required to interface with other FACU's, elevators, or other A/V outputs.

1.7.2.2 Access to FACU and Annunciators

Access to all fire alarm control units and annunciators shall be secured with a lock. This may be a listed locking box or a lock on the panel itself. Alarm company representatives or authorized subcontractors, sprinkler contractors, and representatives of the Shoreline Fire Department shall be the only persons authorized to open or operate an alarm panel.

Keypads with access codes shall not be used for control of a new FACU, annunciator, or other control unit.

1.7.2.3 Signage

When applicable, the access door to the FACU shall be clearly labeled. One sign can display both the fire alarm and riser room information. For example: "Fire Alarm/Riser Room". Additional signage may be required, for additional signage information and standards, see SHFDS 12.0

1.7.2.4 Conditioned Space

A room containing the FACU shall be climate and temperature controlled to maintain the rated design limits of the equipment or as required by the FCO. Generally, this is a temperature over 40 degrees Fahrenheit.

1.7.2.5 Working Space and Clearance

A working space of not less than 30 inches in width, 36 inches in depth, and 78 inches in height shall be provided in front of the alarm panel control units, such as an FACU, remote annunciators, or sub-panels with control functions such as a pre-action panel.

1.7.2.6 Smoke Detection above FACU

There shall be a smoke detector above the FACU, releasing panels, power supplies, and any other fire control unit. See NFPA 72.

1.7.2.7 Required Manual Pull Station at FACU

New systems are required to install a manual pull station near the FACU. See 2021 IFC chapter 9.

1.7.2.8 Required Annunciators

If the FACU is in a room that is not normally occupied, then a remote annunciator shall be located in a normally occupied room or area near a main entrance or as required by the FCO. Fire alarm annunciators shall be located in an approved location. Owners or occupants shall not have access to the annunciator keys for fire alarm control functions.

1.7.2.9 Pre-signal fire alarm features will not be allowed unless otherwise required by the fire code or approved by the FCO.

1.7.3.0 Required Test Features

In occupancies that require regular fire drills (such as but not limited to educational, daycare, institutional, nursing, or retirement occupancies) panels shall include a notification test feature. When activated, the test switch shall energize all interior alarm notification devices but shall not transmit an alarm to the central station.

1.7.3 Signal Programming Requirements

1.7.3.1 Addressable Systems

Addressable FACU’s shall have the initiating device descriptions programed as approved by the FCO.

1.7.3.2 Local and Central Station Signals

The FACU must be capable of receiving and transmitting alarm signals as required in this standard.

1.7.3.3 Group zones

Fire alarm system annunciation should, as a minimum, be sufficiently specific to identify a fire alarm signal in accordance with the following (NFPA72 A.10.18.5):

1) If a floor exceeds 22,500 ft2 (2090 m2) in area, the floor should be subdivided into detection zones of 22,500 ft2 (2090 m2) or less, consistent with the existing smoke and fire barriers on the floor.

(2) If a floor exceeds 22,500 ft2 (2090 m2) in area and is undivided by smoke or fire barriers, detection zoning should be determined on a case-by-case basis in consultation with the authority having jurisdiction.

(3) Waterflow switches on sprinkler systems that serve multiple floors, areas exceeding 22,500 ft2 (2090 m2), or areas inconsistent with the established detection system zoning should be annunciated individually.

(4) In-duct smoke detectors on air-handling systems that serve multiple floors, areas exceeding 22,500 ft2 (2090 m2), or areas inconsistent with the established detection system zoning should be annunciated individually.

(5) If a floor area exceeds 22,500 ft2 (2090 m2), additional zoning should be provided. The length of any zone should not exceed 300 ft (91 m) in any direction. If the building is provided with automatic sprinklers throughout, the area of the alarm zone should be permitted to coincide with the allowable area of the sprinkler zone.

Alarm and waterflow signals shall be grouped or zoned by floor or area. For example, if a fire alarm signal on the 4th floor was initiated, the signal sent to central station should be “Floor 4 smoke – Corridor by unit 426”. The Zone or group would be “Floor 4 Smoke” and the point ID would be “Corridor by Unit 426”.

Trouble and supervisory signals may use one general group per building.

Special systems (e.g., kitchen hood system, pre-action, clean agent) shall be annunciated as a separate zone at the FACU and Central Station monitoring. For example, if a smoke associated with a clean agent system initiated a fire alarm signal on the 4th floor, the signal sent to the central

station should be “Floor 4 Clean Agent – Smoke in Lab 426”. The zone or group would be, “Floor 4 Clean Agent” and the point ID would be “Smoke in Lab 426”.

