Specification Writing - Fundamentals of Structure, Language, Writing and Risk Management

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Safety Moment

Safety in the sun

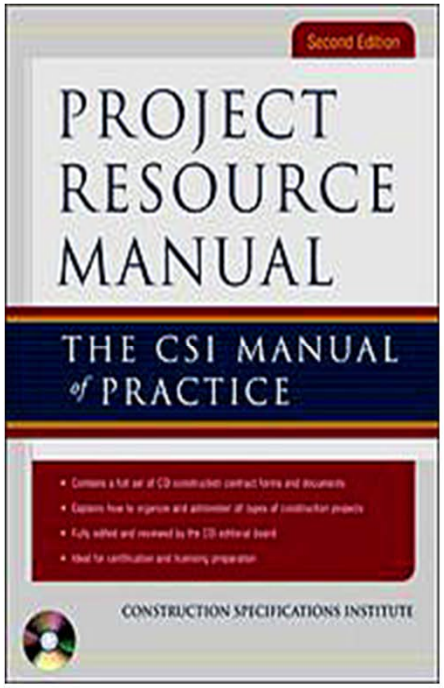
Schedule

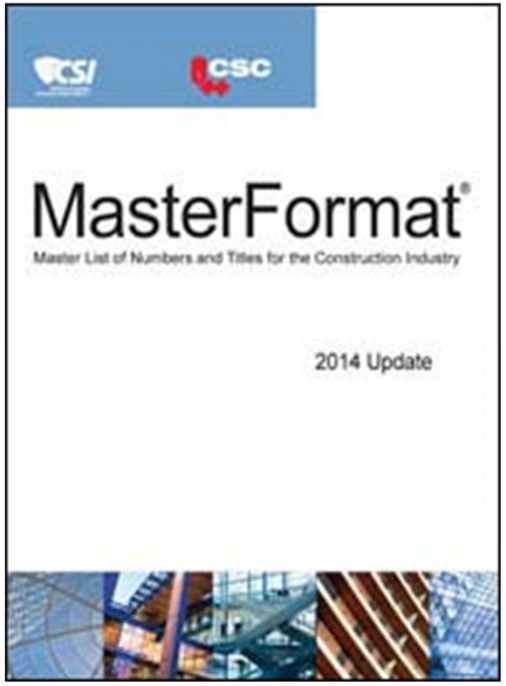
- 1:30 to 2:45
- 2:45 to 3:00 – **15 minute break**
- 3:00 to 4:15
- 4:15 Q&A and wrap up

Agenda

- What is a Specification Document
- Contract Basics
- Types/Methods of Specifying
- Specification Writing
- Specification Language
- CSI Master Format
- Data Center Examples
- Master Specs
- Risk Management

References

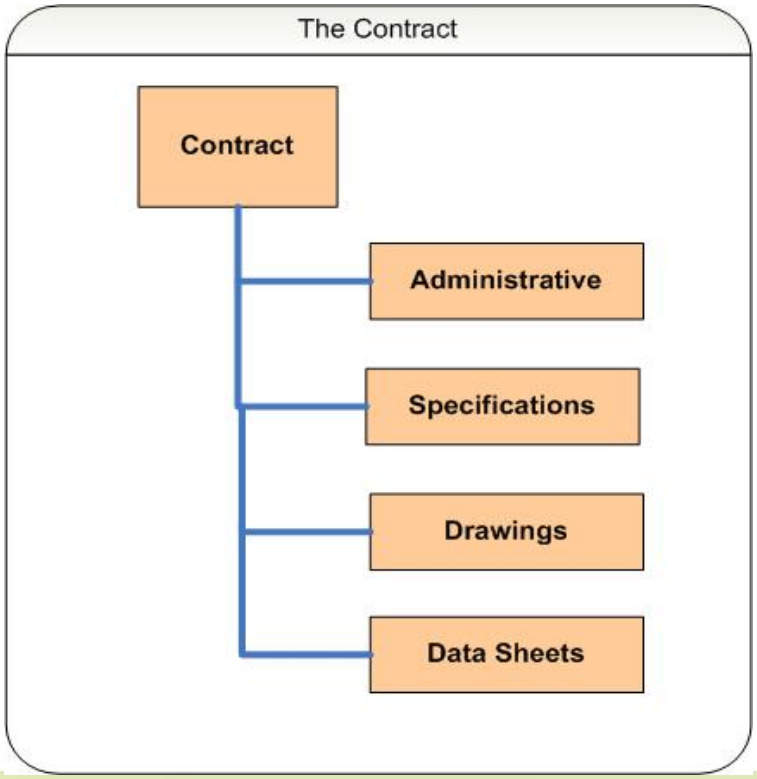

Second Edition
PROJECT RESOURCE MANUAL
THE CSI MANUAL of PRACTICE
CONSTRUCTION SPECIFICATIONS INSTITUTE


CSI
CSC
MasterFormat®
Master List of Numbers and Titles for the Construction Industry
2014 Update

