



ADDENDUM ELE-001

Project: Archambault Establishment – Modernization of the
fire alarm system – PWGSC: R.060914.001

Description: Modifications to plans and specifications

Project no.: 2012-186-104

Division: Electrical

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1. This addendum forms an integral part of the original plans, specifications and contractual documents. Bidders shall make sure that the cost of this addendum is included in the bid amount.
2. Documents:
 - 2.1 Included documents:
 - 2.1.1 Specifications:
 - Index of sections, page 3.
 - Section 28 31 00.01, page 4.
 - Section 28 31 00.03, new.
 - Appendix no. 1, reissued.
 - 2.1.2 Drawing :
 - E-02, révision no 1.
 - E-13, révision no 1.
 - E-19, révision no 1.
 - E-22, révision no 1.
 - E-23, révision no 1.
3. Description of work:

See attached documents.

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- .8 Power supply: to CAN/ULC-S524.
- .9 Audible signal devices: to CAN/ULC-S524.
- .10 Visual signal devices: to CAN/ULC-S526.
- .11 Control unit: to CAN/ULC-S527.
- .12 Manual pull stations: to CAN/ULC-S528.
- .13 Thermal detectors: to CAN/ULC-S530.
- .14 Smoke detectors: to CAN/ULC-S529.
- .15 Smoke alarms: to CAN/ULC-S531.
- .16 Regulatory requirements:
 - .1 Components of the fire alarm system: approved by the Underwriters' Laboratories of Canada (ULC), in accordance with the relevant provisions of the National Building Code and the requirements of the competent local authority having jurisdiction.
- .17 Data logger interface:
 - .1 A data logger, connected to the communication system of which it is part, must record the triggering of all alarms, including fire alarms, noting in each case the time and zone, the time of the event, if there has been a response, cancellation, as well as validation or invalidation of the alarm. This system is independent of the fire alarm system.
 - .2 The fire alarm system must include a socket for connection of a data logger.
 - .1 The display unit must be equipped with three LED: alarm, fault, power on.
 - .2 The system must allow serial or multiplex connection to a main building and security management system equipped with a screen.

2.2 SYSTEM OPERATION: TWO STAGE ALARM – SIGNALS ONLY

- .1 Actuation of any alarm initiating device to:
 - ① .1 Perform the actions indicated in article 2.23.
 - .2 Transmit signal to fire department via central station.
 - .3 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.
 - .4 Cause fire doors and smoke control doors, if normally held open, to close automatically.
- .2 The triggering of an alarm triggering device, in the second step, must do the following:
 - .1 Sound the audible signaling devices throughout the building in an alarm tone.
- .3 If the first stage alarm is not acknowledged after five (5) minutes, the system will automatically switch to the second stage.
- .4 Acknowledging alarm: indicated at central control unit.
- .5 Ensure that it is possible to silence signals by "alarm silence" switch at control unit, after 60 seconds period of operation.

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 All contracting documents from Divisions 01, 26 and 28 are applicable.

1.2 REFERENCE STANDARDS

- .1 National Research Council Canada (NRC):
 - .1 National Building Code of Canada 2015 (NBC).
- .2 Underwriter's Laboratories of Canada (ULC):
 - .1 CAN/ULC-S524-14 – Standard for the Installation of Fire Alarm Systems.
 - .2 CAN/ULC-S526-16 – Visible Signal Devices for Fire Alarm Systems, Including Accessories.
 - .3 CAN/ULC-S527-19 – Standard for Control Units for Fire Alarm Systems.
 - .4 CAN/ULC-S528-14 – Manual Stations for Fire Alarm Systems, Including Accessories.
 - .5 CAN/ULC-S529-16 – Smoke Detectors for Fire Alarm Systems.
 - .6 CAN/ULC-S530-91(R1999) – Heat Actuated Fire Detectors for Fire Alarm Systems.
 - .7 CAN/ULC-S531-14 – Standard for Smoke Alarms.
 - .8 CAN/ULC-S537-13 – Standard for the Verification of Fire Alarm Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for multiplex fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate on shop drawings:
 - .1 Detailed diagrams of assembly and internal wiring of the control module. Drawings should also include auxiliary cabinets.
 - .2 Overall system riser wiring diagram identifying control equipment signaling circuits initiating zones. identifying terminations, terminal numbers, conductors and raceways.
 - .3 Details for devices.
 - .4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
 - .5 Step-by-step operating sequence, cross referenced to logic flow diagram.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 – Closeout Submittals. Documents/Items to be submitted upon completion of the work.
- .2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manual.
- .3 Include:
 - .1 Instructions for complete fire alarm system to permit effective operation and maintenance.
 - .2 Technical data illustrated parts lists with parts catalogue numbers.
 - .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
 - .4 List of recommended spare parts for system.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- .1 Submit maintenance materials in accordance with Section 01 78 00 – Closeout Submittals. Documents/Items to be submitted upon completion of the work.