1.7.3.4 Suites

Where one transmitter and FACU serve multiple suites or businesses with one base address, the signal group shall include the suite number and not the name of the business. An alarm or waterflow signal initiation in any suite or portion of a building shall initiate alarm outputs, A/V, and building evacuation for the entire building or as required by the FCO.

For example, a strip mall with five suites, 100 through 150, all sharing one base address and one transmitter, shall include the suite number and not business name for all devices in each suite. The kitchen hood in suite 110 should have the signal group “suite 110 kitchen hood” transmitted to central station. Smokes in each suite shall have corresponding signal descriptions to send emergency responders to the specific suite.

1.7.4 Transmitter Requirements

All fire systems shall utilize only approved means of transmission of signals.

1.7.4.1 Acceptable Transmission Methods

Below are the acceptable methods of transmission:

1. Cellular transmitter (e.g. Telguard/Starlink).
2. Radio transmitter (e.g. AES).
3. Other communication methods approved by NFPA 72 and as approved by the FCO.

Other methods of transmission require FCO approval prior to being installed.

Phone Lines, data over the internet (IP) and managed facilities-based voice networks (MVFN) are not currently allowable methods of transmission.

1.7.4.2 Other Dispatching Methods

Non-listed residential style alarm or monitoring systems shall not generate fire response without prior FCO approval. Services such as Ring and other internet-based monitoring systems should notify a subscriber and not the fire department.

1.7.4.3 Transmitter Number and Location

Each building shall have one transmitter, or additional transmitters as required by the FCO. Fire alarm transmitters shall be in the same room as the FACU and follow the same requirements for FACU’s or as approved by the FCO.

1.7.5 Voluntary Alarm Components

1.7.5.1 Assumption of Fire Alarm Requirements

Unless clearly indicted on an approved plan set, all fire alarm devices will be assumed to be required components of a fire alarm system. Such devices shall not be removed without FCO approval.

1.7.5.2 Indication of Voluntary Devices

An accurate summary of all voluntary devices shall be indicated on plan sets. The use of voluntary devices is subject to approval by the FCO.

The most common area of confusion regarding voluntary or code-required devices are in corridors in R-1 and R-2 occupancies. Designers shall provide the code reference (IFC, Municipal code) that requires a device in an area such as corridors or storage rooms where it would otherwise be unclear. Please refer to SMC 907.2.10.8 for Smoke Detection placement requirements within the City of Shoreline.

1.7.5.3 Install as if Required

Voluntary alarm components approved at time of plan review shall be installed, tested, and maintained as if they were required.

1.7.5.4 Voluntary Monitoring

A subscriber may request that the FACU monitor devices not mandated, be monitored by a central station. Such monitoring shall meet the following requirements:

1. Approval by the Fire Code Official at plan review. Fire alarm monitoring of security alarms, motion detectors, or burglar alarm will not be approved. Monitoring of voluntary life safety systems such as air monitoring, leak detection, backup power systems, fire extinguisher monitoring, or Knox box monitoring may be approved.
2. Signals sent from voluntary monitoring shall not transmit alarm signal that result in fire department response unless approved by the Fire Code Official.
3. Signals must adhere to NFPA 72 guidelines such that trouble signals shall be for signals pertaining to equipment maintenance of the alarm system. Voluntary system signal not associated with the maintenance of the alarm system shall be of the supervisory signal type.

1.8 Modifications to Existing Fire Alarm Systems

1.8.1 Scope

Work to existing fire alarm systems where the fire alarm system is not compliant with current codes and standards shall conform to this section.

1.8.2 Unpermitted Work

An existing non-conforming fire alarm system that is found to have been installed or modified without a valid fire alarm permit or worked on by unqualified personnel shall be required to come into compliance with current codes and standards via permitted work. The scope of the upgrades will be determined by the FCO based on the scope of the unpermitted work.

1.8.3 Maintenance

Like for Like replacement of alarm components shall not trigger code requirements in a legally existing non-conforming system unless that system was previously installed without FCO approval.

1.8.4 Change of Occupancy, Construction Type or Remodel

When a building undergoes a change of occupancy or construction type as determined by the building official, the FCO may require the entire fire alarm system to be modified to meet current codes and standards. Please refer to SMC 901.4.3.1, 901.4.3.2 & 907.2.25. Please Refer to KMC 907.2.

