

**California High-Speed Rail Authority**



**RFP No.: HSR 13-57**

**Request for Proposals for Design-Build  
Services for Construction Package 2-3**

**Book IV, Part F.3  
Construction Specifications Preparation  
Manual**

**04/02/2014 - RFP No.: HSR13-57**

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## 1.0 GENERAL

### 1.1 PURPOSE

The purpose of these instructions is to promote consistency in the Construction Specifications and as-built Construction Specifications throughout the California High-Speed Train System (CHSTS).

The requirements spelled out herein apply to the preparation of Construction Specifications and as-built Construction Specifications by the design-build Contractor's team.

## 2.0 CONSTRUCTION SPECIFICATIONS

### 2.1 ROLE OF THE CONSTRUCTION SPECIFICATIONS

Construction Specifications for CHSTS contracts shall define the requirements for products, materials, installation, construction, and workmanship upon which the construction shall be based. The Construction Specifications shall also, as appropriate within the framework of the specific CHSTS contract, define details for administration and performance of the project.<sup>1</sup>

- In conjunction with the Construction Drawings and other documentation such as reports, Construction Specifications shall communicate and document what the Contractor will build and how the Contractor will built it, as well as establish requirements for other construction-related activities and their documentation.
- Construction Specifications shall define how the work shall be performed and controlled, such as quality assurance and control, and construction phase submittals in a manner similar to the Standard Specifications. Construction Specifications shall be written for use by the Contractor and those monitoring, overseeing, or approving construction. The quality control requirements spelled out in the Construction Specifications shall be one of the bases of and be coordinated with the Contractor's Quality Management System.
- Construction Specifications shall be maintained during construction and become part of the "as-built" record delivered to the Authority for its use in maintenance of the Work and for future design and construction.

### 2.2 COMPONENTS OF CONSTRUCTION SPECIFICATIONS

Incorporate the following components at the beginning of the Construction Specifications.

- **Cover page:** Furnish a cover page with each submittal of the Construction Specifications including the information shown in Exhibit A, at minimum.
- **Seal Pages:** Furnish seal pages listing the Construction Specifications Sections with the corresponding engineer, architect, or landscape architect. Furnish seal pages with seals and signatures for final submittals. See Exhibit C.
  - There may be instances when an engineer or other professional is responsible for only part of the work of their discipline. In those cases, the list of Sections may be qualified with phrases such as "(in regard to work between Station 10+100.00 and Station 20+000.00 only)" or "(in regard to street lighting only)".

<sup>1</sup> Paragraph based on text of the Project Resource Manual (CSI Manual of Practice), Fifth Edition, Copyright © 2005 by the Construction Specifications Institute.



- **Preface Page:** The preface page for the Construction Specifications is included as Exhibit B. In addition to the title identification of “Construction Specifications”, this page contains a paragraph explaining the relationship of the Standard Specifications to the Construction Specifications.
- **Table of Contents:** Furnish a Table of Contents for the Construction Specifications containing Division and Section numbers and titles along with the numbers and titles of attachments and appendices included in the Construction Specifications. Format the Table of Contents as shown in Exhibit D.

The body of the Construction Specifications is made up of individual sections, and shall be contract-specific and complete. Construction Specifications sections include the following:

- Specifications prepared by the Contractor
- Standard Specifications incorporated into the Construction Specifications.
- Standard Specifications incorporated into the Construction Specifications and modified or augmented.

### 2.3 RESPONSIBILITY FOR CONSTRUCTION SPECIFICATIONS

Contractor shall review the Standard Specifications and determine applicability of each provision of the Standard Specifications to Contractor’s final design and construction methodology and determine what additional specifications are required. The Standard Specifications represent minimum requirements and general requirements. The Contractor in drafting the Construction Specifications shall have thoroughly reviewed the Standard Specifications and made whatever changes are necessary to suit the specifications to its design. Review shall include review of reference standards.

The registered individuals who prepare the Construction Specifications, by signing and sealing the Construction Specifications, shall be responsible for the Construction Specifications suitability to the design and construction and compliance to the Design Criteria and other Contract provisions. These signatures and seals and determination of suitability shall encompass the Standard Specifications provisions incorporated into and made applicable through the Construction Specifications.

### 2.4 INCORPORATING THE STANDARD SPECIFICATIONS

The applicable sections of the Standard Specifications shall be copied and incorporated into the Construction Specifications.

Most of the Standard Specifications Sections contain requirements to be supported by information supplied elsewhere (either in the Construction Specifications or on the Construction Drawings). This information consists of requirements unique to a particular contract such as concrete class (strength) and the type of material and equipment to be incorporated into the Work.

### 2.5 MODIFYING STANDARD SPECIFICATIONS SECTIONS

Modifications to the Standard Specifications Sections incorporated into the Construction Specifications shall be made in accordance with the following rules:

- Modifications of the Standard Specifications shall include only those modifications which are necessary to convey requirements, products, and installation standards which are special to the specific contract.
- Modification of the Standard Specifications shall be accomplished with additions, revisions, or deletions and substitutions as indicated in Exhibit F. When configuring additions, revisions, deletions, and substitutions, consider the clarity of the resulting Construction Specifications.



- Tracked changes versions of modified Standard Specifications Sections: Contractor's submittals of the Construction Specifications, when including revised Standard Specifications Sections, shall include tracked changes versions for the reviewers' use in determining whether the minimum and general requirements found in the Standard Specifications are met. The Ready for Construction submittal shall include Construction Specifications showing tracked changes and another version with changes accepted.

References to the Construction Specifications in the Standard Specifications: When a Standard Specifications Section refers to a Construction Specifications Section, this reference indicates that typically a contract-specific provision in the Construction Specifications Section with the same number and name as the Standard Specifications Section is required.