1.6 TEMPORARY DEACTIVATION OF THE FIRE ALARM SYSTEM

- .1 When the fire alarm system or part of it is deactivated, for any reason, including a malfunction, power failure or repair, the following procedures must apply:
 - .1 A supervisor provided par CSC must ensure constant surveillance by making continuous rounds of non-functional areas.
 - .2 The supervisor must have in his possession a portable communications radio or cell phone and a flashlight. He must be able to communicate with the site foreman.
 - .3 The supervisor must be informed of the instructions to be followed in the event of burning odors, the presence of smoke and/or fire.
 - .4 Refer to section 01 35 35 – Fire Safety requirements for the instructions in cast of fire.
- .2 During a repair likely to trigger the fire alarm system, the Contractor must ensure that the detection devices in the work area are protected by safety caps or that the detection devices in the work area are temporarily disabled.
- .3 After each repair or at the end of each day, the safety caps must be removed and the detection devices must be reactivated.
- .4 In the event that it is impossible to reactivate a detection zone, a supervisor must remain on the premises to ensure constant surveillance of the premises, at the Contractor's expense.

1.7 UNFOUNDED FIRE ALARM (FALSE ALARM)

- .1 For the duration of the work, the Contractor is responsible at all times for the proper functioning and continuity of the fire alarm system.
- .2 Before the start of work, the Contractor must ensure that the fire alarm network does not have any failure (trouble).

- .3 All costs due to the triggering of an unfounded fire alarm (false alarm) must be defrayed by the Contractor.
- .4 Non-exhaustive list of examples of unfounded fire alarm triggers (false alarm) :
 - .1 Accidental testing and handling.
 - .2 System test without notifying the control panel where the system is connected.
 - .3 Failure to deactivate the system.
 - .4 Accidental triggering of a manual station in the work area.
 - .5 Construction or renovation work.
 - .6 Dust caused by the work.
 - .7 Wiring or equipment damaged by the work.
 - .8 All other situations during the work.

Part 2 Product

2.1 DESCRIPTION

- .1 Fully supervised, microprocessor-based, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission.
- .2 System to carry out fire alarm and protection functions, including receiving alarm signals; initiating a two (2) stages alarm, supervising components and wiring; actuating annunciators and auxiliary functions, initiating trouble signals and signalling to fire department.
- .3 Zoned, two (2) stages.
- .4 Modular in design to allow for future expansion.
- .5 Operation of system shall not require personnel with special computer skills.
- .6 System to include:
 - .1 Central control unit in separate enclosure with power supply, stand-by batteries, central processor with microprocessor and logic interface, main system memory, input-output interfaces for alarm receiving, annunciation/display, and program control/signalling.
 - .2 Power supplies.
 - .3 Initiating/input circuits.
 - .4 Output circuits.
 - .5 Auxiliary circuits.
 - .6 Wiring.
 - .7 Manual and automatic initiating devices.
 - .8 Audible and visual signalling devices.
 - .9 End-of-line resistors.
 - .10 Annunciators.
 - .11 Printer.
 - .12 Historic event recorder.

- .7 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.
- .8 Power supply: to CAN/ULC-S524.
- .9 Audible signal devices: to CAN/ULC-S524.
- .10 Visual signal devices: to CAN/ULC-S526.
- .11 Control unit: to CAN/ULC-S527.
- .12 Manual pull stations: to CAN/ULC-S528.
- .13 Thermal detectors: to CAN/ULC-S530.
- .14 Smoke detectors: to CAN/ULC-S529.
- .15 Smoke alarms: to CAN/ULC-S531.
- .16 Regulatory requirements:
 - .1 Components of the fire alarm system: approved by the Underwriters' Laboratories of Canada (ULC), in accordance with the relevant provisions of the National Building Code and the requirements of the competent local authority having jurisdiction.
- .17 Data logger interface:
 - .1 A data logger, connected to the communication system of which it is part, must record the triggering of all alarms, including fire alarms, noting in each case the time and zone, the time of the event, if there has been a response, cancellation, as well as validation or invalidation of the alarm. This system is independent of the fire alarm system.
 - .2 The fire alarm system must include a socket for connection of a data logger.
 - .1 The display unit must be equipped with three LED: alarm, fault, power on.
 - .2 The system must allow serial or multiplex connection to a main building and security management system equipped with a screen.

