This section specifies Communication and Control for **View® Smart Windows** in CSI format for use by design professionals for use in Project Manuals. Typically edit by deletion based on your project requirements. Please call 408-514-6512 or visit www.view.com for more information.

**SECTION 25 13 00 INTEGRATED CONTROL NETWORK FOR SMART WINDOWS**

**PART 1 - GENERAL**

**1.1    SUMMARY**

A.    Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B.    Section Includes: Requirements for integrated automation control and monitoring network with remote connectivity for Manufacturer's Smart Glass System. Work includes, but is not limited to, the following:
1.    Connecting the Smart Glass Master Controller and ensuring connectivity to Manufacturer HQ, Time Server, DNS, and the rest of the Smart Glass Control Network
2.    Ensuring remote connectivity from Manufacturer HQ to the Smart Glass Master Controller for Manufacturer personnel to commission, configure, and maintain the system.
3.    Ensuring the Dynamic Glass Mobile App functions properly for users both inside and outside the corporate firewall.
4.    Connecting a separate private VLAN for the control panels to communicate together (if applicable)
5.    Connecting to a BMS system (as applicable).

C.    Related Requirements:
1.    Section 08 80 00 – Dynamic Glazing.
2.    Section 26 09 00 – Power for Instrumentation for Smart Windows
3.    Section 27 10 00 - Instrumentation and Control for Smart Windows.
4.    Division 26 - Electrical

**1.2    DEFINITIONS**

A.    Refer to other divisions for industry standard glass and glazing definitions. The following apply to this section:
1.    BMS: Building management system.
2.    Network Window Controller: Control module for Smart Glass System.
3.    BACnet: ASHRAE, ANSI, and ISO standard communications protocol for building automation and control networks.
4.    REST API: Cloud based API's using the Representative State Transfer rules

**1.3    SYSTEM DESCRIPTION**

A.    Basic Controls:
1.    Dynamic Glass insulated glass units shall be operated by the manufacturer's Smart Glass control system
2.    The Smart Glass control system consists of a Control Panel mounted at the project site (usually in common control room for alarm, fire, and similar items).
3.    The control panel contains power supplies and controllers that communicate to windows. The Smart Glass Master Controller controls all critical functions and interface functions for the glass. These include the scheduler, interfaces for mobile devices and BMS, critical glass control parameters, and the building dimensions and parameters for the manufacturer's automatic control mode.

**1.4    SUBMITTALS**

   A.   Comply with Division 01 General Requirements and submit for approval:
       1.   Product Data: Manufacturer's Dynamic Glass literature including data sheets, installation instructions, use restrictions and limitations.

**1.5    QUALITY ASSURANCE**

   A.   Integrated Automation Installer Qualifications:
       1.   Experienced with comparable installations and having successful performance on not less than 3 such installations.
       2.   Acceptable to Smart Glass manufacturer.

**1.6    PROJECT CONDITIONS**

   A.   Environmental Requirements: Install assemblies only in indoor, clean, climate controlled spaces using the final building mechanical system.

**1.7    WARRANTY**

   A.   For Controls, Software, and Services components necessary for operation and control of insulating glass units, the manufacturer shall warrant the system free of defects in material and workmanship as follow:
       1.   Warranty period shall commence on the date of delivery of components by the system manufacturer.
       2.   Warranty period: 5 years.

**PART 2 - PRODUCTS**

**2.1    MANUFACTURER**

   A.   Basis-of-Design: View Smart Glass Integrated Automation Control and Monitoring Network assemblies as manufactured or supplied by:

       VIEW Inc.
       195 S. Milpitas Blvd, Milpitas, CA 95035
       Telephone: 408-514-6512
       E-mail: salesops@view.com
       Internet: http://www.view.com

   B.   Substitutions: Not permitted

   C.   Proposed substitutions: Will be reviewed only if submitted in writing for approval by the design professional of record a minimum of 10 working days prior to the bid date and made available to all bidders. Proposed substitutes shall be accompanied by review of specification noting compliance on a line-by-line basis.

**PART 3 - EXECUTION**

**3.1    MASTER CONTROLLER CONNECTIVITY**

   A.   Verify Smart Glass Master Controller connectivity to the corporate IT network, Manufacturer HQ, the Smart Glass Control Network, and to either public or private DNS/ NTP server.

   B.   Ensure the Master Controller is installed in the Corporate IT infrastructure such that the rest of the system components operate correctly, including:
       1.   Communication to the Smart Glass controllers on the private network.
       2.   Communication to the Smart Glass App for users both inside and outside the corporate network/firewall.

   C.   Additional Smart Glass Control Panels required to service multiple floors or buildings shall be connected on a private LAN to allow critical communication to/from the Smart Glass controllers.

**3.2 REMOTE CONNECTIVITY**

A. Verify Remote Connectivity from Manufacturer HQ to the Smart Glass Master Controller to enable consistent remote access for Manufacturer's personnel to commission, configure, monitor, and maintain the system.

   1. Connectivity Options: Provide connection through the following as applicable.

      a. Firewall via DMZ using routable IP address for the Master Controller – if Inbound/Outbound restrictions are added, use port mapping. Firewall via port mapping using routable IP address for the Master Controller

      b. Firewall restricted to the Smart Glass IP address range (for extra security) via port mapping or DMZ.

      c. Firewall with VPN access.

      d. Guest/Vendor network separate from your business network.

   2. Outbound Requirements:

      a. TCP port 53: Required for DNS, can use a customer provided internal DNS server

      b. UDP port 123: Required for NTP servers. Public us.pool servers used by default, can use customer internal server as requested

      c. TCP port 443: HTTPS based outbound connection used for remote monitoring, application control and software updates

      d. TCP port 8443: HTTPS based outbound connection for authenticating users and ensuring authorization

      e. TCP port 8883: MQTT over TLS

**3.3 MOBILE APP CONNECTIVITY**

A. Verify operation of Smart Glass App for users inside and outside the corporate network/firewall. App shall have direct communication to the Master Controller via Wi-Fi or cellular network.

**3.4 FINAL OPERATIONAL TESTING CONNECTIVITY**

A. After Smart Glass system start-up, conduct an overall system test to verify system is operational per system operating instructions.

**END OF SECTION 25 13 00**

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