

PART 1 - GENERAL

1.1 DESCRIPTION OF SYSTEM

- .1 The Access Control System (ACS) shall consist of components, hardware, controls, software, firmware, wire and conduits for a complete operating system to provide monitoring and control of access points.
- .2 The battery backup for controllers and strikes (or other electrically operated door locking hardware) shall be sized for a minimum of eight (8) hours of operation.
- .3 Monitored points will be supervised for such conditions as alarm, short circuit, ground, open and normal conditions. Each of the door controllers shall be supplied with its own AC power supply. Step-down transformer(s) shall be CSA approved. Each of the standalone controllers will control / supply power for all electrically operated door locking hardware.
- .4 System to include the following:
 - .1 Door access control panels.
 - .2 Key pad readers
 - .3 TCP/IP LAN Connectivity.
 - .4 Security management and reporting software.
 - .5 Power supplies for with the Access Control System (Supplied by Division 8).
 - .6 Door position switches (Supplied by Division 8).
 - .7 Electrically operated door locking hardware (Supplied by Division 8).
 - .8 Exit Alarm panels (Supplied by Division 8).
 - .9 Power door operators and controls (Supplied by Division 8).
 - .10 Door holders/closures (Supplied by Division 8).
 - .11 Power transfer hinges (Supplied by Division 8).
 - .12 Electromagnetic door hold open devices (Supplied by Division 8).
 - .13 Power supplies for electrified door hardware not associated with the Access Control System (by Division 8).
 - .14 Wiring and conduit for a complete operating system.
- .6 This contractor shall configure and program the access control system to function as per the requirements of this specification. It is the contractor's responsibility to deliver a fully functioning access control system.

1.2 RELATED SECTIONS

- .1 Related Sections:
 - .1 08 71 10 - Door Hardware General.
 - .2 26 05 31 - Splitter, Junction, Pull Boxes and Cabinets.
 - .3 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
 - .4 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
 - .5 26 91 13 - Electrical Systems Testing and Verification.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings of product and data before the supply of equipment. All equipment is to be CSA approved.
- .2 Include:
 - .1 Layout of equipment.
 - .2 Complete PROJECT SPECIFIC Wiring Diagrams.
 - .3 Provide 3 copies of an operational and maintenance manual for all products being supplied.
- .3 ULC Certifications: submit proof that the following companies are ULC certified for Commercial Types of Installations:
 - .1 Installing service company is a ULC listed alarm service company.
 - .2 Monitoring facility is ULC listed "Central Station"
- .4 Submit proof of Certificate that the security access system is a "Certified alarm system".

1.4 SYSTEM OPERATION

- .1 Access control system components, locations and wiring diagrams are indicated on the electrical contract drawings.
- .2 The system integrator shall be responsible for interfacing applicable systems with the fire alarm system
- .2 The following theory of operation is detailed for the main door groupings.
 - .1 Door #1 (Exterior Vestibule Door)

PART 2 - PRODUCTS

2.1 ACCESS CONTROL AND SECURITY MANAGEMENT SOFTWARE

- .1 Must be compatible with HID *and* AWID Access Control and Security Management Software.
 - .1 Acceptable Manufacturer: AXIOM V Professional

2.2 NETWORK CONTROLER

- .1 32 bit processor and 256kB of RAM.
- .2 Power-over-ethernet.
- .3 Support 2 input of technology.
- .4 The system shall read all available weigand and smartcard format
- .5 Controls up to 16 door controllers network loop.
- .6 Acceptable manufacturer: Axiom V - UNC-500 c/w power supply

2.3 DOOR READER CONTROLLER

- .1 The system shall read all available weigand and smartcard format
- .2 Support 2 input of technology.
- .3 The system shall read all available weigand and smartcard format
- .4 Fully supervised RS485 data communication between reader controller, I/O controllers and network controller.
- .5 Built-in lightning protection, cabinet tamper alarm, diagnostic LED's and power fusing.
- .6 8 inputs fully supervised, 8 outputs (4 form C relays, 4 electronic).
- .7 12 VDC back-up battery for up to three hour operation upon loss of AC power.
- .8 Acceptable manufacturer: Axiom V#RC-2 c/w power supply.