1.8.5 Non-Conforming Structures

Legally existing, non-conforming fire alarm systems shall comply with all of the following:

1. City of Shoreline Municipal Code (SMC) sections. An existing structure shall be brought into current code compliance in accordance with SMC 901.4.3.1, 901.4.3.2, 907.2.25 and 907.2.26 when alteration or expansion of the structure takes place.
2. City of Kenmore Municipal Code (KMC) sections. An existing structure shall be brought into current code compliance in accordance with KMC section 907.2 Existing buildings.
3. City of Lake Forest Park Municipal Code Sections (LFPMC). An existing structure shall be brought into current code compliance in accordance with LFPMC 907.2 Existing Buildings.

The value of the building shall be listed by the King County Assessor's office or an acceptable method approved by the Fire Code Official at the time of the first permit application or the first alteration or repair work performed. Buildings not listed with an appraised value shall utilize an alternate method approved by the FCO.

1.8.6 FACU Replacement

Replacing an FACU may drive upgrades to the fire alarm system as required by the FCO at the time of plan review. FACU replacements shall include plans for the entire existing system and specify why the FACU is being replaced.

The FCO will determine what, if any, system upgrades will be required to bring the system up to current code compliance, considering the occupancy type, cost of upgrades, age of devices, other life safety systems in place, and the scope of the proposed alarm work and /or tenant improvements.

Fire alarm systems being replaced in phases should consult the FCO before beginning work. Components replaced prior to a new FACU may be required to be modified or replaced as a part of a later FACU installation.

Replacing or modifying cards or components of an FACU or a transmitter may be treated as replacing the entire device, as determined by the FCO.

Any building with an impaired FACU shall be placed on fire watch in accordance with SHFDS 11.0. Fire Watch shall continue until evidence of acceptable signals transmitted to the monitoring company are submitted and accepted by the FCO or if the new FACU passes acceptance testing with the FCO.

All FACU replacements will require the following:

1. Compliance with NFPA 72 requiring central station smoke detection coverage protecting the FACU, other control units, NAC's and the transmitter.
2. A manual pull station shall be installed near the FACU if one does not exist.
3. An addressable panel.
4. An SHFDS 1.7.4 compliant transmitter. As per this standard, if the existing transmitter is not compliant, it shall be replaced with a compliant means of transmission. If the transmitter in not capable of sending required signal or zones, it may require an upgrade such as an SDACT to allow compliant transmitter output.
5. If existing initiating devices are compatible with the new FACU, those devices may not be required to be updated unless required by the FCO or Municipal Code.
6. Where existing audible/visual notification appliances will need to be replaced to be compatible with a new FACU, any horns or horn/strobes in bedrooms shall be low frequency sounders.
7. In R-1 and R-2 occupancies where existing initiating devices are heat detectors that need to be replaced to be compatible with a new FACU, they shall be replaced with system smoke detectors to comply with current code (except in kitchens, bathrooms and other places determined to initiate false alarms).
8. Audio visual devices must sync. Area sync may be acceptable instead of system wide sync if the areas of overlap between synced zones are limited.
9. Sound levels shall comply with current codes and standards for minimum and maximum sound level and intelligibility unless otherwise allowed by the FCO.

1.8.7 No-Conforming Number of FACU's

If fire alarm work is conducted in a building that has no FACU or more than one FACU, the FCO will determine if the building shall modify the system to meet current codes and standards.

Generally, a smaller scope of alarm work to a non-conforming system may not require bringing an FACU into current code compliance. A change of use of a larger scope of work may require the FACU to meet current codes and standards.

1.8.8 Existing Transmitter Serving Multiple Buildings

In existing multi-family or commercial complexes with a previously approved system that has a transmitter that covers multiple buildings, the transmitter shall send separate and distinct signals to the approved central station for each building. In these instances, when an FACU is replaced or added to a building without a transmitter, a transmitter shall be added.

1.8.9 Existing Non-Compliant Means of Transmission

An FACU that is determined to have and existing means of transmission that is not compliant with this standard will require modification to the fire alarm system to comply when one of the following occurs:

1. If the current means of transmission is determined by the FCO to be problematic, it shall be modified in a timely manner to comply with this standard.
2. If the current means of transmission was not previously accepted as a means of transmission, such as a managed facilities-based voice network (MVFN), it shall be modified in a timely manner to comply with this standard.
3. If the existing fire alarm system undergoes an FACU replacement, a compliant means of transmission will be required. Previously accepted means of transmission such as phone lines (POTS) will no longer be accepted and shall be replaced with a compliant means of transmission.

