FIRE ALARM SYSTEM SUBMITTAL & CONSTRUCTION PROCESS

1. Fire alarm contractor to provide Owner with a full set of shop drawings, specifications, materials list, product cut sheets, and any other items required as per Town of Henrietta Fire Alarm Submittal Checklist for Owner review before applying to the town for the Fire Alarm Permit.

2. Submittal will comply with these guidelines and Town of Henrietta Fire Alarm Submittal Checklist in addition to all applicable codes.

3. Submittal will include a completed copy of the Town of Henrietta Fire Alarm Submittal Checklist.

4. Owner (Electrical Dept – Fire Techs) will review submittal and meet with contractor to resolve any issues.

5. Contractor will apply for Fire Alarm Permit after Owner approves submittal.

6. Contractor and Owner (Fire Techs) will meet and review materials and installation locations before ordering and rough in. This is to ensure correct materials and mounting height compliance with these guidelines.

FIRE ALARM CONTROL PANELS

FACP MODEL TYPE:

- SIMPLEX FACP, minimally 4100U/ES model
- PYROTRONICS FACP, minimally XLS

FACP FEATURES:

- Full detector SENSITIVITY and device SERVICE STATUS reporting.
- Programmable FUNCTION SWITCHES (at least four) located at main FACP and ANNUNCIATORS.
- Dedicated network communications meeting 100% COMPATIBILITY with existing network fire systems.
- DISABLE HORNS & STROBES from the panel.
- DISABLE FANS, DOOR HOLDERS, ELEVATORS, WATER FLOWS, SUPPRESSION SYSTEMS, etc. from the panel.
- SILENCABLE Audible Circuits (from FACP).
- LCD Annunciators, with Bypasses programmed at annunciators as well as FACP.
- System annunciator shall be located at the Fire Department response location and shall be readily visible in the entrance lobby or vestibule.
- All system conditions shall be annunciated through LCD annunciator and network monitors.
- FACP shall not be installed in any area where ambient temp could exceed 86F or fall below 40F or where excessive humidity or dust might be present. Control unit shall incorporate an "Event Memory" and the ability to access and view each event in memory from the keypad.
- FACP shall provide AT LEAST TWO FREE INTERNAL expansion card bays for future expansion.
- The FACP shall be used to control pre-action fire sprinkler systems. The panel must be UL listed and FM approved for this function.
- All system walktest features and devices will be tested upon Final Acceptance in BOTH walktest and alarm modes to confirm the desired operation of both modes.
FACP NETWORK COMMUNICATIONS:

- All FACP's shall be NETWORKED to FMS Fire Alarms Systems Shop (located in Building 49, Room A063/065) & Public Safety Dispatch Center (located in Building 025 Grace Watson).
- All networked FACPs will provide a BI-DIRECTIONAL communication interface to both Campus Safety monitoring station and FMS Bldg. 49 Fire Alarm Systems Shop.
- All networked systems shall allow for both "Local Reset" and "Reset From Networked Head End".

FIELD DEVICES

INITIATING DEVICES:

- ALL FIELD DEVICES shall be programmed with individual addresses.
- ALL MONITORING/SUPERVISORY DEVICES shall be programmed with an individual address.
- Every tamper and flow switch shall be individually addressed, regardless of their proximity to other devices.
- Where a Fire Pump is present, a “Pump Running” condition shall be treated as a supervisory condition, not an alarm.
- ALL PHOTOELECTRIC SMOKE SENSORS shall be intelligent analog type detectors.
- ALL THERMAL SENSORS shall be intelligent analog type detectors.
- ALL DUCT DETECTORS shall be the sample tube type and have key operated testing stations accessibly mounted (test switch to be mounted no higher than 72”).
- ALL PROJECTED BEAM SMOKE DETECTORS will have local key operated testing stations accessibly mounted (test switch to be mounted no higher than 72”).
- All manual stations shall be intelligent individual address dual-action type with B Key operated reset, requiring operator to make two (2) distinct and separate actions to initiate alarm.
- LINE ISOLATORS shall be installed every 30 devices, allowing no more than 30 devices to be affected in the event of a wiring fault. Use only line Isolator Modules. NO Isolator Bases shall be used. All Line Isolators Modules shall be accessibly located and labeled.
- ALL DEVICES LOCATED ABOVE CEILINGS shall have a remote LED indicator mounted on the wall at eye level as near as possible below the device and labeled accordingly.
- ALL DEVICES MUST BE INSTALLED WITH GOOD ACCESS FOR SERVICING.
- Smoke detector zones shall incorporate and utilize a smoke alarm verification feature, whereby a delay is allowed in alarm sequence to allow verification of alarm received.
- Initiating device circuits shall be wired Class A to line isolators.
- Smoke detection shall never be installed in:
  1) Laboratory fume hood exhaust,
  2) Maintenance or mechanical areas (except a smoke detector as required near the FACP).
  3) Attics, Exterior of buildings, or any location where temperature may be below 40F or above 100F, or where high humidity, dust, insects or airborne particulates might be present.