2.2 **SYSTEM OPERATION: TWO STAGE ALARM – SIGNALS ONLY**

- .1 Actuation of any alarm initiating device to:
 - .1 Transmit signal to fire department via central station.
 - .2 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.
 - .3 Cause fire doors and smoke control doors, if normally held open, to close automatically.
- .2 The triggering of an alarm triggering device, in the second step, must do the following:
 - .1 Sound the audible signaling devices throughout the building in an alarm tone.
- .3 If the first stage alarm is not acknowledged after five (5) minutes, the system will automatically switch to the second stage.
- .4 Acknowledging alarm: indicated at central control unit.

- .5 Ensure that it is possible to silence signals by "alarm silence" switch at control unit, after 60 seconds period of operation.
- .6 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.
- .7 Actuation of supervisory devices to:
 - .1 Indicate respective supervisory zone at central control unit and at remote annunciator.
 - .2 Cause audible signal at central control unit to sound.
 - .3 Activate common supervisory sequence.
- .8 Resetting alarm and supervisory devices not to return system indications/functions back to normal until control unit has been reset.
- .9 Trouble on system to:
 - .1 Indicate circuit in trouble at central control unit.
 - .2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; whereas visual indication to remain until trouble is cleared and system is back to normal.
- .10 Trouble on system: suppressed during course of alarm.
- .11 Trouble condition on any circuit in system not to initiate alarm conditions.

2.3 CONTROL PANEL

- .1 Central control unit (CCU).
 - .1 Suitable for DCLA, DCLB and DCLC communication style: to CAN/ULC-S524.
 - .2 Features specified are minimum requirements for microprocessor-based system with digital data control and digital multiplexing techniques for data transmission.
 - .3 Minimum capacity of 2,000 addressable monitoring and 1,000 addressable control/signal points.
 - .4 System to provide for priority reporting levels, with fire alarm points assigned highest priority, supervisory and monitoring lower priority, and third priority for troubles. Possible to assign control priorities to control points in system to guarantee operation or allow emergency override as required.
 - .5 Integral power supply, battery charger and standby batteries.
 - .6 Basic life safety software: retained in non-volatile Erasable Programmable Read-Only-Memory (EPROM). Extra memory chips: easily field installed. Random-Access-Memory (RAM) chips in panel to facilitate password-protected field editing of simple software functions (i.e. zone labels, priorities) and changing of system operation software.
 - .7 Circuitry to continuously monitor communications and data processing cycles of microprocessor. Upon failure, audible and visual trouble indication to activate.
 - .8 Communication between CCU and remote DGP's/TPR's to be supervised, DCLA and DCLB. Should communications fail between CCU and remote units, audible and visual trouble to be indicated at CCU. Data communication to be binary DC, baseband, time-division multiplex, half-duplex. Each data channel: capable of communicating up to distance of 3,000 m.

