

Scope of Work: View Net

This document contains basic scope of work information for bidding on View Net. For additional clarity, refer to the View Level 2 drawings or View Schematic Drawings, available upon request.

OVERVIEW

Section 1: Prerequisites and Classification of Work

1. Contractor Requirements
2. Classification of Work
3. Certification & Training Requirements

Section 2: View Net Base Package

1. View Control Panels
2. Armored Optical Fiber cabling (12-strand on spools)
3. Armored Optical Fiber jumpers (12-strand, pre-terminated with LC connectors)
4. Fiber Adapter Panel (48-port)
5. Trunk cables (LMR400; shipped on spools or pre-terminated (up to 1, 5, 6 and 10 foot segments in 1 foot increments)
6. Aluminum Backboards
7. Trunk Splitters
8. BNC connectors
9. Drop Cables pre-terminated (up to 10 foot segments in 1 foot increments)
10. Network Window Controllers
11. IGU cables (shipped to glazier)
12. IGU extension cables as needed (shipped to low-voltage contractor; pre-terminated)
13. Sky Sensor
14. Cell Modem
15. GTT (Glazier Test Tool)
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17. Commissioning

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3. Firestop Requirements
4. Access Panels
5. Conduit Raceways
6. Roof Penetration

Section 1: PREREQUISITES AND CLASSIFICATION OF WORK

Contractor requirements:

- Licensed low-voltage contractor for all other structured cabling requirements
- Provide design assistance to View and MEP for equipment locations and cable paths
- Provide all installation hardware and supplies for View products
- Provide safe and secure storage for all View products
- Low voltage contractor shall be a Corporate BICSI member or equivalent

Classification of Work

- Division 25 13 00 Integrated Control Network for Dynamic Glazing
- Division 26 09 00 Instrumentation and Control for Dynamic Glazing
- Division 27 10 00 Instrumentation and Control for Smart Windows

Certification & Training Requirements:

- BICSI Cabling Installation/Design Certifications or equivalent
 - BICSI Manual: ITSIMM Seventh Edition or higher
 - BICSI Installer 1 (INST, Course IN101)
 - BICSI Installer 2, Copper (INSTC, Course IN225)
 - BICSI Installer 2 Optical Fiber (INSTF, Course IN250)
 - BICSI Technician (TECH, Course TE350)
 - BICSI Registered Communication Distribution Designer (RCDD, DD102)
- View Trade Partner Training: Low-voltage Bootcamp (4-hours of in-person training)
- For additional information go to: www.view.com/training

Section 2: View Net

1. View Net Control Panel

- a. Installation of all View Net Control Panels per View Schematic drawings, use Seismic rated anchors as required per local building code
- b. Installation of pre-construction baseplate for control panels prior to concrete pour (Baseplate provided by View)
- c. Each Control Panel must be bonded to building ground
- d. Install 12-strand armored optical fiber cable, daisy-chain each View Net control panel. This cable will ship with pre-terminated LC connectors when cable length under 17 feet.
- e. Install 12-strand armored optical fiber cable from last control panel back to first control panel. 12 strands shall be terminated using LC connectors and terminated into the fiber adapter panel
- f. Connect one (1) primary View Control Panel to customer network via Fiber or ethernet connection per View Schematic Drawings

2. Inter-rack wiring

- a. Install pre-terminated ethernet patch cables provided by View
- b. Install pre-terminated fiber cables provided by View
- c. Provide professional cable management for all cabling per BICSI industry standards or equivalent

3. Sky Sensor

- a. Installation of Sky Sensor and related hardware accessories on building rooftop
- b. Installation of roof mast, electrical junction box (EJB), and grounding couplers (EJB and grounding couplers provided by View)
- c. Installation of Ethernet and/or fiber cabling from Sky Sensor to View Control Panel or building network
- d. Roof mast must be bonded to building ground