NOTIFICATION APPLIANCES:

- ALL NOTIFICATION APPLIANCES shall be of a manufacture approved by FACILITIES MANAGEMENT SERVICES (FMS).
- ALL VISUAL NOTIFICATION APPLIANCES will be synchronized with all others in a given area.
- ALL VISUAL NOTIFICATION APPLIANCES shall be Addressable 2 Wire Type.
- ALL PERIPHERAL DEVICES shall be powered from the building emergency power circuit and battery backed.
- ALL Horns shall be Addressable 2 Wire Type.
- If addressable notification appliances cannot used, then horns and strobes shall be on separate class-A circuits.
- All Notification Appliances placed outside shall be Weather Proof and in a STI-1229-HAZ weather proof
• ALL Notification Appliance Circuits (NAC) POWER EXTENDERS shall be approved by FACP manufacturer, support full monitoring and meet all NFPA requirements.
• ALL NAC POWER EXTENDERS shall be installed next to the main FACP, all other installation locations must be approved by FMS.
• All NAC Power Extenders must be connected to E-Power Source.
• ALL NAC POWER EXTENDERS shall be monitored by an assigned individual addressable monitoring point for each extender with descriptive annunciation programmed for that device on the main FACP and remote LCD ANNUNCIATOR displays, and NETWORKED COMMAND CENTERS (NCC).
• Installation, hardware, and programming shall support all functions associated with a walk test. During a walk test, horn and strobe functionality shall be supported while testing devices using the walk test with signal feature. Devices and wiring methods that do not support testing in walk test mode with a signal having full functionality of that feature are NOT acceptable.
• All NAC Power Supplies shall be Addressable and Wired Class A.
• Do not use Wheelock Snap Series Z Strobes (unless approved by RIT Fire Alarm Shop).
• No T Tapping.
• On systems with voice, avoid speaker placement in individual offices and restrooms.

**AUXILIARY DEVICES:**

• ALL FAN SHUTDOWN RELAYS shall be addressable monitored devices that may be bypassed at the main FACP, and locally indicate the operational state (status LED on control relay shall be at or near eye level) of the relay. All shutdown controls shall be wired to the normally open, held closed, contacts during normal status (no Alarm) of the FACP. The status LED shall be lit for normal operation.
• ALL SMOKE VENT RELEASES shall have associated service bypass control switched from the main FACP front panel.
• ALL SMOKE VENT RELEASES will utilize 24 volt reset-able latching devices only, and shall be battery backed by main FACP or auxiliary supply. Fusible links shall not be a primary releasing mechanism and no ETL links will be used.
• ALL DOOR HOLDER CIRCUITS shall be 24 Volts DC and be on separate dedicated power supplies and have associated service bypass control switched from the main FACP front panel. Having separate power supplies for Door Holders prevents loss of main power supply due to a shorted Door Holder circuit.
• Powered Fire Curtains shall automatically be restored to the open position upon fire alarm system reset to normal.
• Coordinate door hold open requirements with Architect. Complete smoke detection throughout the corridor should provide the smoke activation element for most door holder applications.
• Provide fire alarm circuits to elevator controller. Provide four supervised relays near the elevator controller. Program FACP, relays and elevator related smoke and heat detectors as per FMS Design Guidelines Division 14.

**SYSTEMS WIRING:**

• Identify Fire Alarm circuits with printable tape at all terminal and junction locations in a manner that will prevent unintentional interference with the fire alarm circuits during testing and servicing (760.10).