- .9 Equipped with software routines to provide Event-Initiated-Programs (EIP); change is status of one or more monitor points, may be programmed to operate any or all of system's control points.
- .10 Software and hardware to maintain time of day, day of week, day of month, month and year.
- .11 Software to operate variable sensitivity addressable smoke detectors and annunciate their status and sensitivity settings at control panel.
- .2 Description of components:
 - .1 Cabinet type EEMAC-1, for surface mounting on wall, front metal door on concealed hinges, key lock, window for viewing all light indications and operating instructions.
 - .2 Set of compartments inside the cabinet, making it possible to house all the electronic modules required for the operation of the system, plus the free spaces requested, including central control unit of microprocessor type and memory unit containing the operating program.
 - .3 Display and control unit comprising an annunciator with a minimum of eight (8) lines of twenty-eight (28) alphanumeric characters, controls for alarm location, subsequent alarm display, alarm display subsequent fault, reset button, acknowledgment/silence button, light emitting diode (LED) type light indicators "alarm" fault "power", keypad for performing system functions.
 - .4 Zone reception modules for DCLA communication style for addressable type detectors. Add three DCLA communication style circuit.
 - .5 Zone reception modules for DCLB communication style for addressable type detectors. Add three DCLB communication style circuit.
 - .6 Campus network modules for DCLC communication style.
 - .7 Zone reception modules for short-circuit contact type detectors.
 - .8 Warning signaling modules (first step), according to the mode defined in paragraph 4.2 of ISO 8201 "Alarm systems – Audible emergency evacuation signal".
 - .9 Evacuation alarm signaling modules, according to the mode defined in paragraph 4.2 of ISO 8201 "Alarm systems – Audible emergency evacuation signal".
 - .10 Signaling modules in the panel with its device for alarm and fault.
 - .11 Zone isolator modules.
 - .12 Visual warning devices synchronization modules.
 - .13 Auxiliary control modules with output relays rated at 120 V, 5 A.
 - .14 120 V, 60 Hz, power supply unit.
 - .15 Accumulator chargers.
 - .16 Gel-Cel type accumulators, of sufficient capacity to power the entire system for a minimum of twenty-four (24) hours .and thereafter with full emergency power for at least one (1) hour. This current must be able to supply all the devices connected to the fire alarm system.
 - .17 Commands for triggering each alert zone.
 - .18 Key switch for triggering each evacuation alarm zone.
 - .19 Audio communication panel described in the article "FIRE ALARM CONTROL PANEL (TCAI)".

- .20 Normal control buttons for auxiliary functions.
- .21 Fully programmable on site.
- .22 Multi-level password protection.
- .23 Logic output functions.
- .3 The TCAI is equipped with the following manual controls:
 - .1 One command for each of the functions "stop the ventilation systems indicated", when signaled.
 - .2 A command for disconnecting the electromagnets.
 - .3 These commands are done using a single button per command. These buttons are mounted in a metal case with faceplate, finished in the color chosen by the architect.
 - .4 Each control has a light emitting diode (LED) type function indicator.

2.4 POWER SUPPLIES

- .1 120 V, 60 Hz as primary source of power for system.
- .2 Voltage regulated, current limited distributed system power.
- .3 Primary power failure or power loss (less than 102 V) will activate common trouble sequence.
- .4 Interface with battery charger and battery to provide uninterruptible transfer of power to standby source during primary power failure or loss.
- .5 During normal operating conditions fault in battery charging circuit, short or open in battery leads to activate common trouble sequence and standby power trouble indicator.
- .6 Standby batteries: sealed, maintenance free.
- .7 Continuous supervision of wiring for external initiating and alarm circuits to be maintained during power failure.

2.5 INITIATING/INPUT CIRCUITS

- .1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors, supervision and control modules, smoke detectors for ventilation ducts and water flow switches, wired in DCLA configuration to central control unit.
- .2 Alarm receiving circuits (active and spare): compatible with smoke detectors and open contact devices.
- .3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".
- .4 Receiving circuits for supervisory, N/O devices. Devices: wired in DCLA configuration to central control unit.
- .5 Actuation of supervisory initiating device: cause system to operate as specified in "System Operation".

2.6 ALARM OUTPUT CIRCUITS

- .1 Alarm output circuit: connected to signals, wired in DCLA configuration to central control unit.

2.7 CONNECTING THE FIRE DEPARTMENT

- .1 Digital communicator conforming to the ULC-S561 standard, having two (2) passive communication means, namely a telephone line and a GSM cellular link or an IP link and a GSM cellular link or an active communications link always in communication with the monitoring station.

2.8 AUXILIARY CIRCUITS

- .1 Auxiliary contacts for control functions.
- .2 Alarm supervisory on system to cause operation of programmed auxiliary output circuits.
- .3 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.
- .4 Auxiliary circuits: rated at 2 A, 24 V D.C. or 120 V A.C., fuse protected.

2.9 MANUAL ALARM STATIONS

- .1 Addressable manual pull station.
 - .1 Metallic pull lever, surface wall mounted type, two (2) stage, electronics to communicate station's status to addressable module/transponder over two (2) wires and to supply power to station. Station address to be set on station in field.
 - .2 The second stage shall be activated with a key.