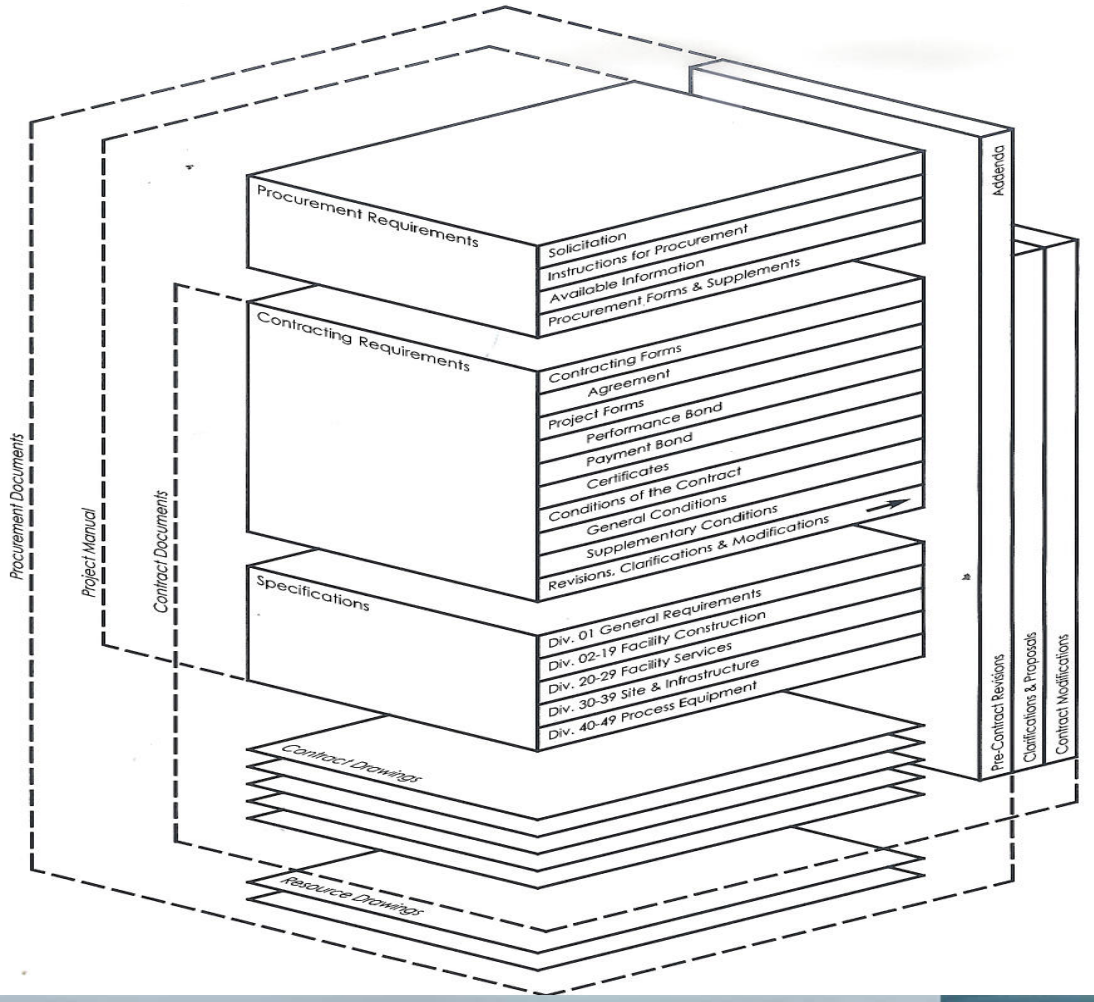

SectionFormat/PageFormat
CSI
CSC

What is a Specification Document

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



Construction Documents



Specifications

Administrative – Contracting requirements

- Schedule
- Terms and Conditions
- Definitions
- Address of the project site
- Identification of the Parties to the Contract

Specifications

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.

Specifications

Specifications 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. It's a Standard !

Drawings

The drawings are graphic representations of the work upon which the contract is based.
As the graphic documents usually contain more then plan views, the preferred term is *Drawings* rather then *Plans*.

The Relationship Between Specifications and Drawings - Differences

Drawings

- Graphically show the components in relation to the rest of the building and surrounding components
- Graphically show 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.”
- Specification items are not repeated on the drawings.

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 should not repeat manufacturers or Code requirements.
- Drawing information is not repeated in the specs.

The Relationship Between 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.

Specification Owners & Authors

Architects

Engineers & Designers

Others

- Vendors
- Suppliers
- Equipment Manufacturers
- Owner

Intended Recipients of Specifications

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.

Contract Basics

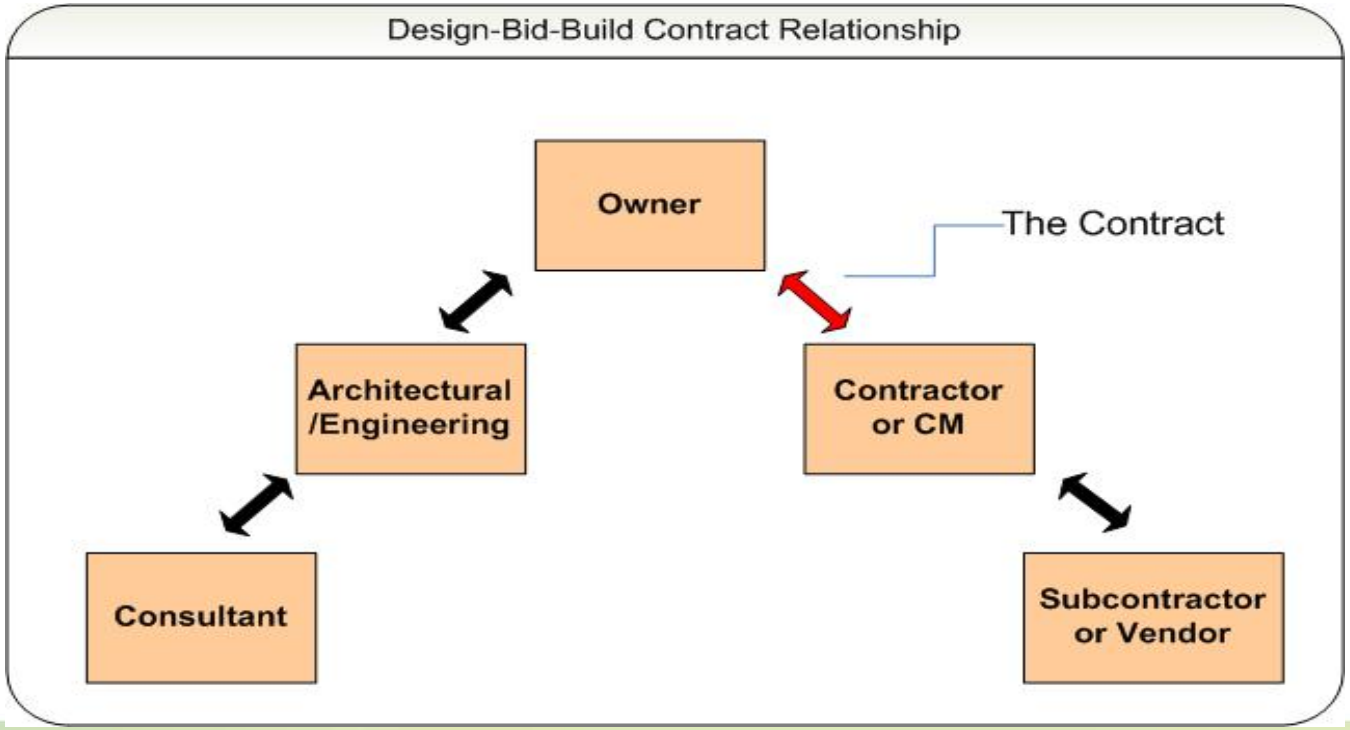
Elements of a Contract

1. Offer
2. Consideration – something of value
3. Acceptance – must mirror the terms
4. Mutuality
    1. ‘A meeting of the minds’ this means the parties understood and agreed to the basic substance and terms of the contract.

How is a Contract Interpreted?

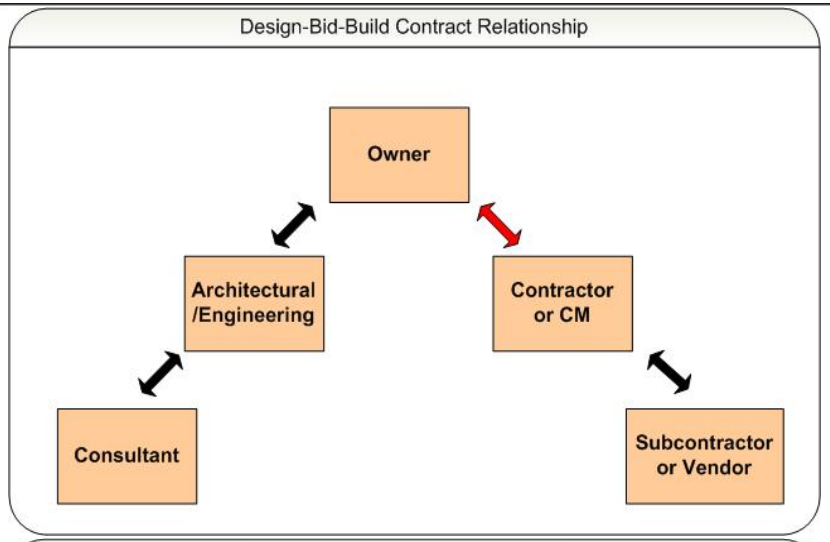
In general the court reads the contract as a whole (drawings, specifications, etc.) and according to the ordinary meaning of the words. To interpret or clarify the contract, additional information such as submittals, emails or other correspondence can be used.

