

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 08 71 11 - Finish Hardware

1.2 REFERENCE  
DOCUMENTS

- .1 National Fire Protection Association (NFPA)
  - .1 NFPA 70, 2011 Edition, National Electric Code.
  - .2 NFPA 101, 2009 Edition, Life Safety Code.
- .2 Electronic Industries Association (EIA)
  - .1 REC 12749, Power Supplies.
  - .2 RS 16051, Sound Systems.

1.3 REFERENCE  
STANDARDS

- .1 Underwriters Laboratories of Canada (ULC)
    - .1 CAN/ULC-S301-09, Second Edition, Signal Receiving Centre Burglar Alarm Systems and Operators.
    - .2 CAN/ULC-S302-M91, Installation and Classification of Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults.
    - .3 CAN/ULC-S303-M91, Local Burglar Alarm Units.
    - .4 CAN/ULC-S304-G5.2, Central and Monitoring Station Burglar Alarm System Units (AMCXC).
    - .5 CAN/ULC-S310-M91 (R1999), Installation and Classification of Residential Burglar Alarm Systems.
    - .6 ORD-C1023-1974, Household Burglar Alarm System Units.
    - .7 ORG-C1076-M1986, Proprietary Burglar Alarm Units and Systems.
    - .8 ORD-C488-1995, Remote Burglar Alarm Signaling Centres.
  - .2 Underwriters' Laboratories (UL)
    - .1 UL 294-1999, Standard for Safety for Access Control System Units.
    - .2 UL 365-1997, The Standard for Police Station Connected Burglar alarm Units and Systems.
    - .3 UL 1635-1996, The Standard for Digital Alarm Communicator System Units.
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1.4 DEFINITIONS

- .1 Electronic Access Control (EAC): The control of people through entrances and exits of a controlled area. An aspect of security that utilizes hardware systems and specialized procedures to control and monitor movements into, out of, or within a controlled area. Access to various areas may be a function of authorized level or time or a combination or both. (Butterworths Security Dictionary, Terms and Concepts by John L. Fay).
- .2 CPVX: Central Station Burglar Alarm Systems.
- .3 CVSG: Mercantile Burglar Alarm Systems.
- .4 CVWX: Proprietary Burglar Alarm Systems.
- .5 DRS:. Door Release System.
- .6 PIN: Personal Identification Number.

1.5 DESIGN  
PERFORMANCE  
REQUIREMENTS

- .1 Where noted herein under 2.1 Materials, all access control products (ie., card readers, reader controllers and interfaces, electronic reader locks, electronic hardware etc.) are to be provided (supply and install) by Section 08 71 11. This section specification is to define the minimum "standards of acceptance" of those access control products and the scope requirements for installation, commissioning and training for the access control system.
  - .2 Design access control system so that all system functions are seamlessly managed by a single Security Management System (SMS). The SMS shall control all aspects of card reader and electronic reader lock management and door control in one central database. The SMS shall support secure Open Architecture 900 MHz spread spectrum wireless communication with electronic card locks as required. Wireless communication shall make use of AES 128 bit key encryption for all transmission signals.
  - .3 Design access control and security access systems using only ULC/UL Listed products.
  - .4 Design security access system using a company specializing in security access systems.
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1.5 DESIGN  
PERFORMANCE  
REQUIREMENTS  
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- .5 Design access control systems to meet safety requirements specified in accordance with UL 294.
  - .6 Design system to provide door manual and automatic control functions from locations indicated to central monitoring system.
  - .7 Design system to allow for addition of future DRS controls and activation units by adding appropriate transmission lines and equipment at each location.
  - .8 Design system to consist of home run control to activation unit connections.
  - .9 Each activation unit must have door panel control function/equipment item located as indicated.
  - .10 Design system to provide ease of operation, servicing, maintenance, testing and expansion of additional services.
  - .11 Door activation units
    - .1 Fully complement and function and match door manufacturers magnetic controls and hardware.
    - .2 Fully function with OEM supplied door controls and hardware to activate system in routine and emergency conditions.
    - .3 Fully function within supplied electrical supervision circuits as specified.
  - .12 Control Panel
    - .1 Fully compatible, compliment and operate door magnets, electric strikes or electric locks provided by door hardware manufacturer of system or OEM supplied door-operating hardware.
    - .2 Complete with electronic touch point to release and secure each door.
    - .3 Identify each door control function with lamp electronically identified on panel or associated display unit.
    - .4 Permanently label (paper labels are not acceptable) or electronically identify each door location on panel or associated display unit
    - .5 Fully functional within supplied electrical supervision circuits as specified.
  - .13 Control Signal Standards
    - .1 Input and Output Signal: 0.0 dBmV + 1.0 dBmV Level.
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1.5 DESIGN  
PERFORMANCE  
REQUIREMENTS  
(Cont'd)

