National Plain Language Peer to Peer Conference
June 17 – 19, 2008

Hosted and Funded by
Federal Highway Administration
and
California Department of Transportation (Caltrans)

Final Report

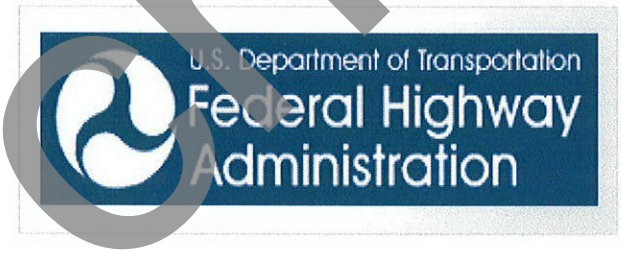


Table of Contents

Summary

Construction projects that are advertised, bid, and administered using clear, correct, and easy-to-understand documents will in the experience and expectations of the Conference participants:

- Increase participation of industry in bidding state Department of Transportation (DOT) projects;
- Reduce errors in estimating the cost of state DOT projects;
- Reduce the likelihood of change orders and claims during construction;
- Facilitate the resolution of those change orders and claims that do occur; and
- Reduce the likelihood of errors in the inspection and administration of a construction contract.

It will probably never be possible to measure or quantify the dollar-value benefit of converting construction documents to plain language – active voice (PL). Conference participants agree that improving the clarity and quality of the construction documents will reduce construction and delivery costs. The federal government and many state governments have executive orders or legislative mandates to implement PL conversions. Some states are voluntarily implementing PL.

The initial PL effort is usually focused on converting the standard specifications to PL followed by conversion of special provisions, standard plans, bid books, policy manuals, and technical guides. PL principles can be applied to non-standard project specific specifications.

Representatives from ten state DOTs (California, Florida, Idaho, Iowa, Minnesota, Nebraska, New York, Oregon, Washington, and Wisconsin) along with FHWA representatives from the California Division, Resource Center and Headquarters in Washington, DC gathered for a three-day Peer to Peer Conference held in Sacramento, California to share ideas, ask questions, raise concerns, share "lessons learned" and develop best practices regarding the conversion of construction documents to PL.

This conference was jointly planned and funded by the FHWA and the State of California, Department of Transportation, Construction Division (Caltrans). The Conference was organized by Caltrans. The Conference was facilitated by Navigant Consulting, Inc.

This report summarizes the "lessons learned" and best practices resulting from participant discussion and consensus of this three-day conference.

Objective of the Conference

The objective of this conference is to share ideas, answer questions, alleviate concerns, share lessons learned, discuss continuous quality improvement, and develop best practices for PL. FHWA and Caltrans developed the agenda to:

- Define Plain Language (PL);
- Quantify the extent and applicability of PL conversion to construction contract specifications;
- Determine the status of PL conversion;
- Perfect the process for converting documents to PL;
- Learn how to build consensus and acceptance of PL internally and with industry, local agencies, and other stakeholders;
- Assess the impact PL has on bid books, project advertising, and policy development;
- Understand PL implementation;
- Identify the best ways to train users of PL;
- Assess the risk of PL conversion to project delivery;
- Develop methods to implement continuous quality improvement; and
- Implement best practices and lessons learned of DOTs that have converted to or are in the process of converting to PL.

The conference agenda is in Appendix A. Items on the agenda but not addressed in this report are in Appendix B.

Background – Why Convert to Plain Language?

Many DOTs have, are, or are thinking about converting part or all of their construction documents to PL. Different states are motivated by different factors including:

- Requests from industry for "user-friendly" documents;
- Executive orders or directives;
- Legislative mandates;
- The recognition that the quality of construction documents is a risk to delivery of construction projects; and
- The desire to make contract documents more clear, concise, and easier to use, resulting in fewer disputes and lower costs.

Preparing for the Conference

FHWA and Caltrans jointly developed a Cooperative Work Plan and agenda for the Conference. A general invitation was sent to all 52 state and territory DOTs. A questionnaire was sent out to participants prior to the Conference. Four states responded to the Questionnaire. These responses are collated and reported in Appendix B.

Participants

The following representatives from ten DOTs participated in this Conference:

- Mike Kissel – California DOT
- Jim Cotey – California DOT
- Jill Sewell – California DOT
- Greg Edwards – California DOT
- Sey Hossnieh – California DOT
- Robert Schott – California DOT
- Robin Leonard – California DOT
- Tim Sobelman – California DOT
- Greg Balzer – California DOT
- Perry Mayer – California DOT
- Don Roberts – Florida DOT
- Frances Hood – Idaho DOT
- Tom Reis – Iowa DOT
- Tim Quinn – Minnesota DOT
- Mike Sklenar – Nebraska DOT
- Pratip Lahiri – New York DOT
- Dale Deatherage – Oregon DOT
- Craig McDaniel – Washington DOT
- David Mariman – Washington DOT
- Michael Hall – Wisconsin DOT

FHWA representatives that participated in the conference are:

- Ken Jacoby, FHWA – HQ's, Washington, DC
- Jeff Lewis, FHWA – Resource Center, California
- Bren George – California Division
- Caltrans chief engineer Richard D. Land and construction division chief Mark Leja welcomed the participants to the Conference.

The Conference was facilitated and documented by John Sween and David Halligan from Navigant Consulting Incorporated. This report was prepared by John Sween

and David Halligan of Navigant Consulting Incorporated and edited by Michael Kissel of Caltrans.

Participant contact information is in Appendix C.

Key Observations and Best Practices Discussed

1. *Defining Plain Language – Active Voice (PL)*

   PL means documents written and formatted such that they are easy to read, understand and utilize. Best practices generally include:

   - Use of the active voice in lieu of the passive voice;
   - Use of the imperative mode;
   - Use of short, simple sentences rather than long, conditional statements;
   - Use of lists whenever practical;
   - Avoiding the use of technical jargon and abbreviations;
   - Avoiding repetition;
   - Use of consistent style and format; and
   - Use of technically correct specifications.

   There are no universally accepted rules and guidelines for PL. Different DOTs have different definitions of PL. Several PL examples are in Appendices D, E and F. Additional guidance is found at www.dotspecs.fhwa.gov and www.plainlanguage.gov.

   A best practice is to develop and use a PL Style Guide that defines PL for your DOT. Use a style guide to ensure specifications are consistently written in PL. An example Style Guide is in Appendix E.

   Your Style Guide ensures that PL specifications developed by delegated function units are consistently written, especially non-standard, project-specific specifications. Use a style guide to ensure the consistent development of PL specifications, especially in decentralized DOTs project delivery units.

   When converting to PL, remember that your primary audience is the construction industry, your construction staff, and the responsive bidder. Your specifications are part of the construction contract that must be followed by the Contractor and DOT.

2. *Status of Plain Language Conversion*

   As expected, the status of PL conversion varies from one state to the next. Some states have already converted significant portions of their specifications

to PL. Other states are in the middle of the process, while a number of states are contemplating the change.

One of the major differences is between those states implementing a stand-alone PL conversion as compared to those states that are converting to PL while at the same time updating technical content. In the ideal world, only a conversion to PL would be necessary. However, it makes no sense to convert an obsolete, outdated or incorrect specification to PL. In fact, conversion to PL is an opportunity to correct and update technical content, and vice versa.

The PL conversions that are underway or have been completed all started with conversion of the Standard Specification to PL, in particular, with conversion of what are commonly called either Division 1 or Division 100 requirements. Next in line for PL conversion are the Technical Specifications and Materials Specifications (commonly called Division 2 and Division 3, or Division 200 and Division 300, respectively). Construction Manuals and Design Manuals are typically the next priority. One state is moving toward replacing its construction manual with an interactive website. However, this may be problematic for remote users or users working out of their trucks without ready access to an office.

The Contract Terms and Conditions themselves, as well as bid forms, which typically must meet certain legal sufficiency requirements, are generally outside the scope of a PL conversion.

Other documents that are candidates for PL conversion include standard drawings and QA/QC manuals.

States that had completed all or part of a PL conversion all remarked on the significant investment of time and resources required. Converting Division 1 requirements to PL takes between 18 months and 2 to 3 years or more. In practice, the conversion to PL is an ongoing initiative of continuous quality improvement as specifications are corrected, changed, and updated over time. A similar time frame can be expected for converting construction manuals or other manuals to PL. The conversion process is not simple and takes time.

3. *Converting Specifications to Plain Language*

Key observations and best practices for converting Specifications to PL include:

- Obtain full commitment and support from the highest administrative and executive levels within your DOT. Conversion to PL requires a significant commitment of time and resources, so a long-term commitment by the organization is required to achieve success;

- Obtain early involvement and support of industry. As the key end-user of the specifications, industry must be brought in early in the process and remain engaged. Industry must buy into the process and to the end result. Include industry representation in your working groups and specifications review committees;

- Identify who will be responsible for converting a section to PL – will it be a specifications engineer, a consultant, or a designer;

- Identify technical leads within the state DOT responsible for the technical content of each section;

- If possible, develop a work plan and schedule for converting each section;

- Create liaison committees with specific industry groups to assist in the PL conversion, especially if you are changing technical content, and include all relevant stakeholders within your organization on these committees;

- Create review committees involving all stakeholders (for example, your legal department, materials suppliers, and FHWA). Complete this process before submitting a converted section for final approval;

- Develop a PL conversion communication / out-reach program. Communicate within your organization, to industry and to other stakeholders, including local agencies that use your specifications, what you are going to do and when you are going to do it. You don't want to get too far down the road with something that ultimately is unacceptable or problematic;

- Develop or adopt a PL Style Guide;

- Develop and provide templates and examples for specification writers to follow;

- Implement training in the use of the PL Style Guide and how to write PL specifications;

- Begin each specification section with a description that tells the reader what is included in that section so the reader will know whether or not he or she is in the right section or not;

- As you make changes, be sure you "track" them – maintain version control;

- Specifications should not include or reiterate permit requirements;
- Specifications should not include or reiterate government code requirements unless the code specifically requires it;
- Special or unique specification items should be designated through a special coding structure;
- Specifications should not reference design or construction manuals;
- Keep local FHWA representative involved and apprised of progress in converting to PL and otherwise modifying your standard specifications; and
- If PL conversion results in an unintentional change or ambiguity to the specifications on a specific project, be prepared to issue change orders as a remedy.

