Specification Writing - Fundamentals of Structure, Language and Writing

By Tim Kuhlman, PE, RCDD
CH2M HILL
Safety Moment
Schedule

• 1:30 to 2:45
• 2:45 – **15 minute break**
• 3:00 to 4:15
• 4:15 Q&A and wrap up
Purpose of this Course

• Understanding Specifications
  – What is a Specification Document
  – Who writes them
  – Who receives them
  – Parties & Parties to the Contract
  – Structure
  – Language
  – Specification Sources
  – Master Template Specs & Project Specific Specs
References

MasterFormat® Numbers and Titles - 2014
What is a Specification Document

- Specifications are one of the basic components that make up the contract agreement between the Owner and the Contractor.
The Contract

• Administrative
  – Legalese
  – Schedule
  – Terms
  – Definitions
  – Address of the project site
  – Identification of the Parties to the Contract
The Contract

- Contractor Drawings: “The drawings are graphic representations of the work upon which the contract is based. As the graphic documents usually contain more than plan views, the preferred term is *Drawings* rather than *Plans*. They show the quantitative extent and relationships of elements to one another”
The Contract

• Specifications
  – Definition: “Specifications define the requirements for products, materials and workmanship upon which the contract is based and the requirements for administration and performance of the project.”
  – They are written to achieve a “Work Result”

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
   1. This Section covers work necessary to furnish communications system testing, including the following:
      a. On-the-reel fiber optic cable testing.
      b. Backbone unshielded twisted-pair (UTP) cable system testing.
      c. Horizontal UTP cable system testing.
      d. Fiber optic cable system testing.
The Contract

- Specifications
- They are generally written for each subject as sections and organized under [CSI]
  MasterFormat®
- “…MasterFormat® is a list of titles that represent construction practices or work results that result from the application of skills and procedures to the materials, products or assemblies”

<table>
<thead>
<tr>
<th>27 20 00</th>
<th>Data Communications</th>
</tr>
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<tbody>
<tr>
<td>27 21 00</td>
<td>Data Communications Network Equipment</td>
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<tr>
<td>27 21 13</td>
<td>Data Communications Firewalls</td>
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<td>Data Communications Routers, CSU/DSU, Multiplexers, Codecs, and Modems</td>
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<td>27 21 25</td>
<td>Data Communications Network Management</td>
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<td>Data Communications Switches and Hubs</td>
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<td>Data Communications Wireless Access Points</td>
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<td>Data Communications Hardware</td>
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<td>Data Communications Mainframes</td>
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<td>Data Communications Servers</td>
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<td>27 22 23</td>
<td>Data Communications Desktops</td>
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<td>Data Communications Laptops</td>
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<td>27 22 29</td>
<td>Data Communications Handhelds</td>
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<td>27 24 00</td>
<td>Data Communications Peripheral Data Equipment</td>
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<td>27 24 13</td>
<td>Printers</td>
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<td>27 24 16</td>
<td>Scanners</td>
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<td>27 24 19</td>
<td>External Drives</td>
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<td>27 24 23</td>
<td>Audio-Video Devices</td>
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<td>27 24 28</td>
<td>Virtual Reality Equipment</td>
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<td>27 24 29</td>
<td>Disaster Recovery Equipment</td>
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<td>27 25 00</td>
<td>Data Communications Software</td>
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<tr>
<td>27 25 13</td>
<td>Virus Protection Software</td>
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<tr>
<td>27 25 16</td>
<td>Application Suites</td>
</tr>
</tbody>
</table>
The Relationship Between Specifications and Drawings - Differences

- **Drawings**
  - Graphically shows the component in relation to the rest of the building and surrounding components.
  - Graphically shows a symbol representing a component not drawn to scale.
  - Provides dimensions for the component placement.
  - Annotations specific to the component placement. Such as “Coordinate the fire pull station with the fire extinguisher mounted adjacent to the door.”

