

Interior Signage

All interior signs shall meet Green Building Focus Materials (GBFMs) requirements. Require that the Contractor provide mock-ups for University approval prior to installation of same

The University requires the following special warranties for interior signage: Manufacturer shall agree to repair or replace components of signs that fail in materials or workmanship including but are not limited to: 1) deterioration of metal and polymer finishes beyond normal weathering; 2) deterioration of embedded graphic image colors and sign lamination. A five (5) year unlimited warranty must be provided on the signage materials.

All identification, directional and informational sign applications shall be cast acrylic sign panels. The faceplate panel shall be laser cut from 1/16 in. clear, cast-acrylic and finished with a 3/8 in. subsurface opaque color border. The faceplate shall be permanently bonded to a black acrylic back plate allowing for changeable message. Permanent room identification and/or ADA compliance shall be achieved with a photopolymer acrylic faceplate. Photopolymer ADA faceplates shall provide 1/32 In. raised tactile graphics, and Grade II braille. This faceplate shall provide for permanent messages and optional subsurface applications. Provide paper or polystyrene inserts to allow for changeable message Inserts that can be easily updated as required. Signs shall be wall mounted or flag mounted to any surface using selected fasteners, brackets and adhesives recommended by the sign system manufacturer.

Informational and identification signs shall be 9 in x 9 in. x 1/16 in. in dimension with 9 in x 6.5 in. being white in color and 9 in. x 2.5 in. being blue in color. Office signs shall be 9"x 6.5" x 1/16" in dimension with 9 in x 4 in. being University white in color and 9 in. x 2.5 in. being University blue in color. Tactile Characters and Grade 2 braille raised 1/32 inch (0.8 mm) above surface with contrasting two colors.

The University has determined the following Manufacturer(s) to be of acceptable quality for signage include; APCO Graphics, Inc., ASI-Modulex, Inc., and Kroy Gemini Incorporated.

12 Public Safety Systems Guidelines

12.1 Guiding Principles

Providing buildings and sites that are safe is one of the primary tenants of the University. Proper design and constructability of Infrastructure Security Systems for new construction and renovations at the University is paramount. The University has adopted the Crime Prevention through Environmental Design (CPTED) philosophy and requires the Designer to take into account such philosophy in the positioning of a new structure, landscape and building design. Every building on campus has a unique purpose, therefore safety and security design shall be specific for each building. Design an appropriate physical protection system that utilizes building occupants and technology that will protect the assets accordingly.

The Designer shall incorporate existing systems when applicable, to ensure a seamless co-existence of new installations. Only certified professionals knowledgeable in the systems shall perform such designs.

Design documents shall provide details of all fire protection and security systems. Before finalizing the intended design within the Design Development phase on any University owned property, the Designer shall obtain confirmation from the University Representative in conjunction with Division of Public

Safety that all details concerning public safety have been covered and are acceptable. Such details shall also include the preliminary site logistics plan which shall reflect site and building access and egress paths by the public and occupants.

For many projects, the Division of Public Safety will have jurisdiction over the review and approval of the design plans as they relate to permitting responsibilities. However, if the project exceeds the State's Threshold Building Limits, the Office of State Building Inspectors has jurisdiction and review authority over the project. The Designer is required to meet all requirements of the Office of State Building Inspectors, as well as, all University Standards for Threshold projects.

12.2 Automatic Exterior Defibrillator (AED)

All new buildings and major renovations to existing buildings shall incorporate an AED installation. The AED shall be located at a minimum in main entry/lobby of the building. Such installation package shall include a an AED device with 2 electrodes, charging unit, protocol card and program, implementation starter kit, carrying case, ambulance rescue kit(reusable mouth barrier mask with valve and filter, 2 sets of gloves, vionex wipes, scissors, disposable razor and carrying case), wall decal, inspection tag, AED cabinet with audible alarm, projected wall sign and basic bleeding kit vacuum sealed (1 – CAT tourniquet, 6" emergency trauma dressing, 2-NAR compressed gauze, 2-Pair bear claw nitrile gloves and NAR 7.25 trauma shears). The University has determined the following Manufacturer(s) to be of acceptable quality for AEDs: LifePak CR Plus Auto Physio or approved equal.

12.3 Infrastructure Security System

Guiding Principles

All designs shall ensure clear sightlines and adequate lighting for safety and surveillance to protect the assets within the building and campus grounds. The Designer is responsible for coordinating the security system with any landscape design for review with the University Representative in conjunction with the Division of Public Safety and University's Landscape Architect.

A well-designed infrastructure security system shall be included in the program to identify what needs to be protected and provides four groups of security components: deterrence, detection, delay, and response. These four items in addition to what type of work is being performed in the building or space as well as equipment housed shall be the basis of need.