You should convert your Standard Specifications to PL as a whole package and then implement them as a whole package. However, individual technical sections can be revised and implemented as they are converted.

You may maintain the AASHTO specification format when converting transportation-related specifications to PL. For building construction, the Construction Specifications Institute (CSI) format is more appropriate. Building work and roadwork projects should be treated as different projects under different specifications.

There is no consensus on whether materials specifications should be included as subsections under "Construction" or whether a wholly separate "Materials" section would be better. Likewise, there is no consensus as to whether or not testing and inspection should be included as separate subsections under "Construction" or whether a wholly separate "Testing and Inspections" section or a wholly separate QA/QC document would be a better approach.

If only a conversion to PL is being implemented, a specifications engineer or consultant typically makes the conversion. Technical leads and higher-level committees then review and approve the converted specification prior to implementation. Industry is typically not included in the PL conversion but in the review and approval process. However, if the conversion to PL is being performed in tandem with technical revisions, technical leads and industry should be involved from the very beginning of the conversion process.

All but one state has at least one or more individuals tasked with writing, or at least providing QA/QC over the specification writing process. In general, technical leads are responsible for technical content with a specification engineer responsible for ensuring PL consistency and format.

To various degrees, states use consultants to assist in the PL conversion. Consultants may be used to prepare Style Guides, perform the actual conversion of documents to PL, and to train DOT personnel in converting construction documents to PL. To be effective, a consultant must understands the "custom and culture" of the particular state DOT. In deciding to use a consultant, you should first convene all stakeholders to define how a consultant can best serve your needs.

4. *Advertising and Bidding*

There is no reason to modify existing contract advertising or bidding procedures and policies as long as industry is involved in the PL conversion and fully apprised of any technical changes far in advance. Best practices when advertising and bidding PL specifications include:

- Publishing the converted specifications far in advance of using them in a contract being advertised for bid;
- When publishing converted specifications, provide a Conversion Guide that indicates the following:
  - Which portions are converted to PL with no change in technical requirements;
  - Which portions are converted to PL and include a change in technical requirements; or
  - Which portions are entirely new to the specifications.
- Publish specification updates on a regular, well-defined schedule unless emergency situations dictate otherwise. Some states publish updates several times per year, others on an annual or less frequent basis.

Most states are moving to or have already made the standard specifications available on-line. Some states expressed concern over version control and how to resolve a conflict between an electronic version and a printed version. The consensus is that the printed version in effect at the time of advertisement is the controlling document. The use of a regular schedule for publishing updates greatly facilitates version control.

Most states are moving to or have already moved to electronic bidding. States are moving towards electronic publication of bidder inquiries and contract addenda on line, as well as minutes from any mandatory pre-bid meetings.

Bidding and estimating may be affected if the PL conversion included re-definition of bid (pay) items. A redefinition of bid (pay) items is a significant change that must be done carefully as it will affect how a contractor bids a job and how it is paid. It will also affect how historical cost data are used by both

contractors and state DOTs. If bid (pay) items are re-defined, a conversion table should be provided. Unique bid (pay) items should be clearly indicated by a coding structure. It is also important to clearly distinguish between lump-sum payment items and final pay quantity items.

5. *Implementation Steps*

The best practices for implementation are:

- Build widespread support for PL conversion within your organization;
- Develop a plan and schedule for converting each section;
- Be flexible, realizing that resource constraints and other priorities may delay conversion of any given section; and
- Once a specification section is ready for use, consider a pilot program before implementing a section across all projects state-wide.

There is no consensus on the benefit of running a pilot program. Some states conducted pilot programs, others did not. In making a decision on a pilot program, consider the following points:

- If industry and stakeholders have been involved in the PL conversion and specification process, there may be no benefit to a pilot program;
- You may decide to run a pilot program on a select subset of projects. However, note that it may take several years before all parts of any given specification section are truly tested in the field. Even after a successful pilot program, latent issues may emerge;
- You may want to use old specifications and PL specifications side-by-side to emphasize differences or the lack of differences; and
- You should use a "Conversion Guide" (see "*Advertising and Bidding*" above).

Industry is generally supportive of PL conversion, but becomes increasingly concerned as technical changes and policy changes are wrapped into a PL conversion. Also, while it may make sense for you to make technical improvements to specifications while converting to them to PL, policy changes should be part of a separate process.

6. *Training*

Existing training schedules and formats can easily accommodate training in PL and PL specification conversion. With regard to specific PL training, the best approach is to have a program where key individuals are trained on PL and these trained individuals then lead workshops and training sessions throughout your state. Several states endorse the NHI training course "Principles of Writing Highway Construction Specifications."

Training on PL and PL conversion should be open and made available to industry and consultants, as well as to the local agencies that use your state DOT specifications.

There is consensus that web-based training would be quite beneficial, but as yet, none exists. In any event, you would need to modify the training content to be consistent with the Style Guide adopted by your state.

FHWA set forth that the Transportation Curriculum Coordination Council (TCCC) could be used to develop standards for PL training.

7. *Program Delivery Impacts*

The major risks to delivery of PL specifications are:

- Lack of a PL conversion strategy and plan;
- Resource (staffing) constraints;
- Scope creep;
- Lack of industry involvement; and
- Lack of support from highest executive and administrative levels within the state DOT.

The states that have implemented PL specifications noted an initial apprehensiveness by industry, as would be expected of anything new that has the potential to affect a contractor's profitability. However, because of industry involvement throughout the conversion process, the transition did not have any discernable negative affects on project delivery. It is too early to document the effect of PL documents on claims and the resolution of claims.

8. *Maintaining PL Specifications*

Various formal and informal processes can be used by stakeholders to propose changes to specifications. One state requires a written formal submission of proposals to change the specifications using a standard form, another allows for proposed changes to be made more informally by phone or email. Both states maintain a database or record of the proposed changes and evaluate

them based on their merits and overall conformance to policy. If a change has merit and deemed worth making, the best practice is to revise the specification at that time but not immediately issue it for use. Instead, you should issue new versions in batches on a pre-determined schedule, for example, once every six months or once a year, unless an emergency situation exists.

Various methods of conducting post-project audits and developing formal "lessons learned" exist. Some states require the project participants to prepare post-project reviews and reports. One state uses a committee approach where several individuals not directly involved with the project review the work on a quarterly basis and, at the end of the project, prepare a close-out report. Another state maintains a formal online lessons learned database. However, it may be difficult to distinguish between opinions, one-time errors, or truly a "lesson learned" with universal relevance. Other states distribute lessons learned through regular meetings or written memoranda. However, regardless of how lessons learned were documented, the problem of how to incorporate lessons learned into future projects still remains, and this is a problem that is not yet wholly solved.

9. Additional Discussions

Although not part of the formal agenda, the conference participants also discussed the following topics:

- Digital Terrain Maps (DTM). The participants discussed if and how DTM be made available to bidders and/or successful bidders, although no consensus emerged.

- Pre-bid Meetings. Pre-bid meetings have advantages. Such meetings provide the opportunity for potential bidders to learn more about the project from the design team, to visit the site, and to ask questions. The disadvantage of mandatory pre-bid meetings is that not all interested bidders may be able to participate.

- Design-Build Authority. High-value, complex projects may benefit from the DB project delivery method, but, in general, the authority to do so is limited.

- California's Time-Related Overhead (TRO) specification. Several states expressed interest in California's TRO specifications. The TRO specification requires bidders to set forth a daily overhead rate in the bid, which simplifies the administration of changes that extend the contract duration.

Appendix A

Conference Agenda

Agenda

National Plain Language Peer to Peer Conference 2008
Hosted by the Federal Highway Administration and Caltrans
June 17, 18, and 19, 2008
Sacramento, Ca. USA 95814

June 17	Topic	Presentor	Duration
8:30 am	Welcome	Rick Land	10
8:40 am	Purpose of the conference	Mike Kissel	10
8:50 am	Introductions 1. What do you expect to achieve at this conference?	Jeff Lewis	10
9:00 am	Defining plain language (PL) 1. Language 2. Style	Greg Edwards	30
9:30 am	Defining plain language – State by State	All	60
10:30 am	Break	All	15
10:45 am	Status of Plain Language Conversion – State by State	All	60
11:45 am	Lunch – on your own	All	60
1:00 pm	Contract Specification Discussion 1. What was the reason for starting the PL project? 2. Do you consider specifications part of design or construction? 3. Did you consider Construction Specification Institute format? 4. For materials, how did you split out general from specific requirements? 5. Do you include building work with road work or use separate contracts?	All	150
3:30 pm	Break	All	15
3:45 pm	Continue Specification discussion 6. What is your spec development process? 7. How many specification engineers do you have? 8. What is your relationship between technical experts? 9. Did you pilot your PL conversion	All	60
4:45 pm	Adjourn		

Agenda

National Plain Language Peer to Peer Conference 2008
Hosted by the Federal Highway Administration and Caltrans
June 17, 18, and 19, 2008
Sacramento, Ca. USA 95814