The Contract

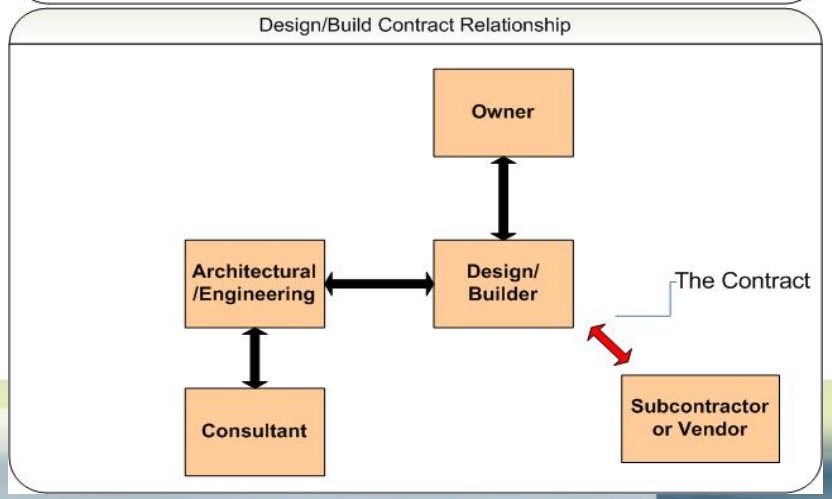


Contracting Strategies

Design – Bid – Build



Design/Build



Parties to the Contract

Parties

- Contractor
- Architect
- Owner
- Engineer
- Design-Builder
- Construction Manager
- Vendor
- Subcontractor

All the parties above may be mentioned in the specifications but it typically is only the Owner and the Contractor that are considered the “Parties to the Contract

Types/Methods of Specifying

Generally

- Open or Results
  - Describes required performance without mandating how those performances are to be achieved
- Closed or Method
  - Describes not only required performances, but also tools, technologies or subassemblies that must be used in the design of a product or assemble to meet the specification

Types/Methods of Specifying

Generally

- Open - Advantages
  - Usually results in lower costs and good contractors can be very innovative in devising ways to get work done.
- Closed - Advantages
  - Permits design to be completed down to the smallest detail.

Types/Methods of Specifying

Generally

- Open - Disadvantage
  - Can challenge inexperienced contractors.
  - May not match existing systems.
- Closed - Disadvantages
  - Usually higher cost.
  - Dependent on contractor experience

4 Types/Methods of Specifying

1. Descriptive
    - A detailed written description of the required properties of a product, material or piece of equipment and the workmanship required for its proper installation.

2. Performance
    - A statement of required results with criteria for verifying compliance, but without unnecessary limitation on the methods for achieving the results or it can be defined as specifying an end result by formulating the criteria for its accomplishment.

4 Types/Methods of Specifying

3. Reference Standard
    - Are requirements set by authority, custom or general consensus and are established as accepted criteria, such as BICSI TDMM

4. Proprietary
    - Identify the desired products by manufacturer's name, brand name, model number, type designation or other unique characteristics. This method can be open or closed depending on whether substitutions are permitted.

Specification Writing

- Know your audience – It's the Contractor(s)
- Know the Parties of the Contract – Understand the contracting strategy
- Writing Style
  - Be Accurate, Brief, Clear
  - Avoid complex sentences and stilted language (artificially formal).
  - Use simple sentences with terms and words that are easily understood.

Writing to the Parties of the Contract

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 almost always write as if the Owner if talking directly to the General Contractor. We almost never identify the subcontractors because we don't assume who the General Contractor will subcontract to.

Writing Style Example 1

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 the 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 Style Example 2

Avoid complex sentences and stilted (artificially formal) language

- Bad Examples:
  - Stilted: Perform permanent link test on temporarily removed outlets.
  - Complex: 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.

Writing Style Example 3

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 3

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 cable exposed on the surface of the building columns.

Sentence Form

Form simple declarative sentences or imperative statements

- The Imperative Form
  - Example: "Place a label on the front of the data outlet face plates."

- The Indicative Form - not good
  - Example: "The Contractor Shall place a label on the front of the data outlet face plates."

The Imperative Form (Good) Example

Coffee-making Instructions - Imperative

- 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 Indicative Form (Bad) Example

Coffee-making Instructions - Indicative

- 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

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.

Tip: Use this same sentence form for writing notes on drawings

Specification Language

Words to Avoid

- All
- Any
- Every
- Should
- Such
- Could
- Please
- Must
- Is to
- Etc.

Phrases to Avoid

- As allowed
- As appropriate
- As necessary
- As required
- As directed
- As indicated

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.

Specification Language

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.

Specification Language

Don’t use these Symbols:

- ‘ Spell out feet
- “ Spell out inches
- % Spell out percent
- + - Spell out plus or minus
- o Spell out degrees

Specification Language

Every word in a specification is important.

- Do not:
  - Underline
  - Bold
  - Italicize
  - Highlight
- Do not use color in final specifications.

CSI Master Format

- 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

CSI Master Format

27 00 00 COMMUNICATIONS

- **27 01 00 Operation and Maintenance of Communications Systems**
  - 27 01 10 Operation and Maintenance of Structured Cabling and Enclosures
  - 27 01 20 Operation and Maintenance of Data Communications
  - 27 01 30 Operation and Maintenance of Voice Communications
  - 27 01 40 Operation and Maintenance of Audio-Video Communications
  - 27 01 50 Operation and Maintenance of Distributed Communications and Monitoring
- **27 05 00 Common Work Results for Communications**
  - 27 05 13 Communications Services
    - 27 05 13.13 Dialtone Services
    - 27 05 13.23 T1 Services
    - 27 05 13.33 DSL Services
    - 27 05 13.43 Cable Services
    - 27 05 13.53 Satellite Services
  - 27 05 26 Grounding and Bonding for Communications Systems
  - 27 05 28 Pathways for Communications Systems

CSI Master Format

Recommendations for selecting CSI numbers:

- Remember to keep it simple
- Use the 6 digit number when possible.
- Avoid using every CSI number in the Master Format
- Ideally use only one CSI number
  - Example: “27_00_00 Communications”
  - Example for Performance Spec. “27_00_05 Common Work Results for Communications”

CSI Section Format

Section Format has 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, ….

