Structured Cabling Statement of Work

Multiple Locations

June 15, 2010
A. **GENERAL**

a. San Joaquin County (referred to as “Owner”) is requesting proposals for a new structured cabling infrastructure to be installed at their facilities located in Stockton and French Camp, California.

B. **CONTRACTOR QUALIFICATIONS AND REQUIREMENTS**

a. Contractor shall design and provide all materials in order to install a structure cabling solution supporting voice, and data. The contractor shall be responsible for providing a communications infrastructure compliant to current county standards; including the procurement of products, installation of cabling infrastructure, fire stopping, verification of performance, and documentation.

b. Contractor must possess a valid C-7 California State contractor’s license. This license must have been issued five (5) years prior to the date on this Statement of Work.

c. Contractor and/or subcontractor will be required to have a C61 (Asbestos Certification License), by the Contractor’s State License Board. A copy of this certification must be submitted with the proposal.

d. The contractor must be a certified by the manufactures of the cabling solutions to be installed. To meet the requirements of this specification, the contractor must be a Panduit PCI. In addition, the contractor must have a BICSI RCDD (Registered Communications Distribution Designer) on staff (full time employee).

e. *Some work sites have asbestos. Tenting is required in areas with asbestos.*

f. After-hours and weekend work is required at several locations. These locations are identified in the Execution Section “F” of this document.

g. This is a prevailing wage project.

h. Contractor shall be responsible for all fees and permits required to any governmental agency having jurisdiction over the work in proposal. The contractor shall arrange inspections.

i. Contractor employees shall act in a professional manner, and dressed appropriately for the task. No person shall bring alcoholic beverages, controlled substances, firearms, or animals to the job site.
j. Contractor shall clear the work area every evening. If available space exists, contractor equipment and materials may be stored at the facility with approval of the Owner. All packing material shall be disposed of at the end of each day. The Owner will not be responsible for the loss, theft, or damage of any equipment or material.

k. Contractor shall follow the security policies and procedures defined by the Owner. This may include providing key access, creating access badges, and escorts for restricted areas.

l. The Contractor shall take all precautions necessary to protect existing structures and furniture. Any items that are damaged during the course of the work shall be repaired or replaced by the contractor at no cost to the Owner.

m. Owner will provide the contractor with reasonable access to the job site Monday-Sunday 8-5 (Federal / State holidays excluded). The Owner must approve any work that requires access outside of these parameters.

n. Contractor shall take special precautions to ensure a safe work environment for the employees, contractors, and visitors.

o. Contractor will make a reasonable effort to not be disruptive to other contractors, or working staff at the job site.

p. Contractor will install only material that is new and undamaged. Refurbished or used materials are not acceptable.

q. Owner expects the workmanship to be of high quality. All equipment shall be plumb and true with the structure. All materials shall be firmly secured in place, adequately supported, and permanent.

r. Owner will consider the project complete when all work has been completed, the final documentation has been delivered, and the work site has been cleaned to the Owners satisfaction.

s. Contractor agrees to replace or repair, as new, any defective work or materials, which are identified by the Owner within 2 years of final payment.

C. CODES, STANDARDS, AND BEST PRACTICES

a. All work and materials shall be in full accordance with the latest
codes, standards, and best practices. It is the responsibility of the Contractor to have access to each document. In the case that one of the following documents has a ratified update or addendum; it shall be incorporated into this scope of work. If multiple documents provide different requirements, the strictest requirement shall be followed. Not all documents may apply to this project.

i. ANSI/TIA/EIA - 568-B.1 - Telecommunications Cabling Standard, Part 1: General Requirements (including all the latest

ii. ANSI/TIA/EIA - 568-B.2 - Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components


v. ANSI/TIA/EIA – Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant

vi. ANSI/TIA/EIA - 569-A Pathway and Spaces

vii. ANSI/TIA/EIA – 606-A Administration Standard for the Telecommunications Infrastructure of Commercial Buildings (labeling identifiers will be provided by Owner)

viii. ANSI/TIA/EIA – 607-(A) Commercial Building Grounding/Bonding Requirements

ix. NFPA 70 – 1996

x. ANSI/TIA/EIA-942 – Telecommunications Infrastructure Standard for Data Centers