2.4 CARD READER

- .1 Uni-directional proximity reader type.
- .2 RFID technology.
- .3 Internal piezo sounder.
- .4 Tri-color LED indicators with selectable off function.
- .5 Wiegand 26-bit format.
- .6 Compatible with 125 kHz HID formats and AWID.
- .7 Read range: 102mm.
- .8 Height: 102mm; width: 46mm.
- .9 Voltage: +5 – 14 VDC; current: <80 mA.
- .10 Black finish.
- .11 Acceptable manufacturer: RBH Access #FR-360N-H

2.5 DSC INTEGRATION MODULE

- .1 Connects between the door controller and the Intrusion detection panel Combus.
- .2 Bi-directional RS-232 interface.
- .3 Fully programmable.
- .4 Acceptable manufacturer: RBH-PC100

2.7 STANDARD OF ACCEPTANCE

- .1 Access control system components as follows:
 - .1 HID/AWID *Compatible* Access Control System, c/w:
 - .2 Ethernet Ready Door Controllers and Enclosures.
 - .3 Power supplies, battery back-up, etc.
 - .4 Network Communication Controller.
 - .5 Proximity Card Reader, HID/AWID format.
 - .6 DSC Integration Module.
 - .7 GE #(R) 1076D magnetic door contacts for steel doors.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Supply and install an access control system with all required components and wiring for a complete and fully functional system. The equipment manufacturer's certified representative will supply and install all the equipment, devices, and make all the connections.
- .2 Verify wire type and gauge with manufacturer prior to installation. All access control system wiring is to be installed in a conduit system.
- .3 Locate all components as indicated on drawings.
- .4 Wire and connect to electrically operated door locking hardware supplied by Division 8. Confirm location of each device requiring a backbox or pathway prior to installation.
- .5 Wire and connect power door operators and controls supplied by Division 8. Confirm location of each device requiring a backbox or pathway prior to installation.
- .6 Wire and connect door position switches supplied by Division 8. Confirm location of each device requiring a backbox or pathway prior to installation.
- .7 Install door controllers and connect to 120 volt circuit. Install and connect proximity readers where indicated.
- .8 Connect each door controller together.
- .9 Connect door controllers to the Network Controller.
- .10 Install door contacts, local alarm appliances, power supplies and key switches where indicated.
- .11 Make connections to the network for remote access.
- .12 Install and connect the data link module to the Intrusion alarm system.
- .13 All exit devices (electric strikes, locking systems) shall be fail safe and shall be wired to release upon activation of the fire alarm system or on a power failure as per NBC requirements.
- .14 Provide all documentation associated with the access control system alarm panel to the Departmental Representative, including all programming/contractor codes required for future modifications to the system.
- .15 This contractor shall configure and program the access control system to function as per the requirements of this specification. It is the contractor's responsibility to deliver a fully functioning access control system.

3.2 TESTS

- .1 A written report shall be prepared detailing the access control system verification and submitted to the Engineer.

3.3 PROGRAMMING AND TRAINING

- .1 Provide the initial programming, customizing and data entry.
- .2 Provide Demonstration, Operating and Maintenance Instructions as per Section 26 05 00.
- .3 Provide an initial five (5) hours of training to the Departmental Representative's designated representative.
- .4 Visit site 30 days following substantial performance and provide an additional four (4) hours of training. Visit site within 90 days following substantial performance upon request from TIE and provide an additional two (2) hours of training.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF SYSTEM

- .1 System to consist of alarm control panels, door contacts, digital key pads, motion detectors, power supplies, programmable output module, dual line dialer, battery back-up, system software, wire and conduits for a complete operating system.
- .2 Remote monitoring must comply with the requirements of CAN/ULC-S524-06.5.15 and CAN/ULC-S561 and use two separate technologies.
- .3 Related Work:
 - .1 26 05 31 - Splitter, Junction, Pull Boxes and Cabinets.
 - .2 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
 - .3 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
 - .4 26 91 13 - Electrical Systems Testing and Verification.
 - .5 28 13 00 - Access Control System.