June 18	Topic	Presentor	Duration
8:30 am	Bid Book Discussion 1. What are the main concerns regarding bidding? 2. What is your process for bid analysis? 3. Did you pilot your bid book conversion?	All	60
9:30 am	Break	All	15
9:45 am	Advertising Discussion 1. What advertising tactics did you employ? 2. How did PL affect your advertising schedule? 3. How much time is allowed for bidding? 4. Do you use electronic contract documents? 5. Do you use electronic bidding?	All	60
10:45 am	Policy Development 1. How was policy development integrated into specification development? 2. Were you able to convert your existing policy documents or did you have to start over?	All	60
11:45 am	Lunch – on your own	All	60
1:00 pm	Policy Development Continued 6. How did you assure all the PL provisions were covered by your policy development? 7. What policy changes were required? 8. How long did it take to convert your policies and procedures?		60
2:00 pm	Industry and Training 1. How did industry react to your PL conversion? 2. How was industry input obtained? 3. How has industry responded to implementation? 4. Do your contractors work mostly in your state or nationally? 5. What did you do to get industry to support your PL conversion?	All	60
3:00 pm	Break	All	15
3:15 pm	Implementation Steps 1. How do you provide update information? 2. Did you publish your Standards fully revised or by transition? 3. How do you update your standards? 4. How do you track version control for your standards?	All	60
4:15 pm	Adjourn		

Agenda

National Plain Language Peer to Peer Conference 2008
Hosted by the Federal Highway Administration and Caltrans
June 17, 18, and 19, 2008
Sacramento, Ca. USA 95814

June 19	Topic	Presentor	Duration
8:30 am	Training 1. How did you train staff? 2. Design, Construction, Specifications 3. How much training did you provide to your staff? 4. What kind of training did you provide to your staff? 5. Did you provide training for local agencies? 6. Did you provide training for consultants? 7. Did you provide training for contractors?	All	60
9:30 am	Break	All	15
9:45 am	Program Delivery Impacts 1. From inception to publication, how long did it take to create your PL construction contract documents? 2. How long did it take to convert the associated manuals? 3. Do you have a schedule for publication of your standards? 4. What was your risk to delivery? 5. Did implementation delay delivery of any projects? 6. Did implementation have an impact on the final quality of the constructed product? 7. Did implementation result in an increase of contract claims or arbitration filings?	All	135
12:00 pm	Lunch – on your own	All	60
1:00 pm	Continuous Quality Improvement 1. What process will you use to update your: i. Contract documents? ii. Construction manuals? iii. Design Manuals? 2. What lessons will you use for future projects? 3. How do you track lessons learned? 4. How do you communicate lessons learned to staff?	All	60
2:00 pm	General Lessons Learned 1. What worked well? 2. What needed improvement? 3. Did going through the PL project result change any processes? a. Design? b. Construction? c. Specifications?	All	60
3:00 pm	Adjourn		

Appendix B

Pre-Conference Survey Results

General Information		
1		How do you define plain language?
	CA	Easy to read, understand and use.
	FL	Plain language has been defined as language your audience understands the first time they hear or read it. That means you must know your audience.
	IA	While Iowa does not have a formal definition, we believe that our conversion to the Imperative Mood - Active Voice mode of writing will be a move towards ensuring plain language useage.
	WA	Easy to read
2		What is the status of plain language conversion in your state?
	CA	90% completed on the draft of Division 100. Working with technical owners of common materials, landscape, structures.
	FL	The Florida Department of Transporation Standard Specifications have been written in Active Voice since 1999.
	IA	Iowa is in the process of reviewing and approving the final language for our Imperative Mood - Active Voice conversion to be issued in conjunction with our October 2009 construction letting.
	WA	Use of Plain Talk was decreed as required by the Governor. Several agencies have undertaken formal PL conversions. WSDOT has not begun any formal PL conversions, but some managers have begun to incorporate PL principles into their publications.
3		What was the reason for starting the PL project?
	CA	CA govt code, Chapter 3.3, Section 6219; June 1, 1998 Presidential Order; Go California-Industry Capacity Expansion
	FL	The Department wanted to make the Standard Specifications easier to understand and to reduce the size of the book. This would help reduce the number of contract claims and lower the cost of printing the Standard Specifications Book.
	IA	The Imperative Mood-Active Voice mode of writing is more clear to the contracting authority and contractor. Iowa noticed the high percentage of other states making the same switch which helped to make the decision.
	WA	WSDOT has not begun a conversion of our contract documents. Use of Plain Talk was decreed by the Governor. It applies to all things that we send to the public. Because our contract documents are not for the public, we believe they are excluded.

Specifications

4		Do you consider specifications part of design or construction?
	CA	Specifications are written for the bidder, adminstered by construction.
	FL	The State Specifications Office is combined with the State Estimates Office and is a part of the Design Division. At one time the office was a part of the State Construction Office.
	IA	Specifications are an integral part of both design and construction. While specifications are written to the contractor, the designer needs to be aware of the end result product.
	WA	Construction.
5		Did you consider Construction Specification Institute format?
	CA	Yes.
	FL	No. Division II of the FDOT specifications follow the AASHTO format. The CSI format does not lend itself to the FDOT specifications.
	IA	Yes, the Iowa DOT considered several different formats, but in the end decided to only perform the Imperative Mood-Active Voice conversion to avoid confusion with our industry and additional internal costs to reprogram our historical bid data and modifying all our electronic forms.
	WA	No, WSDOT follows the AASHTO format. CSI Format appears to be specific to vertical construction.
6		For materials, how did you split out general from specific requirements?
	CA	Include a heading titled "General" for specifications that apply to multiple sections and as a placeholder for project-specific specifications that do not fall under the other headings. If used only as a placeholder, write Reserved under the heading.
	FL	The FDOT Standard Specifications is separated into three Divisions; Division I covers General Requirements and Covenants, Division II covers Construction Details, and Division III covers Materials. Division II directs the Contractor to comply with the specific material requirements covered in Division III.
	IA	Specific material language is included in the second part of the of our 5 part format, while general materials language is included in Iowa's Division 41 of the specifications.
	WA	Materials acceptance is a general requirement. All other materials requirements are specific (technical) requirements.
7		Do you include building work with road work or use separate contracts?
	CA	Yes
	FL	We include building work with road work. However, building work is constructed under Technical Special Provisions signed and sealed a by registered engineer, while the remaining work is to be constructed in accordance with the Standard Specifications.
	IA	No, building work is always added as special provisions.
	WA	WSDOT uses separate contracts for highway work and for building work.

8		What is your spec development process?
	CA	The process is documented in Section 3 of the Guide for Standard Specifications, SSPs, and Standard Plans.
	FL	Very generally, any employee of the FDOT can request a revision to a specification. The request is made to the State Specifications Engineer, along with the specification change formatted to specific requirements, and an origination form detailing the reasons for the change. If the State Specifications Engineer concurs with the change, it is forwarded to one of four specialists in the Specifications Development Section for processing. The specialist will process the revisions through implementation or rejection. The proposed revision will go through a 90 day review process, with internal, industry and FHWA review. During the review process, FDOT employees, industry members and FHWA employees are given the opportunity to review, comment and suggest changes to the proposed revision. All comments and suggestions will be considered and responded to by the originator. The proposed specifications, comments and responses are posted to the Specifications Office web site. If the proposed change is adopted, it will be included in a workbook of modifications to the Standard Specifications. A new workbook is distributed every six months for use in compiling specification package
	IA	A Specification Committee is comprised of Office Directors within the Highway Division or their designees. The committee has authority to approve specification revisions. All revisions are routed through the appropriate Committee representative for input before it is added to an agenda. Subsequent to the Specification Committee meetings the Specification's Section staff compiles revisions every six months in order to issue the General Supplemental Specification which modifies the Standard Specifications and is issued inconjunction with the Iowa DOTs April and October highway construction letting.
	WA	Project specific provisions are developed by the project designer, subject to Region and HQ review and approval. Standard Specifications are developed by subject matter experts with input from department construction staff and from Industry. Standard Specifications require approval by HQ Construction and FHWA.
9		How many specification engineers do you have?
	CA	Office Engineer has 12 Standards Engineers.
	FL	We have the State Specifications Engineer who supervises a staff of four Specification Development Specialists. The FDOT is decentralized into eight districts. Each district has a Specifications Office with a staff of two or three, but they are generally involved with assembly of specification packages, not developing specifications.
	IA	Two dedicated to specification development and process management however the Iowa DOT has numerous technical experts that are able to provide assistance as needed.
	WA	WSDOT has just one.

10		What is your relationship between technical experts?
	CA	Standards Engineers support the owners in ensuring the Standards meet the Department's standards for style, language, and format.
	FL	It is important to understand that the Specification Development Specialists do not write specifications. It is our responsibility to ensure that the Specification Development Procedure is followed, to prepare the specifications in the correct format, to verify that all references are correct, and to ensure proper implementation of the changes. We rely on the technical experts to provide the technical information, and we work very closely with them to ensure a good final product.
	IA	The Iowa DOT has a very good relationship with technical experts representing both the construction industry and academia. The Iowa DOT meets regularly with construction industry representatives to discuss issues involving mutual concern.
	WA	There is very little relationship between technical experts, as they come from a variety of disciplines such as Design, Construction, Materials, Traffic, Geotechnical, and Legal.
11		Did you pilot your PL conversion?
	CA	2010 Standards are not complete and ready for use.
	FL	No. As each Section of our Specifications was converted to Active Voice, we followed our Specification Development Procedure in having the Section reviewed by internal staff and industry personnel. Sections of the specifications were assigned to technical experts within the Department as final authority on the conversion of the specification. We worked very closely with all parties involved in the conversion, so there were no surprises when we published the 1999 Standard Specifications Book in Active Voice.
	IA	No, however before the conversion began the Iowa DOT visited with the major construction industries to inform them of the direction and to assure them that the only change would be in the style of specification writing and not in the actual content of the specification expectations.
	WA	Have not yet converted. Not likely to pilot a conversion of the contract documents, because the contract documents would have to be 100% converted in order to use them in any single contract. We would not undertake a full conversion until we know for sure that we want to remain there.