xi. ANSI/TIA/EIA-758-(A) – Customer-Owned Outside Plant Manual

xii. BICSI - Telecommunications Distribution Methods Manual (latest edition)

xiii. BICSI - Cabling Installation Manual (latest edition)


xv. FCC 47 CFR 68

xvi. NEMA – 250

xvii. NEC - Articles 770 and 800

xviii. ADA - Americans with Disabilities Act

xix. ISO/IEC 11801 (International) Generic Cabling for Customer Premises Standard (including all the latest amendments and applicable addenda)

xx. Title 24 (California Code of Regulation)

xxi. All Federal, State, and Local Codes
D. Definitions

a. Data Connection: A horizontal cabling solution that consists of a UTP cable terminated on a Data Jack at the work area outlet, and a Data Jack in a modular patch panel within the ER or TR. This connection will support data and VoIP connections.
b. Data Jack: A Category 5E connector used to terminate a single UTP cable for data and VoIP communications.
c. Outlet Box: A housing to protect Data and Voice Jacks at the Work Area.
d. Telecommunications Room (TR): An enclosed space that is used for horizontal cross-connects, and telecommunications equipment.
e. Equipment Room (ER): An enclosed space that is used for housing main cross-connects, horizontal cross-connects, and telecommunications equipment.
f. Telecommunications Space (TS): A generic term for a space that houses main cross-connects, horizontal cross-connects, and telecommunications equipment.
g. Traditional Voice Connection: A horizontal cabling solution that consists of a UTP cable terminated on a Voice Jack in the Outlet Box, and a 66-block within the TR or ER.
h. Voice Jack: A Category 3 connector used to terminate a single UTP cable for supporting traditional voice communications. This includes emergency hard lines and fax communications.
i. VoIP: Voice over Internet Protocol
j. Work Area: A building space where the occupants interact with Telecommunications equipment

E. System Design and Clarifications

a. The goal of this project is the installation of a structured cabling system for data (including VoIP), and traditional voice connections.

b. 2-6 position faceplates shall be installed at each work area outlet and will be determined by Owner. The port shall be numbered 1-6, from left to right, top to bottom. The data jacks shall be placed in port #1 (required) and port #2 (required), and the traditional voice jack shall be placed in port #3 (when specified by the Owner). Blanking panels (matching in color) shall be installed on all unused ports.

c. All data connections shall use Category 5E Cable terminated on Category 5E Jacks (one on each end). The cable and jacks shall be Yellow in color.

d. All traditional voice connections shall use Category 5E Cable terminated on Category 3 Jacks (one on each end). The cable and
jacks shall be Grey in color.

e. All data jacks shall be terminated using the “T568B" wiring scheme.

f. UTP patch cords (Data or Traditional Voice) are not required for this project.

g. SJC personnel will facilitate access and pathway identification.

h. Contractor will provide tenting for work areas that contain asbestos.

i. Contractor assumes all existing pathways are free and clear and additional work will be done as a change order.

F. Execution

a. Courthouse Room 100, Cables from Printer Cubicle to Room 144 Data Closet

i. Furnish and install two (2) six (6 port) Category 5E data cables complete with connectors, faceplates, labeling and testing. Location shall be on the north wall behind existing printers.

ii. Provide Patch Panel if necessary. Back pull blue cable for a string.

iii. Work to be complete after hours or weekend work.

iv. Install Firestopping on all utilized communications conduits, sleeves to re-establish the integrity of the fire rated walls or floors.

b. Courthouse Room 101, Cables from North Corner to Data Closet by Stairwell.

i. Furnish and install two (2) four (4 port) telecom outlets with (5) Category 5E data cables complete with connectors, faceplates, labeling and testing.

ii. Provide Patch Panel if necessary.

iii. Work to be completed after hours or weekend work.

iv. Install Firestopping on all utilized communications conduits, sleeves to re-establish the integrity of the fire rated walls or floors.
c. Courthouse Room 265B, Cables from 265 to Data Closet in Hallway near room 260
   i. Furnish and install one (1) telecom outlet with (4) Category 5E data cables complete with connectors, faceplates, labeling and testing.
   ii. Provide Patch Panel if necessary.
   iii. Work to be completed after hours or weekend work.
   iv. Install Firestopping on all utilized communications conduits, sleeves to re-establish the integrity of the fire rated walls or floors.