- .13 (Cont'd)
- .2 Input and Output Signals: Terminated on each Control Unit.
- .3 Input and Output Impedance: 120 Ohms, BAL.
- .4 Channel Bandwidth:
  - .1 Data: 300 Hz to 3.5 kHz (9.6 kilo bits per second rate).
  - .2 DC: 0.5 Hz to 100 Hz, + 5.0%, MIN.
- .5 S/N Ratio: 60 dBmV + 1.0 dBmV.

1.6 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Product Data: Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00.
  - .1 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00.
  - .2 Submit manufacture's literature for each control panel, detection accessory device.
  - .3 Submit:
    - .1 Functional description of equipment.
    - .2 Technical data for all devices.
    - .3 Device location plans and cable lists.
    - .4 Devices mounting location detail drawings.
    - .5 Typical devices connection detail drawings.
- .2 Shop Drawings: Submit in accordance with Section 01 33 00.
  - .1 Submit shop drawings to indicate project layout, including all details.
    - .1 Submit shop drawings to indicate, mounting heights and locations, wiring diagrams, etc.
    - .2 Submit zone layout drawing indicating number and location of zones and areas covered.
    - .3 Submit wiring diagrams.
    - .4 Submit complete equipment list.
- .3 Samples: Submit in accordance with Section 01 33 00.
  - .1 Submit one sample of each component proposed for inclusion into system. Components will be returned for incorporation into work.
- .4 Quality Assurance Submittals: Submit the following in accordance with Section 01 33 00.
  - .1 Test Reports: Submit certified test reports from approved independent testing laboratories indicating compliance with specifications for

1.6 ACTION AND  
INFORMATIONAL  
SUBMITTALS  
(Cont'd)

- .4 Quality Assurance Submittals:(Cont'd)
  - .1 Test Reports:(Cont'd)  
specified performance characteristics and physical properties.
  - .2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
    - .1 Submit ULC/UL Product Safety Certificates.
    - .2 Submit verification Certificate that service company is ULC/UL List alarm service company.
    - .3 Submit verification Certificate that monitoring facility is ULC/UL "Listed central station".
    - .4 Submit verification Certificate that security access system is "Certified alarm system".
  - .3 Instructions: Submit manufacturer's installation instructions.
  - .4 Manufacturer's Field Services: Submit copies of manufacturer's field reports.
- .5 Maintenance Data: Submit maintenance data for incorporation into manual specified in Section 01 78 00.
  - .1 Include:
    - .1 System configuration and equipment physical layout.
    - .2 Functional description of equipment.
    - .3 Instructions of operation of equipment.
    - .4 Illustrations and diagrams to supplement procedures.
    - .5 Operation instructions provided by manufacturer.
    - .6 Cleaning instructions.

1.7 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Deposit packaging materials in appropriate container on site for recycling or reuse.
  - .2 Avoid using landfill waste disposal procedures when recycling facilities are available.
  - .3 Collect and separate plastic, paper packaging and corrugated cardboard.
  - .4 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin.
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- 1.8 WARRANTY .1 For door access materials the 12 month warranty period is extended to 60 months.

PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Door controls Items and panels
- .1 Provide standard "off the shelf" equipment items to form a complete and operating DRS system.
  - .2 Provide as required and detailed in Section 08 71 11: Equipment cabinets, equipment panels, AC power strips, power line conditioner, system power supply, junction box, door control panels, door activation units, electronic supervising master panel, electronic supervising remote panels, system connectors, and system cables.
  - .2 Provide system cables including coaxial cable, multiconductor control cable, audio and AC power cable required.
  - .3 Power supplies: to CAN/ULC-S318 or UL 603.
  - .4 Connectors and switches: to ORD-C634.
  - .5 Basic Access Control System Criteria
    - .1 Card Readers:
      - .1 Type: Contactless Multi Technology.
      - .2 Format: HID Corporate 1000.
      - .3 Quantity of card readers required as shown on plans and in Section 08 71 11.
      - .4 Fitted with LED indicator light.
      - .5 Reading distance 25 - 100 mm.
      - .6 Compatible with access card model.
    - .2 Cards: Standard, plastic, credit-card size, sealed and highly resistant to normal handling and weather, fitted with vertical slot punched hole.
      - .1 Quantity of cards required: as detailed in 08 71 11.
      - .2 Coding:
        - .1 Designed with highly secure codification of card information.
        - .2 Card life: minimum period of 10 years for cards in same family.
        - .3 Use one series of cards for all areas protected by access control system.
        - .4 ISO Thickness, DESFireEV1 aptiQ 16K Bit Memory.

2.1 MATERIALS  
(Cont'd)

- .5 (Cont'd)
  - .3 Quantity of alarm monitoring points required: 96.
  - .4 Quantity of outputs required: 32.
  - .5 Number of access levels (assigned to cardholders): 32.
  - .6 Schedules:
    - .1 Number of date schedules required: 100.
    - .2 Number of holiday schedules required: 180.
    - .3 Allow full schedule description label of 32 alphanumeric characters.
    - .4 Include 4 time intervals/day.
  - .7 Groups:
    - .1 Design system to include possibility of group association in following categories:
      - .1 Controller groups: 100.
      - .2 Door groups: 100.
      - .3 Relay groups: 100.
      - .4 Input groups: 100.
      - .5 Access groups: 100.
    - .2 Design groups with fully customizable field of 32 alphanumeric characters for easy renaming of associated group.
  - .8 Operating system: DOS Windows XP Professional.
  - .9 Connection: multisite, networked.
  - .10 Language: Bilingual.
  - .11 Off Site Monitoring of alarm conditions.
- .6 Accessory Software Features
  - .1 Elevator control.
    - .1 Enable only floor button associated to users access level.
    - .2 Instant cancellation of other floor access following valid floor selection.
  - .2 Time and attendance reporting.
  - .3 Features:
    - .1 Anti pass-back, global.
    - .2 Guard tour.
    - .3 Graphics.
    - .4 CCTV integration.
    - .5 Intrusion integration.
    - .6 Badging/photo ID integration.
    - .7 Each card reader shall be programmed to operate such that an activation by a card will lock door, and the next activation will unlock door or as a standard card reader, confirm doors to receive programming type.