Bid Book		
12		What are the main concerns regarding bidding?
	CA	Getting good bids.
	FL	The main concerns are that bids are within a certain percentage of the Department's official estimate, that there is no unbalanced bidding, and that more than one bid is received. With few exceptions, contracts greater than $500k will be awarded to the lowest responsible bidder if that bid falls within 10% of the Department's estimate. Contracts less than $500k will be awarded to the lowest responsible bidder whose bid is within 15% of the Department's estimate.
	IA	None
	WA	Our main problems in the bidding arena are the clarity of Disadvantaged Business Enterprise Condition of Award provisions, and requirements for submission of subcontractor lists.
13		What is your process for bid analysis?
	CA	Bids are opened and verified, bid summaries prepared and reviewed for comparison with our estimate for material unbalanced and competiveness.
	FL	Bids that do not meet the criteria for automatic award will be analyzed by DOT experts, reviewed with the bidder, and reviewed by a DOT Technical Review Committee and a Contract Award Committee. Membership on these committees is comprised of top Department Officials.
	IA	All bids are analyized using AASHTO Transport software products on a letting by letting basis. Thus if there were differences due to PL conversion it should show up during the letting analysis.
	WA	Lowest responsive bid.
14		Did you pilot your bid book conversion?
	CA	New bid book will be implemented next fiscal year using existing standards.
	FL	No. Industry was intimately involved with conversion of our specifications to Active Voice. The specifications make up the vast majority of the bid book, so no piloting was necessary.
	IA	N/A
	WA	Not converted. Not likely to pilot for same reason as Q11. WSDOT bidding procedures are a part of the Standard Specifications.
15		What advertising tactics did you employ?
	CA	Internet, Department of General Services,
	FL	Conversion of our specifications to Active Voice did not require a change to our advertising policy.
	IA	N/A
	WA	Not converted.
16		How did PL affect your advertising schedule?
	CA	No information available. TBD
	FL	How did PL affect your advertising schedule?
	IA	N/A
	WA	Not converted.

17		How much time is allowed for bidding?
	CA	Depending on the project, the advertising period is 3 weeks for safety projects, 4 weeks for less than 50 bid items, 5 weeks for 50-100 bid items and 7 weeks a for over 100 bid items.
	FL	The Department permits 30 days between advertising to opening bids on less complex projects, and 60 days for more complex projects.
	IA	Four weeks.
	WA	Two to eight weeks depending on scope, but three to six weeks is most common.
18		Do you use electronic contract documents?
	CA	Not at this time, we hope to.
	FL	Yes. Nearly all our documents, from specifications, plans, standards, and specification packages are processed electronically.
	IA	Yes, the Iowa DOT uses Field Book.
	WA	Yes & no. WSDOT does provide some bid documents electronically, and faxed addenda are not uncommon. All contract documents are hard copy after the bid period.
19		Do you use electronic bidding?
	CA	Not at this time, we hope to.
	FL	Yes. Since 7/05, we have required that bids on construction contracts be submitted electronically.
	IA	Yes, the Iowa DOT uses Field Book.
	WA	Yes.

Policy Development		
20		How was policy development integrated into specification development?
	CA	There has been no integration and no coordinated effort. The specifications will probably be completed before policy is converted by the individual functional units.
	FL	Conversion to Active Voice specifications had no impact on policy development.
	IA	The Iowa DOT is only converting the Standard Specifications at this time.
	WA	They are not integrated. They are segregated.
21		Were you able to convert your existing policy documents or did you have to start over?
	CA	Caltrans will probably attempt to convert its existing policy first, then add new policy, and then reorganize its manuals to follow the chronology of the specifications.
	FL	n/a
	IA	N/A
	WA	WSDOT has been able to convert existing policy document to PL as the policies come due for updates.
22		How did you assure all the PL provisions were covered by your policy development?
	CA	We will do a side by side comparison of the PL provision, the old specification language, the old policy, and the new policy. Caltrans is also completely reorganizing its contract documents.
	FL	n/a
	IA	N/A
	WA	All of the revised policy documents go through a central contact to make sure that all of the Plain Language provisions are addressed.
23		What policy changes were required?
	CA	A lot of detail has been stripped out of our old contract specifications. This includes both technical specifications and legal requirements. This content will have to be retained and converted into policy. Rather than reiterate legal provisions the specs now refer directly to the statute. The policy must interpret this content for resident engineers since they are not lawyers.
	FL	n/a
	IA	N/A
	WA	None. WSDOT did not have a formal policy about the style of the policy documents. Nothing to change.
24		How many resources were used and how long did it take to convert your policies and procedures?
	CA	The Division of Construction estimated it would take two years and $5 million to convert its construction manual to plain language using a consultant. It will probably cost $2 million and take four years to do this work in house.
	FL	n/a
	IA	N/A
	WA	No additional resources were allocated to convert to PL. Conversion is ongoing.

Industry Relations		
25		How did industry react to your PL conversion in your state?
	CA	Industry generally supports contract language that is plain, clear, and concise. Industry has expressed both concern and opposition to this wholesale conversion of the Caltran's specifications. Industry sees this conversion as being very risky since they do not understand all the changes that will be taking place and since they do not have experience with the new plain language.
	FL	Industry was very receptive to the conversion. Industry groups and associations were a big part of the conversion effort and assisted in many ways. They recognized that any attempt to make our specifications more user friendly would be beneficial to them, to the DOT, and to the travelling public.
	IA	There has been no adverse reaction to date, however the Iowa DOT shared the reasoning behind the conversion early on and periodically during the process as well as assuring the industry that the conversion is in language only with no content changes.
	WA	Not converted. Have not consulted with Industry.
26		How was industry input obtained?
	CA	The Department's office engineer has made presentations to the three big industry associations: Associated General Contractors (AGC), Southern California Contractors Association (SCCA), and the Engineering Underground Contractors Association (EUCA).
	FL	During conversion to active voice, we followed our specification development procedure, which permits industry personnel to review and comment on specification changes. As each Section of the specifications was converted, it was forwarded to industry groups for review and comment. Changes were highlighted, with deleted text struck through and new text either italicized or redlined. The Florida Transportation Builders Association was a tremendous help by serving as a central point of contact between the DOT and the contracting industry. So Industry was a full partner in the conversion process.
	IA	The Iowa DOT periodically meets with the Specification Committees of the various industries. The minutes of the Iowa DOT Specification Committee are shared with the construction industry.
	WA	Not converted. Industry input would be obtained through WSDOT standing committees with AGC of America, Washington Asphalt Paving Association, ACEC (American Counsel of Engineering Companies of Washington), ADSC and others.
27		How has industry responded to implementation?
	CA	We have not implemented our plain language conversion. We are doing an incremental conversion of our standard specifications.
	FL	Industry was extremely helpful during conversion and continues to be responsive to the active voice style.
	IA	No adverse reaction to date.
	WA	Not converted.

28		Do your contractors work mostly in your state or nationally?
	CA	By project count, most of our contractors are primarily based in California. By dollar volume, many of the high value jobs are done to national construction firms.
	FL	Mostly in the State.
	IA	The Iowa DOT has contractors that work locally, intrastate, and interstate; however most contractors work intrastate.
	WA	Most are local. A small share goes to the big national companies like Kiewit, Granite, etc.
29		What did you do to get industry to support your PL conversion?
	CA	We will work closely with industry to implement these specifications. Industry will likely review the specifications, bid book and policy. This will likely be performed by individual review. Caltrans may form working technical committees if requested by industry.
	FL	We kept industry involved throughout the conversion process.
	IA	Periodic communication with the Specification Committees of the various industies thus far.
	WA	Not yet converted.

Implementation		
30		How do you provide update information?
	CA	Twice per year, propose change review by experts subject matter, districts and collect all comments this change have been processed in accordance with the Division formal procedure.
	FL	We publish a workbook of modifications to the Standard Specifications twice annually; once for projects let during January through June, and once for projects let during July through December. These modifications have been processed in accordance with our Specification Development Procedure. While not a formal procedure, the Standard Specifications Book is reprinted approximately every four years.
	IA	The Iowa DOT holds monthly Specification Committee meetings a part of which is reserved for updates if necessary. Periodic meetings with the Industry are also used for updates. In the future the Weekly Letting Bulletin will be used for updates as Iowa gets closer to the publishing date.
	WA	All amendments to the WSDOT Standard Specifications and standardized special provisions are identified by the date of issue, and are printed in the bidding documents.
31		Did you publish your Standards fully revised or by transition?
	CA	Caltrans Standards will be fully revised and released as one. Caltrans Special Provisions will be converted and released after the standards are released. All new specifications are being converted to plain language.
	FL	Fully revised.
	IA	The Iowa DOT Standard Specifications are to be published fully. The accompanying specification documents are on target for conversion as well to be published at the same time.
	WA	Not converted. Standard specs would likely be fully revised. Standardized special provisions would likely be by transition.
32		How do you update your standards?
	CA	Did Not Answer
	FL	In accordance with the Specification Development Procedure
	IA	The Iowa DOT publishes the revisions to standards on the same six month cycle as the specifications.
	WA	New Standard Specifications are issued biannually in even years. Amendments to Standard Specifications are published every 4 months.
33		How do you track version control for your standards?
	CA	Did Not Answer
	FL	We include a revision date, FHWA approval date and an effective letting date on each of the specification modifications.
	IA	Standards are issued with revision date, revision number, and only twice per year.
	WA	By date.