## 2.6 NEW SECTIONS

The Standard Specifications do not cover all conditions required for each project. New sections will be required to augment the Standard Specifications for classifications of work not covered therein. Contractor shall develop these new sections following the guidance presented in the remainder of these instructions. Also refer to the Standard Specifications and the illustration of the first page of a new "Construction Specifications" section illustrated in Exhibit G including the word "NEW" in bold capital letters in the top margin.

- Select a six-digit number and a title for each new section. Number and title shall be selected in accordance with MasterFormat,<sup>2</sup> current edition. Coordinate with numbers and titles already designated in the Standard Specifications.
- Eliminate nonessential language and state exactly what is required to avoid the possibility of more than one interpretation being given to a requirement.

## 3.0 SECTION ORGANIZATION AND CONTENT

### 3.1 CONSTRUCTION SPECIFICATIONS INSTITUTE (CSI) SECTION FORMAT<sup>3</sup>

Each Section has three Parts:

- PART 1 – GENERAL: Describes administrative and procedural requirements unique to the Section.
- PART 2 – PRODUCTS: Describes systems, assemblies, equipment, products, materials, fabrications, and mixes.
- PART 3 – EXECUTION: Describes site installation or application, including preparatory actions and post-installation cleaning and protection. Site-built or site-manufactured assemblies are included.

When a Section does not require the use of a Part, include number and title of unused Part, followed by the words "Not Used". Within Parts, there are Articles and Paragraphs. An Article must have at least one paragraph. See Figure A for an illustration of Part, Article, and Paragraphs nomenclature:

<sup>2</sup> MasterFormat is a master list of numbers and titles for organizing information within construction contracts and related documents and filing systems. Copyright by and available from the Construction Specifications Institute.

<sup>3</sup> SectionFormat / PageFormat, Recommended Format for Construction Specifications Sections, Copyright © 2008 by the Construction Specifications Institute.



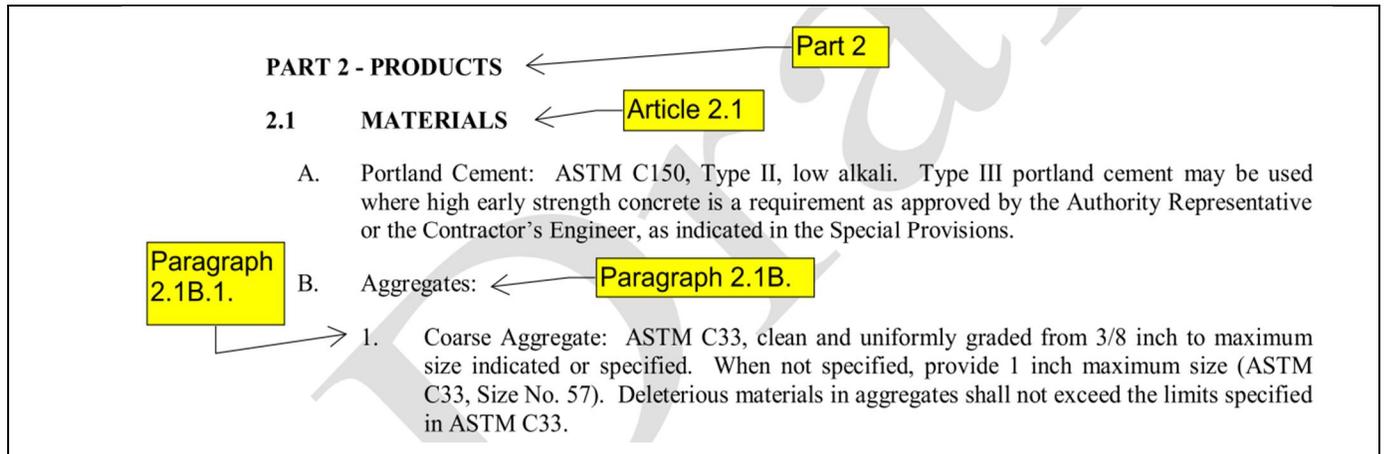
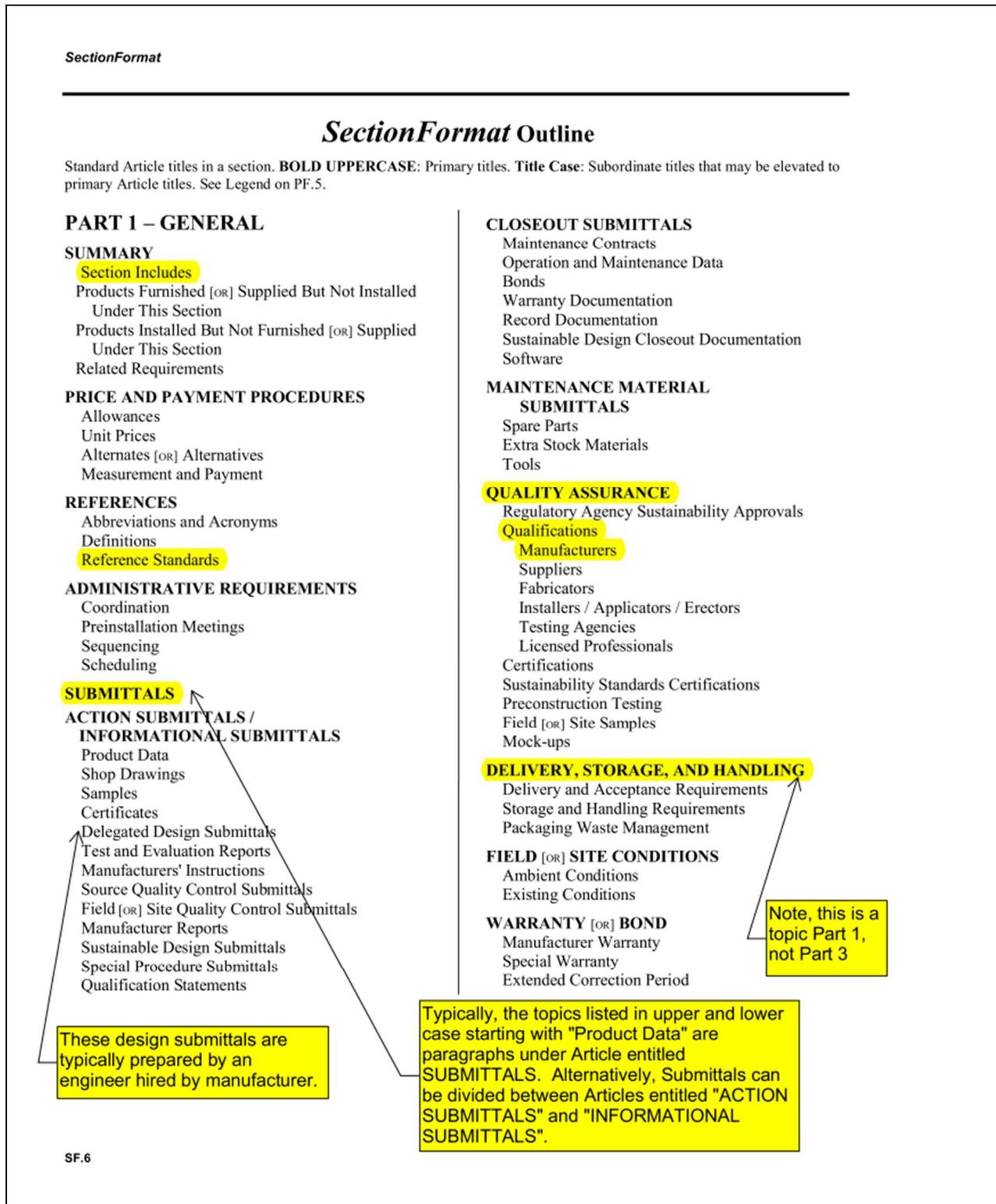
**Figure A – Part, Article, and Paragraph**