4. Horizontal Cabling and Connectors

- a. Installation, termination and testing of View Trunk coaxial cables per View Schematic drawings
- b. Installation of BNC splitters per View Schematic drawings
- c. Installation of coaxial drop cables from trunk line to NWCs per View Schematic drawings
- d. Installation of IGU extension cables as required per View Schematic drawings

5. NWC (Network Window Controller)

- a. Installation of all NWCs per View Schematic drawings
- b. NWCs shall be installed on mounting plates (mounting plates provided by View)
- c. NWCs shall be mounted in an area where the temperature does not exceed the manufacturers specified operating temperature (refer to View Data Sheet)
- d. Location of all NWCs must be accessible for testing, commissioning and future serviceability
- e. Provide mockup of proposed mounting solution for approval by View, GC and Owner of project

6. Labeling

- a. Label trunk cables per View Schematic drawings
- b. Label all Network Window Controllers per View Schematic drawings
- c. Label all View IGU extension cables at both ends per View Schematic drawings
- d. Label all Ethernet cables per View Schematic drawings

7. Cell Modem

- a. Install cell modem near primary Control Panel as a temporary network to the Internet (Refer to View Schematic Drawing)
- b. Provide power cord for cell modem (Refer to View Schematic Drawing)

8. Testing Protocol Requirements for Fiber and Coaxial cables

- a. Follow BICSI standards for single-mode fiber designed to run 10-GB Ethernet
- b. Provide test logs for all field terminated fiber runs using Optical Loss Test Set (OLTS) tool
- c. Provide test logs for all field terminated horizontal trunk lines using a cable line tester (Must be compatible with cable test management software)
- d. Use GTT and View Field App (VFA) for acceptance testing, field termination testing and FHT.
- e. Use a Cable Test Management Software and follow BICSI guidelines
- f. Acceptable cable test management software: Linkware PC by Fluke or equivalent
- g. Provide cable test reports in PDF format and to View PM/PE/CM for verification and acceptance (Reports must be generated from cable test management software)
- h. Report shall include Cable ID, Pass/Fail, Test Limit, Length, Headroom, Date/Time

9. Functional Hardware Testing

- a. Test and validate all control panels are wired correctly to AC power
- b. Test and validate permanent power source is stable to all control panels (NO temp power)
- c. Test and validate all trunk lines using View software tools
- d. Test and validate all NWCs using View software tools
- e. Using View software tools, connect to individual control panels and validate all cables and hardware devices are working properly.
- f. Submit all test results to View using View software tools
- g. Test and validate all vertical fiber cabling using BICSI protocol
- h. Verify all Ethernet patch cables are installed in View Control Panels
- i. Test and validate View Smart Glass using GTT (Glazier Test Tool)

10. Commissioning

- a. Final commissioning will be performed by View PE however, Low-Voltage contractor must be on standby for hardware troubleshooting support
- b. Low-Voltage contractor shall provide all support equipment for commissioning (such as but not limited to scissor lifts, boom lifts, ladders, scaffolding, etc.)

11. As-Built Record Drawings

- a. Maintain accurate As-Built drawings in the field
- b. Submit redline drawings to View Project Manager at completion of project

12. Training and Support

- a. Required comprehensive online introductory courses provided by View (no charge)
- b. Contractor technicians and installers are required to complete View Net Low-voltage Bootcamp to be held by View Training Team (4-hours of instruction)
- c. Comprehensive Schematic drawings provided by View, includes location of View hardware, cabling and all termination requirements
- d. View will assign a project manager to each project, the View PM shall provide ongoing support for the duration of the project
- e. BICSI certifications or equivalent are a pre-requisite and provided by others

13. Storage

- a. UPON receiving, store ALL View cables in a heated area with temperatures above 60°F / 15.55°C
- b. BEFORE installation, store ALL View cables in a heated area with temperatures above 60°F / 21°C for 24 hours
- c. Install within 8 hours after removing from heated area
- d. All View cables need to be handled with care and not dropped, kinked, or bent roughly
- e. Pull cables slowly, use large sheaves and lubes suitable for cold temperatures
- f. Provide dry, safe and secure storage of all View hardware, cabling and accessories