		Training
34		How did you train your staff?
	CA	Construction Division will probably have a web based course to explain the general layout and concept of our plain language conversion. We will then have formal adult training for both the specifications and policy.
	FL	Select staff from the various sections participated in training sessions presented by the Consultant hired to assist in the conversion of the specifications from passive to active voice. Hands on exercises were conducted using a training manual developed specifically for DOT specifications. The State Specifications Office has since developed its own training course which is presented to FDOT employees as requested. We also have developed some Specification Writing Aids which provides guidelines for writing or revising our Standard Specifications. The training course is provided to in-house staff and consultants throughout the state on an informal basis. No formal training has been provided to local agencies. Contractors were involved with the development of the active voice specifications.
	IA	The Iowa DOT periodically uses the NHI course "Principles of Writing Highway Construction Specifications" and this training was used to kickoff the Imperative Mood - Active Voice conversion.
	WA	Not yet converted. Most agency specific training is presented by trainers that are agency staff. PL training would likely be from a consultant trainer.
35		How much training did you provide to your staff?
	CA	Construction Division will probably provide atleast 120 hours of training for each resident engineer and higher person. Inspectors might be able to get by with 60 to 80 hours of training.
	FL	See No. 34
	IA	The Iowa DOT has provided the NHI course and plans to provide additional training to the construction industry and field staff once the final draft of the manual is completed.
	WA	Not yet converted. Significant training will be required.
36		What kind of training did you provide to your staff?
	CA	Construction Division will probably have a web based course to explain the general layout and concept of our plain language conversion. We will then have formal adult training for both the specifications and policy.
	FL	See No. 34
	IA	Training is both internal and external. The NHI course is the highest level of training provided and the Specifications Section also provides training to staff as needed.
	WA	Not yet converted. Spec writing training will be needed.
37		Did you provide training for local agencies?
	CA	Many local agencies use Caltrans' contract documents. Caltrans will probably provide training to these local agencies.
	FL	No
	IA	All our training is open to local agencies.
	WA	All WSDOT training is open to other agencies.

38		Did you provide training for consultants?
	CA	Caltrans will probably provide some training for consultants.
	FL	Yes
	IA	On an as needed basis training can be provided to consultants.
	WA	Not yet converted. Not sure if WSDOT would train consultants.
39		Did you provide training for contractors?
	CA	Caltrans probably will provide some joint training with both contractors and construction staff.
	FL	No
	IA	Training will be provided to the construction industry in the future.
	WA	Not yet converted. Not likely to train contractors.

Project Delivery Continuity		
40		From inception to publication, how long did it take to create your PL construction contract documents?
	CA	It will probably take Caltrans 4 to 6 years to convert.
	FL	It took approximately 1 1/2 years to convert all specifications from passive to active voice and to print the first Standard Specifications Book using this style of writing.
	IA	The Iowa DOT is only converting the Specification documents at this point. The conversion of the specifications began in 2003 and will be finished in 2008 (approximately 5 years using current staff on a part time basis).
	WA	Not yet converted.
41		How long did it take to convert the associated manuals?
	CA	It will probably take the Division of Construction 2 to 5 years to convert.
	FL	n/a
	IA	The Iowa DOT will discuss the conversion of associated manuals following the substantial completion of the specification conversion.
	WA	Not yet converted.
42		Do you have a schedule for publication of your standards?
	CA	We have a CPM schedule and work plan for our standards conversion.
	FL	While there is no formal schedule, the Standard Specifications are reprinted approximately every four years.
	IA	October 2009 for the Standard Specificatinos.
	WA	New Standard Specifications are published biannually and effective on the first Monday in January of even years. Amendments to the Standard Specifications are published every 4 months.
43		What was your risk to delivery?
	CA	Projects in process may have to be reworked to convert to the new specs; which would delay project delivery in drive up support costs. Some bidders may pass or build a big risk premium into their bids. We could see a increase in bid protests and construction claims. We could see a big increase in contract change order volume and cost to correct errors in the specs.
	FL	None
	IA	Unknown at this point.
	WA	Not yet converted.
44		Did implementation delay delivery of any projects?
	CA	It is not implemented yet.
	FL	No
	IA	No
	WA	Not yet converted. Many commitment dates are legislated, so delays will not be an option.

45		Did implementation have an impact on the final quality of the constructed product?
	CA	Unknown
	FL	No
	IA	Unknown at this point.
	WA	Not yet converted.
46		Did implementation result in an increase of contract claims or arbitration filings?
	CA	Unknown
	FL	There has been no formal tracking since conversion to Active Voice.
	IA	N/A
	WA	Not yet converted.
47		What process will you use to update your contract documents , construction and design manual ?
	CA	These manuals will need to be supplemented, reworked, and reorganized.
	FL	We will continue processing our documents in accordance with the Specification Development Procedure.
	IA	Unknown at this point.
	WA	Most likely will use a consultant for specifications. Design and Construction manuals will be written in-house, if we convert.

Best Practices and Lessons Learned		
48		What lessons will you use for future projects?
	CA	Not converted.
	FL	n/a
	IA	Allowing the timeline for conversion to be too long can cause problems with needing to update both current and draft documents.
	WA	Not yet converted. Hopefully, lessons shared by other agencies at this Peer Exchange will be valuable to us.
49		How do you track lessons learned?
	CA	We do an annual Contract Administration Process Evaluation (CAPE) of construction practices, procedures, and policies. Best practices are integrated into revised policy, new guides, and training.
	FL	n/a
	IA	Did Not Answer
	WA	WSDOT has a formal Lessons Learned database that can be viewed at http://eefmapps.wsdot.wa.gov/fmi/xsl/Lessons/Main.xsl?-db=DebriefReport&-lay=LessonWebForm&MonthlyHighlight=Yes&-find
50		How do you communicate lessons learned to staff?
	CA	Training, Annual Managers and Resident Engineers Meetings, and Construction Policy Directive Memorandums.
	FL	n/a
	IA	Did Not Answer
	WA	Weekly updates to the LL database are transmitted by email.
51		What worked well?
	CA	Team approach to converting the specifications. We have construction, design, legal, and office engineer in the same room working on this conversion line by line.
	FL	Conversion of Division II, Construction Details, reduced the amount of text and helped in making these specifications more user friendly. We found that a well written active voice specification provides clear lines of responsibility, direction and expectations.
	IA	Having a small number of staff involved in the conversion is somewhat beneficial to help eliminate personal style differences.
	WA	Not yet converted.

52		What needed improvement?
	CA	We need more resources to complete this conversion faster. Some have expressed concern about the risk of this project to product delivery and have called for a pilot to test the conversion on some smaller jobs. Some have expressed alarm at the loss of technical content in the specifications that will have to be retained in policy. This policy is not a part of the contract, so it is anticipated that an increase in the number of disputes will result.
	FL	We determined that Divisions I and III of the specifications did not lend themselves to the active voice writing style. There were also some legal concerns with conversion of Division I to Active Voice. We were a bit disappointed with that. So we are migrating back to passive voice in Division I and Division III is written in passive voice.
	IA	Did Not Answer
	WA	Not yet converted.
53		Did going through the PL project result change any processes of the design, construction and specifications in your state?
	CA	Yes. There have been numerous changes to the organization of the contract documents, specification content has been added, and specifications have been clarified.
	FL	No
	IA	No
	WA	Not yet converted..

Appendix C

Conference Participant Contact Information

National Plain Language Peer to Peer Conference 2008
Hosted by the Federal Highway Administration and Caltrans
June 17, 18 and 19, 2008
Sacramento, CA USA 95814

NAME	AGENCY	MAILING ADDRESS	PHONE NUMBER	EMAIL ADDRESS
Bren I. Feorge	FHWA	650 Capitol Mall, Suite 4-100, Sacramento, CA 95814	916-498-5890	Bren.george@fhwa.dot.gov
Sey Hossnieh	CALTRANS	1120 N Street, Sacramento, CA 95814	916-654-3088	sey_hossnieh@dot.ca.gov
Micheal Hall	WISDOT	4802 Sheboygan Avenue, Madison, Wisconsin	608-266-8461	michael.hall@dot.state.wi.us
Ken Jacoby	FHWA	8104 Bright Meadows Lane, Dunn Loring, VA 22027	202-366-6503	ken.jacoby@dot.gov
Jeff Lewis	FHWA	650 Capitol Mall, Suite 4-100, Sacramento, CA 95814	916-498-5035	jeff.lewis@fhwa.dot.gov
Tim Quinn	MNDOT	395 John Ireland Blvd, MS 692, St Paul, MN 55155	651-366-4664	tim.quinn@us.state.mn.us
Dale Deatherage	ODOT	355 Capitol Street NE, Room 222, Salem, OR 97310	503-986-3777	dale.deatherage@state.or.us
Greg Edwards	CALTRANS	1727 30th Street, Sacramento, CA 95816	916-227-6199	greg.edwards@dot.ca.gov
Jill Sewell	CALTRANS	1727 30th Street, Sacramento, CA 95816	916-227-6222	jill_sewell@dot.ca.gov
Mike Sklenar	NDOR	1500 HWY 2, Lincoln NE, 68509	402-479-4844	msklenar@dor.state.ne.us
Robert Schott	CALTRANS	1120 N Street, MS 28, Sacramento, CA 95814	916-653-9068	robert.schott@dot.ca.gov
Frances Hood	IDTRANS	P.O. Box 7024 Boise, ID, 83703	208-334-8426	frances.hood@itd.idaho.gov

Micheal Kissel	CALTRANS	1120 N Street, Sacramento, CA 95814	916-654-2467	michael.kissel@dot.ca.gov
David Mariman	WSDOT	P.O. Box 47354, Olympia, WA 98504	360-705-7831	marimad@wsdot.wa.gov
Mark Leja	CALTRANS	1120 N Street, Sacramento, CA 95814	916-654-2157	mark_leja@dot.ca.gov
Jim Cotey	CALTRANS	1120 N Street, Sacramento, CA 95814	916-227-7142	jim.cotey@dot.ca.gov
Robin Leonard	CALTRANS	1120 N Street, Sacramento, CA 95814	916-654-5676	robin.leonard@dot.ca.gov
Don Roberts	FDOT	605 Suwannee St., Tallahassee, FL	850-414-4127	don.roberts@dot.state.fl.us
Tom Reis	IOWA DOT	Specification Section, IWOA DOT, 800 Lincoln Way, AMES, IA 50010	515-239-1566	tom.reis@dot.iowa.gov
Craig McDanniel	WADOT	HQ Construction, P.O.BOX 47354, Olympia, WA 98504	360-705-7823	mcdanil@wsdot.wa.gov
Pratip Lahiri	NYS DOT	POD 23, DGAB, 50 Wolf Rd., Albany, NY 12232	518-457-4092	plahiri@dot.state.ny.us
Tim Sobelman	CALTRANS	1120 N Street, Sacramento, CA 95814	916-653-5747	timothy_sobelman@dot.ca.gov
Greg Balzer	CALTRANS	1120 N Street, MS 28, Sacramento, CA 95814	916-653-7337	gregory.balzer@dot.ca.gov
Perry Mayer	CALTRANS	1120 N Street, MS 28, Sacramento, CA 95814	916-653-2032	perry_mayer@dot.ca.gov
David Halligan	NAVIGANT CONSULTING	One Market Street, Spear Tower, Suite 1200, San Francisco, CA 94105	415-356-7138	Dhalligan@NavigantConsulting.com
John Sween	NAVIGANT CONSULTING	One Market Street, Spear Tower, Suite 1200, San Francisco, CA 94105	415-356-7169	John.Sween@NavigantConsulting.com

