

1.0 GENERAL

1.1 Related UBC Guidelines

- .1 Section 27 05 08 Cable Infrastructure Design Guidelines – 1.4.10
- .2 Section 27 05 05 Communication Rooms Design Guidelines – 1.4
- .3 Section 08 71 00 Door Hardware

1.2 Coordination Requirements

- .1 UBC Energy & Water Services (Vancouver)
- .2 UBC Building Operations Electrical Technical Support (Vancouver)
- .3 UBC Information Technology
- .4 UBC *Facilities Electrical (Vancouver)*
- .5 UBC Facility Management (Okanagan)

2.0 MATERIALS AND DESIGN REQUIREMENTS

2.1 General Requirements

- .1 The fire alarm system shall be a complete electrically supervised, single stage, non-coded addressable system. The system shall incorporate only addressable notification appliances in addition to addressable speakers if required.

The system shall be the following:

Vancouver: Simplex 4100ES series control panel, Autocall 4100ES or equivalent.

Okanagan: Edwards EST3 series or equivalent.

Equivalentents will be evaluated by UBC Facilities Electrical (Vancouver) / *Facility Management (Okanagan)*. Approval of equivalent equipment will be provided in writing by UBC Facilities Electrical (Vancouver) / *Facility Management (Okanagan)*.

- .2 All fire alarm systems must be designed by a Professional Engineer currently registered in BC.
- .3 All fire alarm systems shall comply with the following standards:
 - .1 CAN/ULC-S524.
 - .2 CAN/ULC-S537.
 - .3 BC Building Code.
 - .4 Canadian Electrical Code as amended for British Columbia.
- .4 Interfacing fire alarm system with BMS system.
 - .1 Review Section 20 00 05 Mechanical - General Requirements for interfacing.
 - .2 Provide form C dry contact signals to BMS as applicable.
- .5 Each ancillary function of the fire alarm system shall have its own independent bypass switch, (i.e. fans, door holders, security locks, bells, elevator homing, BMS, monitoring, etc.). Each switch is to be clearly labeled with LED annunciation of its normal and active positions.

- .6 Commissioning/Verification
 - .1 At the completion of verification of the fire alarm system and before fire alarm monitoring is connected, UBC Building Operations Fire and Life Safety (Vancouver) / Facility Management (Okanagan) shall be provided with:
 - .1 A colour photocopy of the current red line electrical drawings.
 - .2 A complete copy of the Verification Report.
 - .3 A complete list in excel format of all field devices installed.
 - .4 A detailed matrix describing device inputs and outputs. Included are all smoke control sequences, FEO Service matrix and other ancillary operations.
 - .5 A copy of the currently installed fire alarm panel program and ES Panel Programmer Report.
 - .7 All smoke control shall be controlled by hard wired interlocks with the fire alarm panel whenever possible. BMS control of smoke control system components shall not be permitted.
 - .8 Avoid nodes and networked panels in buildings where possible. One panel is preferred.
 - .9 Ancillary functions requiring 120VAC shall be fed from separate circuits, independent of the A.C circuit that feeds the fire alarm panel.
 - .10 All fire alarm system field circuits shall have connected loads/devices to a maximum of 60% of manufacturers allowable.

2.2 Main Control Panel

- .1 The main control panel shall be modular type, complete with all necessary plug-in modules or plug-in cards, and shall contain zone indication and all manually operated functions in the front cover behind a lockable door with viewing window. The panel shall contain enough bypass switches with a least 3 spares to provide each special system and/or ancillary system with bypass capability.
- .2 The location of fire alarm control panel shall be in the Main Electrical Room.
- .3 The 120VAC circuit supplying the Main Fire Alarm Control Panel shall have a surge protection device installed in or connected to a 4" square electrical box within 1m of FACP or as per manufacturer specifications. Preferred device is a Ditek DTK-120HW or equivalent.
- .4 The FACP shall be fed from a 120/208V Panelboard within the same room as the control panel. Distribution Boards/Switchboards are not acceptable.
- .5 The FACP enclosure shall not be used as a raceway for power or ancillary system wiring. All power and ancillary wiring within the FACP enclosure shall only be permitted when terminating (not splicing) to FAS cards and modules mounted within the FACP enclosure.

2.3 Pre-Action Control Panel for Sprinkler System

- .1 Pre-action control panel for sprinkler system, if required, has the following requirements:
 - .1 Capable of disabling the following using a separate switch for each:
 - .1 Notification appliance circuits (audible & visual).
 - .2 Notification appliance circuits (audible & visual).
 - .3 Releasing circuits.
 - .4 Alarm, supervisory and trouble signals to base building FACP.
 - .5 Ancillary equipment required by design (hatches, shutters, fans, etc.).

- .2 Monitored by the base building FACP individual points for:
 - .1 Releasing panel alarm.
 - .2 Releasing panel supervisory.
 - .3 Releasing panel trouble.
 - .3 Connected to:
 - .1 All tamper switches on a supervisory zone.
 - .2 All low air and low water pressure switches on separate supervisory zone.
 - .3 All devices that monitor release on an alarm zone.
 - .4 If annunciation is required using a separate LED as part of a base building FACP graphic type annunciator then the releasing panel shall be networked with the base building FACP.
- .2 A complete sequence of operation matrix identifying all possible input conditions and corresponding outputs shall be provided to UBC *Facilities Electrical* (Vancouver) / Facility Management (Okanagan) before system demonstration.