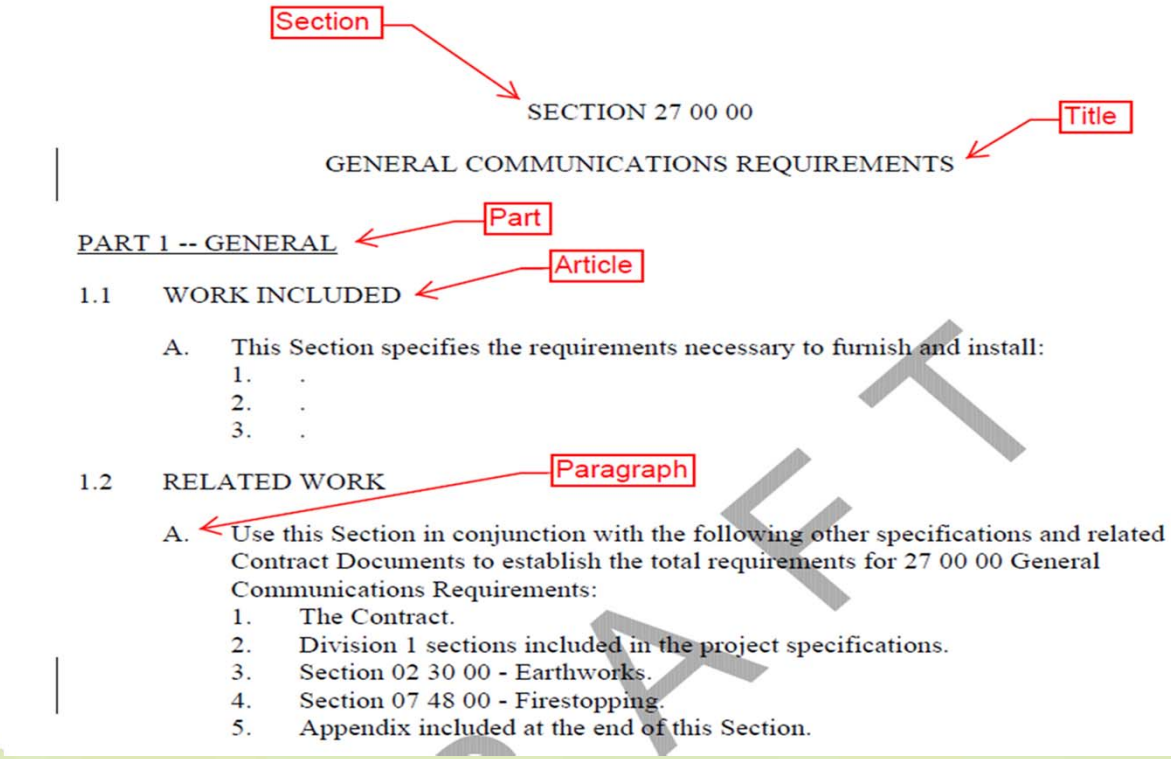
CSI Section Format

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



CSI Section Format - Sample

PART 3 -- EXECUTION

3.1 INSPECTION

A. .

3.2 FIELD PREPARATION

A. .

3.3 INSTALLATION

A. .

3.4 FIELD QUALITY CONTROL

A. .

3.5 TOLERANCES

A. .

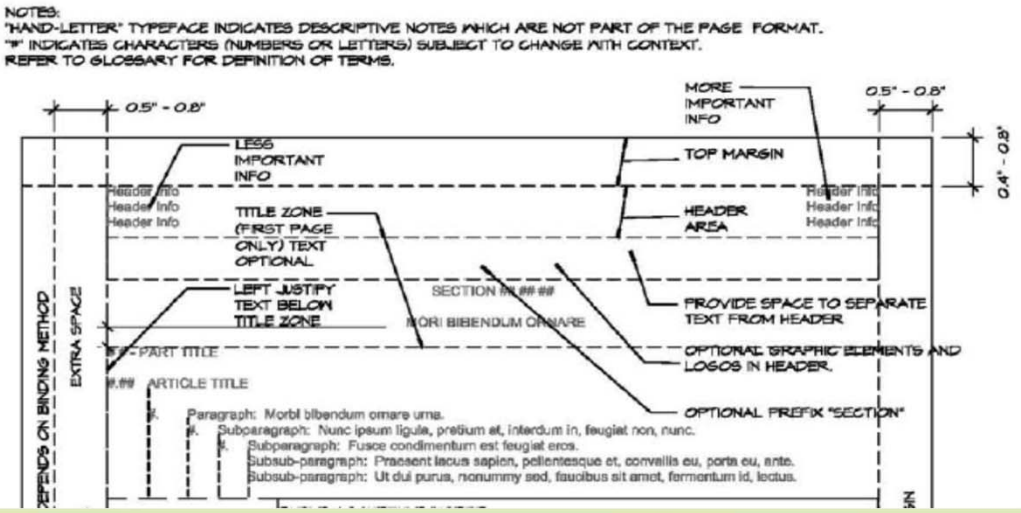
CSI Section/Page Format

The CSI Section Format/Page Format document includes:

- Examples
- Article Headers
- Sample Templates in the Appendix

CSI Page Format

Figure PF-2a - *PageFormat* Example with Descriptive Notes



Example Specification - 1

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 - 2

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.

Example Specification - 3

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:

Example Specification - 4

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:
      a. Sheathed Near Each FDU: 24 feet.
      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 should work together

Example Master Format - Backbone Cabling

27 10 00	**Structured Cabling**
27 11 00	**Communications Equipment Room Fittings**
27 11 13	Communications Entrance Protection
27 11 16	Communications Cabinets, Racks, Frames, and Enclosures
27 11 19	Communications Termination Blocks and Patch Panels
27 11 23	Communications Cable Management and Ladder Rack
27 11 26	Communications Rack Mounted Power Protection and Power Strips
27 13 00	**Communications Backbone Cabling**
27 13 13	Communications Copper Backbone Cabling
27 13 13.13	Communications Copper Cable Splicing and Terminations
27 13 23	Communications Optical Fiber Backbone Cabling
27 13 23.13	Communications Optical Fiber Splicing and Terminations
27 13 33	Communications Coaxial Backbone Cabling
27 13 33.13	Communications Coaxial Splicing and Terminations
27 13 43	Communications Services Cabling

Example Master Format - Horizontal Cabling

27 15 00	**Communications Horizontal Cabling**
27 15 01	Communications Horizontal Cabling Applications
27 15 01.16	Voice Communications Horizontal Cabling
27 15 01.19	Data Communications Horizontal Cabling
27 15 01.23	Audio-Video Communications Horizontal Cabling
27 15 01.39	Patient Monitoring and Telemetry Communications Horizontal Cabling
27 15 01.43	Nurse Call and Intercom Communications Horizontal Cabling
27 15 01.46	Paging Communications Horizontal Cabling
27 15 01.49	Intermediate Frequency/Radio Frequency Communications Horizontal Cabling
27 15 01.53	Antennas Communications Horizontal Cabling
27 15 13	Communications Copper Horizontal Cabling
27 15 23	Communications Optical Fiber Horizontal Cabling
27 15 33	Communications Coaxial Horizontal Cabling
27 15 43	Communications Faceplates and Connectors