Deterrence – to prevent unwanted visitors from gaining access to school grounds or buildings, and deterrence to avert the impact of natural threats that could result in potential harm to students, staff and property.

Detection – to quickly locate, identify and contain the movement of an unwanted party who has gained unauthorized entry to the building.

Delay – to impede, isolate and forestall the movement of an unwanted party within a building; to prevent access to classroom areas and common gathering points within allowing adequate time for a public safety response.

Response – to ensure that coordinated, interactive and reliable communication system and procedures are in place to facilitate an immediate and effective response from public safety and medical agencies.

The design shall allow for the monitoring of points of entry/egress by natural and/or electronic surveillance during normal hours of operation and during special events.

For new construction or renovations to existing buildings, if the building has occupancy that requires access after normal hours, design shall identify one key entrance to be designated as an “afterhours” entry point to the building. Such entrance shall be clearly identified as such with a sign at the entry door. Where feasible, incorporate into the design for an afterhours space that can be segregated in such a manner that the rest of the building can be secured.

Signs identifying the designated after-hours access entrance shall following the sign standards and shall state: “After Hours Entrance”. Follow sign requirements within subsection on Way finding, Informational and Directional Exterior Signage.

Public Areas consist of areas made available for use by the public, including but not limited to, campus grounds, parking areas, building exteriors, loading docks, areas of ingress and egress, classrooms, lecture halls, study rooms, lobbies, theaters, libraries, dining halls, gymnasiums, recreation areas, and retail establishments. Areas in which persons would not have a reasonable expectation of privacy, but to which access is restricted to certain University employees, such as storage areas, shall also be considered public areas.

Private Areas consist of areas in which a person has a reasonable expectation of privacy, including but not limited to, non-common area do residence halls, residence hall corridors, bathrooms, shower areas, locker and changing rooms and other areas where a reasonable person might change clothes. Additionally, areas designed for the personal comfort of University employees or the safeguarding of their possessions, such as lounges and locker rooms, and areas dedicated to medical, physical or mental therapy or treatment shall be considered private areas.

Generally, at a minimum, all buildings (with the exception of Residence Halls) shall include card key access control, alarm notification and camera(s) to all entrance and exit points, include just intrusion alarm with card key for roof hatches.

The security management system control panel shall be installed in the main telecommunications distribution closet. Ensure that there is two (2) dedicated data connections and two (2) dedicated isolated power outlets where the control head end unit will be located. The Designer is responsible to coordinate the control hardware with the standard doors and frames. The Designer shall clearly have defined pathways and identify them in the as-built drawings. IP address will be coordinated with the University.

12.4 Security Management Systems

For projects where there is a high risk factor to the building, occupants or grounds, the Designer shall provide as part of the design team, a designated ASIS certified security consultant independent of any product manufacturer or dealer.

The University has determined the following internet protocol system to be of acceptable quality and performance for the Surveillance System; Genetec.

- Ensure that the specifications call for a certified technician who is an authorized service representative of the proposed equipment with the requisite training and authorization from proposed equipment manufacturer to install and program the solution specified at the time of installation. Technician shall be responsible for training designated personnel in access card programming.

Power over Ethernet (PoE) is required for any dedicated data drop on or within a building. Where feasible, data drops shall be inaccessible and hidden from view to prevent unauthorized tampering with connection.

A single UTP Category 6, plenum cable is required for each data location. These data drops are to be terminated in a dedicated patch panel and switch in the telecommunications room. Designer must insure data jacks are included in the Communications drawings.

For distances beyond what can be supported by Category 6 plenum cable, such as outside poles, fiber optic cabling dedicated to a network switch installed in a NEMA 4X rated control box mounted to the pole. Locations with 110 power requirements shall take into consideration the need for step down transformers. Emergency power circuits are preferred. Poles and conduits shall be grounded.

The design and functionality of the security system shall include:

- Configuration of embedded systems such as Access Control System, License Plate Recognition, and Video Monitoring Systems.
- Live event monitoring.
- Live video monitoring and playback of archived video.
- Alarm management.
- Reporting, including creating custom report templates and incident reports.
- Federation for global monitoring, reporting, and alarm management of multiple remote and independent ACS and/or VMS systems spread across multiple facilities and geographic areas.
- Global cardholder management across multiple facilities and geographic areas each with their own independent ACS system.
- Microsoft Active Directory integration for synchronizing USP user accounts and ACS cardholder accounts.
- Intrusion device and panel integration (live monitoring, reporting, and arming/disarming).
- SIP Intercom device integration for bi-directional communication.
- Integration to third party systems and databases via plug-ins (access control, video analytics, point of sale, and more).
- Dynamic graphical map viewing.
- Asset management system integration.

In locations where access control and surveillance cameras work in tandem, time stamp of both systems shall synchronize to insure entry and exit times match recorded video.