1.2 RELATED WORK BY OTHER DIVISIONS

- .1 Door Hardware.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Division 1.
- .2 ULC Certificates: submit proof that the following companies are ULC certified for Commercial Types of Installation.
 - .1 Submit proof of Certificate that the installing service company is a ULC Listed alarm service company.
 - .2 Submit proof of Certificate that the monitoring facility is ULC "Listed central station".
- .3 Submit proof of Certificate that the security intrusion alarm is a "Certified alarm system".

PART 2 - PRODUCTS

2.1 MAIN BUILDING SYSTEM

- .1 Alarm Control Panel
 - .1 Control panel: surface mounted, programmable, addressable, and expandable to 128 zone capacity, 8 partitions, 1000 user codes, 3000 event buffer. Power supply from 120 V AC circuit. Provide CSA-1 enclosure c/w lockable cover.
 - .2 Control panel shall include a battery backup feature for minimum of 48-hour duration.
 - .3 System shall be UL listed for commercial application.
- .2 Key Pads

- .1 Two line, 32 character LCD screen
 - .2 Built-in buzzer for key beeps.
 - .3 Liquid crystal display, adjustable keypad back light, will allow identification of each security system device, by room number, for ease of isolating an alarm condition.
 - .4 Individual LED indicators for Trouble, Armed and Ready.
 - .5 Provide vandal resistant Plexiglas enclosure c/w lockable cover, where indicated.
- .3 Door Contacts
- .1 Door contacts: vandal resistant, tamper proof, suitable for flush mounting on door.
- .4 Motion Detectors
- .1 Addressable, low noise, quad element PIR sensor designed for commercial applications. RF, static, transient and white light immunity. 360 degree detection. jumper selectable fast and slow detection modes. Automatically adjusts sensitivity according to room temperature. Built in tamper switch. surface mount construction.
- .5 System Operation
- .1 Intrusion Detection
 - .1 System will be armed by the keypad. At the time the ARM command is received, and the system is about to become armed, it will sound a distinctive warning, alerting anyone still inside the building. Following a programmed delay, the system shall become armed.
 - .2 System will revert to normal operation when control panel is reset.
 - .2 Door Egress Detection
 - .1 System will be armed by the keypad. At this time the system will alarm only the door contacts (Stay Mode).
 - .2 When the system is armed, door contacts will initiate an alarm condition when a violation is detected. At this time the door Annunciator panel will indicate the location of the alarm and the keypad will sound. The system will not dial out to the monitoring agency under this condition.
 - .3 System will revert to normal operation when control panel is reset.
 - .4 System will supervise all zones. Any trouble or tamper condition will be annunciated, both locally and remotely.
 - .3 System to be programmed by the contractor under the direction of the Departmental Representative. Allow sufficient time for programming the system to meet the operational requirements of the building.

2.2 STANDARD OF ACCEPTANC E

- .1 Main Building System
 - .1 DSC Security Products Maxis Integrated System Technology
 - .1 4020CF Control Panel, C/W with auxiliary relay board.
 - .2 PC4204 CXCF Commercial Power Supply.
 - .3 LCD 4501 keypads.
 - .4 Phone line adapter.
 - .5 AMB-500 motion detectors, ceiling mount.