Example Master Format - Audio/Visual

27 50 00	**Distributed Communications and Monitoring Systems**
27 51 00	**Distributed Audio-Video Communications Systems**
27 51 13	Paging Systems
27 51 13.13	Overhead Paging Systems
27 51 16	Public Address Systems
27 51 19	Sound Masking Systems
27 51 23	Intercommunications and Program Systems
27 51 23.20	Commercial Intercommunications and Program Systems
27 51 23.30	Residential Intercommunications and Program Systems
27 51 23.50	Educational Intercommunications and Program Systems
27 51 23.63	Detention Intercommunications and Program Systems
27 51 23.70	Healthcare Intercommunications and Program Systems
27 51 26	Assistive Listening Systems
27 52 00	**Healthcare Communications and Monitoring Systems**
27 52 13	Patient Monitoring and Telemetry Systems
27 52 16	Telemedicine Systems
27 52 19	Healthcare Imaging Systems
27 52 23	Nurse Call/Code Blue Systems
27 53 00	**Distributed Systems**
27 53 13	Clock Systems
27 53 13.13	Wireless Clock Systems
27 53 16	Infrared and Radio Frequency Tracking Systems
27 53 19	Internal Cellular, Paging, and Antenna Systems

Example Master Format - Security 1

28 00 00	**Electronic Safety and Security**
28 01 00	**Operation and Maintenance of Electronic Safety and Security**
28 01 10	Operation and Maintenance of Electronic Access Control and Intrusion Detection
28 01 10.51	Maintenance and Administration of Electronic Access Control and Intrusion Detection
28 01 10.71	Revisions and Upgrades of Electronic Access Control and Intrusion Detection
28 01 20	Operation and Maintenance of Electronic Surveillance
28 01 30	Operation and Maintenance of Electronic Detection and Alarm
28 01 30.51	Maintenance and Administration of Electronic Detection and Alarm
28 01 30.71	Revisions and Upgrades of Electronic Detection and Alarm
28 01 40	Operation and Maintenance of Electronic Monitoring and Control
28 01 40.51	Maintenance and Administration of Electronic Monitoring and Control
28 01 40.71	Revisions and Upgrades of Electronic Monitoring and Control
28 05 00	**Common Work Results for Electronic Safety and Security**
28 05 05	Selective Demolition for Electronic Safety and Security
28 05 13	Conductors and Cables for Electronic Safety and Security
28 05 13.13	CCTV Communications Conductors and Cables
28 05 13.16	Access Control Communications Conductors and Cables
28 05 13.19	Intrusion Detection Communications Conductors and Cables
28 05 13.23	Fire Alarm Communications Conductors and Cables
28 05 26	Grounding and Bonding for Electronic Safety and Security
28 05 28	Pathways for Electronic Safety and Security
28 05 28.29	Hangers and Supports for Electronic Safety and Security
28 05 28.33	Conduits and Backboxes for Electronic Safety and Security
28 05 28.36	Cable Trays for Electronic Safety and Security
28 05 28.39	Surface Raceways for Electronic Safety and Security
28 05 48	Vibration and Seismic Controls for Electronic Safety and Security
28 05 53	Identification for Electronic Safety and Security
28 06 00	**Schedules for Electronic Safety and Security**
28 06 10	Schedules for Electronic Access Control and Intrusion Detection
28 06 20	Schedules for Electronic Surveillance
28 06 30	Schedules for Electronic Detection and Alarm
28 06 40	Schedules for Electronic Monitoring and Control
28 08 00	**Commissioning of Electronic Safety and Security**

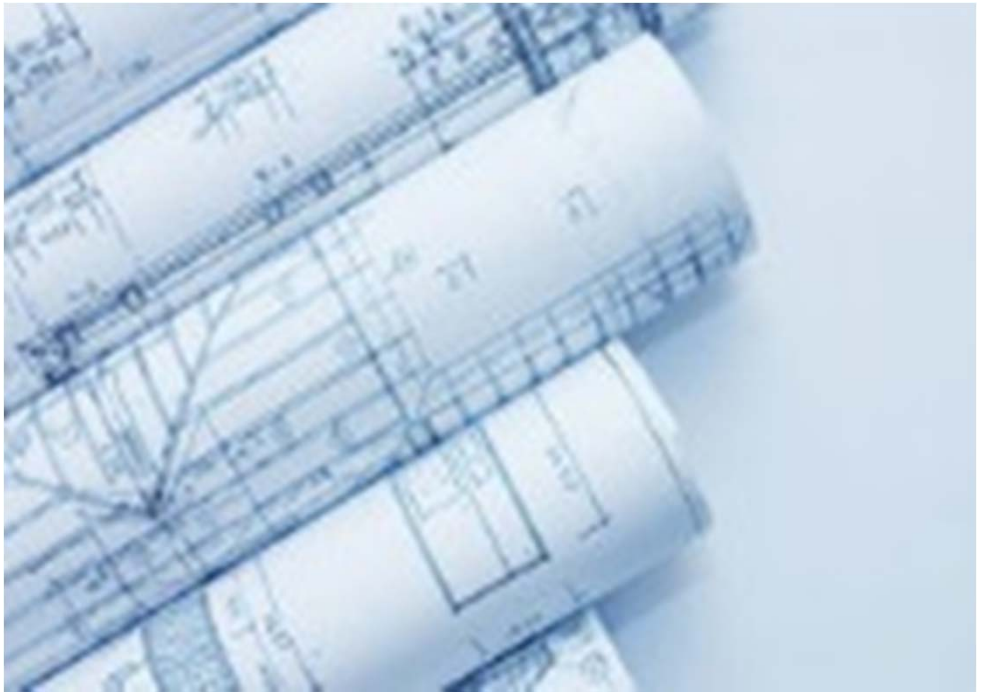
Example Master Format - Security 2

28 10 00	**Electronic Access Control and Intrusion Detection**
28 13 00	**Access Control**
28 13 13	Access Control Global Applications
28 13 16	Access Control Systems and Database Management
28 13 19	Access Control Systems Infrastructure
28 13 26	Access Control Remote Devices
28 13 26.11	Wireless Access Control Devices
28 13 33	Access Control Interfaces
28 13 33.16	Access Control Interfaces to Access Control Hardware
28 13 33.26	Access Control Interfaces to Intrusion Detection
28 13 33.33	Access Control Interfaces to Video Surveillance
28 13 33.36	Access Control Interfaces to Fire Alarm
28 13 43	Access Control Identification Management Systems
28 13 53	Security Access Detection
28 13 53.13	Security Access Metal Detectors
28 13 53.16	Security Access X-Ray Equipment
28 13 53.23	Security Access Explosive Detection Equipment
28 13 53.29	Security Access Sniffing Equipment
28 13 63	Access Control Vehicle Identification System
28 16 00	**Intrusion Detection**
28 16 13	Intrusion Detection Control, GUI, and Logic Systems
28 16 16	Intrusion Detection Systems Infrastructure
28 16 19	Intrusion Detection Remote Devices and Sensors
28 16 33	Intrusion Detection Interfaces
28 16 33.13	Intrusion Detection Interfaces to Remote Monitoring
28 16 33.16	Intrusion Detection Interfaces to Access Control Hardware
28 16 33.23	Intrusion Detection Interfaces to Access Control System
28 16 33.33	Intrusion Detection Interfaces to Video Surveillance
28 16 33.36	Intrusion Detection Interfaces to Fire Alarm
28 16 43	Perimeter Security Systems

Example Master Format - Security 3

28 20 00	**Electronic Surveillance**
28 23 00	**Video Surveillance**
28 23 13	Video Surveillance Control and Management Systems
28 23 16	Video Surveillance Monitoring and Supervisory Interfaces
28 23 19	Digital Video Recorders and Analog Recording Devices
28 23 23	Video Surveillance Systems Infrastructure
28 23 26	Video Surveillance Remote Positioning Equipment
28 23 29	Video Surveillance Remote Devices and Sensors
28 26 00	**Electronic Personal Protection Systems**
28 26 13	Electronic Personal Safety Detection Systems
28 26 16	Electronic Personal Safety Alarm Annunciation and Control Systems
28 26 19	Electronic Personal Safety Interfaces to Remote Monitoring
28 26 23	Electronic Personal Safety Emergency Aid Devices

Questions ?