- **Specifications**
  - Provides the component specifications of performance, size, weight.
  - Provides component labeling and testing requirements.
  - Identifies the Contractor qualifications to install the components.
  - Provides direction to the contractor in the execution of construction to get a common work result. It does not repeat manufacturers or Code requirements.

- Specification items are not repeated on the drawings.
- Drawing information is not repeated in the specs.
Specifications and Drawings - Similarities

• Drawings & Specifications
  – Part of the “Contract” between the Owner and the Contractor
  – Use the same contract language, and terms.
  – They work together and cannot be used or developed separately.
  – Engineers and Architects that write the specifications need access to the drawings.
  – Designers and Drafters that create the drawings need access to the specifications.
  – Specs do not supersede drawings. Drawings do not supersede specs. If they contradict each other, it is a design error.
PART 2 PRODUCTS

2.1  NEMA VE1 CABLE TRAYS

A. Acceptable Manufacturers:
   1. LeGrand PW Cablefoil
   2. Husky
   3. Chaltant
   4. P.W. Industries
   5. Cope
   6. Mono-Line

B. Ladder-Type Cable Trays:
   1. Tray:
      a. Communications Installations: Class 12C
   2. Material and Finish of Tray, Fittings, and Accessories:
      a. Communications Installations: Steel, galvanized
   3. Inside Width:
      a. Communications Installations: As shown on the Drawings
   4. Inside Depth:
      a. Communications Installations: As shown on the Drawings
   5. Straight Section Rung Spacing:
      a. Communications Installations: 6 inches on center

PART 3 EXECUTION

3.1 INSTALLATION

A. Install cable tray as shown on the Drawings and securely attach under the provisions of Section 26 05 29 – Hangers and Supports for Electrical Systems.

B. NEMA VE1 Cable Tray:
   1. Install in conformance with NEMA VE1 requirements and in accordance with manufacturer’s instructions.
Intended Recipients of Specifications

• An Owner will commission an Engineer & Architect to prepare the Construction documents. The Engineer and Architects are the authors of the document on behalf of the Owner.
• Knowing the Recipients of the document helps the author to make decisions on the language in writing the specification
• The specifications are intended to be read by the Contractor
• Contractor may then hand off to the subcontractors, vendors and manufacturers
Each is a contract but it is the contract between the Owner and the Contractor that we are addressing for this type of contracting.
Parties & Parties to the Contract

• Parties
  – Owner
  – Contractor
  – Architect
  – Engineer
  – Subcontractor
  – Vendor
  – Manufacturer
  – Supplier
  – Design-Builder
  – Construction Manager (CM)
  – Contract Administrator

▪ All the parties above may be mentioned in the specifications but it is only the Owner and the Contractor that are considered the “Parties to the Contract”.
▪ This may change depending on the contracting strategy.
Contracting Strategy

• Design – Bid – Build

• Design/Build
  – EPC – Engineer Procure Construct
Specification Language

- Specifications and Drawings make up the “Contract”. Use the same language for both.
- Know your audience – It’s the Contractor
- Know the Parties of the Contract – Understand the contracting strategy
- Writing Style
  - Be Accurate, Brief, Clear
  - Avoid complex sentences and stilted language
  - Use simple sentences with terms and words that are easily understood
Writing Example 1

• Design-Bid-Build
  – Bad Example: The Communications Contractor shall coordinate with the Electrical Subcontractor for cable supports and pathways.
  – Good Example: Cable supports and pathways are shown on the Electrical Drawings.

The bad example refers to a subcontractor. For Design-Bid-Build we always write as if the Owner if talking directly to the General Contractor. We never identify the subcontractors because we don’t assume who the General Contractor will subcontract to.
Writing Example 1

• Design-Bid-Build
  – Bad Example: The Communications Contractor shall coordinate with the Electrical Subcontractor for cable supports and pathways.
  – Good Example: Cable supports and pathways are shown on the Electrical Drawings.