Appendix D

Defining Plain Language: Caltrans Style and Format

Defining Plain Language
Caltrans Style & Format

Greg Edwards
California Department of Transportation

“No one technique defines plain language. Rather, plain language is defined by results—it is easy to read, understand, and use.”

http://www.plainlanguage.gov/index.cfm

Plain Language Uniformity

Ranking	State	Plain Language
1	California	no
2	Texas	yes
3	New York	no
4	Pennsylvania	yes
5	Florida	yes
6	Georgia	yes
7	Ohio	yes
8	Illinois	no
9	Michigan	yes
10	North Carolina	yes

This presentation is a brief overview of:

- Caltrans Specification Writing **Style** and Examples:
  - Passive / Active
  - Old Style / New Style
- Mandates:
  - California Law
  - President's Executive Order
- Caltrans 2010 Style Guide
- Federal Clear Writing Principles
- Chicago Manual of Style
- CSI Section Format
- Caltrans Specification:
  - **Format**
  - **Organization**

Caltrans Specification Writing Style

- Foundation of plain language:
  - Target reader
    - Bidder before award
    - Contractor after award
  - Use active voice
    - Speak directly to the reader
  - Use appropriate tone
    - Imperative mood: "You must do it" or "Do it"

- The Department is gradually changing the style and language of the specifications. The new style and language includes:

1. Use of:

1.1. Imperative mood
1.2. Introductory modifiers
1.3. Conditional clauses

2. Elimination of:

2.1. Language variations
2.2. Definitions for industry-standard terms
2.3. Redundant specifications
2.4. Needless cross-references

- The use of this new style does not change the meaning of a specification not yet using this style.
- The specifications are written to the Bidder before award and the Contractor after. Before award, interpret sentences written in the imperative mood as starting with "The Bidder must" and interpret "you" as "the Bidder" and "your" as "the Bidder's." After award, interpret sentences written in the imperative mood as starting with "The Contractor must" and interpret "you" as "the Contractor" and "your" as "the Contractor's."
- Unless an object or activity is specified to be less than the total, the quantity or amount is all of the object or activity.
- All items in a list apply unless the items are specified as choices.
- Interpret terms as defined in the Contract documents. A term not defined in the Contract documents has the meaning defined in Means Illustrated Construction Dictionary, Condensed Version, Second Edition.

For Example

PASSIVE voice:

The first segment shall be lined, completed, and accepted prior to initiating all subsequent pipe liner work. (17 words)

ACTIVE voice:

The Engineer must accept your installation of the first pipe liner segment before you start work on any other pipe liner segment. (22 words)

Caltrans Specification Writing Style (cont'd)

- Pillars of clear writing style:
  - Use common terms and avoid jargon
  - Use short sentences
    - Use present tense
    - Place words carefully (subject/object close to verb)
    - Use "if, then" conditional statements
  - Use lists

For Example

OLD STYLE & FORMAT:

When the final thickness of the cured-in-place pipe liner is less than the calculated minimum thickness provided in the submittals of this special provision, this liner may be brought into compliance at no additional cost to the State by removal and replacement of the undersized liner, addition of a second thin liner designed to support hydrostatic loads due to groundwater, or other repair alternatives as recommended by the Contractor and approved by the Engineer.

Same paragraph using active voice / conditional statement / list / imperative mood

NEW STYLE & FORMAT:

If the final thickness of the cured-in-place pipe liner is less than the calculated minimum thickness in your submittal, then you must do one of the following:

1. Remove and replace the cured-in-place pipe liner.
2. Add a second thin liner designed to support hydrostatic groundwater loads.
3. Propose a method of repair and if the Engineer approves, repair the cured-in-place pipe liner.

ANOTHER EXAMPLE

THIS:

At the option of the Contractor, a growth regulator may be applied to mowed areas, provided the growth regulator is approved in advance by the Engineer and the growth regulator is applied in conformance with these special provisions. If a growth regulator is approved and applied, the growth regulator shall be at the Contractor's expense.

At the option of the Contractor, plants of a larger container size than those originally specified may be used for replacement plants during the first 125 working days of the plant establishment period. The use of plants of a larger container size than those originally specified for replacement plants shall be at the Contractor's expense.

TO THIS:

You may apply a growth regulator to a mowed area as specified in these special provisions if the Engineer approves.

You may use plants of a larger container size than those originally specified for replacement plants during the first 125 days of the plant establishment period.

Plain Language Mandates

- CA GOVERNMENT CODE Section 6219
  - Government shall write in plain, straightforward language.
- June 1, 1998 Presidential Executive Order
  - Requires agencies to write in plain language
- American Bar Assoc. 1999 Annual Meeting
  - ABA urges agencies to use plain language
- Go California - Industry Capacity Expansion
  - Uniformity of standards and specifications

CALIFORNIA GOVERNMENT CODE

6219. (a) Each department, commission, office, or other administrative agency of state government shall write each document that it produces in plain, straightforward language, avoiding technical terms as much as possible, and using a coherent and easily readable style.
(b) As used in this section, a "state agency document" means any contract, form, license, announcement, regulation, manual, memorandum, or any other written communication that is necessary to carry out the agency's responsibilities under the law.

In his Executive Order, President Clinton directs federal departments and agencies to write in plain language including use of:

1. "you" and other pronouns
2. Common terms, everyday words, except for necessary technical terms
3. Active voice
4. Short sentences

THE WHITE HOUSE
WASHINGTON

JUNE 1, 1998

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: Plain Language in Government Writing

The Vice President and I have made reinventing the Federal Government a top priority of my Administration. We are determined to make the Government more responsive, accessible, and understandable in its communications with the public.

The Federal Government's writing must be in plain language. By using plain language, we send a clear message about what the Government is doing, what it requires, and what services it offers. Plain language saves the Government and the private sector time, effort, and money.

Plain language requirements vary from one document to another, depending on the intended audience. Plain language documents have logical organization, easy-to-read design features, and use:

- common, everyday words, except for necessary technical terms:
- "you" and other pronouns:
- the active voice; and
- short sentences.

To ensure the use of plain language, I direct you to do the following:

- By October 1, 1998, use plain language in all new documents, other than regulations, that explain how to obtain a benefit or service or how to comply with a requirement you administer or enforce. For example, these documents may include letters, forms, notices, and instructions. By January 1, 2002, all such documents created prior to October 1, 1998 must also be in plain language.
- By January 1, 1999, use plain language in all proposed and final rulemakings published in the Federal Register, unless you proposed the rule before that date. You should consider rewriting existing regulations in plain language when you have the opportunity and resources to do so.

The National Partnership for Reinventing Government will issue guidance to help you comply with these directives and to explain more fully the elements of plain language. You should also use customer feedback and common sense to guide your plain language efforts.

I ask the independent agencies to comply with these directives.

This memorandum does not confer any right or benefit enforceable by law against the United States or its representatives. The Director of the Office of Management and Budget will publish this memorandum in the *Federal Register.*

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
OFFICE ENGINEER

Style Guide for the 2010 Specifications

May 2008

Caltrans

Standardization of Style, Format & Organization

- *Caltrans 2010 Style Guide* based on:
  - Federal Register's writing guidelines,
  - Chicago Manual of Style,
  - Construction Specifications Institute (CSI), and
  - AASHTO Guide Specifications for Highway Construction

12. **Prefer simple words**. Government writing should be dignified, but doesn't have to be pompous. Writing can be dignified when the language is simple, direct, and strong. To make your writing clearer and easier to read -- and thus more effective -- prefer the simple word.

13. **Omit needless words**. Don't use compound prepositions and other wordy expressions when the same meaning can be conveyed with one or two words.

19. **Write short sentences**. Readable sentences are **simple, active, affirmative, and declarative**.

20. **Make lists clear and logical in structure**. Listing provides white space that separates the various conditions. Listing can help you avoid the problems of ambiguity caused by the words "and" and "or". When you list, use the following rules:

- Use parallel structure. (See example in item 11 above.)
- List each item so that it makes a complete thought when read with the introductory text.

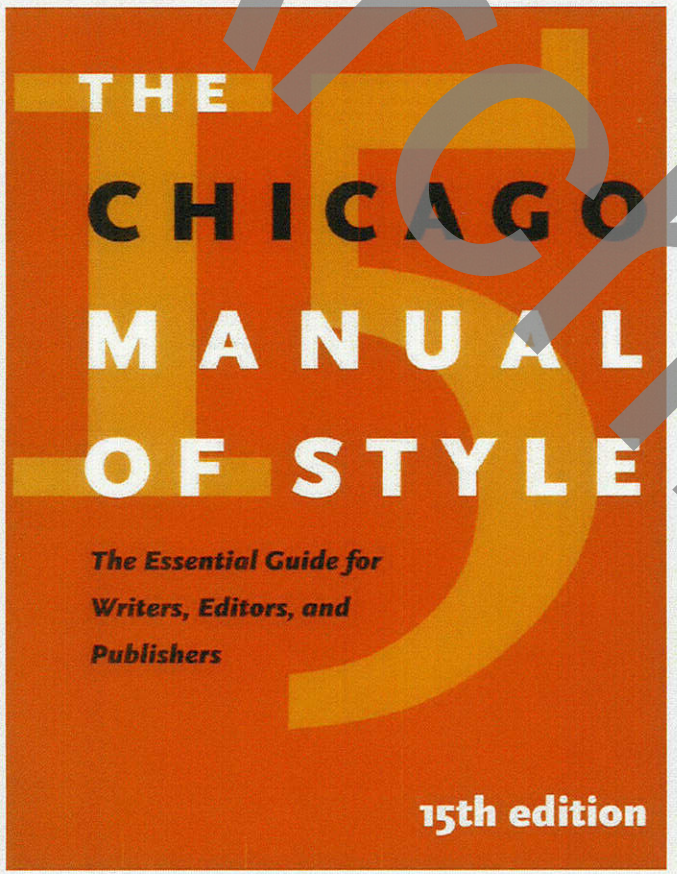
Solutions

- State one thing and only one thing in each sentence.
- Divide long sentences into two or three short sentences.