- System is to be programmed to alert Public Safety if access is opened outside of FO first shift hours (0700-1500).
- All perimeter doors shall lock at a specified time, except for one central door (After Hours Entrance) which shall remain open until a designated time. This insures all people are entering the building through the main entrance.

Security Cameras

All building exterior doors and service areas shall have video surveillance cameras installed. Such surveillance shall be recorded back to the Command Center located at the University's Police Department. Inside building entrances a designated sign that notifies the public that the building is

under surveillance shall be posted. Use of cameras shall be limited to public areas. Follow requirements for interior signs at the end of Section 7.

If needed electronic shielding will be placed in the camera so that the camera cannot be used to look into or through windows into private areas either on University property or privately owned residence not located on University property.

Cameras shall be an integrated IP-based field mounted camera. Basis of design for Cameras shall be on the needs of performance. As technology advances the basis of design will change therefore it is the Designer's responsibility to inform the University Representative for any new innovative devices that will provide enhanced surveillance for the application.

Components shall be protected from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include coverage for voltage surges of external wiring of each conductor's entry connection to the manufacturer's requirements for the camera.

Conduits, connectors, hand holes and secured boxes shall be weather-proof.

For situations where the camera needs optimum night –time camera viewing, include back focus and adjustments necessary to obtain such viewing.

Access Control Systems

Access Control System shall support a variety of access control functionality, including but not limited to:

- Controller (Unit) management, door management, elevator management, and area management
- Cardholder and cardholder group management, credential management, and access rule management
- Badge printing and template creation.
- Visitor Management.
- People counting, area presence tracking, and mustering.
- Offer a framework for third party hardware integration such as card and signature scanner

The University uses a card access system for entry into the buildings and public spaces within the building. Individual offices, bedrooms or other private rooms utilize a traditional key systems and non-electronic hardware. The design of the card access system in the building needs to be compatible with the access system hardware and software that is currently being utilized on the campus.

Warranty/Guarantee

The Designer is to include within the detailed specifications any component of the Security System Infrastructure that the manufacturer agrees to repair or replace components of cameras, equipment related to camera operation, and control-station equipment that fail in materials or workmanship within specified warranty period. Security System components include all hardware, firmware, devices, and other materials and labor unless specifically excluded in this document.

Ensure that the Contractor provide a complete coverage of parts, labor, installation and software warranty on all components associated with this purchase, for a period of one (1) year following

acceptance of the entire system. Warranty period shall commence upon official acceptance by the University of the entire network system.

During the warranty period, the University requires a four (4) hour response time for system or component failures from the Contractor and shall provide all available software and firmware upgrades, patches, hot-fixes, etc. to include all labor, at no additional cost to the owner. Advanced replacement of each component in need of replacement or repair at no additional cost to the owner.

12.5 Code Blue Emergency Telephone

Any project that entails work outside of a building that impact or add sidewalks shall take into consideration the requirement of moving or adding an Emergency Blue Telephone. Designer shall review with the University Representative to determine if an emergency telephone is required. The spacing of these telephones shall be such that from any location on the site, at least one emergency telephone can be seen.

See Appendix IV - Telecommunications Design Guidelines and Performance Standards for further information and details about emergency call box requirements.

12.6 Central Fire Command Station

At Regional Campuses, stand-alone structures and other areas off of an existing campus network, the communication system from the building alarm system to a receiving station shall be based on compatible technology. Due to concerns over key holder contact, repair contracts, cost of monitoring, and potential delays in transmission of non-priority alarms, the University Storrs 911 center shall be the first choice alarm receiving center and use of third party receivers (i.e.; ADT, Brinks, etc.) shall only be used when the existing network cannot be extended and found to be the only practical solution.

On the Storrs and Depot campus phone networks, the system shall be provided with a fully networked communication process, to be connected to the existing campus Network Command Center (NCC) by Siemens or the Central Station Fire Alarm System 4120 network True Site Work Station (TSW) by SimplexGrinnell. Both are located in the Public Safety Building in Storrs. The network interface shall provide and be programmed to use the following minimum capabilities:

- Graphic screens shall be programmed at the TSW or NCC (head end receiver) that depict an actual representation of the building floors, annunciating all alarm points in the building. These points shall be programmed to change color depending on their state of activity (red for alarm, green for normal, etc.).
- The network interface shall provide to the TSW or NCC:
 - Control of the remote panel allowing the operator to acknowledge devices individually or in groups.
 - The ability to silence signals and reset the remote panel.
 - Set-host service functions which will allow remote node data access including reports on all individual initiating devices.
 - Programming and diagnostics capability of the remote node.