Data Center Examples

Equipment Racks

2.1 EQUIPMENT RACKS

A. Floor-Supported Equipment Racks:
   1. Material: Aluminum.
   2. Finish: Aluminum with clear iridite finish.
   3. Uprights: 4-inches wide with EIA drilling for 1-3/4-inch panels on the front.
   4. Overall Dimensions: 20-5/16-inches wide by 84-inches high.
   5. Panel Width: 19-inches wide.
   6. Mounting Spaces: 42 1-3/4-inch-high panels.

B. Cabling Management Sections:
   1. 84-inches-high by 6-inch-wide vertical aluminum rack cabling section, including formed assembly, and assembly hardware.

Equipment Cabinets

2.1 EQUIPMENT CABINETS

A. Equipment Cabinets:

1. Construction: Welded aluminum for indoor use.
2. Finish: Black.
3. Overall Dimensions: 24-inches wide by 36-inches deep by 76-1/4-inches high.
4. Panel Width: 19-inches wide.
5. Mounting Spaces: 40 1-3/4-inch-high panels.
6. Mounting Rails: EIA drilling for 1-3/4-inch panels.
7. Side Panels: With side panels.
8. Doors: With front and rear doors.
9. Gaskets: No gaskets.
10. Latching (Door Handles): Key lockable.

What's a PDU?

And in what spec section would you find it?

Power Distribution Unit

26 26 00 Power Distribution Units ?

Or

27 11 16 Communications Rack Mounted Power Protection and Power Strips ?

Power Distribution Unit's

PDU
Includes transformer

pdu
Power strip

Master Specifications

- Referred to as Boiler Plate Specifications
- Owner Master Specifications
- A/E or Consultant Master Specifications.

Benefits

- Saves a lot of time in not writing specs from scratch
- Provides consistency in construction requirements.
- Can result in a non-specific project scope if not properly revised by the author.

Create Your Own Masters

- Editing Software
  - ARCOM, BSD and UFGS have software to manage the spec content.

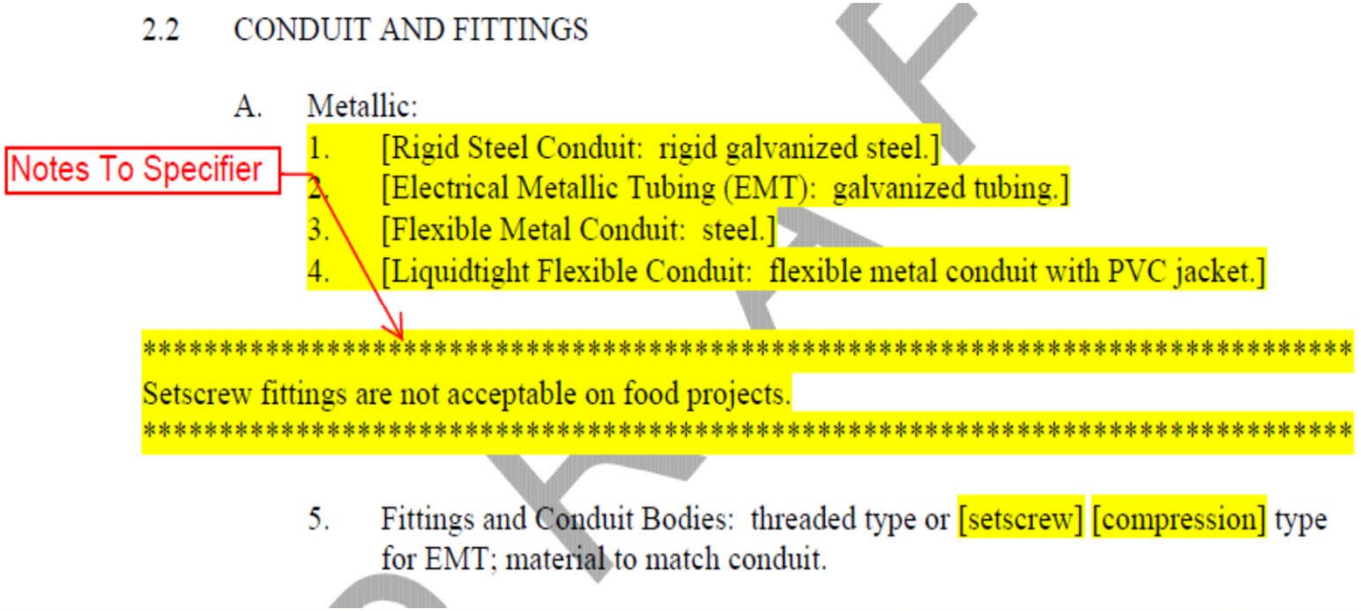
    ARCOM – Masterspec-Buildings SpecText - Infrastructure

    BSD – SpecLink-E

    UFGS - SpecIntact (United Facilities Guide Specifications)
- Integrated Spec and Design Software
  - Interspec – e-Specs extracted from Autodesk Revit Drawings
  - Bently Systems- Projectwise Specifications Management
- Vendor specifications - West Penn Wire, Panduit & Hubbell