1.8.10 Existing Keypads

Use of existing keypads for fire alarm panel control shall be discontinued upon system modification. Existing keypads shall use a FCO-approved access code and have clear, easily visible, and readily accessible instructions for operation by the Shoreline Fire Department or alarm company- authorized personnel. Owners or occupants shall not have access to the keypad access code for fire alarm control functions.

1.8.11 Non-Required System or Devices

Existing fire alarm systems or devices not required by code at the time of installation shall be treated as required devices and shall be maintained, tested, and modified per all applicable codes and standards.

1.8.12 Key Boxes

If a building with a required fire alarm system does not have a key box, a key box will be required per SHFDS 12.0 and the FCO.

1.9 Acceptance Testing

1.9.1 Scope

Acceptance testing of new fire alarm devices shall be completed per this standard and all referenced codes and standards.

1.9.2 100-Percent Pre-Testing Required

Prior to fire final inspection with the FCO, all new devices and associated systems inputs and outputs for the fire alarm system shall be successfully pre-tested.

1.9.3 Record of Completion

For fire alarm final approval, a valid Record of Completion is required to be completed and signed by the installing contractor.

Included with the Record of completion:

1. List current and correct central station contractual arrangement of qualified fire alarm companies.
2. Record of completion and other required documentation recorded and uploaded to The Compliance Engine. Permit/s associated with fire alarm installation will not be signed off until all records are uploaded into The Compliance Engine.

1.9.4 100-Percent Acceptance Testing

All new devices installed under a fire alarm permit shall be acceptance tested per NFPA 72 and the device listing. The acceptance testing shall be observed by a FCO at fire final.

1.9.5 Low-voltage Permits

All low-voltage electrical permits associated with a fire alarm permit shall be placed in “OK to Test” or Finaled Status prior to acceptance testing and include L&I sign off.

1.9.6 No Monitoring Before Approval

New FACU's and/or transmitters in a new fire alarm systems shall not transmit signals that dispatch fire department response before receiving FCO approval.

As per the FCO, new FACU's and/or transmitters in existing systems may be required to obtain FCO approval prior to dispatching fire department personnel for an emergency response. This may include emergent work.

1.9.7 Smoke Control

Fire alarm permits will not be issued before an associated smoke control permit is issued. Unless otherwise allowed by the FCO, smoke control and associated fire alarm permits will be reviewed together. Early coordination on the operation of the smoke control and fire alarm system is encouraged to ensure both permits show the same input/output operation.

Prior to scheduling the smoke control alarm interface final inspection, the following must be complete:

1. Air envelope testing
2. All smoke control devices in place and pre-tested.
3. The smoke control special inspection must be complete.
4. All associated backup power supplied (such as completing a fuel fill inspection for a diesel backup generator) must have passed inspection.

Washington State Department of Labor & Industries approval of associated elevators and associated doors, hardware, and other smoke control system inputs and outputs are required prior to final approval of the smoke control special inspection.

1.9.8 Fire Final and Acceptance Testing

Fire inspections are required by the Shoreline Fire Department for permitted work. For scheduling an inspection, please email the Shoreline Fire Department at inspections@shorelinefire.com. Response times and scheduling may vary depending on current workloads.

A fire alarm final inspection for an area or building shall not be conducted prior to any of the following:

1. Associated low-voltage permits approved and tested by L & I.
2. Completion of dust-producing work, painting, flooring, and other similar construction activities.
3. Installation of all alarm devices.
4. Concealed devices, such as those above drop ceilings or ducts/dampers behind vents, are visible for testing and final inspection.
5. All flooring and fixed furnishing shall be in place.

6. Labor & Industries has completed acceptance testing devices associated with elevators. Elevator testing will include devices that activate elevator hoist way smoke control and smoke barrier assemblies.

1.9.8.1 Fire Alarm Testing Plan (New Buildings)

The qualified alarm personnel at a site and the FCO or designee shall establish a plan for completing a fire alarm final inspection. Below is a typical plan for alarm acceptance testing for a new system. The FCO may adopt the below sample testing plan for systems to fit the scope of the alarm work to be inspected.