Compatibility and Age/Versions

The University has standardized critical life safety infrastructure for reliability and compatibility of operating systems, as well as consistency of parts stock, technician and user training and testing protocols. All primary (panel, programming, network interface, etc.) fire alarm equipment and

programming shall be manufactured by SimplexGrinnell or Siemens. Secondary components and some communications equipment may be from other manufacturers if compatible with the SimplexGrinnell or Siemens alarm receiving system and is approved by the University Representative in conjunction with the Fire Chief as an equal. Examples include, but are not limited to Vesda detection systems, interface or control modules, dialers for non-networked locations, etc. Packaged off brand, devices such as duct detection packaged with air handler units will not be accepted, as they create compatibility problems with the main panel and require special parts stock. Prepackaged devices must of the same brand (or accepted by the manufacturer) as the fire alarm panel in the building or must be replaced with same brand equipment unless technically impossible.

With renovations, the age of the existing system components should be taken into consideration when specifying the re-use of existing system components in conjunction with additional new system components being added to the overall system. The Designer is responsible for investigating the existing system being impacted and confirming with the University Representative in conjunction with UDPS the strategy for utilizing existing versus new components. Investigation should not be left to the Contractor or third-party supplier.

Fire Alarm Control Panel and Annunciation Configuration

The building's main fire alarm control panel shall be located at or as close to the main entrance of the building as possible. The location of this panel shall be approved by the Division of Public Safety designee. In cases where, due to existing wiring infrastructure or other factors that necessitate locating the main fire alarm control panel in a location that is not near the main entrance, a fire alarm remote control-capable annunciator with voice controls and microphone-if applicable) shall be installed at the main entrance. Remote annunciator panels shall be configured to match appearance and function of the main panel within the limits of the equipment. A minimum 80-character alphanumeric display shall be mounted at 5'6" to the center of display above the floor.

Fire protection releasing functions should be included in the main fire alarm panel whenever possible, removing any secondary releasing panels from the design.

Notification

Voice capability may be specified in areas where not required, but deemed by the fire department's designee as appropriate for occupant emergency alerting and/or notification purposes.

The operation of the "hot" or "soft" keys shall be password protected to prevent unauthorized control of fire alarm functions. Capability of one stroke key control or hot key button control (after password access) and includes the following disabling features:

- All audible and visual signals, while only generating one (1) trouble transmission, shall be provided.
- The automatic release of magnetic door hold open devices and fire shutters, while only generating one (1) trouble transmission shall be provided.
- The elevator bypass feature, while only generating one (1) trouble transmission shall be provided.
- The interconnect feature with other fire alarm panels/systems within the same building, while only generating one (1) trouble transmission.
- Other control by event features such as air handling unit shut down and activation of smoke control systems, while only generating one (1) trouble transmission for each group of like features being disabled.

Backup Power

For secondary power supply and back-up battery capacity, regardless of the presence of an emergency generator, provide a minimum of 24 hours standby and 15 minutes of alarm time capacity.

Labeling of Fire Alarm Components

The fire alarm panel shall be labeled with the following information:

- location of the battery charger panel
- location of the battery box
- location of any Notification Appliance Circuit (NAC) panels
- location of the AC power supply overcurrent protection device (OCPD) for that panel
- a contact number for the fire alarm service provider (if the system is not being monitored and serviced by the University)
- the alarm transmission method (fiber network, dialer, etc.)
- the account or node identity at the receiving location shall also be described

If the panel is located in an area that is controlled and not publicly accessible, such as a locked and dedicated fire command room, the labels may be on the exterior of the panel enclosure, otherwise it shall be on the interior of the panel enclosure.

The labeling shall be of a pre-manufactured or site produced label and shall not be hand written. Labeling shall be located in an area such as on the inside surface of the panel door or similar that would be protected but readily visible to authorized users.

Power Supply

NAC, PAD etc. panels shall also have a label indicating battery location and designed size, as well as, the AC power OCPD location. The inside of the battery box shall be labeled with the amp hours rating of the batteries required by the fire alarm design. Battery system and charger system shall be readily accessible to the satisfaction of the Division of Public Safety Representative for normal testing and maintenance.

Initiating devices shall be labelled clearly with the device number that appears on the annunciating display(s). The label shall be positioned to face the direction of travel from the door of a space and/or the direction of travel from the alarm panel toward the device. The label should be visible from the floor level and shall be of a pre-manufactured or site produced label and shall not be hand written.

Fire Alarm Excess Capacity

A minimum of 20% excess cabinet/rack space above that required by code shall be incorporated into the original design and configuration of the fire alarm system. It is preferred that the excess space be within the main fire alarm panel, however if in order to achieve such excess space a separate panel is required, it shall be mounted immediately next to the main fire alarm panel.

For addressable circuit (ID Net/DLC loop. Etc.) addresses, provide a minimum of 20% excess addresses for each ID net circuit or card utilized above that required by code for the original design and configuration of the fire alarm system on the day that the Certificate of Occupancy (CO), Temporary Certificate of Occupancy (TCO) or Certificate of Approval (CA) is issued.

