SECTION 271000 - STRUCTURED CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Where Paragraphs of this Section conflict with similar paragraphs of the General and Supplementary Conditions and Division 1, requirements of this Section shall prevail.

1.2 SUMMARY

A. Description, this project consists of, but is not limited to, the following:

1. A complete and operational horizontal cabling distribution system consisting of:

a. Plenum rated Category 6 station cabling;

b. Associated terminations, connections, connectors, mounts, brackets, enclosures and accessories to ensure a complete system.

2. A 20 year applications and system warranty.

B. Section Includes:

1. Pathways.

2. UTP cable

3. UTP cable hardware.

4. Grounding.

5. Identification products.

1.3 STANDARDS

A. ANSI/TIA-568-C.0: Generic Telecommunications Cabling for Customer Premises.

B. ANSI/TIA-568-C.1: Commercial Building Telecommunications Cabling Standard

C. ANSI/TIA-568-C.2: Balanced Twisted-Pair Telecommunications Cabling and Components Standards.

D. ANSI/TIA/EIA-569-B: Commercial Building Standard for Telecommunications Pathways and Spaces.

E. ANSI/TIA/EIA-606-A: Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

F. ANSI/J-STD-607-A: Commercial Building Grounding and Bonding Requirements for Telecommunications.

G. ANSI/TIA-1152, Requirements for Field Test Instruments and Measurements for Balance Twisted-Pair Cabling.

1.4 DEFINITIONS

A. ANSI: American National Standards institute.

B. BICSI: Building Industry Consulting Service International.

C. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

D. EIA: Electronic Industries Alliance.

E. EMI: Electromagnetic interference.

F. ER: Equipment Room.

G. HC: Horizontal Cross-Connect

H. IDC: Insulation displacement connector.

I. ITSIM: Information Technology Systems Installation Methods Manual

J. LAN: Local area network.

K. Telecommunications Outlet/Connectors: A connecting device in the work area on which horizontal cable terminates.

L. RCDD: Registered Communications Distribution Designer.

M. TIA: Telecommunications Industry Association.

N. TDMM: Telecommunications Distribution Methods Manual.

O. TR: Telecommunications Room.

P. UTP: Unshielded twisted pair.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordinate layout and installation of telecommunications cabling with Owner, Architect and architectural drawings and elevations.

B. Review the related drawings and specifications for other trades/sections, including but not limited to: Architectural, Mechanical, Electrical, Electrical, Structural and Civil.

C. Coordinate telecommunications outlet/connector locations with location of power receptacles.

1.6 ACTION SUBMITTALS

A. Shop Drawings:

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.

2. Electronic form cabling administration drawings.

3. Wiring diagrams for each system and subsystem to show typical wiring schematics, including the following:

a. Cross-connects.

b. Horizontal cable.

c. Patch panels.

d. Patch cords and work area cords.

4. Cross-connects and patch panels. Detail mounting assemblies, and show elevations and physical relationship between the installed components.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, qualified layout technician, installation supervisor, and field inspector.

B. Submit documentation regarding the manufacturer's warranty. The documentation will include a sample of the warranty that would be provided to the customer when the installation is complete and documentation of the support procedure for warranty issues. Provide an application assurance manual documenting the vendor supported applications and application guidelines. In addition the contractor will furnish manufacturer's documentation stating the contractor is certified to perform warranty work.

1.8 CLOSEOUT SUBMITTALS

A. Submit, upon completion of the installation:

1. Electronic copies of complete operating manuals and user guide for each system and record drawings. Instructions must include part numbers and names, addresses, and telephone numbers of parts source.

2. Test reports, as specified in field quality control article under execution, on CDs using excel or other similar software. If the software used to document test results is proprietary, than the contractor will include the necessary software and licenses to read and store the test results.

3. Electronic floor plans showing communications outlets and identification numbers for each system. Submit completed cable schedules for each cable by system, using the final room numbers. This submittal must be approved prior to authorization for final payment.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Project Manager: Shall be an RCDD.

2. Layout Responsibility: Preparation of Shop Drawings, Cabling Administration Drawings, and field testing program development by an RCDD.

3. Installation Supervision: Installation shall be under the direct supervision of BICSI Certified ITS Technician, who shall be present at all times when Work of this Section is performed at Project site.

B. Provide evidence that the contractor is authorized by the manufacturer to furnish warranty services, components, and systems.

C. Provide and/or warranty section a warranty for all parts, components, and materials against defects, faulty workmanship, and/or failure for one full year following system(s) acceptance.

D. Meet with designated representative of the owner, architect and consultant for coordination meeting prior to commencement of work.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Schedule, arrange, and coordinate with involved parties/trades for shipment, arrivals, loading dock, elevators (as applicable), acceptance, storage, and security of equipment and materials. Assure that these activities do not interfere with other trades or the progress of this project.