The bad example is in the “indicative” form. You are indicating who is doing the work. The good example is in the “imperative” form. You are just telling them to do the work. This is the preferred method.
More on the Imperative and Indicative Form

• Write simple declarative sentences or imperative statements
• The Imperative Form
  – Example: “Place a label on the front of the data outlet face plate.”
• Do Not Write in the Indicative Form
  – Example: “Contractor Shall place a label on the front of the data face plates.”
The Indicative Form (Bad) Example

• Coffee Pot Instructions
  – The Consumer Shall place a coffee filter in the filter holder.
  – The Consumer Shall fill the decanter with cold water and pour the water into the water reservoir of the coffee maker
  – The Consumer shall add 1 tablespoon of coffee grounds to the filter for each cup of water poured into the reservoir
  – The Consumer shall Turn the coffee pot selector knob to “brew”.
The Imperative Form (Good) Example

• Coffee Pot Instructions
  – Place a coffee filter in the filter holder.
  – Fill the decanter with cold water and pour into the water reservoir of the coffee maker.
  – Add 1 tablespoon of coffee grounds to the filter for each cup of water poured into the reservoir.
  – Turn the coffee pot selector knob to “brew”.

The Imperative Form (Good) Example

- Start with a verb. A word of action.
- Coffee Pot Instructions
  - **Place** a coffee filter in the filter holder
  - **Fill** the decanter with cold water and pour into the water reservoir of the coffee maker
  - **Add** 1 tablespoon of coffee grounds to the filter for each cup of water poured into the reservoir
  - **Turn** coffee the pot selector knob to “brew”.
Sentence Form

• The imperative form is the preferred sentence form.
• This does not mean the indicative form, using the word “shall”, can never be used.
  – For example: Install outlet labels on the front of the face plate. The label format shall meet the requirements of Section 27_05_53 Communication Identification.
• Special Note: Use this same sentence form for writing notes on drawings.
Specification Language

• Know your audience – It’s the Contractor
• Know the Parties of the Contract – Understand the contracting strategy
• Writing Style
  – Be Accurate, Brief, Clear
  – Avoid complex sentences and stilted language.
  – Use simple sentences with terms and words that are easily understood
Writing Example 2

• Be Accurate, Brief and Clear
  – Bad Example:
    • The Contractor shall mount the TO above lab bench matching the height of light switch, fire alarm pull station and avoiding fire extinguisher on the wall unless noted otherwise.
  – Issues:
    • TO is an abbreviation of Telecom Outlet
    • The sentence is stilted
    • By listing specific items to coordinate with, they may not coordinate with other items.
    • Everything is unless noted otherwise. That is why you note things.
Writing Example 2

• Be Accurate, Brief and Clear

  – Bad Example:
    • The Contractor shall mount the TO above lab bench matching the height of light switch, fire alarm pull station and avoiding fire extinguisher on the wall unless noted otherwise.

  – Good Example
    • Mount the telecommunications outlet above the lab bench. Coordinate the mounting height with other wall mounted devices.
Writing Example 3

• Avoid complex sentences and stilted language
  – Bad Example:
    • Perform permanent link test on temporarily removed outlets.
    • For outlets that were temporarily removed during remodeling, perform a permanent link test on each circuit according to paragraph 3.4 of this section.

  – Issues:
    • Stilted language
    • Two sentences say almost the same thing. Combine the sentences.
    • It is good to refer to a Section number (e.g. 27 00 15) but do not refer to a paragraph. Paragraph number are too easily changed by adding or deleting paragraphs.
Writing Example 3

• Avoid complex sentences and stilted language
  – Bad Example:
    • Perform permanent link test on temporarily removed outlets.
    • For outlets that were temporarily removed during remodeling, perform a permanent link test on each circuit according to paragraph 3.4 of this section.