14. Consumables and Specialty Tools

Electrical and Low-Voltage contractor shall supply all installation supplies for the proper integration of the View control system into a building, here are examples of supplies provided by the contractor:

- a. Proper tools for terminating and testing BNC connectors
- b. Fiber termination and tools
- c. J-hooks, bridle rings, cable hangars, Threaded rod
- d. Conduit sleeves, Snap-in bushings
- e. Nuts, bolts, screws and Velcro
- f. Firestops and fire caulking as required for fire rated walls
- g. Ethernet cable, RJ45 connectors and wall boxes/plates
- h. AC power cord for cell modem (14/3 with male Edison connector)
- i. Parts needed to install sky sensor (1/2" rigid mast, mounting hardware, grounding wire)
- j. Label machine that makes vinyl "wrap" style labels, label cartridges
- k. Incidental hardware needed to complete professional installation compliant with local codes and specifications in the View bid packet and interconnect drawings
- l. Provide Cable Test Management Software and compatible testing tool

15. General Notes

GENERAL NOTES:

1. VIEW, INC. IS NOT RESPONSIBLE FOR CONNECTION / HANDLING ERRORS BY OTHERS.
2. WINDOW CONTROL PANEL(S) SHALL BE INSTALLED AT LOCATION AS SHOWN ON THE DRAWINGS.
3. ALL WORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES.
4. GENERAL LAYOUT SHOWN SHALL BE FOLLOWED, EXCEPT WHERE OTHER WORK MAY CONFLICT WITH DRAWINGS.
5. ALL EQUIPMENT AND PANELS SHALL BE ANCHORED PER SEISMIC / AHJ REQUIREMENTS.
6. WHERE ELECTRICAL RECEPTACLES, ELECTRICAL DISTRIBUTION PANELS OR ELECTRICAL SWITCHES ARE INDICATED, IT IS FOR THE PURPOSE OF LOCATION AND COORDINATION.
7. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
8. IF CONDUIT IS REQUIRED, INSTALL BY APPLICABLE CODE AND AUTHORITY HAVING JURISDICTION (AHJ) REQUIREMENTS. (3/4" DIA. MIN.)
9. ALL SYSTEM COMPONENT LOCATIONS AND CORD SET LENGTHS SHALL BE DETERMINED AND VERIFIED BY CONTRACTOR PRIOR TO ORDERING FROM VIEW, INC.
10. INTERCONNECT DIAGRAMS ARE NOT TO SCALE.
11. IGU CORD SETS ARE PRE-TERMINATED WITH CONNECTORS. FEMALE CONNECTORS LEAD FROM WINDOW CONTROLLER. MALE IGU CONNECTORS FACE TOWARD WINDOW CONTROLLER. OBSERVE GENDER WHEN INSTALLING.
12. TRUNK AND DROP CABLE BNC CONNECTORS ARE .75"Ø X 1" LONG. ALLOW FOR ADEQUATE PENETRATION OR CONDUIT SIZE. CABLE SIZE .405"Ø NOMINAL.
13. INSTALLER SHALL PROVIDE CABLE HANGERS, J-HOOK OR OPEN BRIDLE RINGS EVERY 4 FEET (MAX SPACING) TO SUPPORT TRUNK, POWER OR IGU CABLES. (1M MAXIMUM IN CANADA)
14. INSTALLER SHALL PROVIDE J-HOOK (MIN 2" LOOP) AT WALL MOUNTED WINDOW CONTROLLER LOCATIONS TO COIL SLACK IGU CABLES. DO NOT HANG SLACK FROM WINDOW CONTROLLER. NEATLY COIL AND HANG SLACK. VELCRO WRAP PREFERRED. DO NOT PINCH CABLES.
