



Indiana Office of Technology

Powering a State that Works

INFORMATION TRANSPORT SYSTEMS (ITS)

STRUCTURED CABLING INFRASTRUCTURE SPECIFICATIONS

The State of Indiana follows the most current BICSI standards, NEC's codes and local codes and ordinances to maintain a required minimum compliance. All standards, codes, and ordinances will support Design, Implementation, Safety, Methods, and product interoperability for all State projects.

METHODOLOGY REFERENCES

Installation Methodology

All work will be completed to conform to the:

- Latest edition of the *State of Indiana Structured Cabling Infrastructure Specifications*
- Manufacturers' specifications
- All local codes and ordinances
- Latest edition of the *National Electrical Code*
- Latest edition of the *National Electrical Safety Code*
- Latest ANSI/TIA/EIA-568, *Commercial Building Telecommunications Cabling Standard*
- Latest TIA/EIA-569, *Commercial Building Standards for Telecommunications Pathways and Spaces*
- Latest ANSI/TIA/EIA-606, *Administration Standard for Commercial Telecommunications Infrastructure*
- Latest ANSI-J-STD-607, *Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications*
- Latest edition of the *BICSI Telecommunications Distribution Methods Manual*
- Latest edition of the *BICSI Network Design Reference Manual*
- Latest edition of the *BICSI Information Transport Systems Installation Manual*
- Latest edition of the *BICSI Outside Plant Design Reference Installation Manual*

NOTE: Where a conflict exists, local codes and ordinances will supersede all other requirements



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1. GENERAL SPECIFICATION

- 1.1. All equipment and materials must be new. Used, re-conditioned and refurbished equipment and materials are not acceptable.
- 1.2. All items shall be quoted completely installed and functional as per specifications.
- 1.3. All equipment and materials must abide with FCC Regulations, be UL approved and stamped, and meet or exceed the current publication of the National Electric Code and local fire and building codes.
- 1.4. The State's cable installations are based upon BICSI's Telecommunications Distribution Methods (TDM) Manual, and are designed with the intent to meet the Electronic Industries Association's and Telecommunications Industry Association's (EIA/TIA) standards. Contractors shall be thoroughly familiar with BICSI's TDM Manual and EIA/TIA components and standards.
- 1.5. All components and installation methods shall be EIA/TIA 568A approved and conform to EIA/TIA 569 practices and methods. The Structured Cabling System installed by the Contractor shall be capable of a minimum 1GBPS network application.
- 1.6. An on staff Registered Communication Distribution Designer (RCDD) is desired but not required. The Contractor/Installer must be able to demonstrate the ability to provide an RCDD when the complexity of projects requires additional expertise. When requested the Contractor/Installer must submit the RCDD's Certification Number and his/her experience resume.
- 1.7. All Contractor/Installer must have a current Panduit Certified Installer (PCI) rating. All Installers must be Panduit manufacture certified.
- 1.8. Review of components or documentation of components by a State employee does not relieve the Contractor from meeting or exceeding the specifications outlined in this document.
- 1.9. It will be the responsibility of the Contractor for the shipping, handling, and storage of all equipment and materials and to secure and protect said items from theft. If there is a theft this would not delay the project and the materials would be replaced at the expense of the contractor in a timely manner.
- 1.10. Contractor shall furnish and install all equipment, accessories, and materials necessary for a complete, functional Structured Cabling System in accordance with these specifications.
- 1.11. State of Indiana in no way desires to limit competition. Brand names specified are intended to identify a level of quality or a type. Alternative materials must be approved prior to quotation, and must meet or exceed the competitors manufactures specifications. Contractor must be certified by the manufacture for installation.
- 1.12. Contractor shall assume all responsibility to repair or replace fixtures and materials damaged during work on site, including, but not exclusively: ceiling grid and tiles, gypsum boards, etc. Contractor shall be wholly financially responsible for damages realized by the State as a result of the Contractors' activities.