B. Store and protect materials according to manufacturer's specifications and recommendations.

1.11 WARRANTY

A. Extended Warranty: Manufacturer's standard form in which manufacturer agrees to repair or place horizontal UTP cabling and components that fail within specified warranty period.

1. Warranty Period: Twenty years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. General Requirements: Comply with ANSI/TIA/EIA-569-B.

B. Cable Support: Cable supports shall be sized to allow a fill ratio that meets the standards specified herein and identified to support the Category of cabling being installed, designed to prevent degradation of cable performance and pinch points that could damage cable.

1. Spools, J-hooks, Velcro straps and D-rings.

2.2 UTP CABLE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Belden.

2. Berk-Tek.

3. Commscope.

4. Hitachi.

5. Mohawk.

B. Horizontal Cabling Description: 100-ohm, four-pair UTP, covered with a thermoplastic jacket.

1. Provide the following colors:

a. Data 1, Blue.

b. Data 2, Yellow.

c. Voice 1, White.

C. Patch and Work Area Cords Description: Factory-made, four-pair cables in various colors and lengths; terminated with 8-position 8-contact modular plug at each end.

1. Patch cords shall have bend-relief-compliant boots. Provide one Patch Cord per cable terminated on patch panel in the following lengths:

a. Length:

1) 50 percent 10 foot.

2) 40 percent 7 foot.

3) 10 percent 4 foot.

2. Work Area cords shall have bend-relief-compliant anti-snag boots and color-coded icons. Provide one Work Area Cord per telecommunications outlet connector terminated in the following lengths:

a. Length:

1) 40 percent 10 foot.

2) 40 percent 7 foot.

3) 20 percent 4 foot.

2.3 UTP CABLE HARDWARE

A. Manufacturers: Provide products by AMP or approved equivalent.

B. Connecting Blocks: 110-style IDC. Provide blocks for the number of cables terminated on the block, plus 25 percent spare. Integral with connector bodies, including plugs and jacks where indicated.

C. Patch Panel: modular panels housing multiple-numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables.

1. Number of Jacks per Field: One for each four-pair UTP cable indicated, plus 25 percent spare per system.

D. Telecommunications Outlet Connectors: 100-ohm, Modular, color-coded, 8-position 8-contact, twisted-pair connector.

a. Color: Match cable color.

b. Icon: Indicate service provided.

E. Workstation Faceplate: Multi-port-connector assemblies mounted in single gang faceplate.

1. Plastic Faceplate: High-impact plastic.

2. For use with snap-in jacks.

a. Flush mounting jacks.

3. Legend: Machine printed, in the field, using adhesive-tape label.

2.4 IDENTIFICATION PRODUCTS

A. Comply with ANSI/TIA/EIA-606-A for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 WIRING METHODS

A. Install cables in pathways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used unless otherwise noted. Conceal pathways and cables unless otherwise noted.

3.2 INSTALLATION OF CABLES

A. Comply with NECA 1.

B. Four pair UTP cabling wiring scheme: T568B.

C. General Requirements for Cabling:

1. Comply with ANSI/TIA-568-C.1.

2. Comply with BICSI ITSIM, Cable Termination Practices.

3. Install 110-style IDC termination hardware unless otherwise indicated.

4. Terminate conductors; no cable shall contain unterminated elements unless otherwise noted. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.

5. Cables may not be spliced. Secure and support cables at intervals not exceeding 5 feet. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.

6. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.

7. Install conductors parallel with or at right angles to sides and back of enclosure.

8. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.

9. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.

10. Route cables, in bundles of no more than fifty. Bundle cables using Hook and Loop wire management straps, tie wraps are not acceptable.

11. In the communications equipment room, install a 10 foot long cable service loop.

12. In the ceiling above the work area outlet, install a 3 foot long cable service loop.

13. Pulling Cable: Comply with BICSI ITSIM, monitor cable pull tensions.

D. Group connecting hardware for cables into separate logical fields.

E. Separation from EMI Sources:

1. Comply with BICSI TDMM and ANSI/TIA-569-B for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches .

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: No requirement.

b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.

c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.

5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches.

6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches.

3.3 FIRESTOPPING

A. Comply with requirements in Section 078413 "Penetration Firestopping."

B. Comply with ANSI/TIA-569-B, Annex A, "Firestopping."

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.4 GROUNDING

A. Install grounding according to BICSI TDMM, "Bonding and Grounding (Earthing)" Chapter.

B. Comply with ANSI/J-STD-607-A.

3.5 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with ANSI/TIA/EIA-606-A.