2.10 AUTOMATIC ALARM INITIATING DEVICES

- .1 Addressable smoke detector.
 - .1 Photoelectric type with automatic compensation to provide a maximum stability against dust and wear. Sensibility shall be adjustable.
 - .2 Electronics to communicate detector's status to addressable module/transponder.

2.11 ADDRESSABLE INTERFACE MODULE

- .1 Module for interfacing between shorting contact devices N.O. or N.C. and an addressable trigger circuit.
- .2 Monitored interface module, including the connecting switch in circuit short.
- .3 Programmable on site to provide the address and the type of report.
- .4 Relay monitored to control auxiliary functions.
- .5 Relay contact 120 V, 2 A.

2.12 ADDRESSABLE RELAY INTERFACE

- .1 Relays for addressable interfacing by a trigger circuit.
- .2 Programmable on site to provide the address and the type of report.

- .3 Relay monitored to control auxiliary functions.
- .4 Relay contact 120 V, 2 A.

2.13 MODULE ISOLATOR

- .1 Module insulator on the detection and signaling loops installed so that a defect in an area does not prevent the normal operation of other input or output devices in another room.
- .2 Provide an isolator module for each 2 000 m² (maximum) floor area to be served.

2.14 AUDIBLE SIGNAL DEVICES

- .1 Surface mounted, polarized horns designed for a voltage of 24 V D.C., 90 dB, 3 m, with at least two (2) settings.
- .2 The Contractor must add a bank of horns with 5 m of cable each corresponding to 10% of the total quantity of horns already supplied within the framework of the project.

2.15 VISUAL ALARM SIGNAL DEVICES

- .1 Strobe type: flashing, red, 24 V D.C.
- .2 Unless otherwise indicated, the light intensities:
 - .1 15 candelas: corridor and room up to 35 m².
 - .2 30 candelas: room up to 80 m².
 - .3 75 candelas: room up to 145 m².
 - .4 110 candelas: room larger than 145 m².
- .3 Visual signage designed for surface-mounted, surface-mounted installation, with at least two settings.

2.16 COMBINED SOUND AND VISUAL SIGNALING DEVICES

- .1 Surface mounted installation, with at least two sound and light settings.
- .2 Horns, polarized, designed for a voltage at 24 V D.C., 90 dB, 3 m.
- .3 Strobe signaling: signaling at 24 V D.C., red in color.
- .4 Unless otherwise indicated, the light intensities:
 - .1 15 candelas: corridor and room up to 35 m².
 - .2 30 candelas: room up to 80 m².
 - .3 75 candelas: room up to 145 m².
 - .4 110 candelas: room larger than 145 m².
- .5 Separate wiring between sound and visual signaling.

2.17 SIGNALING DEVICES PROTECTORS

- .1 cUL polycarbonate covers for signaling devices.

2.18 PROGRAMMING AND SEQUENCE

- .1 The Contractor must provide its proposed programming matrix for comments to the Departmental Representative.
- .2 The activation sequence will be confirmed by staff at Archambault Institution at the start of the project.
- .3 An annunciator located elsewhere than in an alarm zone will not be able to acknowledge and reset the alarm.
- .4 The main control center panel will not be able to reset or acknowledge a fire alarm in a building other than where the main panel is located.
- .5 Each station will guard a switch for turning off the audible signal and visual alarms and alarm failures.
- .6 Automatic door openers installed in fire separations must be connected to the fire alarm system in order to deactivate the automatic door opening.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Install systems in accordance with CAN/ULC-S524 and TB Fire Protection Standard.
- .2 Install central control unit and connect to ac power supply, A.C. standby power.
- .3 Install manual alarm stations and connect to alarm circuit wiring.
- .4 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 1 m from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors.
- .5 Locate duct type detectors in straight portions of ducts. Refer to ULC-S524 standard for installation instructions.
- .6 Connect alarm circuits to main control panel.
- .7 Install signal, horns and visual signal devices and connect to signalling circuits.
- .8 Connect signalling circuits to main control panel.
- .9 Install remote annunciator panels and connect to annunciator circuit wiring.
- .10 Install remote relay units to control fan shut down in replacement of existing relay.