2.1 MATERIALS  
(Cont'd)

- .7 System Accessories (as detailed in Seciton 08 71 11):
  - .1 Door strike: latch, UL approved complete with mounting hardware.
  - .2 Magnetic lock: holding force 1200 lbs minimum, surface mounted, UL approved complete with mounting hardware.
  - .3 Request to exit motion detector device:
    - .1 Infrared detection.
    - .2 Continuous low-voltage operation.
    - .3 Fitted with indicator light.
    - .4 Integrated with local audio alarm (electronic buzzer).
    - .5 Adjustable coverage.
  - .4 Request to exit motion push button device:
    - .1 Heavy duty assembly.
    - .2 Size: square, 100 x 50 mm.
    - .3 Sturdy and attractive finishing plate with security screws.
  - .5 Pull Station Power interrupt.
  - .6 Power Supplies:
    - .1 Continuous low-voltage operation output.
    - .2 Equipped with secondary protection for each output.
    - .3 Individual outputs for connection of devices.
    - .4 AC power failure output.
    - .5 DC power failure output and low battery output.
    - .6 Fitted with tamper contact.
    - .7 Wall mounted cabinet with locked door complete with 12 keys.
  - .7 Voltage: 24 volt DC.
  - .8 Administrative PC, Pentium IV class, 3.2GHz, 512K RAM, 200GBHD, steel rack mount case, CD/DVD-R, 3.5"FDD, NIC, mouse, keyboard.
  - .9 21" LCD flat screen monitor to be located at reception desk.
  - .10 Electronic Locks shall be modular in design and support the following:
    - .1 Upgradable field configurable card reader technology.
    - .2 12 or 24 VDC or battery powered.
    - .3 Wired or wireless communication 900 Mhz.
    - .4 Optional integral keypad.
    - .5 RS485 or weigard communication support.
- .8 Burglar alarm systems: to ORD-C1023.
  - .1 Motion Sensors
    - .1 PIR type.

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- 2.1 MATERIALS (Cont'd)
- .8 Burglar alarm systems:(Cont'd)
    - .1 (Cont'd)
      - .2 360° detection pattern at 10 m diameter at floor level.
      - .3 Auto temperature compensation.
      - .4 Integral tamper switch.
      - .5 Output contacts.
      - .6 Ceiling mount.
    - .2 Audible Device
      - .1 Flush mounted horn, white finish, 90 dB @ 3m.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS
- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and datasheet.
- 3.2 INSTALLATION: SECURITY ACCESS
- .1 Install security access systems and components in accordance with CAN/ULC-S302 and CAN/ULC-S310.
  - .2 Install components in accordance with manufacturer's written installation instructions to locations, heights and surfaces shown on reviewed shop drawings.
  - .3 Install components secure to walls, ceilings or other substrates.
  - .4 Install required boxes in inconspicuous accessible locations.
  - .5 Conceal conduit and wiring.
- 3.3 SEQUENCE OF OPERATION FOR MONITORED DOORS
- .1 System operation: when supervised door is opened, zone indicating lamp flashes and operates audible alarm at control panel. When "acknowledge" button is operated, audible signal is silenced and flashing light changes to steady glow.
  - .2 System restored to normal when door is closed and "reset" key switch on control panel operated.
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- 3.3 SEQUENCE OF OPERATION FOR MONITORED DOORS (Cont'd)
- .3 When deactivating switch is operated, supervised door on that zone opened without causing alarm. Zone trouble lamp illuminated when zone is deactivated but audible trouble signal not to sound.
  - .4 Fault in wiring of one zone to cause audible signal to sound even if zone in deactivated position.
- 3.4 FIELD QUALITY CONTROL
- .1 Manufacturer's Services:
    - .1 Have manufacturer of products, supplied under this Section and under Section 08 71 11, review Work involved in the handling, installation/application, protection and cleaning, of its products and submit written reports, in acceptable format, to verify compliance of Work with Contract.
    - .2 Manufacturer's Field Services: 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, at stages listed:
      - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
      - .2 Twice during progress of Work at 25% and 60% complete.
      - .3 Upon completion of the Work, after cleaning is carried out.
      - .4 Obtain reports, within 3 days of review, and submit, immediately, to Departmental Representative.
- 3.5 VERIFICATION
- .1 Perform verification inspections and test in the presence of Departmental Representative.
    - .1 Provide all necessary tools, ladders and equipment.
    - .2 Ensure appropriate subcontractors, and manufacturer's representatives and security specialists are present for verification.
  - .2 Pretesting Procedure
    - .1 Verify (utilizing an approved spectrum analyzer and test equipment) that System is
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3.5 VERIFICATION  
(Cont'd)