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1.13. All abandon cabling and I.T. infrastructure shall be removed prior to completion of project. The cabling removal includes horizontal, backbone, patch cords, etc. I.T. infrastructure removal shall include raceways, racks, management, punch down blocks, ladder racking, and abandon electronics.

1.14. OSHA incident records should be provided on request if needed to meet special project qualifications.

2. SURVEY INFORMATION

2.1. The State will hold the contractor wholly responsible for the successful completion of all activities as specified in the Scope of Work (SOW). The State will not relieve the contractor of any responsibilities due to a miscalculation unforeseen that resulted from unfamiliarity with the job site or product.

2.2. The Contractor will visit the facility to perform a site survey with a State employee. This site survey will be conducted at no charge to the State. The Contractor will receive a floor plan of the site and notification from the State to conduct the site survey.

2.3. It is the Contractors responsibility to obtain the time line of any build out or new construction etc. for submitting their quote.

2.4. The Contractor must review all physical and environmental conditions for the system installation proposed. The Contractor's failure to note any physical or environmental issues to the State shall be deemed acceptance of the conditions and any additional costs required to prep ready any site for the system installation shall be borne by the Contractor.

2.5. Contractors shall not visit the site without prior authorization from the contact person or IOT.

2.6. The site survey request in no way binds the State to proceed with that system purchase.

3. SCOPE OF WORK

3.1. The Contractor will be provided a Scope of Work and formal documents for each project or MAC. This will be drafted by the IOT Design Project Manager with the expectations and materials needed for the purposed project/work. The contractor accepts/approves the responsibility of the design and material by submitting a quote.

3.2. The Contractor will be provided a Visio floor plan designating the locations of the required communications drops, IT room layout and a rack layout for equipment placement.

3.3. The Contractor will submit a detailed quote based on the SOW and all supporting documents. The quote must include all materials, labor, shipping & handling, and travel expenses to complete the project as outlined on the State Excel spreadsheet.

3.4. In an event of a change or deviation of the Scope of Work the Contractor/Installer must have approval by IOT prior to commencement of work.



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4. PROPOSAL PRICING INFORMATION

- 4.1. Contractor shall itemize all costs associated for the project using the State provided Excel spreadsheet.
- 4.2. The total quoted price is to include the cost of all equipment, supplies, labor, travel, and any other miscellaneous services, including the shipping, installation and warrant needed for the systems installed. The total quoted price shall be a lump sum price to reflect the Contractor's total charges to complete the work described in the Scope of Work.
- 4.3. Any items missing from the quoted price which prevents the system described in the Scope of Work from functioning properly will be the contractor's financial responsibility.
- 4.4. Large multi phase project may qualify for progressive payment with the agency and IOT approvals.
- 4.5. The Contractor is responsible for supplying and installing the system per the Scope of Work at the location indicated for the quoted price submitted. After acceptance and the Contractor's receipt of payment, the State shall own the system.

5. QUOTE REVIEW, APPROVAL, AND AUTHORIZATION TO PROCEED

- 5.1. The Contractors submitted quote on the state provided Excel spread sheet will be reviewed by IOT. Any changes or modifications to the quote must be reconciled prior to approval. Upon approval the quote will be submitted to the Agency/customer for a Purchase Order (P.O.).
- 5.2. Upon agency approval a P.O. will be generated and forwarded to IOT. The IOT PM will forward the following information to the Contractor (Notice to Proceed, P.O., final floor plan, IT room layout, IT rack layout, and the inspection document).
- 5.3. The Contractor may be required to meet with IOT to review the project in detail prior to commencement of work. Any deviations to the installation methods described in the Scope of Work will be discussed at this meeting.

6. DELIVERY

- 6.1. The Contractors shall make all arrangements for transportation and insurance and is financially responsible for all costs related to these activities.
- 6.2. The Contractor shall be responsible for delivery all materials, equipment and manpower to and from the location of the quoted work.
- 6.3. The cost of delivery shall be included in both the contractors' total quoted price and unit pricing.