For notification appliance circuits, provide a minimum of 20% excess notification circuit capacity in addition to 20% excess signal circuit capacity on each signal circuit card utilized in the system than

required for the original design and configuration of the fire alarm system on the day that the Certificate of Occupancy (CO) or Certificate of Approval (CA) is issued.

When a project is renovating a space, the Designer can utilize the excess capacity in existing fire alarm panels and does not need add new panels or capacity unless it utilizes greater than 95% of the existing panel capacity. If less than 5% capacity remains, the Designer shall provide an increase in panel, ID net addresses and power supply capacity to the requirements herein.

Fire Alarm Initiating Devices

The Designer shall be responsible to ensure that all initiating devices are placed in locations that are readily accessible for routine maintenance and testing. Duct detection that cannot be readily accessible shall be eliminated from design wherever code allows. If detection devices must go in areas that are hard to access, they will be reviewed with the fire department or designee during design and shall be provided with readily accessible remote alarm/test/reset switches, appropriately labeled. All initiating devices shall be addressable and clearly labeled with their device number. The label shall be clearly visible from floor level and from the typical direction of travel into and through the protected building from the direction of the main Fire Alarm Control Panel (FACP). All FACP pre-programmed keys, zone labels, function keys, instructions and initiation device labels shall be typed.

Devices in locked rooms such as high hazard or medical procedure areas, shall be located such that they can be observed from the corridor or have a remote LED display in the corridor in order to view the status of the device.

Description of device location shall be geographically driven and landmarked to room numbers. The list of the point descriptions shall be submitted and approved prior to final acceptance by the Division of Public Safety designee.

In addition to any specific detection devices required by the State Building Code, Connecticut Fire Prevention Code and/or the Connecticut State Fire Safety Code, automatically addressable detection shall always be provided unless this requirement is waived by the fire department designee. Conventional (non-addressable) detection may be acceptable in locations such as extreme temperature, low risk, low occupancy, etc.

Smoke and Heat

The preferred installation of smoke and heat detectors is on the ceiling with sidewall installation will only be accepted as a contingency.

Activation of any single heat detector, water flow sensor, special hazard detector (flame, explosion, etc.), or pull station in any occupancy class shall activate the general evacuation signals, as well as, transmit a fire alarm signal to the Public Safety TSW/NCC, or other approved reception point.

It shall be the responsibility of the Designer and installer to verify the use of all spaces and equipment within the space to determine the proper type of initiation device and to provide proper coverage, to reduce the number of nuisance alarms. Areas that contain environmental conditions which would likely cause false alarms may require the use of heat detection or smoke detection with a Carbon Monoxide sensor as an example.

The fire alarm system's response to the activation of smoke detector(s) shall be based upon the following:

- **Elevator Recall**

Smoke detectors that serve as area detection and elevator protection/control shall operate as noted in sections below, along with the code required elevator control functions. Smoke detectors that are dedicated to elevator protection/control only shall perform required elevator control functions, as well as, transmit a fire alarm signal to the Public Safety TSW/NCC. Local annunciation shall not be required. Activation of heat detection, even if dedicated to elevator functions, shall activate the general evacuation signals as well as transmit a fire alarm signal to the Public Safety TSW/NCC.

- **Residential Spaces**

Activation of any one (1) dorm/sleeping room smoke detector in which only 1 smoke detector protects that compartment shall result in local annunciation in that compartment and connected compartments (i.e. suites, etc.), and the transmission of a fire alarm signal to the Public Safety TSW/NCC but shall not result in the activation of a general evacuation signal in any other part of the building.

Activation of any two (2) or more smoke detectors in dorm/sleeping rooms (or suites of sleeping rooms) shall result in the transmission of a fire alarm signal to the Public Safety TSW/NCC and activation of the general evacuation signals.

Activation of any one (1) common area or mechanical space smoke detector shall result in the transmission of a fire alarm signal to the Public Safety TSW/NCC and activation of the general evacuation signal.

- **Business, Assembly, Mercantile, Storage and Other Occupancies**

Activation of any one (1) area smoke detector, which shares air/compartment space with other smoke detectors, shall result in the transmission of a fire alarm signal to the Public Safety TSW/NCC and but shall not result in the activation of the general evacuation signal.

Activation of any two (2) or more common area smoke detectors that share the same air or compartment space shall activate the general evacuation signal as well as transmit a fire alarm signal to the Public Safety TSW/NCC.

Activation of any one (1) smoke detector, in which only 1 smoke detector protects that one compartment, shall result in the transmission of an alarm signal to the Public Safety TSW/NCC and shall activate the general evacuation signals.