d. Courthouse Room 350, Cables from 350 to Data Closet in Hallway near room 356.
   i. Furnish and install one (1) telecom outlet with (2) Category 5E data cables complete with connectors, faceplates, labeling and testing.
   ii. Provide Patch Panel if necessary.
   iii. Work to be completed after hours or weekend work.
   iv. Install Firestopping on all utilized communications conduits, sleeves to re-establish the integrity of the fire rated walls or floors.

e. Juvenile Justice Center, Cables from Printer Location to D.A.’s Office Next Door.
   i. Furnish and install (4) Category 5E data cables complete with connectors, faceplates, labeling and testing.
   ii. Provide Patch Panel if necessary.
   iii. Install Firestopping on all utilized communications conduits, sleeves to re-establish the integrity of the fire rated walls or floors.
f. Firestop
   i. Firestop shall be installed for all through-wall or through-floor penetrations as required by the NEC. All firestop products shall be installed in accordance with the manufacturer recommendations. Each firestop shall have a minimum 1-hour rating, and shall be identified in the final documentation.

g. Labeling
   i. All cables will be labeled following the ANSI/ETA/TIA 606-A. This installation shall be treated as a Class IV. The Owner will provide specific labeling identifiers (site, building, etc…), after the contract is awarded.

   ii. All labels shall be printed by a mechanical device (printer, label maker), and shall be legible viewing at 12”.

   iii. On horizontal cabling, printed labels shall be provided within 12” of each end of the cable, on the patch panel, and on the workstation faceplate.

h. Testing
   i. All traditional voice connections shall be tested for continuity and wire map. The Owner reserves the right to have a representative present during testing.

   ii. All Data Connections (Category 5E) shall be tested to the Category 5E Permanent Link performance specification. All data connections shall support 1000BaseT connectivity. The Owner reserves the right to have a representative present during testing.

   iii. The tester shall be a Fluke DSP 4000, Fluke DTX 1800, LANTEK 6 or 7, or equivalent tester. The tester must be certified by ETL or UL.

   iv. Each data and traditional voice connection shall be tested after labeling is complete.
G. Documentation

   a. Performance Test Results
      
     i. The contractor shall provide tester generated documentation for the Voice Connections and Data Connections.

     ii. The results shall be provided in hard and soft copy formats. The soft copy results shall be provided on CD-R media, in a non-proprietary format.

H. Products

   a. All products shall be installed in compliance with the manufactures instructions. The Owner has identified products, which are approved for this installation. No substitutions of identified products shall be allowed. This will ensure a quality installation, guarantee performance, and reduce on-going maintenance costs for the life of the solution.

   b. This is a Graybar VIP Project. Graybar provides enhanced pricing and services for this project.

   c. This is not a complete parts list. Additional products may be required to complete this installation.

   d. Horizontal Cabling: The horizontal cabling solution must conform to the Category 5E Cabling Specification. Plenum cable shall be used where required by code.

      i. UTP Cable

         1. The cable to be used for data drops is the Landmark 350 by Berk-Tek. The cable jacket shall be plenum rated and yellow in color. The approved part number is:
           a. 5EXHNP4P24-YL-P-BER-AP

         2. The cable to be used for voice drops is the Landmark 350 by Berk-Tek. The cable jacket shall be plenum rated and grey in color. The approved part number is:
           a. 5EXHNP4P24-GY-P-BER-AP

      ii. Connectivity

         3. The workstation jack to be used for data drops is the
Panduit Mini-Com TX5e Jack Module, which is yellow in color. The approved part number is: CJ5E88TYL

4. The workstation jack to be used for voice drops is the Panduit Mini-Com Mini-Jack Cat 3 Jack Module, Grey in color, and USOC Coded. The approved part number is:
   a. CJ66UIG

iii. Faceplates

   1. The faceplates shall be the Panduit 4-port Executive Faceplate that is White in color. The approved part number is:
      a. CFPE4WHY

iv. Patch Panels

   1. The patch panels shall be a 48-port modular patch panel by Panduit. The approved part number for the panel is:
      a. CPP48WBLY
Goals
San Joaquin County has a cabling infrastructure standard for all new and existing facilities. This standard applies to all data and voice solutions. The data cabling shall support Ethernet, Fast Ethernet, Gigabit Ethernet, Voice over IP, and Video over IP solutions. The traditional voice cabling shall support traditional phone systems, as well as fax communications. This standard ensures the county will receive a quality installation, guaranteed performance, and reduce on-going maintenance costs.