1. Verify 100 percent pre-testing was completed.
2. Post any zone maps required as part of plan review adjacent to the FACU
3. Review system record of completion documentation such as the King County Regional Pre-Test form or other documentation approved by the FCO.
4. Verify site copy of approved fire alarm plans and fire conditions.
5. Verify the Fire Control Room door is labeled as required by SHFDS 12.0
6. Verify Knox Box keys are in place to open Fire Control Room door and any other required keys are added to other required Knox Boxes.
7. Verify system is in test.
8. Verify OK to cover for alarm was approved, if required.
9. Verify adequate equipment and personnel are on site and appropriate to the scope of the inspection, such as volt meters, ladders, screwdrivers, hearing protection, and decibel meters.
10. Disconnect A/V? devices to silently test initiating devices and ensure system is on AC power.
11. Test all initiating devices in such a way that not only changes the state of the device but also tests the functionality of the device as specified in the listing of the device. This is applicable to new devices.
12. If appropriate, exclude elevator lobby and elevator machine room devices for separate testing. If testing elevator devices, ensure elevator primary and secondary recall as well as other related outputs such as smoke doors or roll down smoke barriers operate such that their output matches approved plans.
13. As devices are activated, verify at the FACU that the alarm status changes to the appropriate condition.
14. Verity the FACU received a local signal with the appropriate fire alarm signal programming and alarm outputs.
15. Before initiating the last device on a floor or area, reset the alarm, reconnect A/V devices, disconnect the A/C power to the fire alarm system, prepare for A/V testing and EOL testing by pulling off end of line devices to allow quick access for voltage testing, then initiate the device.
16. Normally a ring down prior to EOL checks will be for 5 minutes unless there is a voice evacuation system, in which case the ring down will be for 15 minutes on battery power. Verify A/V output, sync, decibel level, intelligibility, and all other alarm outputs as shown in the alarm matrix of operation such as fire damper operation, magnetic door holders releasing, security door releasing, elevator recall, smoke control fans activation.

17. As the area is inspected for the above, test the end of line voltage for all devices that have been exposed. EOL devices shall be labeled as such. Ensure everything powered from the FACU or NAC is load tested at the same time with maximum load on the batteries.
18. When the inspection of the area is complete, silence and reset the alarm and reconnect AC power.
19. Verify outputs (damper operation, magnetic door holders operating, elevator operation, etc.) operate on test.
20. At this time, or at the end of the inspecting other areas, verify the central station received proper signals.
21. Verify the address on file at the central station matches the approved building address.
22. If the system is tested in sections (such as by floors), the entire system shall be tested to verify system wide alarm output requirements and A/V sync are compliant.
23. Ensure system is taken out of test if it is ready to monitor the premise.
24. Verify that the approved plans reflect the system as it was installed. If not, submit as-built plans to the FCO and maintain a copy on-site.
25. The fire inspector will then ensure all applicable and required inspection reports and documentation are complete, review with the field technician, and ensure all required reports are uploaded to The Compliance Engine, ESO, and or Firstdue.

1.9.9 Integrating System Testing

All alarm interfaces for integrated systems shall be acceptance tested prior to approving fire alarm final. See NFPA 4, Standard for Integrated Fire Protection and Life Safety System Testing, and NFPA 72 for additional information.

1.9.9.1 Elevator Interface

Elevator recall and initiating devices that output elevator recall may be tested separately.

1.9.9.2 Sprinkler Interface

See SHFDS 2.0. All sprinkler interface with the alarm shall be tested. It is required that a qualified sprinkler technician is on-site to work with an alarm technician to test all sprinkler interface devices. A typical plan would be as follows:

1. Verify system is in test
2. Ensure waterflow devices activate within 90 seconds per NFPA 72. New systems require a waterflow device per floor or area, as shown in the approved plan.
3. Test all sprinkler system control valves in the riser room and throughout the site. Verify tamper device outputs are a supervisory signal type and that water tamper signals are not waterflow alarm signal type. Supervisory tampers and high/low signals shall be transmitted within 90 seconds per NFPA 72.
4. Test that the system interface activates and sends the required signal for high/low pressure supervisory signals as well as waterflow signal. Dry system shall show water at the inspector's test within 60 seconds and a waterflow signal within 90 seconds per NFPA 72.
5. Ensure compliant local and central station alarm signals were received.

1.9.9.3 Fire Pump Interface

If a fire pump is associated with the sprinkler system, all required alarm signals shall be verified while acceptance testing the fire pump. Fire pump test report shall be uploaded to The Compliance Engine.

1.9.9.4 Water Shutoff Device Tampers

Any water shutoff device for a site shall be monitored by the FACU. Signals shall be supervisory.

1.9.9.5 ERRS/DAS Interface

See the SMC or the alarm interface testing requirements per current NFPA 72 and NFPA 1221 concerning required trouble alarm signal requirements.