Figure B is CSI's SectionFormat. SectionFormat contains lists of topics, in order, for use in Sections. Note the following in regard to the lists:

- Highlighted titles are typically included in many Sections.
- Article "SECTION INCLUDES" is included in all Sections.
- When a title which is listed in all capital letters in Figure B is included in a Section, it typically should be an Article title and not a Paragraph title.
- The titles in upper and lower case can either be paragraph titles or subjects and can be "elevated" to an Article title.
- Develop other titles as needed and locate them within a Section where they would logically fit within CSI SectionFormat.



**Figure B – SectionFormat**



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SectionFormat

**PART 2 – PRODUCTS**

**OWNER-FURNISHED [OR] OWNER-SUPPLIED PRODUCTS**

- New Products
- Existing Products

[SYSTEMS] / [ASSEMBLIES] /  
 [MANUFACTURED UNITS] / [EQUIPMENT] /  
 [COMPONENTS] / [PRODUCT TYPES] /  
 [MATERIALS] / [USER-DEFINED HEADING]

**Manufacturers**

- Manufacturer List
- Substitution Limitations
- Product Options

**Description**

- Regulatory Requirements
- Sustainability Characteristics

**Performance / Design Criteria**

- Capacities

**Operation**

- Operators
- Controls
- Operation Sequences

**Materials**

**Assembly [OR] Fabrication**

- Factory Assembly
- Shop Fabrication
- Assembly [OR] Fabrication Tolerances

**Mixes**

**Finishes**

- Primer Materials
- Finish Materials
- Shop Finishing Methods

**ACCESSORIES**

**SOURCE QUALITY CONTROL**

- Tests and Inspections
- Non-Conforming Work
- Manufacturer Services
- Coordination of Other Tests and Inspections

Depending on the nature of the product specified, pick one of these titles.

**PART 3 – EXECUTION**

**INSTALLERS**

- Installer List
- Substitution Limitations

**EXAMINATION**

- Verification of Conditions
- Preinstallation Testing
- Evaluation and Assessment

**PREPARATION**

- Protection of In-Place Conditions
- Surface Preparation
- Demolition / Removal

**ERECTION / INSTALLATION / APPLICATION / [USER-DEFINED PROCESS]**

- Special Techniques
- Interface with Other Work
- Systems Integration
- Tolerances

**[REPAIR] / [RESTORATION]**

**RE-INSTALLATION**

**FIELD [OR] SITE QUALITY CONTROL**

- Field [OR] Site Tests and Inspections
- Non-Conforming Work
- Manufacturer Services

**SYSTEM STARTUP**

**ADJUSTING**

**CLEANING**

- Waste Management

**CLOSEOUT ACTIVITIES**

- Demonstration
- Training

**PROTECTION**

**MAINTENANCE**

**ATTACHMENTS**

**END OF SECTION**

- Schedules
- Tables
- Illustrations
- Forms

A table may be included in Parts 1 through 3 or after "END OF SECTION"

Depending on the nature of the work specified in a particular section, pick one of these titles.

END OF SECTION is not an Article title. Note that schedules and illustrations can be attached after "END OF SECTION"

SF.7

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### 3.2 INITIAL ARTICLES

**SECTION INCLUDES:** It is recommended that Article 1.1 always be entitled: SECTION INCLUDES. List significant generic types of products, work results, or requirements specified. Be brief and do not include “providing all the necessary labor, materials, tools, equipment and incidentals necessary for \_\_\_\_\_ as shown on the Design Drawings and as specified herein”. It is typically not necessary to list procedures, prep work, secondary products, or final adjusting under “SECTION INCLUDES”. See Figure C.