Standards and Codes
All aspects of the installation must follow Telecommunication Industry standards including the ANSI/EIA/TIA 568 (Telecommunication Cabling Standard), ANSI/EIA/TIA 569 (Pathways and Spaces), ANSI/EIA/TIA 607 (Bonding and Grounding), and the ANSI/EIA/TIA 942 (Standard for Data Centers); as well as federal, state, and local codes.

Cable Design
If the building supports a Voice over IP phone system, then the default configuration for each workstation outlet shall be 3 data connections. The data connections shall be Category 6 rated. All Category 6 cables shall terminate in the telecommunications room on patch panels. The Category 6 cables and connectors shall be ‘White’ in color.

If the building supports a traditional voice system, then the default configuration for each workstation outlet shall be one (1) data connection and one (1) traditional voice connection. The data connections shall be Category 5E cable and connectors. The Category 5E data cables and connectors shall terminate in the telecommunications room on patch panels. The Category 5E data cable and connectors shall be ‘Yellow’ in color. The traditional voice cable shall be rated Category 5E, and the traditional voice connectors shall be rated Category 3. The traditional voice cabling shall terminate in the telecommunication room on 66-blocks. The Category 5E traditional voice cable and connectors shall be ‘Grey’ in color.
Backbone cables supporting the traditional voice solutions shall be a high-pair Category 3 cable, which shall be terminated in the telecommunications rooms on 68-blocks.

Backbone cables supporting data applications shall use Multimode (OM-2) or Singlemode (SM-1) fiber. The selection of fiber shall depend on the actual distance and network performance requirements. The default fiber optic connector for Multimode and Singlemode cabling is the ‘SC’ connector.

Cable Performance
All data drops will be tested to the Category 6 or Category 5E permanent-link performance specifications. All fiber drops shall be tested to the performance standards defined in ANSI/EIA/TIA 568.3-2. All traditional voice drops shall be tested for continuity and wire map.

Racks, Cabinets, and Pathways Design
At least one rack, cabinet, or wall mount cabinet shall be securely mounted in each telecommunication space to support the data cabling and network equipment. The fiber optic housing shall be mounted at the top of the rack or cabinet. The data patch panels and cable management will be mounted just below the fiber optic housing. Cable shall enter from the top, and be cleanly dressed. Overhead cabling shall be independently supported, and never laid on ceiling tiles, tied to any conduit, or attached to ceiling supports. Overhead pathways are required for large cable bundles. J-Hooks may be installed to support small cable bundles. All outside plants cables shall be placed in conduit. Each fiber optic cable shall be placed within an innerduct.

Firestop and Grounding
Firestop materials shall be installed to re-establish the integrity of each through-wall or through-floor penetration as required by the NEC. All firestop products shall be installed in accordance with the manufacturer recommendations. All equipment racks, cabinets, and raceway systems shall be bonded and grounded.

Products
All products shall be installed in compliance with the manufactures instructions. The County has identified specific products to be installed. These include specific products from quality manufactures including Panduit, Berk-Tek, Corning, Chatsworth and Allen Tel.

Documentation
The contractor is required to provide cable test results for each data and fiber optic cable. As-built drawings are required, which identify the telecommunication space locations, workstation outlet locations, cabling pathways, firestop and grounding components. All documentation is provided in hard and soft copy.
Warranties
Every installation shall provide a 25-year extended warranty on the horizontal and backbone cabling solutions by the product manufactures. The extended warranty shall include (but not limited to), product, performance, and application guarantees.

Contractor Qualifications
Contractor qualifications shall include proven experience, a trained staff, multiple customer references, and their ability to offer the extended warranty available by the product manufactures.