1.9.9.6 Smoke Control Interface

All fire alarm inputs and outputs for associated smoke control systems shall be verified by the special inspector prior to fire alarm final being scheduled.

1.9.9.7 Heat Tracing Interface

Any heat tracing system for fire sprinkler systems in unconditioned spaces shall be acceptance tested for fire alarm interface per the device specifications. Power loss to heat tracing shall be a supervisory signal. Prior to fire final, the heat trace installer shall provide a letter from the manufacturer stating the system was installed per the manufacturer's specification. The installer or a representative from the manufacturer of the heat trace system shall be onsite for the FCO acceptance testing.

1.9.9.8 Generators

Generators or other backup power means may be monitored voluntarily if not required by code or the FCO. These signals shall result in a supervisory signal and will be tested prior to approval. Per this standard, Shoreline Fire requires emergency back-up generators to be monitored for system faults. System faults shall be a supervisory.

1.9.9.9 Other Systems

All other systems that interface with the FACU, including voluntary installed devices, such as air monitoring; leak detection; hazardous materials; fire extinguisher device monitoring or Knox Box monitoring, shall be tested per the FCO.

1.9.10 Audibility

Shall meet referenced codes and standards. For voice evacuation systems, the voice portion of the signal and the temporal three tones shall meet intelligibility requirements from NFPA72.

1.9.11 Verification of exterior Requirements

Fire alarm approval will require verification of required exterior elements such as the signage for the FACU/Fire Riser/Fire Control Room door, PIV tamper switch operation and placement, and operation of exterior A/V devices.

1.9.12 Central Station Documentation

Verification of Central Station Monitoring and Prime Contractor Services will be approved and verified prior to final.

1.9.13 FACU installation in an Existing System

Installing an FACU in an existing system will require testing approximate 10% of initiating devices for each signal type and group, per floor or area. This should include as many types of initiating devices as possible. This device testing will be done on AC power with A/V devices disconnected.

The contractor shall complete 100% pre-testing of all existing and new fire alarm devices, including verification of the proper operation of all system inputs and outputs.

The Fire Code Official will determine what an adequate sample test shall be to verify the 100% system compliance test completed by the fire alarm contractor. If issues are found during testing of the 10% sample, the FCO may require testing of additional devices up to 100% of all installed devices.

Local and central station signal will be verified to conform to this standard.

A/V and other alarm outputs must also be tested. Typically, this will include showing one device per floor or area initiates the appropriate outputs. This can be a very brief period of A/V sounding. Then a system -wide ring down must be initiated to ensure building-wide A/V sync and other outputs operate. The inspector will verify outputs operate appropriately upon fire alarm reset. Unless appropriate to the scope of the work, EOLs do not need to be checked.

Verify placement and operation of the required smoke detection and manual pull station.

1.9.14 Transmitter Installation in and Existing System

Per this standard, no new FACU and or transmitter shall dispatch emergency response units before FCO approval.

Installing a transmitter in an existing system will require testing a minimum of one initiating device for each signal type per floor or area.

The Fire Code Official will determine what an adequate sample test shall be. If issues are found while testing the 10% sample. The FCO may require testing of more or all devices.

All required signal associated with the transmitter shall be tested. Local and central station alarm, supervisory and trouble signals will be verified for proper zoning in accordance with this standard. If issues are found during testing the sample, the FCO may require testing of more or all devices.

1.9.15 Documentation

At the completion of commissioning and acceptance testing, the contractor/s responsible for commissioning shall upload all required documentation and commissioning reports to The Compliance Engine (Brycer) before the permit will be finaled and closed out.

As per this standard and referenced codes and standards, required documentation shall be on file in the permit database, in The Compliance Engine, and on site. Documents shall be required to be provided to an FCO or designee at time of fire final approval. Documents shall be kept in a document box on site as per NFPA 72 chapter 7.

1.9.16 System Maintenance

Contractors performing inspection, testing and maintenance (ITM) Shall submit all reports to The Compliance Engine within (5) five business days at the completion of work.

1. The property or building or system owner or the owner's designated representative shall be responsible for inspection, testing and maintenance of the system and for alterations or additions to the system.
2. The installer shall provide to the owner/occupant instructions on how to maintain the fire alarm system.
3. Required inspecting, testing, and maintenance shall be performed as outlined in NPFA 72 chapter 14.
4. The systems shall be tested by personnel qualified and experienced in accordance with the requirement of 10.5.3 of the currently adopted NFPA 72 standards.