- .6 AMB-600 wall mount motion detectors.
- .7 Sentrol 1078H door contacts for steel doors.
- .8 DSL-3 - SADC System Administrator dial-up Software.
- .9 AMB-7001 addressable module.
- .10 3G4010 CDN GSM wireless alarm communicator, c/w SIM card.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Supply and install the security systems with all required components and wiring for complete and fully functional systems. The equipment manufacturer's certified representative will supply and install all the equipment, devices, and make all the connections.
- .2 Verify wire type and gauge with manufacturer prior to installation.
- .3 Locate all components as indicated on drawings. Do not locate a motion detector within one meter of a supply air diffuser.
- .4 Motion sensors located in a suspended ceiling are to be installed using a 103 mm (4 inch) square electrical box, complete with a raised 13 mm (1/2 inch) ring cover. Support of electrical box is to be independent from ceiling.
- .5 Wire and connect all devices to the main control panel. Wire and connect security panel to forward a contact closure to the main building system security panel on alarm.
- .6 Install key pads in lockable Plexiglas enclosure where indicated.
- .7 Make connection to the telephone BIX block for remote monitoring.
- .8 Make connection to the telephone system for remote access.
- .9 *(Deleted)*
- .10 Make connection to the Fire Alarm system.
- .11 Make connection to the Access Control system Integration module.
- .12 Install wireless alarm communication device and connect to security panel and telephone line.
- .13 Connection between security system panel and BAS by mechanical contractor.
- .14 All security system wiring is to incorporate a "RED" coloured jacket and be installed in a conduit system.
- .15 Provide all documentation associated with the security system alarm panel to the Departmental Representative, including all programming/contractor codes required for

future modifications to the system.

3.2 REMOTE MONITORING OF SECURITY SYSTEM.

- .1 The security system will be remotely monitored by an agency acceptable to the Departmental Representative. It is this Contractor's responsibility to provide the equipment and programming necessary to ensure compatibility between the communications device and the monitoring agency, to the satisfaction of the Engineer and TIR.
- .2 This contractor will arrange for telephone service to the security panel and pay all associated connection fees.
- .3 Monitoring agency will be UL approved.
- .4 Include the cost of monitoring the system for a one-year period.
- .5 Include all costs associated with arranging for telephone service to the security panel (both land line and cellular), providing telephone service to the security panel, connection fees levied by the utility, the lease of the telephone line and cellular communications for a one year period.

3.3 TESTS

- .1 A written report shall be prepared detailing the security system verification and submitted to the Engineer.

END OF SECTION

PART 1 – GENERAL

1.1 REFERENCE STANDARDS

- .1 Not Applicable

1.2 RELATED WORK

- .1 Not Applicable

1.3 SHOP DRAWINGS

- .1 ULC Certificates: submit proof that the following companies are ULC certified for Commercial Types of Installation.
- .2 Submit proof of Certificate that the installing service company is a ULC Listed alarm service company.
- .3 Installation and Classification of Closed Circuit Video Equipment (CCVC Systems as per the ULC-S317 for Institutional Commercial Security System.

1.4 PERFORMANCE REQUIREMENTS

- .1 The system installer shall be a firm with at least five years of successful installation experience with projects utilizing integrated video surveillance and equipment similar to that required for this project. A list of three (3) projects of similar size shall be made available, if requested.

1.5 DESCRIPTION OF SYSTEM

- .1 Video Surveillance, Access Control and Intrusion Alarm are to be supplied and installed by one system integrator. The system integrator is responsible for providing all materials, labor and programming required for the integration of these systems. The video surveillance is to be integrated with the access control system to trigger record full images per second continuously during Lock Down events. All camera to be installed as per the drawings.

PART 2 PRODUCTS

2.1 VMS SOFTWARE

- .1 VMS Software Feaures
 - .1 Remote Clients: qty. 5
 - .2 Thumbnail search
 - .3 Event search
 - .4 Multi-camera export
 - .5 Recording and playback timeline
 - .6 Bandwidth management
 - .7 Bookmark surveillance footage
 - .8 Standard of Acceptance: Avigilon ACC5

2.2 NETWORK VIDEO RECORDER FEATURES

- .1 Network video recorder features:
 - .1 Power: Input voltage 120V AC.
 - .2 Operating system: Microsoft Windows 7.
 - .3 Camera Channels: up to 48
 - .4 Recording Storage: 8TB
 - .5 Processor: 6th Gen Intel Core i5-6600
 - .6 Memory: 8GB DDR4
 - .7 Network Interface: 2 x Gigabit Ethernet ports (1000Base-T)
 - .8 Video Outputs: 2 active
 - .9 Optic Drive: DVD-RW
 - .10 Remote view using video management software
 - .11 Standard of Acceptance: Avigilon #HD-NVR3-8TB.