**Figure C – Article entitled SECTION INCLUDES**

<p><b>SECTION 03 05 15</b></p> <p><b>PORTLAND CEMENT CONCRETE</b></p>	
<p><b>PART 1 - GENERAL</b></p>	
<p><b>1.1</b></p>	<p><b>SECTION INCLUDES</b></p> <p>A. Portland cement.</p> <p>B. Aggregates.</p> <p>C. Drying shrinkage of concrete.</p> <p>D. Concrete admixtures and cementitious materials.</p> <p>E. Tests and analysis of materials.</p> <p>F. Mix designs.</p> <p>G. Batching, mixing, and transporting.</p>

**RELATED REQUIREMENTS:** Use Part 1 Article entitled “RELATED REQUIREMENTS” sparingly. This Article lists such things as related Sections. If such an Article seems necessary, briefly list other documents or Sections. Limit list to documents or Sections with specific information that the reader might expect to find in this Section but is specified elsewhere. If another Section is referenced somewhere in the text of the Section, it does not have to be repeated here. Cross-referencing here may also be used to coordinate assemblies or systems among multiple Sections.

**REFERENCE STANDARDS:** An example of Part 1 Article entitled “REFERENCE STANDARDS” is illustrated below. List every referenced standard, i.e., ASTM E84, referenced within the Section with the correct name of its issuing organization and the complete name of the standard. Generally the date of the standard is not stated. For example, ASTM A36 is listed instead of ASTM A36-09. When the edition of a code or standard isn’t stated, the edition shall be understood to mean the edition defined in the General Provisions or Section 02 01 00, Standard Specifications General Statements, whichever is applicable. At the Contractor’s discretion, the date may be listed as long as the edition complies with the definitions cited, is more recent, or spells out a code required edition of reference standard.

- Occasionally, a Section requires a list of reference standards which are not referred to in the text. In that case, introduce the list with a paragraph similar to “The work of this Section shall be in accordance with the following standards.”



- When listing an association such as “ASTM International”, also cite specific standards. A reference to an association alone is too broad and does not add anything enforceable to the technical specifications.

<b>1. REFERENCE STANDARDS</b>		
A.	American Concrete Institute (ACI):	
1.	ACI 116R	Cement and Concrete Terminology
2.	ACI 117	Specification for Tolerances for Concrete Construction and Materials
B.	ASTM International (ASTM):	
1.	ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field

**SUBMITTALS:** Part 1 Article entitled “SUBMITTALS”.

- Specify submittals, when necessary as “for approval by the Contractor’s engineer”. When necessary, specify a submittal as “for acceptance by the Contracting Officer”. See Section 02 01 00, Standard Specifications General Statements for definition of Contractor’s engineer and “acceptance”.
- Make sure that all submittals are included under the Submittal Article.

### 3.3 METHODS OF SPECIFYING

There are four methods of specifying: descriptive, performance, reference standard, and proprietary.<sup>4</sup> The four methods have varying degrees of applicability to the Construction Specifications.

- **Descriptive:** A descriptive specification specifies properties of materials and methods of installation. A descriptive specification is a detailed description of the characteristics, physical properties, and workmanship required for the installation of a product or material.
- **Performance:** Not applicable to Construction Specifications. (A performance specification is defined as a statement of required results for a product or system with criteria for verifying compliance, but without unnecessary limitations on the methods for achieving the required results.)
- **Reference standard:** Specifies product or processes by established standards. Specifications based on reference standards use recognized industry standards rather than individually written product or installation criteria. Carefully review standards to avoid duplications and contradictions, to understand optional requirements, and to be able to properly incorporate the standard into the specifications. Also, verify what edition of the standard will be applicable, and clarify as necessary. Refer to Section 02 01 00, Standard Specifications General Statements, for an explanation of the applicable edition in the Standard Specifications. Note that specific editions may be required under building codes or by a jurisdictional authority. The Contractor may also propose use of a different edition. When a

<sup>4</sup> Project Resource Manual (CSI Manual of Practice), Fifth Edition, Copyright © 2005 by the Construction Specifications Institute.



reference standard does not specify all desired characteristics, list the additional requirements.

- Proprietary: Proprietary specifications describe products and materials by manufacturer's name, brand name, model number, or unique characteristic. Thoroughly identify each brand or trade name with the name of the manufacturer, model number, model name, type, size, finish, and other classifications that are applicable.

Designated Matching Products: The Authority may establish certain products as Designated Matching Products (DMP). Such selections and designations have not yet been established.

### 3.4 LANGUAGE AND USAGE

Several of the examples used in the following instructions were adapted from the CSI Project Resource Manual.<sup>5</sup> The Construction Specifications consist of specifications, therefore the requirements below for "specifications" shall be understood to mean the Construction Specifications.

- Follow the four principles of effective communications: Clear, concise, correct, and complete.
- The specifications are addressed to the Contractor. Generally, omit the words "the Contractor shall". "The Contractor shall" may be used for clarity when both parties to the contract are mentioned in the same article or paragraph. Examples of preferred and acceptable sentences include:
  - Preferred: Perform tests to determine strength and to establish quality.<sup>6</sup>
  - Acceptable: Contractor shall perform tests to determine strength and to establish quality.
  - Avoid: Tests shall be performed to determine strength and to establish quality.
- Streamlining<sup>7</sup>: Reduce verbiage in specifications if the meaning can be made clear. Use streamlining to list products, materials, reference standards, and other itemized specifications. This technique places the subject first and provides keywords for quick reference. Examples:
  - Equipment: Install plumb and level.
  - Aggregate: ASTM C 33.
- Use words such as "a", "an", "the", and "all" only when needed for clarity.
- Shall/Will/May:
  - Shall: Indicates action that is mandatory on the part of the Contractor.
  - Will: Use "will" to indicate action that will be undertaken by Authority or the Contracting Officer (Authority Representative).
  - May: Indicates permissible action. Typically, use only for acts that the Contractor may or may not perform, at the Contractor's option, without concurrence of the Authority Representative. However, where the Contractor's option consists of the selection from two or more specified materials or methods, specify "use x or y" without the word "may".