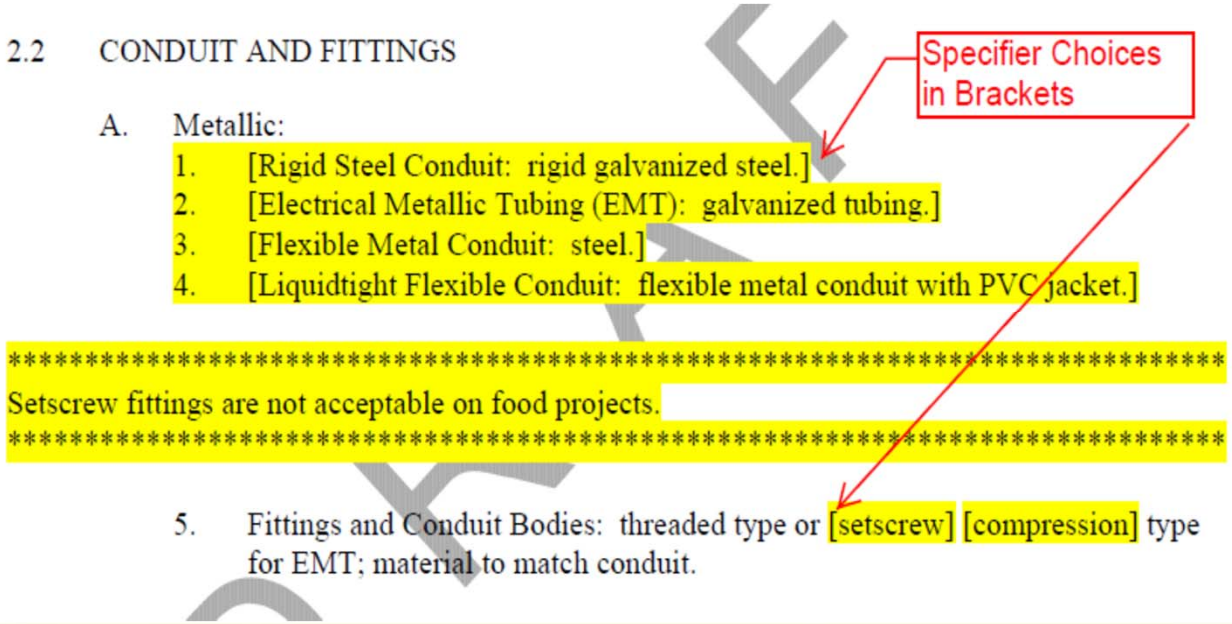
Master Specification Tip - 1

Using Notes to Specifier (NTS) within body of text.



Master Specification Tip - 2

Using Specifier choices in Brackets



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.]

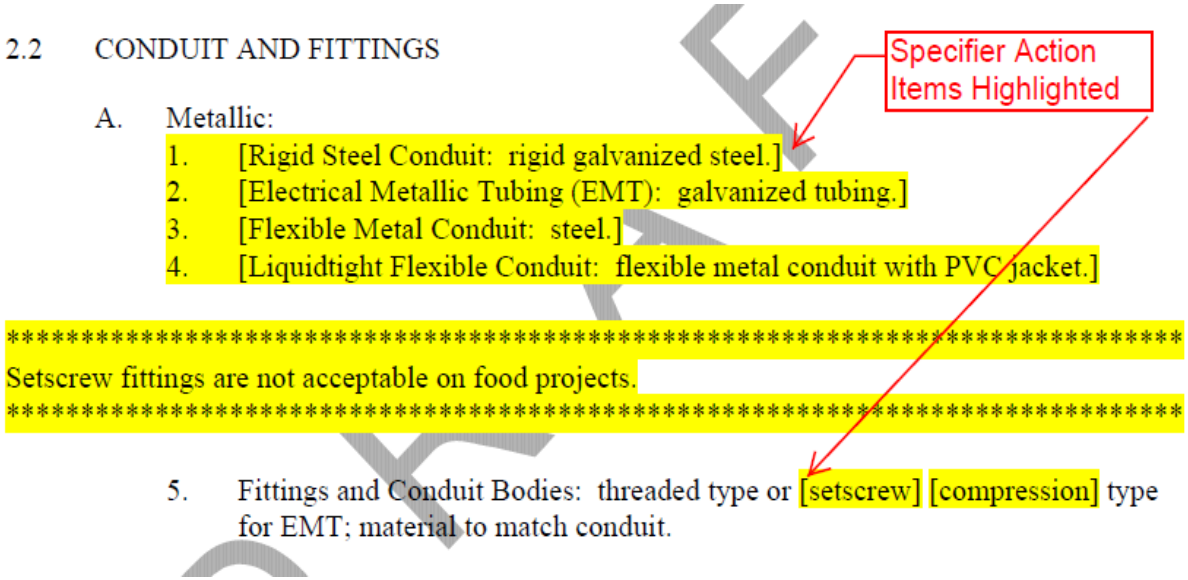
****

Setscrew fittings are not acceptable on food projects.

****

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

Master Specification Tip - 3



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Do not publish/release until highlights, brackets and NTS have been deleted.

Master Specification Tip - 4

PART 2 -- PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. .

B. .

C. .

2.2 GENERAL

A. .

2.3 MATERIALS

A. .

2.4 FABRICATION

A. .

2.5 ACCESSORIES

A. .

2.6 FINISHES

A. .

Master Specification Tip - 5

- Other Considerations
  - Use Revision Control with Word to track edits.
  - Organize submittals within the body of the specification in one location. Create a table or list of contractor submittals.
  - Avoid repeating information on your drawings that is already in your specification.

Master Specification Tip - 6

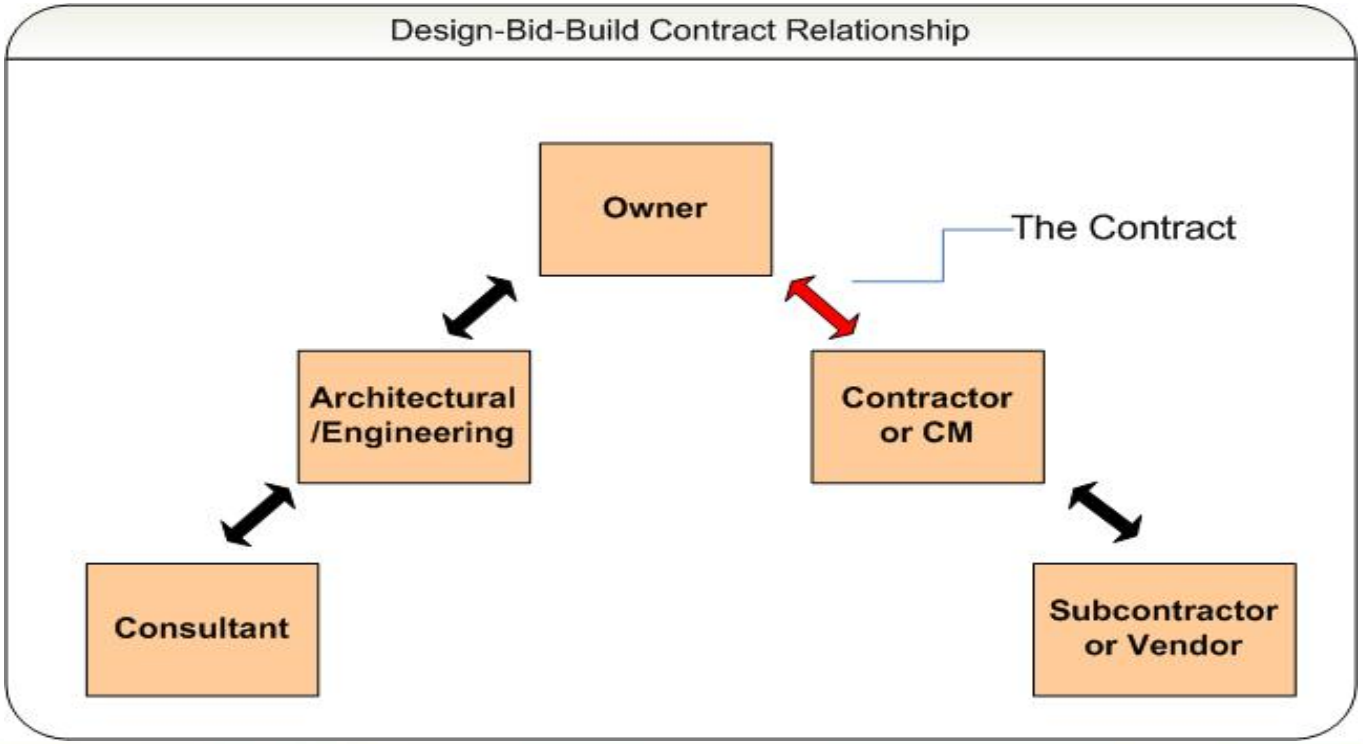
- Other Considerations
  - The Contractor is responsible for reading the specifications but you do not have to make it a treasure hunt.
  - Keep it simple. More text is not better.