Expressions" pages 7-9

www.archives.gov/federal-register/write/legal-docs/clear-writing.html

Chicago Manual of Style



- Grammar
- Word Usage
- Capitalization
- Punctuation
- Lot's More

For example – word usage:

"who" or "whom" PAGE 163, 5-56

"which" or "that" PAGE 163, 5.60

"state" or "State" PAGE 329 , 8.55

ALSO PAGE 333, 8.65

"capital" or "Capitol" PAGE 332 , 8.61

"effect" or "affect" PAGE 198

"a" or "the" PAGE 166 5.70 & 5.71

Construction Specifications Institute (CSI)
http://www.csinet.org/s_csi/index.asp

CSI Section Format

- PART 1- GENERAL
  - SUMMARY
  - DEFINITIONS
  - SUBMITTALS
  - QUALITY ASSURANCE
- PART 2 - PRODUCTS
  - MATERIALS
- PART 3 - EXECUTION
  - CONSTRUCTION
  - FIELD QUALITY CONTROL

CALTRANS

- GENERAL
  - SUMMARY
  - DEFINITION
  - SUBMITTALS
  - QUALITY CONTROL & ASSURANCE
- MATERIALS
- CONSTRUCTION
- PAYMENT

Specification Development

- Employ industry terms (Means Illustrated Construction Dictionary)
- Maximize uniformity with AASHTO and other states business practices (WDOSD)
- Provide complete "due diligence" documentation
- Reduce specification editing (use conditional clauses)
- Avoid customizing of specifications

Caltrans -- Status of:

1. Conversion to Plain Language

2. Organization of Specifications

Go to Appendix A of the 2010 Style Guide

Appendix A
Division Outline

100 General

200 Construction--
General

300 Common Materials

400 Concrete and Metal
Materials

500 Earthwork

600 Pavements

700 Earth Retaining
Structures

800 Major Structures

900 Rehabilitate Concrete
Structures

1000 Drainage Systems

1100 Traffic Control

1200 Electrical

1300 Landscaping

1400 Miscellaneous
Construction

1500 Buildings

100 General

- 101 General
- 102 Bidding
- 103 Contract Award And Execution
- 104 Scope of Work
- 105 Control of Work
- 106 Control of Materials
- 107 Legal Relations & Responsibility to the Public
- 108 Prosecution and Progress
- 109 Payment
- 110 to 199 (BLANK)

Appendix A
Division Ouline

100 General

200 Construction General

300 Common Materials

400 Concrete and Metal Materials

500 Earthwork

600 Pavements

700 Earth Retaining Structures

800 Major Structures

900 Rehabilitate Concrete Structures

1000 Drainage Systems

1100 Traffic Control

1200 Electrical

1300 Landscaping

1400 Miscellaneous Construction

1500 Buildings

200 CONSTRUCTION--GENERAL

240 WATER POLLUTION CONTROL

240.1 GENERAL

240.1.1 Summary

240.1.2 Definitions

240.1.3 Submittals

240.1.3.1 General

240.1.3.2 Water Pollution Control Program

240.1.3.3 Storm Water Pollution Prevention Plan

240.2 MATERIALS

240.3 CONSTRUCTION

Appendix A
Division Outline

100 General

200 Construction -- General

300 Common Materials

400 Concrete and Metal Materials

500 Earthwork

600 Pavements

700 Earth Retaining Structures

800 Major Structures

900 Rehabilitate Concrete Structures

1000 Drainage Systems

1100 Traffic Control

1200 Electrical

1300 Landscaping

1400 Miscellaneous Construction

1500 Buildings

1100 TRAFFIC CONTROL

- 1101 GENERAL
- 1102 PREQUALIFIED SIGNING AND DELINEATION MATERIALS
- 1103 THERMOPLASTIC
- 1104 WATERBORNE TRAFFIC PAINT
- 1105 TWO-COMPONENT TRAFFIC MARKING
- 1106 TRAFFIC TAPE
- 1107 to 1129 (BLANK)
- 1130 PAVEMENT MARKERS
- 1131 OBJECT MARKERS
- 1132 DELINEATORS
- 1133 to 1149 (BLANK)
- 1150 METAL BEAM GUARD RAILING
- 1151 THRIE BEAM GUARD RAILING
- 1152 CONCRETE BARRIER
- 1153 BARRICADES
- 1154 IMPACT ATTENUATORS
- 1155 RUMBLE STRIPS
- 1156 to 1169 (BLANK)
- 1170 SIGN PANELS
- 1171 ROADSIDE SIGNS
- 1172 to 1199 (BLANK)

In Summary,
Caltrans Defines Plain Language as:

Easy to read, understand and use:

STYLE

- Active voice, imperative mood
- Common terms, short sentences, lists
- Federal clear writing principles
- Chicago Manual of Style

FORMAT

- Specification layout similar to CSI Section Format

ORGANIZATION

- Similar to AASHTO Guide Specifications for Highway Construction & other states

CALTRANS

OFFICE OF CONSTRUCTION CONTRACT STANDARDS

http://www.dot.ca.gov/hq/esc/oe/index.html#standards

Jill Sewell, Office Chief

Greg Edwards, Standards Engineer

(916) 227-6199

greg.edwards@dot.ca.gov

Appendix E

Style Guide for the 2010 Specifications (Caltrans)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
OFFICE ENGINEER

Style Guide for the 2010 Specifications

May 2008

CONTENTS

CHANGE DIGEST

Changes to the *Style Guide* are summarized in this section. A vertical line adjacent to text indicates a change. Digest entries and corresponding vertical lines will be deleted after 6 months.

Version	Section	Changes
May 2008	17	Revised style for definitions

1 GENERAL

This guide provides instructions for specification writers contributing to the California Department of Transportation's specifications.

This guide is based on information from several sources, including the *Federal Register*'s writing guidelines, *The Chicago Manual of Style* (CMOS), Construction Specifications Institute (CSI), *AASHTO Guide Specifications for Highway Construction*, and the highway construction specifications of other states. These sources may be shown in parenthesis for your information.

The examples in this guide are models for style, not actual specifications.

Interpret each rule as if followed by *unless context and common sense dictate otherwise*. Do not follow a rule if clarity is reduced.

2 IMPLEMENTATION

Follow this guide if you are writing parts of the 2010 edition of the *Standard Specifications* or corresponding revised standard specifications (RSSs) or project-specific specifications (PSSs).

3 REFERENCE FOR GRAMMAR, USAGE, CAPITALIZATION, AND PUNCTUATION

For guidance not covered in this guide, follow the guidance provided in CMOS for grammar, usage, capitalization, and punctuation. CMOS's Web site has answers to many grammar, usage, capitalization, and punctuation questions. The *Specification Style Guide* provides rules:

1. From CMOS that are not used in everyday writing.
2. Not covered in CMOS.
3. Contrary to the rules in CMOS (only a few of these). For the contrary rules, follow the rules in this guide.

Where the CMOS allows optional styles, choose the traditional style.

4 FEDERAL REGISTER'S WRITING GUIDE

Follow the principles in the *Federal Register*'s Principles of Clear Writing, duplicated in part in this section. For additional explanations, go to:

http://www.archives.gov/federal-register/write/legal-docs/clear-writing.html

Bracketed text is text not in the *Federal Register*'s Principles of Clear Writing.

1. Write in the active voice.

The passive voice is appropriate when the actor is unknown, unimportant, or obvious.

2. Use action verbs.

Don't say	Say
is applicable to	applies to
make payment	pay
give recognition to	recognize
is concerned with	concerns

3. Use *must* instead of *shall*.

shall	imposes an obligation to act, but may be confused with prediction of future action
will	predicts future action
must	imposes obligation, indicates a necessity to act
should	infers obligation, but not absolute necessity
may	indicates discretion to act

4. Be direct.

Talk directly to your readers. [In the Department's specifications, talk to the Contractor.] Use the imperative mood. [Also, use *you* and *your*.]

This style results in [specifications] that are shorter, crisper, and easier to understand.

5. Use the present tense.

A [specification] speaks as of the time you apply it, not as of the time you draft it.

6. Write positively.

If you can accurately express an idea either positively or negatively, express it positively. It's better to express even a negative in positive form.

Don't say	Say
did not comply with or failed to comply with	violated

[Example: If you violate Pub Cont Code § 4100 et seq., the Department may exercise the remedies provided under Pub Cont Code § 4110.]

7. Avoid use of exceptions.

If possible, state a rule or category directly rather than describing that rule or category by stating its exceptions.

Don't say	Say
All persons except those 18 years or older must . . .	Each person under 18 years of age must . . .

[Use *Section <Section no.> applies to <x>* or *<Requirement description> applies to <x>* or introduce requirement with *For <x>*.]

However, you may use an exception if it avoids a long and cumbersome list or elaborate description.

[If a specification has exceptions, do not use general phrases such as *except as otherwise specified* or *except as otherwise shown*. Instead, specify the particular items to which the specification does not apply.]

8. Avoid split infinitives.

The split infinitive offends many readers, so avoid it if you can.

9. Use the singular noun rather than the plural noun.

To the extent your meaning allows, use a singular noun instead of a plural noun. You will avoid the problem of whether the rule applies separately to each member of a class or jointly to the class as a whole.