<sup>5</sup> Project Resource Manual (CSI Manual of Practice), Fifth Edition, Copyright © 2005 by the Construction Specifications Institute.

<sup>6</sup> Called the "imperative mood".

<sup>7</sup> Refer to Section 02 01 00, Standard Specifications General Statements, for explanation of the streamlined form.



- Specifications: Refer to “these specifications” in lieu of “this specification”. Similarly, refer to “these Construction Specifications” in lieu of “this Construction Specification”.
- Do not address individual manufacturer or installers. For example, say “Provide manufacturer inspection and approval of installation.” Do not write, “Manufacturer shall inspect and approve installation.”
- Do not use “and/or”. It has no definite meaning and is subject to misinterpretation.
- Do not use indefinite words such as “good workmanship”, “adequate”, “reasonable”, “satisfactory”, “generally”, “workmanlike”, “best commercial quality”, and “standard practice”. Use more exact words and, when possible, specify a standard.
- Avoid writing “as approved”, “subject to approval”, and “as required” without making clear who will be required to approve.
- The phrase “in accordance with these Construction Specifications” is generally not necessary; all work must be in accordance with the specifications.
- Quality of work should be “in accordance with” and materials should “conform to” or “comply with” referenced standards or specifications.
- The statement “furnishing all labor, materials, tools, equipment, transportation, facilities, services, and incidentals, and for performing all work necessary for completing \_\_\_” is generally not necessary.

## 4.0 TERMINOLOGY AND CONVENTIONS

### 4.1 TERMS

Use the terms such as “Contractor”, “Authority”, “Construction Drawings”, “Construction Specifications”, and “jurisdictional authority” consistently throughout the Construction Specifications.

- **Contractor:** The word Contractor shall be used to indicate the “Design-Builder”.
  - Refer to the Contractor throughout the Contract Documents by singular number and neutral gender.
  - The word “contractor” when referring to contractors other than the entity which is contracted with the Authority and to which these specifications are directed, is not capitalized. “Other contractors” are those who are executing separate contracts with the Authority or jurisdictional authorities.
- **Authority:** California High-Speed Rail Authority. The Authority is the owner of the California High-Speed Train System. Do not use the abbreviation CHSRA.
- **Contracting Officer:** The term used for the representative of the Authority in the Standard and Construction Specifications. In the General Provisions and elsewhere, the term for Contracting Officer is Authority Representative.
- **Jurisdictional Authority or Authorities:** Do not use “authority having jurisdiction”. When possible, refer to the jurisdictional authorities by name.
- **Others:** Refer to “others” only when referring to work to be performed by contractors or agencies not a party to the particular contract. Wherever possible, identify the “others”. Do not use “others” to refer to other trades working under the Contract.
- **Additional Terms:** Refer to Standard Specifications Section 02 01 00, Standard Specifications General Statements, for definition of additional terms to be used in the Construction Specifications.



## 4.2 CAPITALIZATION

Use standard capitalization for the first word of a sentence; proper nouns; entities and agencies; titles; names and trademarks; and names of days, months, and holidays.

Capitalize abbreviations for agencies and entities.

Capitalize names and titles of Sections, Articles, and Appendices.

Use all capital letters for sign or tag names (ON, OFF, AIR, for example). Do not use all capital letters for emphasis.

## 4.3 SPELLING

Use standard spelling. Do not use shortcut spelling. For example, do not use “thru” for “through”.

## 4.4 ABBREVIATIONS

Abbreviations may be used if they are clearly defined. Refer to the Directive Drawings entitled Acronyms and Abbreviations and acronyms listed in the Design Criteria.

Identify abbreviations either at the beginning of that section under an Article entitled “Definitions” or at the first in-text mention in the section where they are used. If an abbreviation is to be used only once or twice, or at widely spaced intervals, spell it out instead of using an abbreviation.

Do not use “et cetera” or “etc.” This term conveys no meaning and has no precise definition in specifications. Where an indefinite listing is required, state “...including such items as nuts, bolts, and washers” rather than “...nuts, bolts, etc.”

Avoid the use of abbreviations that eliminate only a few characters. Therefore use “foot” or “feet” and “inch” or “inches” in lieu of “in.” and “ft.”

## 4.5 NUMBERS

Spell out numbers one through nine. Express numbers 10 and above in figures.

Do not write out both numbers and figures. For example do not write out “two hundred (200)” or “nine (9)”; simply write “200” and “nine”.

Do not use keyboard characters for fractions. The character  $\frac{1}{4}$ , for example, is illegible on a bad copy and there is no way to make it consistent with fractions that do not have fractional characters, such as  $\frac{3}{8}$ . Write out all fractions with full numbers and a virgule (/).

Use a zero in front of the decimal for figures less than one, for example “0.13”.

Do not allow the number of a Section, such as “01 11 00” to be broken at the end of line. To prevent this substitute the spaces between digits with a “no-break space”.

## 4.6 SYMBOLS

Do not use symbols such as ', ", %, &, °, and # in specifications. Their use causes errors that may not be caught in proofreading. Write out “feet”, “inches”, “percent”, “and”, “degrees”, and “pounds”. Such symbols as “%” and “°” may be used in tables with caution. Note, use the degree symbol from the symbols menu in lieu of a superscript zero.

For the word number, do not use the symbol “#”. Either spell out the word number or use the abbreviation “No.” An ampersand may be used only where it appears in the name or corporate identification of a firm or agency, such as “Pacific Gas & Electric Company (PG&E)”.

Do not use a hyphen for “minus”, “to”, or “through” in data where it is also used as a spacing or separating device or where any question as to the exact meaning may arise. The words “plus or minus” are preferable to using symbols.



## 4.7 EMPHASIS

Do not use capital letters, quotation marks, bold font, or underlining in the body of the specifications to express emphasis.

## 4.8 CROSS-REFERENCING

References to the Construction Specifications: In the Construction Specifications, refer to another section, as “Construction Specifications Section 32 11 00, Base Courses”, in lieu of “Standard Specifications Section 32 11 00” or “Section 32 11 00”.

When making a cross-reference to a provision within the Construction Specifications, preferably refer only to the Section, if no ambiguity would be introduced by referring to the entire Section. Make such cross-reference as follows: “as specified in this Section” for provision in the same Section or “as specified in Construction Specifications Section 03 05 15, Portland Cement Concrete”.

If it is necessary to make a reference to a particular Article (and not simply to a Section), write “as specified in Article entitled “Mix Designs” herein” for an Article in the same Section or “as specified in Construction Specifications Section 03 05 15, Portland Cement Concrete, under the Article entitled “Mix Designs””. This avoids confusion which may occur if an Article is re-numbered within a Section.

If it is necessary to make a reference to a particular Paragraph, refer to the Article by name, followed by the Article and Paragraph numbers and letters. Write for example “as specified in Section 03 05 15, Portland Cement Concrete, under the Article entitled “Mix Designs, Paragraph 2.5A.1.”

## 5.0 FORMATTING

### 5.1 FORMATTING

Section Organization: Organize each section in accordance with CSI SectionFormat which establishes the order of topics within a section. (See CSI SECTIONFORMAT in instructions.)<sup>8</sup> This will help maintain consistency throughout the Construction Specifications. Refer also to the Standard Specifications for examples of SectionFormat.

See examples of the following types of Construction Specifications Sections.

- Section incorporates the Standard Specifications with no changes: (See Exhibit E)
- Section incorporates and modifies the Standard Specifications in the Construction Specifications Section: (See Exhibit F)
- There is no Standard Specifications Section; therefore the Construction Specifications Section. Use Template. (See Exhibit G)

Templates: Template is a Microsoft Word file with indents, headers, footers, fonts, and standard text to be tailored to the individual contract and section. Template includes Microsoft styles. Template will be made available to the contractor upon request.

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<sup>8</sup> SectionFormat / PageFormat, Recommended Format for Construction Specifications Sections, Copyright © 2008 by the Construction Specifications Institute.



## 5.2 TABLE FORMATTING

Format tables simply, see example below, Figure D. Format without shading and do not use black background with white letters. Incorporate table header in Paragraph introduction or table header as appropriate.

It is preferable to organize multi-column lists of data in a table instead of using tab keys. Apply “no borders” if desired.

**Figure D – Typical Table Format**

Mortar for Unit Masonry				
Type per CBC	Proportioning (Parts by Volume)			Minimum Strength (psi at 28 days)
	Portland Cement	Sand	Hydrated Lime or Lime Putty	
M	1	2-3/4 to 3-3/4	1/4 max.	2500

## 6.0 SOURCE INFORMATION AND REFERENCES

The following documents are copyrighted by Construction Specifications Institute:

1. Project Resource Manual (CSI Manual of Practice), Fifth Edition, Copyright © 2005.
2. MasterFormat, current edition.
3. SectionFormat / PageFormat, Recommended Format for Construction Specifications Sections, Copyright © 2008.
4. Construction Specifications Practice Guide, Copyright © 2011.



**CALIFORNIA HIGH-SPEED TRAIN PROJECT**

**CONSTRUCTION SPECIFICATIONS**

**FOR**

**CONTRACT NAME**

**CONTRACT NO. \_\_\_\_\_**

**20\_\_**

**\_\_ SUBMITTAL LEVEL OR READY FOR  
CONSTRUCTION**

**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT B – CONSTRUCTION SPECIFICATIONS PREFACE**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS**  
**Contract No. XXX - Contract Name**

**Construction Specifications**

The Construction Specifications incorporate and modify the California High-Speed Train Project Standard Specifications, Version \_\_\_\_, Dated \_\_\_\_\_.

PREFACE TO THE CONSTRUCTION SPECIFICATIONS  
01 00 01 – 1

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**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT C – CONSTRUCTION SPECIFICATIONS SEAL PAGES**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name**

The Construction Specifications contained herein have been prepared by or under the direction of the following Registered Persons. In signing and sealing these Construction Specifications the Registered Person acknowledges having reviewed and adopted in regard to the Work the Standard Specifications Section as incorporated and modified in the corresponding Construction Specifications Section.

CONSTRUCTION SPECIFICATIONS SECTIONS XX XX XX, XX XX XX, XX XX XX,  
XX XX XX, XX XX XX, XXXX XX, XX XX XX, XX XX XX, XX XX XX

\_\_\_\_\_  
ENGINEER'S NAME, PE  
REGISTERED CIVIL ENGINEER  
FIRM NAME.

(SPACE FOR SEAL)

CONSTRUCTION SPECIFICATIONS SECTIONS XX XX XX, XX XX XX, XX XX XX,  
XX XX XX, XX XX XX, XXXX XX, XX XX XX, XX XX XX, XX XX XX (IN REGARD TO  
WORK BETWEEN STATION \_\_\_ AND STATION \_\_\_ ONLY)

\_\_\_\_\_  
ENGINEER'S NAME, PE  
REGISTERED CIVIL ENGINEER  
FIRM NAME

(SPACE FOR SEAL)

Date: (Issue / Edition Date)  
FileName: chstp template 100430.doc

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SaveDate: 23-Jan-14 12:57 PM

04/02/2014 - RFP No.: HSR13-57

**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT C – CONSTRUCTION SPECIFICATIONS SEAL PAGES**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name**

CONSTRUCTION SPECIFICATIONS SECTIONS XX XX XX, XX XX XX, XX XX XX,  
XX XX XX, XX XX XX, XXXX XX, XX XX XX, XX XX XX, XX XX XX

\_\_\_\_\_  
ENGINEER'S NAME, PE  
REGISTERED STRUCTURAL  
ENGINEER  
FIRM NAME

(SPACE FOR SEAL)

CONSTRUCTION SPECIFICATIONS SECTIONS XX XX XX, XX XX XX, XX XX XX,  
XX XX XX, XX XX XX, XXXX XX, XX XX XX, XX XX XX, XX XX XX

\_\_\_\_\_  
ARCHITECT'S NAME, RA  
LICENSED ARCHITECT  
FIRM NAME

(SPACE FOR SEAL)

CONSTRUCTION SPECIFICATIONS SECTIONS XX XX XX, XX XX XX, XX XX XX (IN  
REGARD TO STREET LIGHTING ONLY)

\_\_\_\_\_  
ENGINEER'S NAME  
REGISTERED ELECTRICAL  
ENGINEER  
FIRM NAME

(SPACE FOR SEAL)

Date: (Issue / Edition Date)  
FileName: Seal Pages.doc

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**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT D – CONSTRUCTION SPECIFICATIONS TABLE OF CONTENTS**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name**

**CONSTRUCTION SPECIFICATIONS TABLE OF CONTENTS**

**Section No.    Title**

**GENERAL REQUIREMENTS SUBGROUP**

**Division 01 - General Requirement**

01 33 00	Submittal Procedures
01 33 23	Shop Drawings, Product Data and Samples
01 45 00	Quality Control
01 52 00	Construction Facilities
01 74 13	Progress Cleaning
01 78 23	Operation and Maintenance Data

**FACILITY CONSTRUCTION SUBGROUP**

**Division 02 – Technical General Requirements and Existing Conditions**

02 01 00	Standard Specifications General Statements
02 01 56.39	Temporary Tree and Plant Protection
02 21 13	Site Surveys
02 21 23	Field Engineering
02 21 33	Photographic Documentation
02 22 00	Existing Conditions Assessment

**Division 03 - Concrete**

03 05 15	Portland Cement Concrete
03 05 18	Prestressed Concrete
03 11 00	Concrete Forming
03 11 15	Falsework
03 15 33	Concrete Anchor Bolts
03 20 00	Concrete Reinforcing
03 30 00	Cast-In-Place Concrete
03 60 00	Grouting

**CONSTRUCTION SPECIFICATIONS TABLE OF CONTENTS**

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EXHIBIT D – CONSTRUCTION SPECIFICATIONS TABLE OF CONTENTS**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
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**Section No.    Title**

04 22 00        **Division 04 - Masonry**  
Concrete Unit Masonry

05 05 22        **Division 05 - Metals**  
Metal Welding  
05 50 00        Metal Fabrications  
05 70 00        Decorative Metal  
05 73 00        Decorative Metal Railings

**Divisions 06 Through 19 – Not Used**

**FACILITY SERVICES SUBGROUP**

**Divisions 20 To 25 – Not Used**

26 05 00        **Division 26 - Electrical**  
Common Work Results for Electrical  
26 05 13        Medium-Voltage Cables  
26 05 16        25 kV Feeder Cable  
26 05 19        Low-Voltage Electrical Power Conductors and Cables  
26 05 26        Grounding and Bonding for Electrical Systems  
26 05 29        Hangers, Supports, Seismic Protection, and Sealants  
26 05 30        Sleeves, Sealants and Grout  
26 05 48        Vibration and Seismic Controls for Facility Power Systems  
26 05 53        Identification for Electrical System  
26 50 00        Lighting

**Divisions 27 to 29 - Not Used**

**SITE AND INFRASTRUCTURE SUBGROUP**

**Division 30 - Not Used**

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**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name**

**Section No.    Title**

**Division 31 - Earthwork**

31 05 00	Common Work Results for Earthwork
31 11 00	Clearing and Grubbing
31 23 19	Dewatering
31 50 00	Excavation Support and Protection

**Division 32 - Exterior Improvements**

32 11 23	Aggregate Base Courses
32 12 16	Asphalt Paving
32 16 16	Concrete Curbs, Gutters, and Walks
32 17 13	Parking Bumpers
32 17 23	Pavement Markings
32 31 13	Chain Link Fences and Gates

**Division 33 - Utilities**

33 05 14	Utility Grade Adjustment
33 05 16	Utility Structures
33 05 24	Trenchless Utility Installation
33 05 25	Support and Protection of Utilities
33 05 28	Trenching and Backfilling for Utilities
33 10 00	Water Utilities
33 30 00	Sanitary Sewerage Utilities
33 40 00	Storm Drainage Utilities

**Divisions 34 to 39 – Not Used**

**PROCESS EQUIPMENT SUBGROUP - Not Used**

**END OF TABLE OF CONTENTS**

**CONSTRUCTION SPECIFICATIONS TABLE OF CONTENTS**

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**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT E – CONSTRUCTION SPECIFICATIONS SECTION  
INCORPORATING STANDARD SPECIFICATIONS SECTION UNCHANGED**

CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name

**SECTION 31 35 00**

**SLOPE PROTECTION**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Slope paving.
- B. Channel paving.
- C. Crib walls.
- D. Rock slope protection.

**1.2 SLOPE PROTECTION CLASSIFICATION**

- A. Block Paving: Precast concrete block units with mortar-filled or grouted joints.
- B. Stone Paving: Quarry stone laid in uniform courses with broken joints filled with mortar or grout.
- C. Concrete Paving: Monolithic concrete paving.
- D. Shotcrete (Air-Blown Mortar): Mixed fine aggregate and Portland cement pneumatically applied.
- E. Crib Wall: Earth-retaining structure constructed of interlocking, reinforced precast concrete crib-wall members; there are both "open-faced" or "closed-face" type structures.
- F. Riprap: Hard, durable, angular stone or rock placed to produce a well-graded mass of stone not less than 2-feet thick.

**1.3 REFERENCE STANDARDS**

- A. ASTM International(ASTM):
  - 1. ASTM C33 Standard Specification for Concrete Aggregates
  - 2. ASTM C90 Standard Specification for Loadbearing Concrete Masonry Units
  - 3. ASTM C91 Standard Specification for Masonry Cement
  - 4. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
  - 5. ASTM C150 Standard Specification for Portland Cement
  - 6. ASTM C568 Standard Specification for Limestone Dimension Stone
  - 7. ASTM C615 Standard Specification for Granite Dimension Stone
  - 8. ASTM C915 Standard Specification for Precast Reinforced Concrete Crib Wall Members
- B. State of California, Department of Transportation (Caltrans), Standard Specifications:
  - 1. Section 53 Shotcrete

SLOPE PROTECTION

Date: 07/12/2013  
FileName: Exhibit E Slope protect no change

31 35 00 – 1

Phase: (i.e. 90 % Submittal)  
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**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT F – CONSTRUCTION SPECIFICATIONS SECTION  
MODIFYING STANDARD SPECIFICATIONS SECTION**

CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No. XXX - Contract Name

**SECTION 31 35 00**

**SLOPE PROTECTION**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Slope paving.
- ~~B. Channel paving.~~
- ~~C. Crib walls.~~
- ~~D. Rock slope protection.~~

**1.2 SLOPE PROTECTION CLASSIFICATION**

- A. Block Paving: Precast concrete block units with mortar-filled or grouted joints.
- B. Stone Paving: Quarry stone laid in uniform courses with broken joints filled with mortar or grout.
- C. Concrete Paving: Monolithic concrete paving.
- D. Shotcrete (Air-Blown Mortar): Mixed fine aggregate and Portland cement pneumatically applied.
- ~~E. Crib Wall: Earth retaining structure constructed of interlocking, reinforced precast concrete crib wall members; there are both "open-faced" or "closed-face" type structures.~~
- ~~F. Riprap: Hard, durable, angular stone or rock placed to produce a well-graded mass of stone not less than 2-feet thick.~~

**1.3 REFERENCE STANDARDS**

- A. ASTM International (ASTM):
  - 1. ASTM C33 Standard Specification for Concrete Aggregates
  - 2. ASTM C90 Standard Specification for Loadbearing Concrete Masonry Units
  - 3. ASTM C91 Standard Specification for Masonry Cement
  - 4. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
  - 5. ASTM C150 Standard Specification for Portland Cement
  - 6. ASTM C568 Standard Specification for Limestone Dimension Stone
  - 7. ASTM C615 Standard Specification for Granite Dimension Stone
  - ~~8. ASTM C915 Standard Specification for Precast Reinforced Concrete Crib Wall Members~~
- B. State of California, Department of Transportation (Caltrans), Standard Specifications:
  - 1. Section 53 Shotcrete

SLOPE PROTECTION

Date: 07/12/2013  
FileName: Exhibit F Slope Protect w changes

31 35 00 – 1

Phase: (i.e. 90 % Submittal)  
SaveDate: 23-Jan-14 12:49 PM

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**CHSTP CONSTRUCTION SPECIFICATIONS PREPARATION MANUAL  
EXHIBIT G – CONSTRUCTION SPECIFICATIONS SECTION  
WITH NO CORRESPONDING STANDARD SPECIFICATIONS SECTION**

**CALIFORNIA HIGH-SPEED TRAIN PROJECT – CONSTRUCTION SPECIFICATIONS  
Contract No XXX - Contract Name  
NEW**

**SECTION 21 41 00**

**WATER STORAGE TANK DISINFECTION**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Water tank disinfection.
- B. Bacteriological testing

**1.2 REFERENCE STANDARDS**

- A. American Water Works Association (AWWA):
  - 1. AWWA C652 Disinfection of Water Storage Facilities

**1.3 SUBMITTALS**

- A. Procedure: Submit procedures description for disinfection.
- B. Field Quality Control Submittals: Submit test reports.

**1.4 QUALITY ASSURANCE**

- A. Perform work in accordance with AWWA C652.

**1.5 QUALITY ASSURANCE**

- A. Perform work in accordance with AWWA C652.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Perform work in accordance with AWWA C652.

**PART 2 - PRODUCTS**

**2.1 GENERAL**

- A. Disinfection agents: Provide materials conforming to AWWA requirements.
- B. Comply with standards of jurisdictional authorities pertaining to materials.

**PART 3 - EXECUTION**

**3.1 DISINFECTION**

- A. Perform disinfection.

**WATER STORAGE TANK DISINFECTION**

Date: 06/29/2012

21 41 00 – 1

Phase: End of FY 11-12

FileName: 33 13 13 water storage tanks disinfection.docx

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