2.3 MONITOR

- .1 Monitor features:
 - .1 24 inch LED monitor, color.
 - .2 Aspect ratio: 16:10.
 - .3 Contrast Ratio: 1000:1
 - .4 Response Time: 6ms
 - .5 Resolution: 1920x1200
 - .6 Input voltage: 120 V AC.
 - .7 On-screen display for setup and adjustment.
 - .8 VGA and USB input..
 - .9 Front mounted controls.
 - .10 Construction: black plastic.
 - .11 Stand by, low-profile, plug-and-play configuration.
 - .12 Standard of Acceptance: DELL #U2413.

2.4 CAMERAS

- .1 Indoor Camera:
 - .1 High Definition, Day/Night Dome Camera
 - .2 2.0 megapixel Sensor
 - .3 Power Input: 12VDC / 24DC / POE
 - .4 Built in 100Base-TX Ethernet Network Interface
 - .13 Environment: indoor
 - .14 Lens functions: remote focus and zoom 3-9mm lens
 - .15 Standard of Acceptance: 2.0-H3-D1
- .2 Outdoor Camera:
 - .1 High Definition, Day/Night Dome Camera
 - .2 2.0 megapixel Sensor
 - .3 Power Input: 12VDC / 24DC / POE
 - .4 Built in 100Base-TX Ethernet Network Interface
 - .5 Environment: Outdoor – Vandal Resistant
 - .6 Bracket: Pendant mount

- .7 Lens functions: remote focus and zoom 3-9mm lens
- .8 Standard of Acceptance: 2.0-H3-DP1

2.5 POE SWITCHES

- .1 POE Switches features:
 - .1 Form Factor: 1U rack mount chassis
 - .2 24 x 10/100/1000 (POE+) + 2 x 10/100/1000 + 2 x combo Gigabit SPF
 - .3 Power: 375W POE power
 - .4 Standard of Acceptance: Cisco SG300-28MP

2.6 UPS

- .1 UPS features:
 - .1 120 V output
 - .2 1500 VA.
 - .3 1050Watt
 - .4 Rack Mounted UPS
 - .5 Standard of Acceptance: Eaton 5P1500RT

PART 3 – EXECUTION

3.1 INSTALLATION

- .1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheet.
- .2 Install video surveillance equipment and components in accordance with [ULC-S317].
- .3 Install cable, boxes, mounting hardware, brackets, video cameras and system components in accordance with manufacturer's written installation instructions.
- .4 Install components secure, properly aligned and in locations shown on reviewed shop drawings.
- .5 Connect cameras to cabling in accordance with installation instructions.
- .6 Install ULC labels where required.

3.2 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written reports from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product.

- .2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits to review Work at stages listed:
 - .1 Upon completion of Work, after cleaning is carried out.

3.3 SYSTEM START-UP

- .1 Perform verification inspections and test in the presence of Consultant
- .2 Provide all necessary tools, ladders and equipment.
- .3 Ensure appropriate subcontractors manufacturer's representatives are present for verification.
- .4 Visual verification: objective is to assess quality of installation and assembly and overall appearance to ensure compliance with Contract Documents. Visual inspection to include:
 - .1 Sturdiness of equipment fastening.
 - .2 Non-existence of installation related damages.
 - .3 Compliance of device locations with reviewed shop drawings.
 - .4 Compatibility of equipment installation with physical environment.
 - .5 Inclusion of all accessories.
 - .6 Device and cabling identification.
 - .7 Application and location of ULC approval decals.
- .5 Technical verification: purpose to ensure that all systems and devices are properly installed and free of defects and damage. Technical verification includes:
 - .8 Measurements of tension and power.
 - .9 Connecting joints and equipment fastening.
 - .10 Measurements of signals (dB, lux, baud rate, etc).
 - .11 Compliance with manufacturer's specification, product literature and installation instructions.
- .6 Operational verification: purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Operational verification includes:
 - .12 Operation of each device individually and within its environment.
 - .13 Operation of each device in relation with programmable schedule and or/specific functions.
 - .14 Operation control of camera lens, pan, tilt and zoom.
 - .15 Switching of camera to any monitor.
 - .16 Switching of system video recorder to selective monitor.
 - .17 Set dwell times.

