1. GENERAL

1.01 SUMMARY

.1 Section Includes

.1 Fire Alarm Control Panel.

.2 Fire alarm power supplies and batteries.

1.02 RELATED REQUIREMENTS

.1 Section 28 46 21.22 – Fire-Alarm Remote Annunciators.

.2 Section 28 46 21.24 – Supervising Station Alarm Systems Communications Equipment.

1.03 REFERENCES

.1 Design, manufacture, install and test fire alarm system in accordance with good industry practice and in accordance with the following Codes and Standards:

.1 CAN/ULC-S524-14 – Standard for the Installation of Fire Alarm Systems.

.2 CAN/ULC-S536-13 – Standard for the Inspection and Testing of Fire Alarm Systems.

.3 CAN/ULC-S537-13 – Standard for the Verification of Fire Alarm Systems.

.4 CAN/ULC-S527-11 – Control Units for Fire Alarm Systems.

.2 If any of the requirements of the above Codes and Standards is in conflict with the Drawings or Specifications, the Code or Standard requirements shall govern, but in no instance shall the standards established by these Drawings and Specifications be reduced by any of the Codes and Standards listed above.

1.04 ACTION SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 33 00 and items noted below. Documentation to be project specific.

.1 Generic documentation and/or alternate or as-equal products are unacceptable.

.2 Product data for each type of system component including list of materials and Underwriters' Laboratories of Canada (ULC) listing.

Product data to include technical documentation features, and/or functions, and parts list.

.3 Dimensioned drawings illustrating minimum clearances and any required access space.

.4 Point to point wiring diagrams of the entire installed system differentiating clearly between factory and field installed wiring. Identify all terminals and interconnections including conductor numbering.

1.05 INFORMATIONAL SUBMITTALS

.1 Dimensional elevation of fire alarm control panel and mounting instructions.

1.06 CLOSEOUT SUBMITTALS

.1 In accordance with Section 01 78 00.

.1 Operation and Maintenance Manuals: Data on each product type including all features and operating sequences for both automatic and manual operations including trouble shooting and maintenance instructions, schematic and wiring diagrams, final reviewed shop drawings, manufacturer's warranty and verification test report.

.2 Final device address list and application program listing for the system as installed at the time of acceptance.

.3 A list of all input and output points in the system with a label indicating location or use of initiating device circuit, notification appliance circuit, relay, sensor, and auxiliary control circuits.

.4 System power and battery charts with performance graphs and voltage drop calculations to assure that the system will operate per the prescribed backup time periods and under all voltage conditions per ULC standards.

.5 Operating instructions for control panel.

.6 Installation and programming manuals covering the installed system.

.7 All final and certified documentation.

.8 Drawings in PDF format.

.2 Operations and Maintenance Manuals: Submit such manuals in accordance with Division 01, and prior to completion of project, in triplicate, containing following:

.1 Actual system functional description, and sequence of operation of completed installation.

.2 Detailed maintenance instructions for control equipment and each device type, maintenance schedule in accordance with CAN/ULC-S536. Trouble shooting guide for control panels and devices.

.3 Pictorial drawing of control equipment layout, showing location of components, modules and parts, indicating catalogue numbers.

.4 Schematic diagrams of control equipment, except modules which can be exchanged as unit and internal interconnecting cables and wires.

.5 Copy of verification certificate, verification report and warranty certificates such as for fire alarm system, batteries, ancillary devices, including battery suppliers date coding for batteries.

.6 Name, address and telephone number of service representative of manufacturer to be contacted during warranty period.

.7 Name, address and telephone number of representative responsible for future software programming changes.

1.07 MAINTENANCE MATERIAL SUBMITTALS

.1 Keys.

1.08 QUALITY ASSURANCE

.1 Testing Personnel Qualifications: In addition to the requirements specified in [Division 01 Section "Quality Control"], provide persons currently certified by the Canadian Fire Alarm Association (CFAA) for fire alarm system testing and verification, to supervise on-site testing and verification as specified in Part 3.

.2 Installer Qualifications: Engage an experienced factory-authorized installer to supervise work of this Section.

.3 Single-Source Responsibility: Obtain fire alarm components from a single source who assumes responsibility for compatibility of system components.

.4 Compliance with Local Requirements: Comply with the applicable building code, local ordinances, and regulations, and the requirements of the authorities having jurisdiction.

.5 Listing and Labelling: Provide fire alarm systems and components specified in this Section that are listed and labelled by ULC.

1.09 TESTING AND COMMISSIONING

.1 Perform testing and commissioning services described herein, after fire alarm, visual and audible signalling system has been installed and pretested.

1.10 WARRANTY

.1 Provide a warranty for materials and workmanship, including microprocessor components and software, to be free of defects for period from date of acceptance of system by Owner in accordance with the General Conditions.

.2 Repair response times for problems defined as routine to be addressed and corrected within twenty-four (24) hours, excepting statutory holidays and weekends.

.3 Repair response times for problems defined as major to be addressed and corrected within four (4) hours, excepting statutory holidays and weekends.