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- 6.4. The Contractor shall take all steps necessary to insure that the material/equipment is secure and its contents are not damaged in any way as a result of the contractor's activities. Contractor shall be wholly financially responsible for damages, loss, or theft prior to final inspection and system acceptance.

7. INSTALLATION

- 7.1. The Contractor is required to follow installation schedules for the entire project, progress will be as construction allows. The Contractor will be provided with an estimated time line for the duration of the project. A periodic status update between State of Indiana and the Contractor will be required. The status update may be in the form of site meetings or conference calls. Status update method and schedule will be determined by the State of Indiana based on projects size, phasing, and complexity.
- 7.2. Installation costs under normal circumstances will be consistent for all installations of each system size. The burden of proof to show abnormal circumstances will be on the Contractor. These costs must include all necessary components to make the system operational. Inside building wiring and termination hardware shall be installed in the manner outlined in the State specification and scope of work.
- 7.3. The installation shall include the following:
- 7.3.1. Physical positioning of all equipment according to layout.
 - 7.3.2. Testing of all cabling equipment and functions, verifying proper System operations.
 - 7.3.3. Grounding and bonding
- 7.4. All wiring, cabling, and cable distribution systems shall be installed in a neat and workmanlike manner and shall be in accordance with the most current BICSI standards, NEC's codes and local codes and ordinances. The Contractor shall be responsible for meeting all applicable electrical, building, or fire codes in routing choice of cable. The Contractor shall be responsible for delivering and installing the system in accordance with equipment manufacturers' instructions, the highest industry standards, and as delineated herein. The cost of the installation and testing shall be included in the total price quote.
- 7.5. Coordination by the Contractor with the facility GC or owner is requested with regard to location of equipment and cabling, storage of tools and equipment during installation, and scheduling of work so as to have minimum disruption of normal activities when accessing, working, or departing. The existing system must continue to operate until the new System is Cut-over.

8. JOB CHANGE ORDERS

- 8.1. Job Change Orders (JCOs) may be requested by the State Agency. These requests must have preliminary IOT approval before quoting the additional cost or deduction.



- 8.2. Quotes for small requests (within the amount stated on the contingency line item of the quotation) may be submitted via email. Approval must be provided by IOT via email prior to starting work. The Contractor shall be responsible for tracking cost and not exceeding the contingency line item of the quotation. The Contractor must submit a JCO at the completion of the project to invoice for changes.
- 8.3. Quotes for large requests (exceeding the amount stated on the contingency line item of the quotation) may be submitted on a quotation spreadsheet. Approval must be provided by IOT with an agency P.O. prior to starting work. The Contractor shall be responsible for tracking cost and not exceeding the amount issued on the P.O. All quotations must be in compliance with material and labor pricing documented on the original quote. The Contractor must submit an invoice at the completion of the project for changes.

9. WORK ENVIRONMENT

- 9.1. The Contractor shall take all necessary steps to remove dust, dirt and debris from all work areas prior to installation and throughout the course of installation of any new equipment supplied as a result of this Specification. All work areas shall be swept and cleaned at the end of each day the Contractor is on-site. All work areas shall be left clean at the conclusion of the Contractor's work. No trash, rubbish, or debris of any kind shall be present at the end of the job.
- 9.2. The State will inspect all work areas frequently for compliance with this specification. The State shall have final approval of the Contractor's compliance with this section. Should the State, for any reason, find that the work areas has not been cleaned to its satisfaction; the Contractor shall take immediate steps to address the concerns expressed.