Carbon Monoxide (CO) Detection

CO detectors shall be installed where required by code and additionally based on request of the fire department designee. The fire alarm system's response to the activation of the Carbon Monoxide detector shall be based upon the following:

- **Residential**

Activation of any 1 Carbon Monoxide sensor in dorm /sleeping rooms (or suites of sleeping rooms) shall result in that device sounding locally and throughout any connected rooms of an

individual suite, the transmission of a priority 2 alarm to the Public Safety TSW/NCC, but shall not result in the activation of a general evacuation signal in any other part of the building.

Activation of any 2 or more dorm/sleeping room Carbon Monoxide sensors shall cause those devices to sound locally and throughout any connected rooms of an individual suite, the transmission of a Priority 2 alarm to the Public Safety TSW/NCC, and shall activate the general evacuation signals.

- **Business – Assembly – Mercantile – Storage – Health Care – Educational – Detention**
Activation of any 1 common area Carbon Monoxide sensor shall result in the transmission of a priority 2 alarm to the Public Safety TSW/NCC but shall not result in the activation of the general evacuation signal.
Activation of any 2 or more common area Carbon Monoxide sensors shall result in the transmission of a priority 2 alarm to the Public Safety TSW/NCC and shall activate the general evacuation signals.

Manual Pull Stations

Manual pull stations shall be of a key operated type, not requiring tools such as hex keys, screw drivers, etc. The key type shall match the typical for the brand of the system in that location (ie; B key for Simplex and T45 for Siemens).

Speaker Strobe Units

It is preferred that where voice capability is incorporated or required, the speaker strobe should be a red unit. Where required, speaker strobe units shall be installed onto common circuits and appropriately activate via programming with standardized fire evacuation messages.

Flow Devices

If any device is activated on a wet sprinkler system or dry suppressor system, the emergency evacuation alarm should sound on a building-wide basis, and notification sent to the Public Safety TSW/CNN/NCC.

Sequence of Operations

All initiating devices that cause any sequence of further operations such as releasing, elevator recall, smoke control, verification, etc must be provided with documentation and training prior to acceptance that details the sequence(s) and all related/connected devices and systems.

12.7 Fire Protection/Extinguishing Systems

All student residences larger than single family homes shall have fire protection systems. It is preferred that all new construction projects include a fire protection or suppression system. Renovations to buildings that do not already have sprinkler coverage in the building shall be reviewed on a case by case basis with the University Representative and the Division of Public Safety designee.

Black iron or CPVC shall be used in ALL fire protection system piping. Galvanized piping will only be accepted in drain piping, unless specifically approved by the fire department designee. Black iron piping 2.5" and larger shall be Schedule 10, black iron piping 2" and small shall be Schedule 40.

Branch and main piping for dry/pre-action/deluge/fixed extinguishing systems will be labeled to the approval of the fire department designee to allow easy identification in the field.

For new construction, ITS closets or rooms with a significant amount of equipment, a dry/pre-action system shall be incorporated into the design. For renovations, the need for a dry/pre-action system in an existing ITS closet will be determined on a case by case basis with the University Representative in conjunction with ITS.

All piping in wet spaces such as crawl spaces, tunnels, attics etc shall be provided with corrosion protective coatings (minimum: rust preventative paint) and shall be Schedule 40 piping. In non-heated spaces where sprinkler lines are intended to be installed, such lines shall not be wet systems and shall be insulated.

Flow Switches

Sprinkler flow switches shall be equipped with an integral time delay device which shall be able to provide a delay of no less than 25 seconds from the time water begins to flow to the activation to the time of the alarm or as close to that value as can be adjusted in the field. In no case may the delay be programmed greater than 40 seconds.

Drains

It is preferred the main drain for the sprinkler system to be piped directly to the outside of the building, with provisions made to prevent soil erosion during testing. If the main drain is interior to the building, a large basin shall be provided to accommodate the volume of water required to drain the system. The drain room shall also have a floor drain, however the sole reliance on the floor drain to drain the sprinkler system is prohibited.

All low point, drum traps, and similar drains shall be piped to place the valve in heated spaces. This is required to prevent freezing of drain water between maintenance visits.

Power Monitoring

Power status for jockey pumps and compressors shall be monitored by the fire alarm system.

Accessibility

All risers, valves and appurtenances shall be readily accessible for fire department control, normal or emergency maintenance, and resetting. Zoning of the sprinkler system should be reviewed with the University Representative and the Division of Public Safety designee during the Design Development phase and should not be finalized until approved by both. Shut off valves shall be provided on each floor and for each zone and shall preferably be located in stairwells.

Control valve height shall not exceed seven feet (7') from the walking surface, unless approved by the Division of Public Safety designee. The control valve indicator shall be readily accessible and visible from the floor without the use of a ladder. If the valve height exceeds seven feet, it shall have a chain-equipped handle. The control valves shall be equipped with "break away" locks (keyed as Cat 83 and does not capture the key) and a chain or cable.