- .2 (Cont'd)
  - .1 (Cont'd)

fully operational and meets all System performance requirements of this specification.
  - .2 Measure and record, control (and/or voice) carrier levels of every System channel at each of following points in the system:
    - .1 Door located actuating devices.
    - .2 Door control panel functions.
    - .3 Electronic supervisory control units inputs and outputs.
    - .4 Distribution system input and output.
    - .5 Telephone system interface input and output.
  - .3 Provide and submit to Departmental Representative two copies of recorded system pretest measurements, along with pretest certification.
- .3 Performance testing
  - .1 Test procedure: perform test on a "go-no-go" basis.
    - .1 Make only operator adjustments required to show proof of performance.
    - .2 Test to demonstrate and verify that installed system complies with installation and technical requirements of this specification under operating conditions.
    - .3 Test results to be evaluated by Departmental Representative as either acceptable or unacceptable using following procedures.
  - .2 Documentation review
    - .1 This review will determine if information provided is sufficient to meet requirements of this specification.
    - .2 Provide for review all system manuals, as installed drawings, pretest forms, antenna radiation patterns, equipment cabinet pictorials, antenna pictorial, antenna mount pictorial, video and audio equipment details.
  - .3 Mechanical inspection
    - .1 Departmental Representative and Contractor to tour all areas to insure that all systems and subsystems are installed in place for proof of performance testing.
    - .2 Take system inventory at this time. Verify following items before beginning proof of performance tests:
      - .1 All electrical power circuits designated for system equipment are properly labeled, wired, phased, protected and grounded.

3.5 VERIFICATION .3 (Cont'd)  
(Cont'd) .3 (Cont'd)

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.2 Conductor ends are protected by heat shrink wrap; audio spade lugs, barrier strips and punch blocks are used.

.3 Dust, debris, solder splatter, etc. are cleaned and removed from site.

.4 All equipment is properly labeled.

.5 All equipment identified in System's equipment lists are in-place and properly installed.

.6 Each lightning and system ground method are installed in accordance with manufacturer's instructions and this specification.

.4 Subsystem functional test

.1 Conduct operational testing after review of documentation and mechanical inspection completed. Proceed as follows.

.1 Perform operational test of each subsystem to verify that all equipment is properly connected, interfaced and is functionally operational to meet requirements of this specification.

.2 Control Units

.1 Take S/N readings from control unit's input and output in manual (and/or automatic) mode. Check output of DC/Data converter for S/N. Evaluate entire signal quality at baseband connector output of control unit and remote equipment.

.3 Audio

.1 Take S/N readings from transmitter input and receiver output with equipment placed in manual gain mode. Check output of the audio converter, modulator or demodulator for S/N. Evaluate entire audio signal at baseband connector input and output of control unit.

.4 Distribution (or Interface) System

.1 Check each door utilizing a volt/ohm (or signal level) meter to confirm each function and to insure that System meets all performance requirements.

.2 Test each interconnection point (i.e: Door unit, junction box "cross connection", control unit, etc.) to ensure compliance with this specification.

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3.5 VERIFICATION  
(Cont'd)

- .4 (Cont'd)
  - .5 Total system test
    - .1 Proceed with testing when system and subsystems are functionally tested and accepted. Total system tests to verify that requirements have been met for DC (and/or audio), sub carrier, and control signals in accordance with this specification.
  - .6 Safety
    - .1 Demonstrate with documentation that access control system meets safety requirements specified in UL 294.
- .5 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.
- .6 Technical verification: Purpose to ensure that all systems and devices are properly installed and free of defects and damage. Technical verification includes:
  - .1 Validate sensitivity of readers and applicability and application of cards.
  - .2 Connecting joints and equipment fastening.
  - .3 Compliance with manufacturer's specification, product literature and installation instructions.
- .7 Operational verification: Purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Operational verification includes:
  - .1 Operation of each device individually and within its environment.
  - .2 Operation of each device in relation with programmable schedule and or/specific functions.

3.6 CLEANING

- .1 Remove protective coverings from accessories and components.
- .2 Adjust all components for correct function.
- .3 Clean housings and system components, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.
- .4 Clean all components free from dirt and fingerprints.