15. ALL CONNECTIONS TO BE MADE HAND TIGHT ONLY. DO NOT USE TOOLS TO TIGHTEN IGU CONNECTORS.
16. GLAZIER TO PROVIDE GROMMETS AT FRAME PENETRATIONS TO AVOID CABLE DAMAGE. FILE ALL ROUGH OPENINGS SMOOTH - NO SHARP EDGES. PROVIDE RELIEF CUT IN FRAMING TO AVOID DAMAGE TO CORD SET AND/OR SMART WINDOW CONNECTOR (SWC).
17. SKY SENSOR SHALL BE MAST MOUNTED ON ROOF. ELEVATE SENSOR HEIGHT AS REQUIRED TO OBTAIN CLEAR LINE OF SIGHT TO HORIZON FOR OPTIMUM SYSTEM PERFORMANCE.
18. THE FOLLOWING ITEMS ARE REFERENCED IN THIS DRAWING, BUT ARE NOT INCLUDED BY VIEW IN CONTRACT AND SHALL BE PROVIDED BY E.C.:
 - a. E.C. SHALL PROVIDE 208VAC, 60HZ, 20 AMP, 5 WIRE DEDICATED UNSWITCHED CIRCUIT WITH GREEN WIRE EARTH GROUND TO VIEW WINDOW CONTROL PANEL. CONNECTION TO CRITICAL POWER SOURCE PREFERRED TO MAINTAIN WINDOW STATE IN THE EVENT OF A POWER FAILURE. UPSTREAM FACILITY CIRCUIT BREAKER SHALL BE UL489 LISTED. DO NOT SHARE GROUND OR NEUTRALS. BOND ENCLOSURE TO BUILDING GROUND
 - b. ETHERNET, (1) PoE NETWORK CABLE AT SKY SENSOR ON ROOF.
 - c. BOND CP CHASSES TO BUILDING GROUND VIA GROUND LUG LOCATED IN WIRE DUCT ON RIGHT SIDE OF CONTROL PANEL.
19. NETWORK WINDOW CONTROLLERS (NWC)
INSTALLER MUST ENSURE THEY ARE PLACED PER INTERCONNECT DRAWINGS AND MUST BE INSTALLED IN ACCESSIBLE, ENVIRONMENTALLY CONTROLLED LOCATION.
20. IGU CABLES SHALL BE LABELED BY THE INSTALLER WITH THE "IGU" NAME TO WHICH IT IS CONNECTED. SEE DETAIL 3, SHEET XG-9.2.1 FOR FURTHER INFORMATION.
21. GENERAL CONTRACTOR TO PROVIDE:
 - a. 4" DIA. FLOOR CORE BELOW CONTROL PANELS FOR FIBER / COAX TRUNK ROUTING TO ADJACENT FLOOR. REF SHEET XG-5.2.0 SECTION A-A FOR CORE LOCATION.
 - b. FOR FIBER CABLE ROUTING FROM/TO ADJACENT FLOORS. REFERENCE DETAIL A-A ON SHEET XG-5.2.0 FOR CORING LOCATION.
22. FIRE RESISTANT DROP IN SLEEVES OR PLUG AS REQUIRED FOR FIRE RATED WALLS.
23. ALL PENETRATIONS FOR CABLE RACEWAYS AND SLEEVING MUST BE APPROVED BY ENGINEER OF RECORD (EOR). CONDUIT FILL SHALL NOT EXCEED BUILDING SPECIFICATIONS GOVERNED BY LOCAL AHJ (i.e. NEC FOR USA, CE CODE CANADA)

Section 3: Exclusions

- Dedicated 208VAC 3-phase 20-amp circuit to each View Net control panel, installed by licensed electrical contractor
- Courtesy 110/120VAC outlet for View Cell Modem, installed by licensed electrical contractor
- Coring and fire-rated sleeving for vertical fiber cabling (see View Schematic Drawing for locations, specifications and tolerances)
- Roof penetration for Sky Sensor
- Access panels for View controls
- Conduit raceways, junction boxes and NEMA enclosures if required by local building code or AHJ (Authority Having Jurisdiction)

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