2.4 Central Fire Alarm Monitoring

- .1 The Project Manager shall contact the UBC *Facilities Electrical* (Vancouver) / Facility Management (Okanagan) and request the UBC Fire Alarm Monitoring Installation Procedure at least 3 months before substantial completion.
- .2 UBC IT Voice Services, upon receipt of valid request, will provide analog service for fire alarm monitoring at the designated service demarcation in the building. The completion timing of this service is based on the date of submission of the request for service. The designated UBC fire alarm monitoring company will be responsible to make the final connection between the monitoring equipment and the analog service demarcation point. The analog demarcation point is not to be altered or modified in any way.

2.5 Monitoring Transponder

- .1 (Vancouver) UBC Electrical Technical Support shall provide monitoring equipment at the project's cost.
- .2 The Electrical Contractor shall install the provided cabinet, internal stand-offs, transformer and all required conduit complete with pull strings as per UBC Standard Drawing E11-1.
- .3 The transponder shall use a dedicated circuit from the same power panel as the fire alarm panel. This circuit shall not share a neutral with any other circuit.
- .4 The UBC Fire Alarm System monitoring company shall install, connect, test and commission all components within the cabinet, cabling to the UBC ITS demarcation and cabling to the Fire Alarm Panel including all required terminations.

2.6 Alarm Annunciator

- .1 The location of the annunciator shall be acceptable to the Authority having jurisdiction.
- .2 The fire alarm annunciator shall be located on the inside of the building envelope to protect against rain and weather damage.
- .3 The fire alarm annunciator shall be mounted on an insulated wall, interior wall or on standoffs to avoid cold condensation issues.
- .4 The annunciator shall be manufactured by a company usually engaged for such equipment.

- .5 The fire alarm annunciator shall have a keyed enable switch to avoid tampering by the public when in alarm acknowledge, supervisory acknowledge and trouble acknowledge functions.
- .6 An active graphic style annunciator shall be required for buildings with 10,000 square meters of space or greater.

2.7 Other Requirements

- .1 No combined type detectors will be acceptable.
- .2 Each valve, switch, contact, etc. that requires connection to the FACP shall be monitored by an individual module.
- .3 All remote monitor, isolator and relay modules shall be mounted in a dedicated electrical box external to the cabinet of the equipment they monitor or control with manufacturer supplied mounting brackets and covers.
- .4 Door hold open devices shall be monuments rather than integrated door closure and hold open devices.
- .5 Where an Emergency Generator is supplied, the Fire Alarm Control Panel and all remote Fire Alarm equipment shall be supplied with power from the Life Safety Distribution.
- .6 Where an Emergency Generator is supplied, the Fire Alarm System shall monitor the Generator and Transfer Switch for any and all abnormal conditions.
- .7 Beam type detectors shall be Fire Ray 5000 or approved equivalent. Approval of equivalent equipment shall be provided in writing by Building Operations Electrical Technical Specialist. (Vancouver)
- .8 Aspiration type detection shall be VLP-012 VESDA LaserPLUS or equivalent. The end sampling point of each pipe run shall terminate 1m to 2m above finished floor in a readily accessible area to allow for system testing and maintenance. Approval of equivalent equipment shall be provided in writing by Building Operations Electrical Technical Specialist (Vancouver).
- .9 (Vancouver) Contact UBC Building Operations Electrical Technical Support for acceptable temporary Fire Alarm Control Panel passwords.
- .10 One minute inhibit shall be disabled in panel program unless required by any applicable code or standard.
- .11 One minute time delay shall be active from time of AC power loss until Fire Trouble is activated.
- .12 The following requirements apply to UBC Okanagan only:
 - .1 Commissioning should include proper verification to UBCO Campus Wide Systems (CHP and Security Firework stations)
 - .2 Fire system contractor responsible for insuring Omega Communications Ltd converts EST-3 signal to be able to communicate to Kelowna Fire Department. This is to be done minimum two weeks prior to verification to allow for scheduling of Omega.
 - .3 Fibre connections to the Campus Wide System from Library to CHP needs to be scheduled minimum 2 weeks prior to verifications with IT Services and Facilities Management.

- .4 Fire system contractor responsible for updating maps on Fire Works Stations in CHP and Security.
- .13 Ceiling Mounted notification appliances shall be installed in locations that are accessible with a maximum 12' ladder. Wall mounted locations shall be considered in instances where ladder access is not possible.
- .14 *Back boxes shall be utilized for any surface mounted pull station. Manufacturer supplied steel stamped boxes shall be utilized for interior applications and cast iron for exterior applications.*

2.8 Panel Manufacturer's Responsibility and Inspection Requirements

- .1 Notwithstanding the Contractor's obligations, the entire fire alarm system shall be the responsibility of the panel manufacturer. Prior to acceptance of the system by the Consultant, the manufacturer shall check the entire system and certify the operation of all devices.
- .2 The manufacturer shall make an inspection of the new fire alarm equipment installed under this contract, including those components necessary to the direct operation of the system such as manual stations, fire detectors and controls. The inspection shall comprise of an examination and subsequent verification of all equipment in accordance ULC-CAN4-S537. All equipment of the fire alarm system shall be listed for use with the panel manufacturer.
 - .1 In case of partial occupancy of a building; a partial verification of the fire alarm system may be performed. This shall not waive the requirement of a complete verification as part of the substantial completion process for the entire building when complete.

END OF SECTION