Each control valve shall be labeled to indicate areas covered. Individually addressable sprinkler flow switches and addressable control valve tamper switches shall be provided for each control valve and inspectors test valve on all sprinkler systems, including limited area sprinkler systems.

University Ownership of Equipment

All sprinkler equipment required to service and maintain the system shall remain the property of the University. For renovations of existing systems, unused or replaced equipment shall be kept or discarded at the discretion of the FO.

Training and Documentation

The Designer shall require the sprinkler system installer to provide full overview training of the new system, which shall include field review of the locations of all new components of the system with University fire life safety representatives. Electronic as-built drawings (with a copy of the valve lists) shall be provided to the FO and shall contain the location, area/function served, and “normal setting” (open or closed) for each valve. Documentation shall also include plans of all device locations back to the riser, riser diagrams, and current hydraulic calculations.

12.8 Fire Department Connection

For buildings at Storrs, the University’s standard fire department connection (FDC) is a 4” Storz type connector. For buildings at the regional campuses, the type and size of the FDC shall be determined by the local fire department. The location and number of FDC’s required for a project should be reviewed and approved by the Division of Public Safety designee early in the project design, but in no case shall there be less than one FCD per building.

12.9 Fire Extinguishers and Cabinets

The goal is to provide sprinkler coverage throughout buildings, and thereby minimize the number of fire extinguishers in the building. Fire extinguishers are still required for certain uses in the building, such as chemical laboratories, and the appropriate type of extinguisher should be provided for each special use. To allow quick response and replacement, fire extinguishers should be installed on brackets and not in cabinets. This will minimize wall damage and intrusion on wall fire ratings. All fire extinguishers shall be Buckeye Brand or approved equal.

12.10 Emergency Services Apparatus Accesses

Service road access for rescue and firefighting apparatus shall be provided to all four sides of the building and courtyards, if possible and practical. The largest fire truck serving the Storrs campus currently is the 1994 Aerial Truck (also known as a “Tower 122”). The inner turning radius is 30’ and the outer radius is a minimum of 53’. The stabilizing jacks require a solid (paved or compacted) surface of 18’ wide by 50’ long minimum. If service road access cannot be provided on all four sides of the building, the Fire Department designee shall approve the access provided.

Mountable curbs and raised/ramped roadways must accommodate fire department access for types of responses deemed appropriate by the fire department designee. Access may be require for lower vehicle such as ambulances.

12.11 Fire Hydrants

Fire hydrants shall be located to allow ready access in proximity to the intended center location of the fire department operations, and preferably within close vicinity to the front of the building. However, the hydrant location must be far enough from the building to keep firefighting apparatus and personnel out of potential collapse zones. The area around a hydrant shall have a minimum of a 3’ radius of paved or hard area around the hydrant on all sides to allow for the turning of the valve stem. The area

between the hydrant and the apparatus shall have a minimum of 10' clear of width (5' to each side of the hydrant) to allow for hose line placement and working area.

The University Division of Public Safety shall be consulted regarding acceptable types of fire hydrants. Gate valve shall be a left open valve. Fire hydrants shall be painted red, unless the hydrant is on a high-pressure line, in which case the hydrant shall be painted orange.

12.12 Fire Water Lines

It is preferred that new buildings have a separate domestic water service and fire water service. Where feasible, and for buildings exceeding 250,000 square feet, provide a redundant fire service (ie. three services).

The pressure of the fire loop in the vicinity of the University varies between 120 psi and 140 psi. Prior to commencing the design, it is the Designer is responsible to have a pressure test conducted by an independent third party at the nearest fire hydrant to the project. Such testing cannot commence without first notifying and obtaining an approval to proceed with the testing from the of the University's Fire Department prior to conducting the testing.

12.13 Key Securing Systems

All building projects, new construction and renovations will include a Knox Box key storage device to interface with the Knox Rapid Access System implemented and maintained by the University fire department. The Knox box is a safe-like enclosure and can be either surface or flush mounted outside the building. The location of the box shall be approved by the Division of Public Safety designee. If an alternate key securing system is proposed, it shall be compatible with the existing University system and also subject to approval by the Town of Mansfield (for Storrs based projects).

On the Storrs and Depot Campuses, the Knox box shall be equipped with the option that allows the box to be monitored by the building fire alarm system and shall be designed to tie into the system. If a fire alarm system is not available to monitor the box, a security alarm shall be used. If neither exists, the Division of Public Safety designee shall approve alternate security procedures.

Control of Keys

On the Storrs and Depot campuses, the University fire department will maintain the Knox access key. At other facilities and branch campuses, the Knox box shall be keyed to the local fire department (if a system is already in place) or coordinated with the local fire department to register for a new Knox box system.