Risk Management

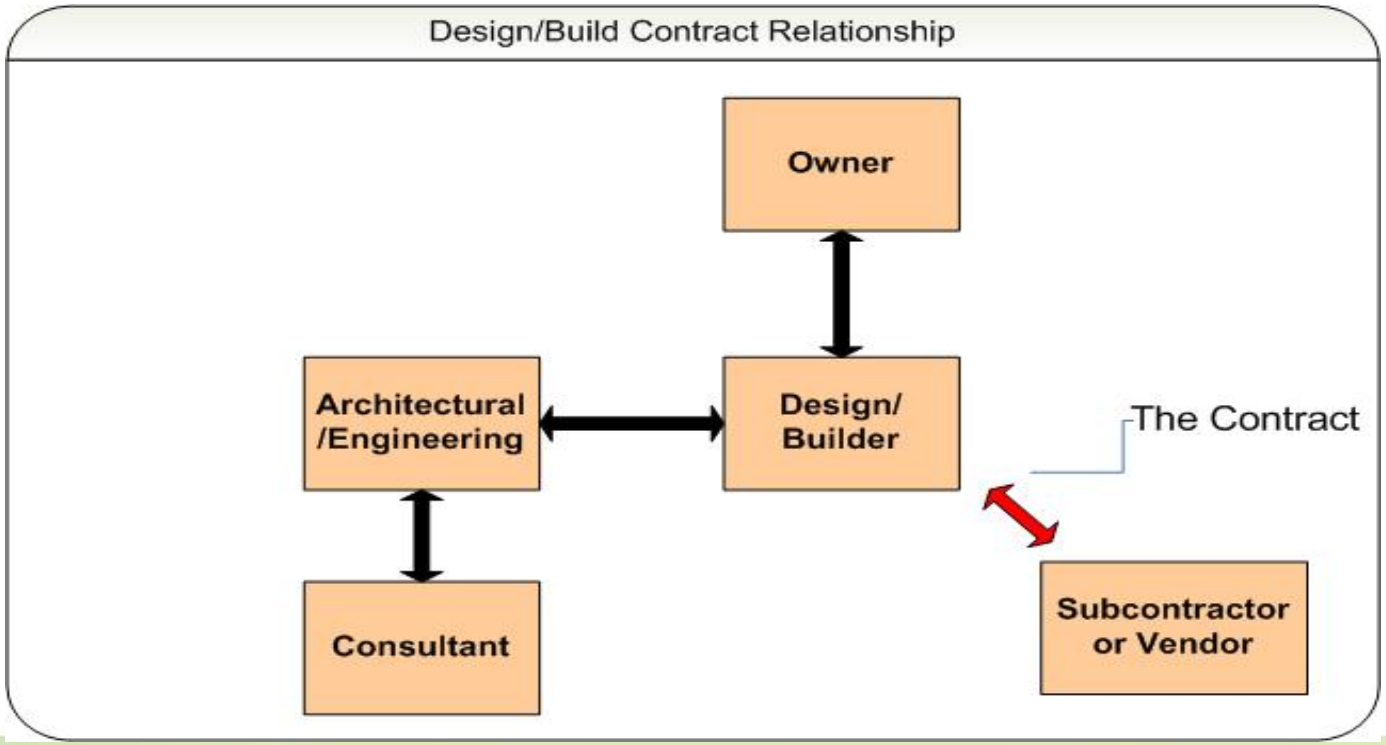
Disclaimer:

- Any views or opinions presented herein are solely those of the author and do not represent those of BICSI, CH2M or AAA. The information provided is used for general discussion purposes. Use of this information should be used with a full understanding of law by a qualified professional.

Who would sue whom?



Again, Who would sue whom?



Risk Management

- How do we reduce risk?
- Where do we start?
- What would a judge, jury or an arbitrator look at?

Risk Management

Definitions

- Litigation- An action brought in court to enforce a particular right. The act or process of initiating a lawsuit.
- ADR (Alternative dispute resolution) - refers to a range of procedures for resolving disputes. Mediation and arbitration are the two most common ADR procedures.

Risk Management

Definitions

- Mediation - is a non-binding process which helps parties try to resolve their dispute voluntarily on a mutually agreeable terms. Non-binding means the mediator has no power to make any decisions.
- Arbitration – is a binding process by which disputes are resolved after a hearing known as arbitration. Binding means the arbitrator issues an award that can be enforced in the courts.

Risk Management

Definitions

- Discovery - Part of the pre-trial or pre-arbitration process during which each party requests relevant information and documents from the other side in an attempt to "discover" pertinent facts.
  - Generally includes:

    Depositions, interrogatories, requests for admissions, document production requests and requests for inspection.

Risk Management

- Winning ?
  - prevailing in a lawsuit?
  - preserving relationship?
  - avoiding distraction of key personnel?
  - setting precedents?
  - minimizing expenses?

Alternative Dispute Resolution

Advantages

- Flexibility - the process is determined and controlled by the parties
- Lower costs
- Less complexity
- Parties choice of neutral third party (and therefore expertise in area of dispute)
- Practical solutions tailored to parties' interests and needs
- Durability of agreements
- Confidentiality
- The preservation of relationships and reputations.

Risk Management

Reducing risk. Where do we start?

- Internal processes and procedures.
  - Standard agreements (clauses) with Owner or Design/Builder.
  - Qualified risk management department.
  - Specification development and quality control processes
  - Training in specification development.
  - PM's trained in risk management
  - Construction phase activities
  - E&O Insurance

Risk Management

- Clarifications during construction phase duties can reduce risk.
  - Submittal review
  - Shop drawing review
  - RFI
  - Field observation notes

Risk Management

Communications

- Words to avoid
  - Extreme words, such as final, all, complete or best
  - Words of multiple meaning such as inspect or estimate
  - Words of promise, such as guarantee or certify

Risk Management

COORDINATE, COORDINATE, COORDINATE

Common coordination issues include:

- Referencing wrong sections
- Assigning work to ‘others’
- Specifying Division 01 requirements in technical sections

Errors or Omissions

Do the specs have to be perfect?

Or to what degree do they need to be accurate.

Errors or Omissions

Do the specs have to be perfect?

Or to what degree do they need to be accurate.

- Depends on the industry.
  - Example 1: Home deck
  - Example 2: Fire Alarm System
  - Example 3: Space shuttle

Questions ?