3.4 ADJUSTING

- .1 Remove protective coverings from cameras and components.
- .2 Adjust cameras for correct function.

3.5 CLEANING

- .1 Clean camera housing, system components and lens, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCES

- .1 Government of Canada
 - .1 National Building Code of Canada - 2015
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S524-14, Standard for the Installation of Fire Alarm Systems.
 - .2 CAN/ULC-S536-13, Inspection and Testing of Fire Alarm Systems.
 - .3 CAN/ULC-S537-13, Verification of Fire Alarm Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 00 10 - General Instructions.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 00 10 - General Instructions.
 - .1 Shop drawings: stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.
 - .2 Include:
 - .1 Layout of equipment with zone/address identification
 - .2 Zoning.
 - .3 Complete wiring diagram, including schematics of modules.
- .3 Quality assurance submittals: submit following in accordance with Section 01 00 10 - General Instructions.
 - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Instructions: submit manufacturer's installation instructions.
 - .3 Manufacturer's Field Reports: manufacturer's field reports specified.
- .4 Closeout Submittals:
 - .1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 00 10.
 - .2 Authority of Jurisdiction will delegate authority for review and approval of

submittals required by this Section.

- .3 Submit to Authority of Jurisdiction 2 sets of approved submittals and drawings immediately after approval but no later than 15 working days to prior to final inspection.
- .4 Submit following:
 - .1 System wiring diagrams:
 - .1 Submit complete wiring diagrams of system showing points of connection and terminals used for electrical connections in the system.
 - .2 Show modules, relays, switches and lamps in control panel.
 - .2 Design data: Power Calculations:
 - .1 Submit design calculations for existing system and new work specified to substantiate that battery capacity exceeds supervisory and alarm power requirements.
 - .2 Show comparison of notification appliance circuit alarm power requirements with rated circuit power output.
 - .3 Test Reports:
 - .1 Preliminary testing:
 - .1 Final acceptance testing.
 - .2 Submit for inspections and tests specified under Field Quality Control.
- .5 As Built Drawings:
 - .1 During construction, keep on site one complete set of drawings on which shall be clearly indicated all deviations made to the original design. The deviations shall include any changes to the following:
 - .1 Equipment location.
 - .2 Conduit, system raceways etc.
 - .3 Riser diagrams and details
 - .1 Keep these drawings up to date weekly and available for review on site by the Consultant.
 - .4 Turn over to the Consultant a completed set of "as _built" drawings upon completion of the project. The as-built drawings shall include all changes to the work during construction, including all approved changes (CCO's and/or Site Instructions).

1.4 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: company or person specializing in fire alarm system installations approved by manufacturer.
- .2 Provide services of representative or technician from manufacturer of system, experienced in installation and operation of type of system being provided, to supervise installation, adjustment, preliminary testing, and final testing of system and to provide instruction to project personnel.
- .3 Maintenance Service:
 - .1 Provide one year's free maintenance with two inspections by manufacturer during warranty period. Inspection tests to conform to CAN/ULC-S536. Submit inspection report to Departmental Representative.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with Section 01 00 10 - General Instructions.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Waste Management and Disposal:
 - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 00 10 - General Instructions.

1.6 DESIGNATED CONTRACTOR

- .1 Hire the services of SimplexGrinnell or its authorized representative to complete the work of this section.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 There is an existing SimplexGrinnell system presently installed in the building. All materials must be selected to ensure compatibility with the existing SimplexGrinnell system.
- .2 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

2.2 END-OF-LINE DEVICES

- .1 End-of-line devices to control supervisory current in alarm circuits and signalling circuits, sized to ensure correct supervisory current for each circuit. Open, short or ground fault in any circuit will alter supervisory current in that circuit, producing audible and visible alarm at main control panel and remotely as indicated.

2.3 CONDUIT

- .1 Electrical Metallic Tubing (EMT).
- .2 REO painted pull box cover plates.

2.4 CUT PATCH AND MAKE GOOD

- .1 Perform all drilling, cutting and patching required for installation of the fire alarm devices.
- .2 Patch and make good all surfaces cut, damaged or disturb due to equipment installations. Match existing material.