.4 Contractor to provide a recommended list of spare components and devices.

.5 Manufacturers of the major components to provide written confirmation of full warranty, extended warranty and service back-up in case of the failure to perform or insolvency of the successful supplier.

.6 Maintain maintenance records for each system supplied and must submit a monthly report containing a time and date record of all reported or detected problems, detail of corrective action taken and the cause of the problem.

.7 At end of warranty period, perform tests described above, and in accordance with CAN/ULC-S536 annual inspection and produce a final inspection report.

2. PRODUCTS

2.01 GENERAL

.1 The Central Processing Unit (CPU) to use multiplex communication techniques to receive data from and transmit data to transponders remotely located throughout the facility to minimize wiring costs, simplify design, to allow economical expansion and easy retrofit.

.2 Make provisions during detailed design for future expansion of the system.

.3 The CPU is microprocessor-based to increase system reliability, speed response to alarm conditions, and reduce cost. CPU response time to alarm conditions to be no more than four seconds, regardless of system size.

.4 Fire alarm system will be zoned as required plus 20 per cent spares.

2.02 FIRE ALARM CONTROL PANEL

.1 Fire Alarm Control Panel (FACP) complete with Central Processing Unit (CPU) shall be housed in a surface wall mounted cabinet with baked enamel finish, full viewing window, and hinged front door cover complete with lock and [two] keys.

.1 Opening cabinet door shall provide access to all operating controls, but will not expose live electrical connections.

.2 Cabinet provided with sufficient capacity to allow maximum system expansion and to house alphanumeric display.

.2 CPU shall be designed for use with transponders.

.3 Control panel, with number of zones as identified on fire alarm schedule plus 20% spare capacity, shall contain the following:

.1 Reset button, LED test button, alarm signal silencing push button, ground fault indicator light, system trouble indicating light, trouble signal silencing button and annunciator trouble indicating light.

.2 Relays and control modules as required for door releases, fan shut-down, extinguishing system release, and audible alarms.

.3 Alarm receiving modules for number of zones as indicated on drawings plus provision for 20% spares. Zone modules shall be capable of handling any type of device including pull stations, smoke detectors, and heat detectors to allow for future changing of devices without changing modules. Each module to contain a trouble alarm indicator.

.4 Power supply modules as required.

.5 Signal control modules as required.

.6 All modules shall have visual supervision against removal.

.4 Ancillary functions:

.1 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.

.2 The panel shall contain enough bypass switches with a least 3 spares to provide each special system and/or ancillary system with bypass capability.

.5 Power supply: self-contained unit, with integral power supply, battery charger, and standby batteries. Short circuit, over voltage, and brown-out monitoring to protect powered components by automatically switching to standby batteries whenever trouble condition exists in power supply.

.6 As a result of alarm conditions received at the FACP, the system shall have ability to automatically operate specified control points such as CAN/ULC-S561 monitoring, or stopping exhaust fans, air conditioning units, and releasing magnetically held doors or other Fire Alarm related devices.

2.03 POWER SUPPLIES

.1 The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC power in a normal supervisory mode for a period of 24 hours with 2 hours of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.

.2 All circuits requiring system-operating power shall be 24 VDC and shall be individually fused at the control unit or transponder.

.3 The incoming power to the system shall be supervised so that any power failure will be indicated at the control unit. A green "power on" LED shall be displayed continuously while incoming power is present.

.4 The system batteries shall be supervised so that a low battery or depleted battery condition or disconnection of the battery shall be indicated at the control unit and displayed for the specific fault type.

.5 The system shall support 100% of addressable devices in alarm, or operated at the same time, under both primary (AC) and secondary (battery) power conditions.

.6 Loss of primary power shall annunciate a trouble signal at the FACP. FACP shall indicate when the system is operating on an alternate power supply.

.7 120 V, 60 Hz as primary source of power for system.

.8 Standby batteries: sealed, maintenance free, lead calcium sealed batteries.

.1 The batteries shall be sealed maintenance free type with expected life of ten years.

.2 Batteries shall be enclosed in a steel housing, or within the fire alarm control unit.

.3 A fully automatic battery charger shall be provided which shall be capable of restoring a dead battery's capacity per ULC standards.

.9 Alarm signals arriving at the main FACP shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.

3. EXECUTION

3.01 INSTALLATION

.1 Install to CAN/ULC-S524.

.2 Control Panel mounting height: arranged such that visual displays and operating controls are not less than 600 mm and not more than 1800 mm above the finished floor level.

.3 Power to be provided by 120 VAC circuit.

.4 Label batteries with the in-service date.

.5 Install Fire Alarm System components as follows:

.1 Install fire alarm control panel and DGPs where shown on drawings.

.2 Provide DCLC loop with 1 hour fire rated conductors between FACP and DGPs. Maintain minimum spacing of the loop per CAN/ULC-S524 figure 1.1.

3.02 FIELD QUALITY CONTROL

.1 Verification in accordance with Section 28 46 13.

End of Section