10. TEST AND CERTIFICATION

- 10.1. The Contractor shall perform a test on all cabling and associated hardware regardless if new or existing cabling is utilized. Official certification of the installed cabling system is mandatory. This certification shall document that the Contractor's installation is in compliance with all applicable state and local building and fire codes. The test results shall be documented and certified.
- 10.2. An official written certification of this inspection and testing shall be turned over to the State. Upon certification of the cable plant, Contractor shall warranty the labor, hardware, jacks, and cabling for five (5) years, to run concurrent with manufacturer's fifteen year (or better) system warranty.
- 10.3. The Contractor will not be required to certify equipment/cabling installed by other vendors, unless a separate contract is signed with the Contractor to do so. The State, however, will require that the Contractor test any existing cable or connecting hardware to make certain that the existing cable plant is working prior to Cut-over. If the cable plant is not working the Contractor will remedy the situation upon cost approval.
- 10.4. Any incorrect equipment or incorrectly installed equipment that must be replaced or fixed to meet this acceptance test shall be wholly and completely paid for by the Contractor. All cabling installed by the



Contractor must be tested. The Contractor must perform tests and provide detailed documentation, in spreadsheet and/or database format, which measures, at minimum cable length, attenuation, near-end cross-talk, and mutual capacitance against EIA/TIA Category 6 specifications. The documentation must also indicate by jack, that the materials and installation is in compliance to Category 6 specifications. If during testing, any cable runs are found which do not meet these specifications, the Contractor must take the necessary actions to bring the run(s) within specifications prior to System Cut-Over. The Contractor shall visually inspect all terminations after they are made to assure that the termination is complete and clear of loose wires. All modular jack equipment shall be inspected to assure that all connectors conform to the wiring pattern specified in the State's Structured Cabling System Standards. An official written certification of this inspection and testing shall be turned over to the State.

- 10.5. The Contractor shall be responsible for any repairs or changes necessary, at no charge to the State, to correct any discrepancy between the description of the cable plant in the Cable Plant Testing & Certification document, and the requirements of this Specification and any erroneous condition which contradicts that document that may be found by the State during inspection or use. Rerouting or re-termination of cables will require re-certification of the installation.

11. INSPECTION

- 11.1. The Contractor shall visually inspect the cabling for correct routing, support, termination, fireproofing, etc. The Contractor must certify that the installation and all associated equipment meets the requirements of this Specification using the State provided inspection document.
- 11.2. Upon notification of completion the State will perform a Final System Completion Inspection. If it is found during this inspection that the Contractor has not complied with the specifications, the State's Standards, or Industry Standards; the State's Inspector and the Contractor will develop a punch list. The Contractor shall be responsible for the cost of any additional inspections after the Final System Completion Inspection.
- 11.3. Defects in workmanship will be corrected for the life of the system at the Contractor's expense. This will hold true even after system acceptance by the State.

12. PROJECT CLOSURE

- 12.1. The Contractor shall update all state provided documentation (floor plan, IT room layout and rack layout) to reflect any changes or deviations during the installation. As-built revisions are to be in the same format as the original documentation (Visio) and shall be received by the State for the Final Inspection
- 12.2. The system will not be accepted by the State prior to having possession of the As-Built drawings, test results, and all other supporting documents. The State will not conduct final inspection of the site until the As-Built documentation has been received unless prior approval is received from IOT.



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12.3. Documentation and final inspection must be completed prior to the Contractor submitting any JCOs (if required). All JCOs must be approved, signed and returned to the contractor before proceeding with invoicing. A copy of the invoice must be submitted to and approved by IOT prior to receiving payment for the completed work.

12.4. After acceptance and the Contractor's receipt of payment, the State shall take ownership of the system.

RFP Sample Projects A-D

The purpose of this exercise is to establish reference for the hours of labor on various projects. The projects consist of large, multi phase, medium and small and may require travel with or without overnight stay. The sample projects, identified as A-D, shall be priced as accurately as possible and shall reflect the pricing of an actual project. The pricing derived from the sample project will become part of the contract and will be use as reference for future like projects. It is not the intent of IOT to lock down pricing but to establish reference for future quotes.