  – Good Example:
    • Perform a permanent link test on the outlets that were temporarily removed during remodeling.
Specification Language

• Words to Avoid
  – All
  – Any
  – Every
  – Should
  – Could
  – Please
  – Must
  – Is to
Specification Language

• Know the meaning of your words and use them consistently.
• Terms should be defined in the contract.
• Furnish – to supply and deliver to the project site, ready to install.
• Install – to place in position for service or use.
• Provide – to furnish and install, complete, ready for use.
Writing Style

• Abbreviations
  – Only use on drawings and in schedules when space is limited.
  – Every abbreviation must be defined on the Drawing Legend Sheet.
  – Avoid using them in the body of a specification.
Writing Style

• Every word in a specification is important.
• Do not:
  – Underline
  – Bold
  – Italicize
  – Highlight
• Do not use color in final specifications.
Writing Style Example 4

• Use simple sentences and common words
  – Bad Example: Rte cable orthogonal to building lines UNO. Obscure cable rte in column façade. Cable **should not** be visible across the column plinth, architrave or tablature.
Writing Style Example 4

• Use simple sentences and common words
  – Bad Example: Rte cable orthogonal to building lines UNO. Obscure cable rte in column façade. Cable should not be visible across the column plinth, architrave or tablature.

  – Issues:
    • Abbreviations in a sentence.
    • Uncommon words
    • The use of “unless noted otherwise”.
    • “Should” is not clear direction.
    • “Should not” is not to be made bold and underlined for emphasis.
Writing Style Example 4

- Use simple sentences and common words
  - Bad Example: Rte cable orthogonal to building lines UNO. Obscure cable rte in column façade. Cable should not be visible across the column plinth, architrave or tablature.

  - Good Example: Route the cables parallel to other utilities and building lines. Do not route the cables exposed on the surface of the building columns.
Part 1
Questions ?
The Importance of Structure

- What is the next move in Tic-Tac-Toe if you are X?
The Importance of Structure

- What is the next move in Tic-Tac-Toe if you are X?
- How did you know to pick the lower right square?
- It is because you know the rules of the game. The rules provide structure such that you can anticipate the next move.
CSI Specification Structure

- CSI MasterFormat™
  - Cost: Free – PDF download

- CSI SectionFormat™/PageFormat™
  - $75 for non-CSI members
CSI MasterFormat™

- Old Format used 5 digits
  - Example: 16704 Communication Cabling
- New Format uses 6 digits
  - Example: 27_10_00 Structured Cabling
- New Format with 8 digits
  - Example: 27_15_00.19 Data Communications Horizontal Cabling
### 27 00 00 COMMUNICATIONS

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<tr>
<th>27 01 00</th>
<th>Operation and Maintenance of Communications Systems</th>
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<tr>
<td>27 01 10</td>
<td>Operation and Maintenance of Structured Cabling and Enclosures</td>
</tr>
<tr>
<td>27 01 20</td>
<td>Operation and Maintenance of Data Communications</td>
</tr>
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<td>27 01 30</td>
<td>Operation and Maintenance of Voice Communications</td>
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<tr>
<td>27 01 40</td>
<td>Operation and Maintenance of Audio-Video Communications</td>
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<td>27 01 50</td>
<td>Operation and Maintenance of Distributed Communications and Monitoring</td>
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<table>
<thead>
<tr>
<th>27 05 00</th>
<th>Common Work Results for Communications</th>
</tr>
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<tr>
<td>27 05 13</td>
<td>Communications Services</td>
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<tr>
<td>27 05 13.13</td>
<td>Dialtone Services</td>
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<td>T1 Services</td>
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<td>DSL Services</td>
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<td>27 05 13.43</td>
<td>Cable Services</td>
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<td>27 05 13.53</td>
<td>Satellite Services</td>
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<tr>
<td>27 05 26</td>
<td>Grounding and Bonding for Communications Systems</td>
</tr>
<tr>
<td>27 05 28</td>
<td>Pathways for Communications Systems</td>
</tr>
</tbody>
</table>
CSI MasterFormat™