1. Administration Class: 2.

2. Color-code cross-connect fields. Apply colors to voice and data service backboards, connections, covers, and labels.

B. Paint and label colors for equipment identification shall comply with ANSI/TIA/EIA-606-A for Class 2 level of administration.

C. Cable Schedule: Post in prominent location in communications each equipment room. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.

D. Cabling Administration Drawings: Show building floor plans with cabling administration-point labeling. Identify labeling convention and show labels for telecommunications closets, hardware, horizontal cables, work areas, grounding buses and pathways, and equipment grounding conductors. Follow convention of ANSI/TIA/EIA-606-A. Furnish electronic record of all drawings, in software and format selected by Owner.

E. Cable Identification:

1. Label each horizontal cable within 4 inches of each termination, where it is accessible in a rack, cabinet, junction box or outlet box.

2. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Prior to labeling, coordinate with owner for labeling scheme. Label each connector, faceplate, 110-block or other connecting hardware.

F. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in ANSI/TIA/EIA-606-A.

1. Cables use flexible vinyl or polyester that flex as cables are bent.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Visually inspect cable jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with standards.

2. Visually confirm correct marking of outlets, cover plates, outlet/connectors, and patch panels.

3. Visually inspect cable placement, cable termination, grounding and bonding, equipment, patch cords and work area cords, and labeling of all components.

4. Test instruments shall meet or exceed applicable requirements in standards specified herein.

5. Horizontal UTP Performance Tests:

a. Test for each outlet. Perform the following tests according to ANSI/TIA-568-C.2:

1) Wire map.

2) Length (physical vs. electrical, and length requirements).

3) DC loop resistance.

4) Return loss.

5) Insertion loss.

6) ACRF.

7) PSACRF.

8) Propagation delay skew.

9) PSANEXT loss.

10) Average PSANEXT loss.

11) PSAACRF.

12) Average PSAACRF loss.

13) Return loss.

14) Propagation delay.

B. End-to-end cabling will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 CLEANING

A. Clean equipment any work areas prior to presentation for acceptance by client. This work will include wiping of work areas, removal of streaks, dust, stains, etc., and assurances that systems and components as represented are new and undamaged.

3.8 DEMONSTRATION

A. Train Owner's maintenance personnel in cable-plant management operations, including changing signal pathways for different workstations, rerouting signals in failed cables, and keeping records of cabling assignments and revisions when extending wiring to establish new workstation outlets.

3.9 SYSTEM ACCEPTANCE

A. Obtain written acceptance from the owner or the owner's representative at the completion of system installation, testing, documentation and training. Failure of the contractor to obtain sign off will result in the contractor remaining responsible for extending, at no charge to the owner, conditions of the warranty and guarantees until such time that sign off had occurred. Time included in the above condition will be presented to the owner in addition to the standard warranties.

END OF SECTION

CROCKFORDS - RESORTS WORLD CATSKILLS

888 resorts World Dr
Monticello, NY 12701

JCJARCHITECTURE
120 HUYSHOPE AVENUE
SUITE 400
HARTFORD, CT 06106
860.247.9226

© 2021 JCJ Architecture

CONSULTANT:

VANDERWEIL
RG Vanderweil Engineers, LLP | 617.423.7423 TEL
274 Summer Street | 617.423.7461 FAX
Boston, MA 02210 | vanderweil.com

BIDDING & CONSTRUCTION
07/06/2022

ISSUE	07/06/2022
JOB	30860.00
DRAWN	TM
SCALE	12" = 1'-0"

REVISIONS

TELECOM - SPECIFICATIONS

TC-002

DRAWING PRINTED FULL SIZE | 100% = 36"x24" DRAWING PRINTED HALF SIZE (50%) WILL FIT ON A SHEET 18"x24" WITH 1" OF EXTRA SPACE ON ALL FOUR SIDES. DRAWING PRINTED NARROW TWIRD SIZE (37.5%) = 11.25"x15.75" WILL FIT TIGHTLY ON 11"x17". MECHANICAL 12", 18", 1/8", 1/16" AND 1/32" VIEW SCALES WILL TRANSLATE BY MULTIPLYING THE NUMERATOR BY 2 AND MAKING THE NUMERATOR 1 FOR EXAMPLE 1/8"=1'-0" FOR SCALES AT 24" X 36" AND 1/32" FOR EXAMPLE 1/4"=1'-0" FOR SCALES WILL TRANSLATE BY MULTIPLYING THE NUMERATOR TO 1. EXAMPLE 3/4"=1'-0" AT (37.5%) WILL BE NEARES TO 1/16"=1'-0"

7/6/2022 4:41:14 PM