12.14 Communication

Radio Amplification System

For any new building or addition to a building that exceeds 10,000 square feet, the radio amplification system shall be checked and verified that receiving and sending coverage meets the following, including below grade spaces:

- A minimum signal strength of one (1) microvolt (-107 dBm) available in 90% of the area of each floor of the building, including below grade where applicable, when transmitted from University Public Safety Dispatch.

- The frequency ranges, which must be supported, shall be in the 800 MHz range for the University's Police Department and UHF for the University's FO Operations Department; with a 100% reliability factor. Frequencies shall be determined by the designer/vendor conducting the required research at time of system design to assure compatibility with existing communications.

Any radio communication boosters, repeaters, etc. required to be added to meet the coverage requirements will be of the same capability and quality as the existing public safety radio systems in areas such as radio identifiers, trunking, digital protocols, etc.

Amplification System

Building and structures which cannot support the required level of radio coverage shall be equipped with an internal multiple antenna system with FCC-accepted dual frequency range bi-directional UHF and 800 MHz amplifiers. Frequencies shall be determined by the Designer conducting the required research at time of system design to ensure compatibility with existing systems.

If any part of the installed system or systems contains an electrically powered component, the system shall be capable of operating on an independent battery and/or generator system for a period of at least twelve (12) hours without external power input. The battery system shall automatically charge in the presence of an external power input. The amplification system, if powered, will be monitored by the building fire alarm system. If the system shifts to auxiliary power as stated above, the buildings fire alarm system will indicate trouble for that dedicated zone or addressable monitoring device when the building uses an addressable fire alarm system.

For new buildings, the Designer shall provide two (2) raceways in the walls into which the cable could be laid. Such raceways shall include an opening in the roof, which allows for replacement of an exterior antenna, and, access to each floor.

Acceptance Testing Procedures

When modification or enhancement to an in-building radio system is required, and upon completion of the installation, it will be the Designer's responsibility to ensure that the radio system has been properly tested and witnessed to ensure the two-way coverage on each floor, including below grade, of the building.

Each floor of the building, and below grade, shall be divided into a grid of approximately twenty (20) equal areas. A maximum of two (2) non-adjacent areas will be allowed to fail the test. The test shall be conducted using a Motorola MTS2000, or equivalent, portable radio, talking through the University radio system and conducted under the supervision of the University's Communications Manager. The center of the grid area will be located for the test. The radio will be keyed to verify two-way communications to, and reception from, UCPS Dispatch.

The gain values of all amplifiers shall be measured, and the test measurement results shall be provided to the Division of Public Safety designee and the University's Communications Manager.

Qualifications of Acceptance Test Personnel

The Designer will be responsible to require the Contractor to perform all tests associated and that the test shall be conducted, documented and signed by a person in possession of a current FCC license, or a current technician certification issued by either the Associated Public-Safety Communications Official

International (APCO), the Personal Communications Industry Association (PCIA), or the National Association of Business and Educational Radio (NABER).

13 Plumbing Guidelines

13.1 Guiding Principles

The Designer is responsible for coordination of all building systems involved within the project and to minimize the number of joints within the run and cross connections. To that means, include language within the specifications that any unnecessary short pipe runs will be replaced at the Contractor's expense.

All piping layouts, directional flows and shut off valves shall be included in the Contractors field red line plans. The Designer is responsible for incorporating such field installs are incorporated into the record set of documents.

13.2 Steam and Condensate Piping

Interior steam piping shall be A53, Grade B, ERW, schedule 40. Condensate piping shall be A53, Grade B, ERW, schedule 80.

13.3 Domestic Water Supply and Systems

The Designer is responsible for individual sizing of all backflow preventers when they are required. Review design parameters with the University Representative in conjunction with FO when backflows are normally required to ensure unnecessary redundancy. Strainers shall be specified with every service entry. Design work performed on new or existing service entries must specify a minimum of a 60 minute flush of the entire system once it is turned back on.

The University has determined the following Manufacturer(s) to be of acceptable quality for backflow Preventers greater than 2" in size are: WATTs Series 709 / Watts 757 or approved equal. For backflow preventers equal to or less than 2" in size, acceptable quality products are WATTs Series 909 or Wilkinson.

In laboratory areas must specify a double check valve in lieu of a backflow preventer. The University has determined the following Manufacturer(s) to be of acceptable quality for double check valves are: WATTs 757 series.

Hot Water Systems

The use of plastic and iron pipe is prohibited. Recirculating hot water distribution systems shall be used to maintain proper supply water temperature. Heat tracing is not an acceptable solution in maintaining proper water temperature. Design tempering domestic hot water with digital mixing valves as opposed to mechanical.

The number of fixtures shall be designed for the full peak load, and diversity factors can only be applied when all points in the system are 100% controlled.

The University has determined the following Manufacturer(s) to be of acceptable quality for:

Digital mixing valves: Armstrong or Powers.

Mechanical mixing valves: Acorn, Halsey and Simmons