• Recommendations for selecting CSI numbers:
  – Follow the MasterFormat™
  – Keep it simple
  – Use the 6 digit number when possible.
  – Avoid using every CSI number in the MasterFormat™
  – Ideally use only one CSI number
    • Example: “27_00_00 Communications”
    • Example for Performance Spec. “27_00_05 Common Work Results for Communications”
CSI SectionFormat™

• SectionFormat™ organizes information into 3 parts
• Part 1 – General
  – Administrative information unique to this section that is not covered in the Division 1 administrative section.
• Part 2 – Products
  – Products specific to this section. Description, manufacturer, part numbers, color, ....
CSI SectionFormat™

• Part 3 – Execution
  – Executable information on the products listed in Part 2.
  – Assembly information
  – Testing
  – Action Items

• Avoid repeating information in each Part.
CSI Section Format™ - Sample

Part 1 - General

- Administrative
- Related Work
- Related Sections
- Qualifications
- Submittals
- Standards
- Design Guide
- References
CSI SectionFormat™ - Sample

Part 2 - Products
• Manufacturers
• Specific Products by category
• Accessories related to the product
• No submittal requirements
• No execution related information.
CSI Section Format - Sample

Part 3 - Execution

• Describe the work that needs to be done to the products identified in Part 2.
• Think in terms of verbs
  – Install
  – Test
  – Mount
  – Label
• No Submittals in this part.
CSI SectionFormat™

• The CSI SectionFormat™/PageFormat™ documents includes:
  – Examples
  – Article Headers
  – Sample Templates in the Appendix
Figure PF-2a - PageFormat Example with Descriptive Notes

NOTES:
- *HAND-LETTER* TYPEFACE INDICATES DESCRIPTIVE NOTES WHICH ARE NOT PART OF THE PAGE FORMAT.
- *ITALIC* INDICATES CHARACTERS (NUMBERS OR LETTERS) SUBJECT TO CHANGE WITH CONTEXT.
- REFER TO GLOSSARY FOR DEFINITION OF TERMS.

0.5" - 0.8"
- IMPORTANT
- TOP MARGIN
- HEADER AREA
- MORE IMPORTANT
- SECTION RUNS UP
- PROVIDE SPACE TO SEPARATE TEXT FROM HEADER.
- EXTRA SPACE
- ARTICLE TITLE
- More Important
- Paragraph: Nunc sed erat eu massa. Subparagraph: Phasellus tincidunt et, convallis eu, porta eu, tristique.
- Optional Formatting Element

0.5" - 0.8"
Example Specification

SECTION 27 00 00

COMMUNICATIONS GENERAL REQUIREMENTS

PART 1 -- GENERAL

1.1 WORK INCLUDED

A. General requirements specifically applicable to Division 27 communications requirements.

B. The Contractor is responsible for:
   1. Furnishing materials, labor, and equipment in accordance with these Specifications and the accompanying Drawings.
   2. Complete systems in accordance with the intent of these Contract Documents.
   3. Coordinating the details of facility equipment and construction for other specification divisions that affect the communications system work covered under this division.
   4. Furnishing and installing incidental items not actually shown or specified, but which are required by good practice to provide complete functional systems.
Example Specification – Part 1

D. This Section specifies the requirements necessary to furnish, install, identify, and test products and materials listed below.

1. Communications raceway, tray, innerduct, and fittings.
2. Communications room subsystems, including:
   a. Backboards, cabinets, and equipment racks.
   b. Equipment rack shelves.
   c. Protector panels and protectors.
   d. Wiring block systems.
   e. Modular patch panels.
   f. Fiber optic distribution units (FDUs).
   g. Cable management accessories.
   h. Ground busbar hardware.
   i. Equipment rack and cabinet ground bars.
3. Horizontal unshielded twisted-pair (UTP) distribution subsystem, including:
   a. UTP cable placement and termination.
   b. Telecommunications outlet components.
4. Communications cable and accessories, including:
   a. Unshielded twisted-pair UTP cable.
2.16 FIBER OPTIC DISTRIBUTION UNITS (FDU)

