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**Part 1            General**

**1.1            SUMMARY**

- .1    Section Includes:
  - .1       System requirements for Local Area Network (LAN) for Building Energy Monitoring and Control System (EMCS).

**1.2            REFERENCES**

- .1    Canadian Standards Association (CSA International).
  - .1       CSA T529, Telecommunications Cabling Systems in Commercial Buildings (Adopted ANSI/TIA/EIA-568-A with modifications).
  - .2       CSA T530, Commercial Building Standard for Telecommunications Pathways and Spaces (Adopted ANSI/TIA/EIA-569-A with modifications).
- .2    Institute of Electrical and Electronics Engineers (IEEE)/Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements.
  - .1       IEEE Std 802.3<sup>TM</sup>-, Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications.
- .3    Telecommunications Industries Association (TIA)/Electronic Industries Alliance (EIA)
  - .1       TIA/EIA-568, Commercial Building Telecommunications Cabling Standards Set, Part 1 General Requirements Part 2 Balanced Twisted-Pair Cabling Components Part 3 Optical Fiber Cabling Components Standard.
  - .2       TIA/EIA-569-A, Commercial Building Standard for Telecommunications Pathways and Spaces.
- .4    Treasury Board Information Technology Standard (TBITS).
  - .1       TBITS 6.9, Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings - Technical Specifications.

**1.3            DEFINITIONS**

- .1    Acronyms and definitions: refer to Section 25 05 01 - EMCS - General Requirements.

**1.4            COMMUNICATION SYSTEM**

- .1    General
  - .1       Connecting an operator station (main or local) to any controller should enable an interface with all other controllers in local or remote mode.
- .2    Communication Compliance
  - .1       Communications must comply with the BACnet ASHRAE 135-2010 standard on an interconnection system in accordance with ISO 8802.3 Ethernet Standard (IEEE 802.3) or MS/TP EIA-485.

- .2 Communication occurring on the communication network should ensure a value transfer and operator interface that is transparent at the architecture inter-network level (« peer to peer »):
  - .1 Connecting an operator interface unit to any communication system controller should allow the operator to interface with all other controllers. Operators must be able to view and edit the data, status information, reports, operating software, personalized programs etc., of all controllers from any communication network;
  - .2 All database values (objects, variable software, and variable personalized program) of any controller must be able to be read from any other controller of the communication network;
  - .3 All objects and their characteristics should be easily viewed and shared on the entire system.
- .3 Communication Network
  - .1 Systems must be designed to ensure reliable connectivity, secure and of adequate performance between different sections (segments).
  - .2 The installation should allow the system to further expand, the option of the network technology and communication protocol. This should include the following without limitation:
    - .1 Transmission network realized with pairs of twisted and shielded wire (MS/TP);
    - .2 Dedicated transmission system of type Ethernet standard at minimum 10 Mbauds.
  - .3 The building has a corporate system. Outlets « data » are available in the main mechanical rooms for connection of new CNP.
  - .4 If the new control system cannot be compatible to the corporate system, this Section must provide and install its own system.
- .4 The system must allow direct communication with the chiller management system and variable frequency drives. This Section is responsible for communication between these devices and system. The information to be transferred to the building control system is defined in the operating sequence.

## **1.5 SYSTEM ARCHITECTURE**

- .1 Standards for determining the number of CNP and CNA are:
  - .1 The number of controllers provided must be adequate to meet the intent and requirements of this Section.
  - .2 All measure points and control points integrated to one specific system must reside in the same controller.
  - .3 Specific application controllers (customizable) (CNA) are accepted in the following cases, for other systems, controllers are fully programmable (CNP):
    - .1 Control of terminal elements;
    - .2 Control of small units such as heaters, fan coil or fan heaters.

- .4 For each CNP, in addition to the connected points, provide modules to connect 15% of future points of each type EN, EA, SN, SA.
- .5 Multiplexers are not accepted.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**