**FACP WIRING:**

• FACP shall be wired to building LIFE SAFETY EMERGENCY POWER with circuit labeling placed on FACP faceplate upper right hand corner including FACP indicated on panel circuit schedule.
ADDRESSABLE LOOP WIRING:

- ALL ADDRESSABLE LOOPS shall be wired using stranded #18/2 conductor, shielded, with a drain wire, with conductor insulation colored red and black, RED PVC jacket, FPLP rated cable UL approved for use in fire alarm system wiring and approved by FMS.
- Addressable loops will be wired as a RISER/BACKBONE and BRANCH CIRCUIT configuration. The Riser/Backbone shall not serve detectors directly, but will supply data feed to all LINE ISOLATORS. Line Isolators will be the only interface points for all BRANCH CIRCUITS. Branch Circuits will supply data feed to all addressable devices. NO MORE THAN 30 DEVICES will be supplied by a single branch circuit. A Line Isolator shall not supply data to any more than a SINGLE branch circuit serving no more than 30 devices.
- ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS (Strobes) shall be wired using stranded #14/2 conductor cable, with a RED PVC jacket, with conductor insulation colored red and black, FPLP rated cable UL approved for use in fire alarm system wiring and approved by FMS.
- ALL AUDIBLE HORN NOTIFICATION APPLIANCE CIRCUITS shall be wired using stranded #14/2 conductor cable, with a RED PVC jacket, with conductor insulation colored red and black, FPLP rated cable UL approved for use in fire alarm system wiring and approved by FMS.
- ALL AUDIBLE SPEAKER NOTIFICATION APPLIANCE CIRCUITS shall be wired using stranded #18/2 or #14/2 conductor, shielded, with a drain wire, with conductor insulation colored white and black, RED PVC jacket, FPLP rated cable UL approved for use in fire alarm system wiring and approved by FMS (see manufacturers wiring requirements).
- ALL wiring associated with FIRE ALARM systems must be in metal conduit.
- ALL AUDIBLE AND VISUAL NOTIFICATION APPLIANCE CIRCUITS shall be wired CLASS "A" (unless otherwise approved by FMS).
- 24 Volt DC AUX wiring shall be run along with all addressable loop data cables.
- All DOOR HOLDER circuits shall be 24 VOLT DC and powered by separate dedicated power supplies (separate from power supply for Fire Alarm system). Power Supplies shall be a minimum of 4 Outputs. Each Output shall be individually fused.
- All door holder power supplies will initiate from dry contacts.
- All door holder power supplies shall not be battery backed.

INSTALLATION:

FACP (CPU) AND TRANSPONDER (RPU) UNITS:

- All system enclosures housing central and remote processing units, and surface mounted annunciators shall be mounted using standoff bolts or vertically mounted Kindorff to isolate the enclosure from water/moisture contamination.
- All enclosures housing LCD DISPLAY CONSOLES shall be mounted so that the display is placed between 60" and 68" above the floor (eye level).
- All equipment, devices, and installation shall to conform to NFPA 72, NEC, and ADA requirements.
- Strobes shall be mounted at 80”-96” AFF.
- Manual Pull Stations shall be mounted 42”-54” AFF.

NAC POWER SUPPLIES:

- All NAC power extenders shall be mounted along side of FACP using standoff bolts or vertically mounted Kindorff.
- All interfacing modules and visual synchronizing devices shall be mounted, on standoff bolts or Kindorff, in close proximity to their associated power supplies and labeled accordingly to reflect address, purpose and circuit.
- All NAC Supplies shall be labeled by NAC number and circuit number including type of circuit for area served.
(i.e. NAC 1 Circuit 2 Horns).

- All NAC CIRCUITS shall be calculated for all NAC devices to be operated at their maximum output level and tap. Included within this calculation shall be an adequate allowance for expansion of at least 25%.

**FAN CONTROL INTERFACES:**

- All FAN CONTROL relays shall be mounted next to or in close proximity to associated motor control / speed drives that are being interrupted.
- All control relays shall be mounted with LED status indicators within 36”-72” of fan contactor or VSD and be labeled for both duct detector address and air handler associated with shutdown.

**ADDITIONAL REQUIREMENTS:**

FMS will assign ADDRESS LABELS for all reporting points on fire alarm system. Contractor will supply FMS with floor plans showing devices and addresses.

The university’s room numbering must be used to program the labels for the points in the control panel. The numbering typically will not be finalized until the later part of the project.

Minimum conduit size shall be 3/4” EMT.

Fire Alarm system batteries shall be mounted in separate enclosure from the FACP. Battery enclosures be mounted on Kindorff stand offs in close proximity of FACP.

An Alternate for unit pricing of detectors, pull stations, addressable strobes and horns shall be included with the bid package.

COMPLETE as-built drawings and riser diagrams with device addresses and installation documentation (including complete manual sets) of each device, shall be provided to Owner.

A digital copy of the as-built drawings in AutoCAD shall be provided to Owner, and become property of the Owner. Drawings to be black and white only, no color on both hardcopy and Auto CAD sets.

Warranty shall be for One Year and include 4 hour response time 24 Hours Per day including weekends and Holidays.

All Devices will be visibly labeled with device address.