- .11 Sprinkler system: wire alarm and supervisory switches and connect to control panel in replacement of existing module.
- .12 Splices are not permitted.
- .13 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.
- .14 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.
- .15 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 – Common Work Results for Electrical and CAN/ULC-S537.
- .2 Fire alarm system:
 - .1 Test such device and alarm circuit to ensure manual stations and smoke detectors transmit alarm to control panel and actuate a general alarm, auxiliary devices and a first stage alarm.
 - .2 Check annunciator panels to ensure zones are shown correctly.
 - .3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.
 - .4 Addressable circuits system style DCLA:
 - .1 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals on each side of single open-circuit fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.
 - .2 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals during ground-fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.
- .3 Provide final PROM program re-burn for system to the Departmental Representative incorporating program changes made during construction.

3.4 CONDUIT AND CONDUCTORS

- .1 Install all conductors in thin-walled rigid steel metal conduits, unless otherwise specified in the plans or in this specification.
- .2 Install all conduits in accordance with section 26 05 34.
- .3 Install the conductors for the detection in conduits separate from the conductors for the bells.
- .4 Fill the conduits so that the total area of the conductors does not exceed 40% of the free area of the conduit.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

3.6 DISPOSITION OF EQUIPMENTS

- .1 Return to Departmental Representative all fire alarm devices, including removed signs and annunciators.
- .2 Dispose of devices and equipment that the representative of the Ministry does not want to keep.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by fire alarm system installation.

3.8 CLOSEOUT ACTIVITIES

- .1 Provide on-site lectures and demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.9 MAINTENANCE

- .1 Give, on the tender form, a separate price included covering the reprogramming of the PROM (programmable read only memory).
- .2 Provide a separate price on the bid form covering temporary software modifications made during construction, including modifications to zoning labels, various control functions and system operation.

END OF SECTION

ARCHAMBAULT ESTABLISHMENT – MAIN TCAI FIRE ALARM SYSTEM – PROGRAMMING TABLE						
Events	Signaling devices	Control panels	Fresh air systems	Pressurization system	Smoke exhaust system	Magnetic electrical locks
① First detection of block A (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block E and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block J and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block T and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block J, K, L and M and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
Key in pull station.	Second stage alarm signal (sound and visual) in building or wing where the detection occurred.	First stage alarm at control panel and annunciators.				
No acknowledgment after five minutes of first stage alarm signal.	Second stage alarm signal (sound and visual) in building or wing where the detection occurred.	First stage alarm at control panel and annunciators.	Ventilation stop in the affected building or wing. Refer to the existing programming for the ventilation shutdown conditions.			
Alarm signal from another part of the building.	To be define based on existing programming.					
Sprinkler supervision valves.		Supervision monitoring signal at control panel and annunciators.				
If acknowledgment in first five minutes of first stage alarm.		Permission to silence the control panel and reinitialize.				
Reinitialization.			Refer to existing programming for ventilation closing and system restart.			

ARCHAMBAULT ESTABLISHMENT – UVFP FIRE ALARM SYSTEM – PROGRAMMING TABLE						
Events	Signaling devices	Control panels	Fresh air systems	Pressurization system	Smoke exhaust system	Magnetic electrical locks
Smoke detector, manual pull station	Alarm signal (sound and visual) in UFVP.	Alarm signal at control panel and annunciators.				
Reinitialization						

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ARCHAMBAULT ESTABLISHMENT – CRSM TCAI FIRE ALARM SYSTEM – PROGRAMMING TABLE						
Events	Signaling devices	Control panels	Fresh air systems	Pressurization system	Smoke exhaust system	Magnetic electrical locks
First detection (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm local sound signal at the security command station responsible for the sector where the device is located for a maximum of five minutes.	First stage alarm at control panel.				
Key in pull station.	Second stage alarm signal (sound and visual) in CRSM.	First stage alarm at control panel.				
No acknowledgment after five minutes of first stage alarm signal.	Second stage alarm signal (sound and visual) in CRSM.	First stage alarm at control panel.	Ventilation stop in CRSM. Refer to the existing programming for the ventilation shutdown conditions.			
Alarm signal from another part of the building.	To be define based on existing programming.					
Sprinkler supervision valves.		Supervision monitoring signal at control panel.				
If acknowledgment in first five minutes of first stage alarm.		Permission to silence the control panel and reinitialize.				
Reinitialization.			Refer to existing programming for ventilation closing and system restart.			