PART 1 - GENERAL

1.1 REFERENCES

.1 CSA C22.1-15, Canadian Electrical Code.

1.2 WORK RESTRICTIONS

.1 Perform the work in accordance with the requirements of Section 01 14 00 - Work Restrictions.

.2 Retain the services of the accredited specialist for the door and window surveillance system and video surveillance system at the time of the work. Request the contact information of the accredited specialist to the Departmental Representative.

1.3 DESIGN REQUIREMENTS

.1 All cables/wires must be suited to the conditions of use, in accordance with Table 19 of the Quebec Construction Code, Chapter V, even if the type of equipment being connected is not governed by the Code.

.2 Unless otherwise indicated, cables/wires must meet the following requirements:

.1 Manufacturer’s requirements for use.

.2 When installed indoors, they must be covered with FT4 sheathing and installed in conduits.

.3 When installed outside underground, they must be covered by a sheath suited for use in damp conditions.

.4 If one section of a cable/wire is installed underground and the other in a building, the cable/wire must be FT4 rated and suited for use in damp conditions.

.5 18 AWG minimum for all voltage under 24V.

.6 A higher cable/wire gauge must be used if the drop in voltage exceeds 5%.

.7 No splices.

.8 Of sufficient length and with enough reserve to redo a minimum of five (5) connections to the component in the event of accidental breakage.

.9 Stranded conductors must be used for supervision and power cables (no single-conductor cables).

1.4 SUBMITTAL PROCEDURES

.1 Submit documents and samples required in accordance with Section 01 33 00 - Submittal Procedures.

.2 The product data to be submitted are:

.1 Product data for all cable/wire types.

.2 Product data for the equipment to be supplied in this section.

.3 Manufacturer's instructions concerning installation of its equipment.

.3 Shop drawings to be submitted are:

.1 Cable/wiring diagrams and installation details for devices showing the proposed location, placement, route and layout, control panels, accessories, piping, conduits and any other item required for a coordinated installation.

.2 Cable/wiring diagrams showing circuit terminals, internal wiring of each device and interconnections between devices.

.3 Drawings indicating clearances required for operation, maintenance and replacement of devices.

.4 If changes are required, notify the Departmental Representative before proceeding.

1.5 HEALTH AND SAFETY

.1 Take the necessary occupational health and safety measures for the construction industry in accordance with Province of Quebec regulations. The Specialized Contractor must perform health and safety-related tasks on the construction sites.

.2 Comply with all requirements identified in Section 01 35 29.06 - Health and Safety Requirements.

1.6 SYSTEM START-UP

.1 The accredited specialist retained must conduct the start-up, check, adjust, balance and calibrate, the different components.

.2 Provide these services for such period and for as many visits as necessary to put equipment in operation.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Where required by the Quebec Construction Code - Chapter V, equipment must be certified for installation in Quebec. Where certified materials or equipment is not available, or where an assembly requiring certification is to be connected to an electrical installation, submit for approval by a competent authority and obtain the necessary authorizations before delivery to the site or before system start-up.

.2 Stranded conductors must be used for security cables (no solid conductors).

2.2 CABLE/WIRING TERMINATIONS

.1 Ensure lugs, terminals and screws for cable/wire terminations are suitable for both copper and aluminum conductors.

.2 Use compression connectors (wire-to-wire) with anti-corrosion and damp-proofing gel.

.3 Use compression terminations when making wire-to-wire connections.

.4 Use ring terminal lugs when connecting to a bolt (e.g., grounding a piece of equipment). Fork-type terminals are prohibited.

.5 When connecting to a terminal block, strip the cable/wire to the appropriate length. The stripped portion must not extend beyond the face of the terminal block. When a stranded conductor with a gauge lower than 22 is used, the conductor must stripped over a length representing twice that usually required, folded over on itself and twisted before being inserted into the terminal block.

.6 Cover wire-to-wire connections with heat-shrink sheathing when the joint is exposed to weather or when the joint is outside a heated building.

2.3 CABLE/WIRING LABELLING

.1 Both cable/wire ends must be labelled using permanent, indelible ink on BRADY SELF-LAMINATING vinyl tape or equivalent.

.2 Labelling must be logical and follow the numbering of doors, rooms or reference points, including a component code to facilitate identification. Labelling must be submitted to the Departmental Representative for comment.

.3 Labelling must be uniform for the entire installation.

.4 Use communication cables composed of a sheath and conductors with uniform colour-coding throughout the network.

.5 Unless otherwise agreed by the Departmental Representative, colour-coding of sheaths for wires/cables and conductors must be consistent for every installation of the same type of component.

2.4 CONDUIT LABELLING

.1 See Division 26 Electricity.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Unless otherwise indicated, install in accordance with CSA C22.1.

3.2 LABELS, NAMEPLATES AND IDENTIFICATION PLATES

.1 Ensure that CSA labels, nameplates and identification plates are visible and legible once equipment is installed.

3.3 CABLE/WIRING INSTALLATION

.1 Comply with manufacturer's requirements.

.2 If a lubricant is required to facilitate cable pulling, use a product that is safe for human contact and the environment. It must also be compatible with all sheath types and CSA approved. Submit product data and obtain prior authorization.

.3 All cables/wires must be installed in conduits; connection to components should be in the closest equipment room, unless otherwise indicated in the safety and security plans in Division 28 and the conduit routing plans in Division 26. If the conduits are not shown in the Division 26 plans, the Contractor shall assume that the conduits are installed along the axis line of the building and corridors.

3.4 CONDUIT INSTALLATION

.1 See Division 26 Electricity.

.2 Conduit sizing was based on a fill ratio not exceeding 40% using standard cables such as those listed below:

.1 Low voltage stranded 2 x 18 Belden 5300UE power cable.

.2 Low voltage stranded 6 x 18 Belden 5304UE power cable.

.3 Stranded 4 x 22 Belden 5502UE monitoring cable.

.4 Low voltage stranded 6 x 16 Belden 8621 power cable.

.5 Low voltage stranded 4 x 14 Belden 8627 power cable

.3 The Security Contractor is responsible for ensuring that conduit sizes indicated in the plans and specifications meet the safety requirements of the cables/wires and equipment proposed. If the Security Contractor deems that the size is inadequate, it must notify the Departmental Representative and explain the sizing problem well before the Division 26 Contractor carries out the work.

.4 Submit for review the plans showing the cable/wiring distribution in all conduits.

.5 To minimize the impact of lightning, cables/wires for outdoor cameras installed on the building must be installed in conduits designated for this purpose. Cables/wires serving equipment installed indoors must not be placed in these conduits.

3.5 MOUNTING HEIGHT

.1 Unless otherwise indicated or specified, mounting height measure for equipment is from finished floor to the equipment centre line.

.2 If mounting height is not given, verify prior to installation.

.3 Comply with the manufacturer's recommended mounting heights and those indicated on the plans. Coordinate placement of components based on expected results and coordinate with the Division 26 Contractor for conduit installation.

3.6 CLEANING

.1 Clean and touch up shop painted surfaces scratched or damaged during transport or installation; use paint of the same type and colour as the original.

END OF SECTION