A. Acceptable Manufacturers:
   1. Systimax Communications.
   2. Corning Cable Systems.

B. FDUs: Enclosure arranged for 19-inch equipment rack mounting equipped to hold adapter connector panels and cable mounting accessories.
   1. Four-Rack Unit Connector Panel Housing:
      a. Systimax Communications: LST1U-72/7.
      b. Corning Cable Systems: CCH-04U.
   2. Three-Rack Unit Connector Panel Housing:
      a. Systimax Communications: LSC2U-024/5.
      b. Corning Cable Systems: CCH-03U.
   3. Two-Rack Unit Connector Panel Housing - Corning Cable Systems: CCH-02U.
   4. Fiber Adapter Connector Panels: modular panels for use with adapters to make direct fiber optic interconnections.
      a. SC Duplex Connector Panels:
         1) Systimax Communications: 1000SC1-DPLX, connector panel with 3 adapters.
            a) C6060A-4, single-mode ceramic-insert adapter.
            b) C6061A-4, multimode metallic-insert adapter.
         2) Corning Cable Systems:
3.19 FIBER OPTIC CABLE INSTALLATION

A. Use care when handling fiber optic cable. Carefully monitor pulling tension and cable bend radius so as not to exceed the limits specified by the manufacturer.

B. Provide the following service loop of cable for connectorizing, polishing, and serviceability.

1. Backbone Cable Segment:
   b. Sheathed in Communication Vault: as indicated on the Drawing or cable schedule.
   c. Unsheathed in FDU: 10 feet.

2. Horizontal Cable Segment:
   a. Unsheathed in FDU: 10 feet.
   b. Unsheathed at Outlet: 4 feet.

• All 3 Parts work together
Master Specifications

• Referred to as Boiler Plate Specifications
• Owner Master Specifications
• A/E or Consultant Master Specifications.
• Saves a lot of time in not writing specs from scratch
• Allows for lessons learned to be captured for corporate knowledge
• Provides consistency in construction requirements.
• Can result in a non-specific project scope if not properly revised by the author.
• **Buy vs. Maintain**
Create Your Own Masters

• Resources
  – CSI Section Format/Page Format for document structure
  – “Specs in a Box”
    – ARCOM: MasterSpec® & SpecText®
    – Building System Design (BCD)
      – DOE, NIBS, Army Corps of Engineers, Air Force.....
Vendors and Manufacturers: Caution! They are written around their products and often break the rules for format and language.
Create Your Own Masters

- Vendor specs continued

2.9 Horizontal distribution cable - Optical fiber, Multimode

A. Design and performance requirements

1. MULTIMODE OPTICAL FIBER HORIZONTAL DISTRIBUTION CABLE FOR 10 GBIT/S APPLICATIONS SHALL BE CONSTRUCTED WITH GRADED INDEX 50/125 MICRON LASER OPTIMIZED FIBERS. CABLE CONSTRUCTION SHALL BE ALL-DIELECTRIC, SINGLE SHEATH WITH SINGLE OR MULTIPLE FIBER PAIRS, AVAILABLE IN PLENUM OR RISER VERSIONS.

2. MULTIMODE OPTICAL FIBER HORIZONTAL DISTRIBUTION CABLES MUST COMPLY WITH THE DETAILED SPECIFICATIONS "OPTICAL FIBER HORIZONTAL CABLING".