2.5 FIREPROOF PATCHING

- .1 Where conduits pass through fire rated floor slabs, fire rated ceilings or fire rated walls, seal opening around with ULC rated compound to maintain fire separation. Similarly seal unused sleeves for electrical systems.

2.6 WIRING

- .1 FAS rated: twisted copper conductors, as per manufactures recommendations.
- .2 Class B configuration for signaling devices.
- .3 Class A configuration for initiating devices.

2.7 PULL STATIONS

- .1 Addressable manual pull stations to match existing pull stations.

2.8 SMOKE DETECTOR

- .1 Addressable smoke detector to match existing addressable smoke detectors.

2.9 DUCT TYPE SMOKE DETECTOR

- .1 Addressable duct type smoke detector and to match existing duct type smoke detector.

2.10 HEAT DETECTOR

- .1 Addressable heat detector to match existing addressable heat detector.

211 AUDIBLE SIGNAL AND VISUAL DEVICES

- .1 Horn/strobe and strobes to match existing audible signal and visual devices. Devices to be synchronized throughout.
- .2 Power supply NAC4009.

2.12 PASSIVE GRAPHIC

- .1 Provide passive graphic display, to be mounted adjacent to fire alarm panel. Plastic laminate type, black artwork on white background, framed under glass. Provide shop drawing for review prior to manufacturing.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 SYSTEM OPERATION

- .1 Sequence of operation to remain the same and follow the current sequence of operation in place.

3.3 INSTALLATION

- .1 Install systems and devices in accordance with CAN/ULC-S524.
- .2 Provide all necessary raceways, cable and wiring to make interconnection to new and existing fire alarm equipment as required by the manufacturer.
- .3 Install new devices and reconnect existing as indicated. No splicing of signaling or initiating circuits is allowed. Provide new raceways (conduit and wiring) for new devices, reuse existing raceways where applicable.
- .4 Ensure that wiring is free of opens, shorts or grounds before system testing and handling over.
- .5 Identify all circuits and related wiring at Fire Alarm Panel annunciators and terminal boxes with permanent plastic markers equal to Weldmuller, Phoenix or Wieland.
- .6 Provide metal brackets, hangers, clamps etc. to support conduit from the structure as required.
- .7 Provide all required auxiliary contacts for control functions as required.
- .8 Provide NAC 4009 power supply to accommodate additional strobe/horns.
- .9 Provide all required hardware and software including modification to any loop/wiring to accommodate new devices.
- .10 Reprogram fire alarm system for ATB and CBS as required to accommodate all changes.
- .11 Follow architectural phases for the implementation of the fire alarm system. Fire alarm system to be fully operational at end of each working day. Provide temporary wiring and bypasses as required.
- .12 Verify system is accordance with CAN/ULC-S537.

3.4 FIELD QUALITY CONTROL

- .1 Site Tests:
 - .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical and CAN/ULC-S537, Part 6.
 - .2 Fire alarm system:
 - .1 Test each alarm circuit to ensure manual stations, thermal and smoke detectors, sprinkler system transmit alarm to control panel and actuate alarm and existing sequence of operations, ancillary devices etc.
 - .2 Check annunciator panels to ensure zones are shown correctly.
 - .3 Simulate grounds and breaks on alarm and signaling circuits to ensure proper operation of system.
 - .3 At the end of the project test the entire fire alarm system in accordance with CAN/ULC-S536 and provide report to Departmental Representative.
- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 – ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.5 SCHEDULE

- .1 Coordinate work schedule with architect, architectural project implementation phases and airport authorities.
- .2 Schedule shall include all power shutdown, fire alarm shutdowns and work performed outside normal working hours.

3.6 DEMONSTRATION AND INSTRUCTIONS

- .1 Demonstrate start-up, operation, trouble-shutting servicing and maintenance of each component of the Fire Alarm System.
- .2 Allocate six (6) hours of hands-on instruction on site for airport authorities.

3.7 CLEANING

- .1 Proceed in accordance with Section 01 00 10 - General Instructions.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION