



Greenbook Seminar

Spec Writing Do's & Don'ts

April 26, 2024

LEARNING OBJECTIVES:

- Promote the use and understanding of the “Greenbook”
- Highlight the necessity and importance of Special Provisions to the success of users’ projects
- Review elements of the “Greenbook Style Guide” that should be considered when preparing special provisions
- Review examples of Special Provisions that amend and supplement the “Greenbook” to further understanding
- Improve the consistency and uniformity of Special Provisions among the various users of the “Greenbook”

WHAT IS THE GREENBOOK:

- AASTHO format Standard Specification with general applicability to public works projects
- Promulgated by the Greenbook Committee of Public Works Standards, Inc. with input from:

APWA, Southern California AGC, ECA, SCCA, local agencies and contractors



HOW TO USE THE GREENBOOK:

- Use with Agency prepared Supplemental Specifications AND project specific Special Provisions
- Not all Agencies maintain Supplemental Specifications
Some Agencies only prepare project specific Special Provisions
- Impossible to have a successful contract only referring to the Greenbook. Each Contract has specific or unique requirements

SPECIAL PROVISIONS ARE NEEDED:

- Greenbook (inherently) requires Agency input:
 - *"Unless otherwise specified"*
 - *"... unless otherwise specified in the Special Provisions..."*
 - *"... unless otherwise specified in the Special Provisions or shown on the Plans..."*
- **3-12.3 Noise Control:** *"Noise generated from the Contractor's operations shall be controlled as specified in the Special Provisions."*
- **3-12.6.2 & 3-12.6.3 BMPs/SWPPP:** *"...as are specifically required by the Plans or Special Provisions."
"...conform to the requirements specified in the Special Provisions..."*

SPECIAL PROVISIONS ARE NEEDED:

- Agencies have specific preferences:
 - Terms and Conditions including:
 - 3-2 Self Performance
 - 3-10 Surveying
 - 3-12 Work Site Maintenance
 - 4-6 Trade Names
 - 5-4 Insurance
 - 6-1 Construction Schedule and Commencement of the Work
 - 6-9 Liquidated Damages
 - 7-3.4 Mobilization
 - 7-4.3 Markup

SPECIAL PROVISIONS ARE NEEDED:

- Agencies have specific preferences:
 - Sequence of Work
- Scheduling Constraints
- Local Hiring Preferences / Project Labor Agreement
- Specific materials or construction methods based on past project performance, environment, stakeholder input, or innovation

SPECIAL PROVISIONS ARE NEEDED:

- Greenbook does not contain every material/scope:
 - Guardrail
 - Bridge / Bridge Maintenance
 - Well Drilling
 - Buildings
 - Etc.

Note: No material is “Greenbook Approved”

The Greenbook Committee is not a standards setting organization such as ASTM or AASHTO



GOALS:

- Develop Special Provisions for each project that are:
 - Grammatically correct
 - Easy to understand
 - Structured in a sequential manner
 - Created without ambiguities or conflicting requirements

GOALS:

- Develop Special Provisions considering:
 - Fairness
 - Clearness
 - Completeness
 - Correctness
 - Economy

FAIRNESS:

- Transparency: Do not conceal content in Special Provisions and place all risks on Contractor
- Requirements must be realistic and represent what is *practical* to obtain
- Do not use indefinite phrases such as:
 - *"as the Engineer may direct"*
 - *"acceptable to the Engineer"*
 - *"as required by the Engineer"*

CLEARNESS:

- Language brief and to the point
- Be DIRECT with directions
- Simple words and terms of a single meaning
- Technical words in their exact meaning
- Use nouns, not pronouns
- Repeat words at the sacrifice of elegance
- Use same word, never synonyms
- Do not say more than necessary
(no reasoning or explanation)

COMPLETENESS:

- Specifications must be complete
- Not to be exhaustive
- PCC Section 1104:
“No local public entity, charter city, or charter county shall require a bidder to assume responsibility for the completeness and accuracy of architectural or engineering plans and specifications on public works projects, except on clearly designated design build projects.”

CORRECTNESS:

- Ensure subject matter is correct and meeting the latest standards/limits
- A Special Provision in use for years does not assure technical accuracy
- Check frequently for correctness, conflicts and omissions

ECONOMY:

- Every requirement has some direct or indirect cost
- Review Special Provisions frequently
- Eliminate non-essential requirements
- Permit use of new materials, methods, and equipment

MAJOR CHALLENGES:

- Lack Of Uniformity
 - Different Agencies/Designers/Consultants follow different Standard Specifications and use different formats.
- Changing Technology
 - Hard to keep current with the latest materials, equipment, processes, and systems.
- Proprietary (Single Source) Products/Processes
 - Compliance with Public Contract Code 3400 (Counties and General Law Cities)
- Method Specifications vs. Performance Specifications
 - Ensure there are no conflicts

OVERCOMING MAJOR CHALLENGES:

- Lack Of Uniformity
 - Be consistent. Use Greenbook and Special Provision Templates that follow type and format of Standard Specifications (See Greenbook Style Guide)
- Changing Technology
 - Greenbook on 3-year production cycle (2021 Edition latest)
 - Network with other Agencies and Industry partners

OVERCOMING MAJOR CHALLENGES:

- Proprietary (Single Source) Products/Processes
 - Make strong effort to maintain open specifications based on acceptance parameters
 - Perform due diligence into products and competition
- Method Specifications vs. Performance Specifications
 - One specification type per topic

FROM SECTION II:

- Specifications include either Method or Performance specifications
- Method specifications describe in detail the materials, workmanship, and processes the Contractor is to use during construction
- Performance specifications describe the desired result or quality of the final product to be achieved. Specify performance requirements for materials, equipment, or completed construction
- Greenbook *primarily* Method specification publication

FROM SECTION II:

- Greenbook written in *indicative mood*
- Use active voice wherever possible
- No *slang* or “*field*” words



FROM SECTION II:

- State construction requirements sequentially (and in logical order)
- Comply with *Laws, Statutes, and Regulations*, do not interpret them or incorporate into Special Provisions (*unless required by law*)
- Establish basis of acceptance or rejection

FROM SECTION III:

- Part 1 – General Provisions
- Part 2 – Construction Materials
- Part 3 – Construction Methods
- Part 4 – Existing Improvements
- Part 5 – Pipeline System Rehabilitation
- Part 6 – Temporary Traffic Control
- Part 7 – Street Lighting and Traffic Signal Systems
- Part 8 – Landscaping and Irrigation

FROM SECTION III:

- PART,
- SECTION,
- Subsections (3 levels),
- then alpha and numerical subparagraphs



FROM SECTION III:

- PART 2
- SECTION 201
- SUBSECTION 201-8
- Subsection 201-8.4
- Subsection 201-8.4.2
- Subsection 201-8.4.2.2
- Subsection 201-8.4.2.2, subparagraph a)

FROM SECTION III:

- Specification topics typically include the following:
 - General
 - Materials
 - Construction Methods (in order of operations)
 - Measurement
 - Basis of Payment

FROM SECTION III:

- **General**
 - Provide overall description of what is being specified therein
 - Include cross references to material requirements from Part 2 (include in general subsection of a Part 3 specification)
- Include **Measurement** and **Payment** clauses for all Bid items
- Utilize and follow Greenbook format to the full-extent possible

FROM SECTION III:

- Lists are very important
- Make sure they are comprehensive
(if you do not specify do not expect to receive)
- For readability, indent lists
- Use the same part of speech (i.e. nouns) in lists

FROM SECTION V:

- Always state requirements in future tense using the emphatic form **shall**
- Weaker verbs *will*, *should*, and *may* do not express a requirement
- *May* grants permission
- *Should* states a preference

ARE SHALL AND MUST SYNONYMOUS?

- Federal Plain Language Guidelines
must is mandatory; *shall* has interpretations
- Caltrans uses *shall* (33 times); *must* (7,298 times)
- Greenbook uses *shall*
- Acceptable to use *shall* in Special Provisions provided it does not create a false imperative
- *shall* = “has a duty to” *shall not* = “has a duty not to”

FROM SECTION V:

- Don't place requirements upon the "Agency" or the "Engineer"
- Specify:
 - What the Agency or the Engineer **will** do
 - When the Agency or the Engineer **will** do it
 - What, if anything, the Contractor **shall** do before, during, or after
- In Short,
 - The Contractor **shall**
 - The Agency **will**

FROM SECTION V:

- Avoid ***should, can, and could***
 - Different interpretation by different parties
- Only use ***may*** when intended for discretionary judgement on the part of the Engineer.
- Do not explain rationale for requirements or include any background information. Be direct.

FROM SECTION V:

- **Do not use** the following Phrases:
 - “... *as directed by the Engineer*”
 - “... *as determined by the Engineer*”
 - “... *unless otherwise directed by the Engineer*”
 - “... *as allowed,*” “*as appropriate,*” “*as indicated,*”
 - “*as required,*” and “*as necessary...*”
- Not fair or reasonable to expect Bidder to know what the Engineer would be asking for after award of the Contract.

FROM SECTION V:

- **Watch Out** for prepositional phrases!
 - Run the risk of creating syntactic ambiguity

"The O&M Manuals shall be prepared for use by the Agency forces."

Who is preparing the manuals?

The Contractor or the Agency forces?

FROM SECTION V:

- Modifiers belong next to the word it modifies
 - Can be attached to one phrase and not all intended

"The flange shall be fastened by nuts and bolts of stainless steel."

Corrected:

"The flange shall be fastened by stainless steel nuts and stainless steel bolts."

FROM SECTION V:

- Additional phrases to avoid:
 - “... *in a workmanlike manner*”
 - “*best quality, high quality, commercial quality, etc.*”
- Meaning is subjective and open to interpretation

FROM SECTION V:

- When making a cross-reference:
 - Only include the number of the subsection
 - The words “*section*” “*subsection*” and “*paragraph*” are not to be used

Just write “... *item will be paid in accordance with 7-3.*”



FROM SECTION V:

- Use defined terms and simple words.

Instead of:

Owner

Owner's Representative, Inspector, etc.

Drawings

Project/job

Initiate

Utilize

Stated

Terminate

Use:

= **Agency**

= **Engineer**

= **Plans**

= **Work**

= **begin**

= **use**

= **specified**

= **end**

FROM SECTION V:

- Basic rule for Specifications, **only say things once**
- No need to repeat items in Specifications already covered in another part

FROM SECTION V:

- **2-1, "WORK TO BE DONE"**

"...Contractor shall perform all work necessary to complete the Contract..."

"...the Contractor shall furnish all materials, equipment, tools, labor, and incidentals necessary to complete the Work."

No need to repeat similar language in various general subsections of Special Provision

FROM SECTION V:

- **4-1, "GENERAL"**

*"Materials, parts, and equipment furnished by the Contractor for the Work shall be **new**, free of defects, and conform to the requirements in the Contract Documents."*

No need to repeat similar phrases in the Special Provisions for the various items of work

FROM SECTION VI:

- “*Conform to*” applies to materials or method specifications
- “*In accordance with*” applies to procedural specifications

Crushed rock used in the Work shall conform to 200-1.2

The Contractor shall locate utilities in accordance with 402-1

REMINDERS:

- **Do not repeat** Greenbook specifications in the Special Provisions, even if it's the "reminder" approach
- Address Agency-specific requirements; in particular, in Part 1
- Address the unique, work-specific requirements; in particular, in Parts 2 to 8
- "**Delete**" or "**replace**" entire paragraphs or entire sentences

SECTION G - GENERAL PROVISIONS

The following Special Provisions supplement and amend the Standard Specifications for Public Works Construction, 2021 Edition. As a reference convenience, these Special Provisions have been arranged into a format that parallels the Standard Specifications.

Statement on the signature page indicating that Special Provisions follow the Standard Specifications for Public Works Construction



SECTION 3 - CONTROL OF THE WORK

3-2 SELF-PERFORMANCE. (Page 14 of the SSPWC)

Replace the entire subsection with the following:

The Contractor shall perform, with its own organization, Contract work amounting to at least 50 percent of the Contract Price. Where an entire Bid item is subcontracted, the value of work subcontracted will be based on the Contract Unit Price. When a portion of a Bid item is subcontracted, the value of work subcontracted will be based on the estimated percentage of the Contract Unit Price. This will be determined from information submitted by the Contractor, and subject to approval by the Engineer.

Delete or **replace** entire paragraphs or entire sentences

5-4 INSURANCE.

5-4.1 General. (Page 25 of the SSPWC)

Add the following as the second sentence of the first paragraph:

Such insurance shall be primary to and not contributing with any other insurance or self-insurance programs maintained by the Agency.

Add the following to the third paragraph:

The Contractor shall provide renewal certificates to the Agency not less than 10 Days prior to the Contractor's policy expiration date(s). The Agency reserves the right to obtain complete, certified copies of any required Contractor and/or Subcontractor policies at any time.

Add the following after the fifth paragraph:

The Contractor may use a combination of primary and excess insurance policies, which provide coverage as broad as the underlying primary policy(ies), to satisfy the insurance requirements.

"Delete" or **"replace"** entire paragraphs or entire sentences



ADDING NEW PARTS, SECTIONS, OR SUBSECTIONS:

- Do not include special provisions for materials or methods of construction for which the Greenbook works satisfactorily
- Do not use notes on the Plans as a substitute for Special Provisions
 - In the order of precedence of the Contract Documents, the notes are interpreted as part of the Plans
 - Special Provisions take precedence over Plans

Add the following:

SECTION 218 - IMPORTED FILL MATERIAL

218-1 GENERAL. The Contractor shall implement the following sampling and analysis requirements prior to importing fill material (imported borrow, structure backfill, and imported backfill) to the Project site.

218-2 SAMPLING FREQUENCY AND LOCATION. The Contractor shall collect discrete soil samples that are representative of the material to be imported. The Contractor shall establish a grid system over the potential borrow site or stockpile. The Contractor shall collect and analyze one soil sample from each grid. The grid and soil sampling frequency shall be as follows:

OK to add new SECTIONS or SUBSECTIONS



Add the following:

**PART 9
MODIFIED PAVEMENTS,
PAVEMENT PRESERVATION, AND
PAVEMENT RECYCLING PROCESSES**

SECTION 903 - RECYCLED ASPHALT CONCRETE

**903-1 COLD-IN-PLACE RECYCLED ASPHALT CONCRETE
PAVEMENT (CIRACP).**

903-1.1 General. CIRACP shall consist of 100 percent reclaimed asphalt pavement (RAP), emulsified recycling agent, and other additives uniformly mixed, spread, compacted, finished, and cured in such a manner that the in-place mixture forms a dense, uniform mass conforming to the lines, grades, and cross sections shown on the Plans.

OK to add new PART for Work not covered by Greenbook



EXAMPLE FROM ANOTHER AGENCY:

- Inconsistent in style and format
- Technical Provisions made reference to Caltrans and Greenbook
- Format similar but not consistent with CSI format

Example

GENERAL REQUIREMENTS

The contract requires completion of all work in accordance with these special provisions and, where applicable, the Caltrans Standard Specifications, latest edition; and the Caltrans Standard Plans, latest editions, thereof.

Furnishing, construction and installing traffic signal, concrete improvements, pavement improvements, storm drain improvements, street lights, signing and striping, landscape and irrigation, banner poles, shall conform to the State Standard Specifications, and State Standard Plans latest edition, and these Special Provisions. The State Standard Specifications shall hereinafter be referred to as the SSS and the State Standard Plans will hereinafter be referred to as the SSP.

A. Reference Specifications and Standard Plans

Except as modified herein, materials and installation shall conform to the following Standard Plans and Specifications, latest edition.

1. City Standards and Details
2. American Public Works Association (APWA) Standard Plans
3. Standard Specifications for Public Works Construction
4. CALTRANS Standard Plans and Specifications
5. California Vehicle Code
6. Work Area Traffic Control Handbook (WATCH)
7. California Manual of Uniform Traffic Control Devices (CA-MUTCD)



Example

SECTION 02515 - CURB AND GUTTER, SIDEWALK, CURB RAMP, MEDIAN

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Sidewalk
- B. Curb & Gutter

1.2 REFERENCES

- A. Caltrans Standard Specifications.
- B. Standard Plans for Public Works Construction.
- C. City Standard Drawings and Specifications.

Technical Specification in a format similar to CSI

Makes reference to Caltrans SSP without referencing or amending applicable section (Division VIII, Section 73)

Example

2.1 CONCRETE CURBS/GUTTERS, SIDEWALKS, DRIVEWAYS AND CURB RAMPS

- A. All concrete shall conform to Section 303-5 of the Standard Specifications for Public Works Construction and City Standard Details unless otherwise specified herein. In addition, the Concrete mix shall have 1" maximum combined aggregate grading.
- B. Portland Cement Concrete (P.C.C.) shall conform to Section 20 of the Standard Drawings and Specifications and as modified by this Specification.
- C. Portland cement: ASTM C150 Type I or II. 8-sacks cement minimum per cubic yard with High Early. (No lampblack is needed for concrete to be covered with asphalt.)
- D. Aggregate:
 - 1. ASTM C33 - clean, hard, durable, uncontaminated, washed, graded, cleaned and screened. Crusher run or bank run gravel will not be permitted.
 - 2. $\frac{3}{4}$ " maximum combined aggregate grading.

Refers to Greenbook and makes additional changes
What is acceptable?



Example

- 2.4 AGGREGATE BASE - Aggregate Base shall be Class II and conform to the City Standard Drawings and Standard Specifications for Public Works Construction.

Continuation of Technical Specifications for curb and gutter, sidewalk, and curb ramps

Nowhere in the Greenbook will you find “Class II Aggregate Base”

Example

Construct 4” Thick PCC Sidewalk

This Bid Item shall include all labor, material and equipment required to construct concrete sidewalk for the project. Concrete sidewalk shall be a minimum 4” thick per the Standard Plans for Public Works Construction. Concrete sidewalk shall be constructed to the line, grades and designs shown on the plans or as ordered by the Engineer. Existing surfaces to be joined shall be sawcut on a neat, straight line at the join location. The Contractor shall remove and replace any new concrete work with graffiti markings and blemishes at no additional cost to the City.

Any work in private properties should be coordinated in writing with the owner and it is Contractor’s responsibility to obtain owner’s written approval for removal prior to construction. Retaining curb shall be constructed at back of walk as shown on plans or where needed and shall be paid under separate bid item.

Payment for Construction of Concrete Sidewalk, shall be paid for at the contract unit price per Square Foot (SF) and shall include full compensation for furnishing all labor, materials, tools, equipment, forming, pouring, finishing, hauling, properly disposing, and incidentals for doing all the work involved complete in place and no additional compensation will be allowed therefor.

*Separate document, not referenced anywhere else
Expanded language and measurement and payment clause
Why not included in Technical Provisions?*



Example

- Work sufficiently covered in the Greenbook in terms of materials and construction methods used
- Adding Agency specific requirements accomplished by simple amendment or modification to 201-1 and 303-5

303-5.9 Measurement and Payment. (Page 361 of the SSPWC)

Add the following:

Payment for the placement and removal of forms (including excavation), backfilling, grading, shaping, preparation of subgrade, root pruning not requiring the use of root control barriers, and other incidental costs connected with the construction of walk, curb ramps, cross gutters, and driveways shall be considered as included in the Contract Unit Price for the applicable Bid item.

Payment for the construction of retaining curbs integral with curb ramps, if so required by the curb ramp case and type specified on the Plans, shall be considered as included in the Contract Unit Price for the applicable Bid item for curb ramps.



INCORPORATING OTHER SPECIFICATIONS:

- Different standard specifications or specification formats should not be used within the same Contract Documents
- May need to incorporate Caltrans or CSI format specifications
- When using Part 1 of Greenbook, be careful with Division 0 and Division 1 of CSI format specifications
Make sure Specifications address measurement and payment and not refer to Division 1

SECTION GT - GUARDRAIL AND TERMINAL END SECTIONS

The following Special Provisions supplement the Standard Specifications for Public Works Construction, 2021 Edition. These Special Provisions reference and replace Sections 83-1, 83-2, and 83-11 of the Caltrans Standard Specifications, 2018 edition.

Statement on the signature page indicating that Special Provisions follow the Caltrans Standard Specifications



83-2.04B *In-Line Terminal Systems*

83-2.04B(1) *General.*

Section 83-2.04B includes specifications for in-line terminal systems.

The specific in-line terminal system to be furnished and installed at each location shall be as shown on the Plans.

83-2.04B(2) *Submittals*

Submit a Certificate of Compliance conforming to 4-1.5 of the SSPWC prior to installation.

83-2.04B(3) *Materials.*

In-line terminal systems must be one of the following as shown on the Plans:

TYPE MSKT-MGS FOR WOOD OR STEEL POSTS (TL-3) – Type MSKT terminal system manufactured by Road Systems, Inc., and must include the connection components. The SKT terminal system can be obtained from Road Systems, Inc., (RSI), 3616 Howard County Airport Road, Big Spring, TX 79720, telephone (432) 263-2435.

Sample language in Special Provisions

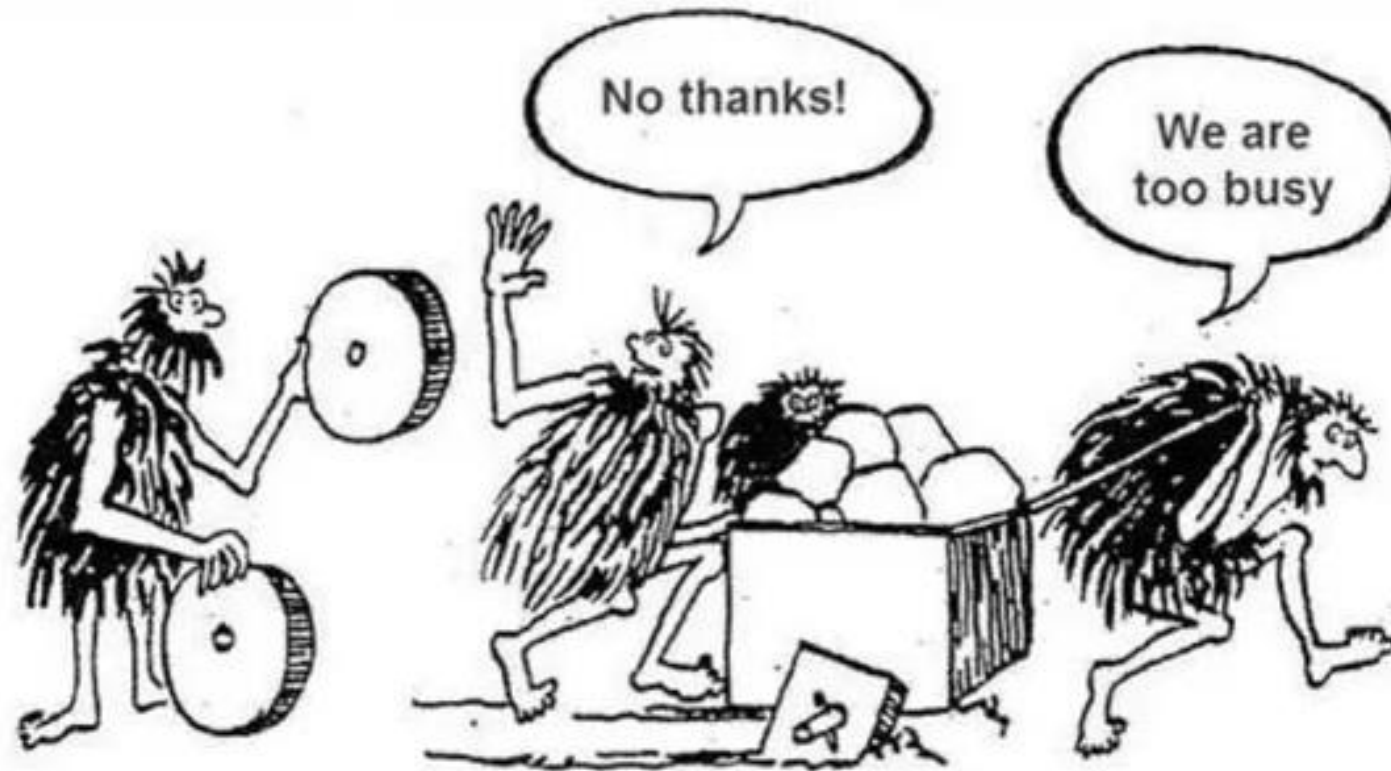


SUPPLIER SPECIFICATIONS:

- **Use Caution** when incorporating
- Requires Due Diligence of Agency/Designer
- Possible to (unintentionally) conflict with PCC 3400

RECOMMENDATIONS:

- Use Standard Specification format that fits routine work
- Prepare Supplemental Specifications and Special Provisions in the style of the Standard Specification used
- Establish core group to maintain Special Provisions and review work prepared by others for consistency and uniformity
- Remember Specifications need to be complementary to the Plans and Bid items



- **RESOURCES:**

- Greenbook Style Guide:

<http://www.greenbookspecs.org/documents/StyleGuide072710.pdf>

- Special Provisions Guide:

<http://www.greenbookspecs.org/documents/SpecialProvisions.zip>

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