1. NEC ARTICLE 250: GROUNDING
2. NEC ARTICLE 386: SURFACE METAL RACEWAYS
3. NEC ARTICLE 388: SURFACE NON-METALLIC RACEWAYS
4. NEC ARTICLE 800: COMMUNICATIONS CIRCUITS
5. NEC ARTICLE 770: OPTICAL FIBER CABLES AND RACEWAY
Create Your Own Masters

• Vendor specs continued

1.5 Work Included

A. THE APPROVED CONTRACTOR SHALL FURNISH THE REQUIRED MATERIALS AND LABOR TO COMPLETE THE 10 GBIT/S CABLING INFRASTRUCTURE SPECIFIED IN THE CONTRACT DOCUMENTS. CONSTRUCTION WORK SHALL COMPLY WITH CONTRACT DRAWINGS, SPECIFICATIONS, PROJECT COMPLETION SCHEDULES, AND APPLICABLE CODES AND STANDARDS. WORK SHALL INCLUDE ALL DETAILED EXECUTION REQUIREMENTS, SUCH AS PREPARATION, INSTALLATION, SYSTEM CERTIFICATION, AND PROJECT CLOSEOUT ACTIVITIES ACCORDING TO THE CONTRACT. BASIC EXECUTION AND SYSTEM CERTIFICATION ACTIVITIES ARE OUTLINED IN PART 3 AND

I. ALL CRITICAL INTERNAL MANUFACTURING OPERATIONS FOR INSTALLED PRODUCTS SHALL HAVE DOCUMENTED IN-PROCESS INSPECTION AND TESTING ACCORDING TO ISO9001.
Create Your Own Masters

• Editing Software
  • ARCOM, BSD and UFGS have software to manage the spec content.
  • ARCOM – SpecWare and SpecAgent
  • BSD – SpecLink-E
  • UFGS - SpecIntact

• Integrated Spec and Design Software
  • Interspec – e-Specs for Revit, for AutoCAD
  • Bently - SpecWave
Create Your Own Masters

• Where to start
  – Identify the type of masters you need (multi-discipline, supports a specific market, ...)
  – Keep it simple. This can easily get out of control where it is too complicated to manage, costly to update, difficult to understand or integrate with specs provided by others.
  – Consider a single Telecom spec for small projects and compartmental specs for larger projects
Create Your Own Masters

• Where to start
  – The fewer number of specs you create, the easier it is to manage.
  – CSI’s MasterFormat™ has a lot of number, you don’t have to use all of them to organize your information.
  – If starting from a past project, sanitize the spec for client proprietary and confidential information.
2.2 CONDUIT AND FITTINGS

A. Metallic:

1. [Rigid Steel Conduit: rigid galvanized steel.]
2. [Electrical Metallic Tubing (EMT): galvanized tubing.]
3. [Flexible Metal Conduit: steel.]
4. [Liquidtight Flexible Conduit: flexible metal conduit with PVC jacket.]

Setscrew fittings are not acceptable on food projects.

Fittings and Conduit Bodies: threaded type or [setscrew] [compression] type for EMT; material to match conduit.
Master Spec. Tips

- Using brackets [ ] or { } for common choices.

2.2 CONDUIT AND FITTINGS

A. Metallic:

1. [Rigid Steel Conduit: rigid galvanized steel.]
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5. Fittings and Conduit Bodies: threaded type or [setscrew] [compression] type for EMT; material to match conduit.
Master Spec. Tips

• Highlight action items required by the specifier. Do not publish until highlights, brackets and NTS have been deleted.

2.2 CONDUIT AND FITTINGS

A. Metallic:

1. [Rigid Steel Conduit: rigid galvanized steel.]
2. [Electrical Metallic Tubing (EMT): galvanized tubing.]
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Specifier Action Items Highlighted

Setscrew fittings are not acceptable on food projects.

5. Fittings and Conduit Bodies: threaded type or [setscrew] [compression] type for EMT; material to match conduit.
Master Spec. Tips

• Other Considerations
  – Use Revision Control with Word to track edits.
  – Use a “Draft” watermark to during the design review process to discourage draft specifications from being used as final documents. This is required by some states when prepared by an Engineer.
  – Organize submittals within the body of the specification in one location. Create a table or list of contractor submittals.
Master Spec. Tips

• Other Considerations
  – The Contractor is responsible for reading the specifications but you do not have to make it a treasure hunt.
  – Avoid repeating information on your drawings that is already in your specification.
  – Keep it simple. More text is not better.
The End

Questions ?