Don't say	Say
The guard will issue security badges to the employees who work in Building D and Building E.	The guard will issue a security badge to each employee who works in Building D and each employee who works in Building E.

[Exception: Use plural nouns for headings and titles.]

10. Be consistent.

Don't use different words to denote the same thing. Don't use the same word to denote different things.

Don't say	Say
Each motor vehicle owner must register his or her car with the Automobile Division of the Metropolitan Police Department.	Each automobile owner must register his or her automobile with the Automobile Division of the Metropolitan Police Department.
The tank had a 200-gallon tank for fuel.	The tank had a 200-gallon fuel container.

11. Use parallel structure.

Arrange sentences so that parallel ideas look parallel. This is important when you use a list.

[The following example is from the *Federal Register*'s writing guide except that the format of the lists has been changed to comply with the format described in this guide.]

Nonparallel construction:

The duties of the Executive Secretary of the Administrative Committee are:

1. To take minutes of all the meetings
2. The Executive Secretary answers all the correspondence
3. Writing of monthly reports

Parallel construction:

The duties of the Executive Secretary of the Administrative Committee are to:

1. Take minutes of all the meetings
2. Answer all the correspondence
3. Write the monthly reports

12. Prefer simple words.

[See "Preferred Expressions" of this guide. Also, refer to plain language Web sites, such as www.plainlanguage.gov and www.plainlanguagenetwork.org.]

13. Omit needless words.

Don't say	Say
[located at] [at the following location]	[at]
because of the fact that	because
for the period of	for
[highway right-of-way]	[highway]
[including, but not limited to]	[including]

14. Avoid redundancies.

Don't use word pairs, if the words have the same effect or where the meaning of one included the other.

Examples: Word pairs to avoid

any and all	full and complete
authorize and direct	order and direct
cease and desist	means and includes
each and every	necessary and desirable

15. Use concrete words.

Abstract words can be vague and open to different interpretations. [Use] simple, concrete words. [Be specific.]

Don't say	If you mean
vehicles	automobiles
firearms	rifles
aircraft	helicopters

16. Don't use words that antagonize.

[Not applicable to specification writing.]

17. Avoid noun sandwiches.

Administrative writing uses too many noun clusters — groups of nouns "sandwiched" together. Avoid these confusing constructions by using more prepositions.

Don't say	Say	[Or]
Underground mine worker safety protection procedures development	Development of underground procedures for the protection of the safety of mine workers	[Development of safety procedures for protecting workers underground.]

Which meaning is intended becomes clearer when this four-word sandwich is broken up.

18. Don't use gender-specific terminology.

[Exception: You may use gender-specific terminology if required to match industry-standard terminology or the law.]

19. Write short sentences.

20. Make lists clear and logical in structure.

[List by work sequence or most important to least important. If no logic, list alphabetically. Display a list of ±3 items in a vertical list.]

21. Use short paragraphs.

A writer may improve the clarity of a [specification] by using short, compact paragraphs. Each paragraph should deal with a single, unified topic. Lengthy, complex, or technical discussions should be presented in a series of related paragraphs.

5 BREVITY

Be as brief as possible without reducing clarity.

Avoid prepositions. But do not eliminate prepositions if noun sandwiches or nonparallel clauses or phrases are created as a result.

Don't say	Say
authority of the Engineer	Engineer's authority
drawings for falsework	falsework drawings

Use elliptical clauses.

Don't say	Say
For excusable delays that are not caused by weather, the Department pays your added costs.	For excusable delays not caused by weather, the Department pays your added costs.
If the Engineer determines that a claim is without merit, you may pursue the administrative claim procedure . . .	If the Engineer determines a claim is without merit, you may pursue the administrative claim procedure . . .

Avoid unnecessary qualifiers.

Examples:

actual

all (except to differentiate between partial and whole quantities)

any (except to specify a choice)

existing (with remove, reconstruct, salvage, abandon, or obliterate)

Avoid *respective* and *respectively*.

Don't say	Say
Forms are listed under the names of their respective sections.	Forms are listed under the names of their corresponding sections.
The hat and the scarf must be blue and green, respectively.	The hat must be blue. The scarf must be green.

6 DEFINITIONS FOR CONTRACT PARTS

Use the following definitions for contract parts:

Part	Definition	Use
Plan	A detailed formulation of a program of action (*Webster's Collegiate Dictionary*)	Charts Maps Outlines Strategies
Drawing	Graphic and textual information organized on a two-dimensional surface for the purpose of conveying data about a specific portion of a project. Drawings convey design intent and may show multiple views, either of the whole project or of its parts. Drawings indicate relationships between elements and may show the following for each material, assembly, component, and accessory: location, identification, dimension and size, details, and diagrams of connections, shape, and form. (CSI)	Delineation Tracings Falsework drawings Shop drawings
Specifications	A detailed and exact statement of particulars (Means)	Provisions, conditions, requirements, and terms except as described in Section 2.6 of the Style Guide
Supplemental project information	Information relevant to the project, specified as supplemental project information, and made available to bidders (Section 110 of the *Standard Specifications*)	Permits Agreements Cross sections Foundation recommendations and reviews Geotechnical reports Log of test borings Rock cores Water source As-built drawings

7 INDUSTRY STANDARD

Use terms in prevalent use by other states and the construction industry. Do not use terms unique to the Department. Use of a unique term requires concurrence by the specification owner, Construction, and Legal.

8 PREFERRED EXPRESSIONS

Use	Do not use synonyms
accept (for an agreement to receive something as satisfactory)	approve, authorize, or certify for an agreement to receive something as satisfactory
approve (for CCOs and change order bills)	accept, authorize, or certify for CCOs and change order bills
authorize (for a sanctioning from the Engineer)	accept, approve, or certify for a sanctioning from the Engineer
certify (for drawings and plans (Bus & Prof Code 6735.5))	accept, approve, or authorize for drawings and plans
account	narrate narrative narration
activity	operation
adjacent	next[c]
after[a]	subsequent to
after June 30[a]	on or after July 1
all	all the all of the
allow	permit
assign (as an action of the Contractor)	authorize designate
because[a]	for the reason that
before[a]	prior to
before July 1[a]	no later than June 30
by[a]	by means of
change	alter modify revise

Use	Do not use synonyms
complete	finish
comply with	adhere to follow meet
contract with[a]	enter into a contract with
count[a]	enumerate
described in (to refer to the specifications and the drawings; to refer to the Contract) provided in (to refer to laws) shown in (to refer to info in a table) shown on (to refer to drawing details or notes) specified in (to refer to specifications, including specifications such as ASTMs)	indicated in
document (for general paperwork, including records) record (as a verb) record (as a noun if referring to paperwork containing recorded information)	record (for general paperwork) document (as a verb) document (as a noun if referring to paperwork containing recorded information)
during[a]	during the course of during the duration of
end	terminate
enough[a]	adequate number of sufficient number of
except	excluding
fair[a]	equitable
for[a]	in the interest of with reference to
furnish (except for furnishing work documents and samples to the Engineer or Department) submit (furnishing work documents and samples to the Engineer or Department)	give
how[a]	the manner in which
if (except use *when* in reference to time and *where* in reference to location)	when where subject to in case[a] in the event that[a]
instead of[a]	in lieu of
is	considers (meaning *deems*) deems
job site[b]	site project site contract site
keep[a] (except use *retain* for records)	retain
limits	parameters
may	is authorized[a] reserves the right to
notify	inform
obtain (except use *procure* for materials)	get procure secure
on	upon (except use *upon* to introduce an event or condition)
upon request	at the Engineer's request
order	direct
plant	facility
possible	feasible
produce (except use *manufacture* to focus on a specific production part)	fabricate
project (except use *job site*)	job
provisions (for laws and permits)	conditions

Use	Do not use synonyms	
specifications (for specifications, including specifications such as ASTMs) terms (for contracts not between the Department and the Contractor)	requirements	
quantity[b]	amount	
reconstruct	adjust modify relay	relocate remodel reset
request	ask[c]	
require[a]	necessitate	
result[a]	consequence	
section	subsection	
start	begin commence	
stop[a]	cease	
the, this, these, that, those (Use *the* unless it creates ambiguity.)	such	
to	in order to	
too many[a]	excessive number of	
under[a]	following meeting pursuant to	in accordance with in conformance with under the provisions of
until[a]	until such time as	
use[a]	utilize employ	
way[a]	manner	
when[a]	at the time	
while[a]	during such time as	
withhold	retain	

[a]From Appendix B -- Preferred Expressions of the *Federal Register*'s Drafting Legal Documents
[b]Based on definition in *Means Illustrated Construction Dictionary*
[c]Reduced variation over simpler word

If choosing a word not in this list, balance the following:

1. Use the most basic word.
2. If the most basic word has many definitions and if those definitions can cause confusion (i.e., definition is not obvious by context), use a more precise word.
3. Use industry-standard words.
4. If a law is referenced, use the words in the law (only the core words, not the legalese).

9 SPECIFICATION DUPLICATION

Do not include specifications covered by other specifications. Examples:

No need for	Reason
as shown on the drawings	Drawings are part of the Contract.
at the option of the Contractor	From the *Standard Specifications*: "If not described in the Contract, choose the means and methods to complete the work." (If you specify a minimum or maximum value, it is the Contractor's choice to use anything greater or less. The addition of *as authorized by the Engineer* creates an ambiguous specification.)
Authorization or certification of the <item needing authorization or certification> is contingent on the <item needing authorization or certification> being satisfactory to the railroad company involved.	The contract is between the Department and the Contractor. Third-party contingencies are irrelevant to the Contract.
by the Engineer (for orders, authorizations, certifications, and requests to the Contractor)	Division 100 of the *Standard Specifications* specifies that orders, authorizations, certifications, and requests to the Contractor are by the Engineer
Driving equipment that damages piling shall not be used; provided driving does not injure the posts; and similar "do not use methods or equipment that damage the work" clauses.	covered by Maintenance and Protection and Payment Scope in Division 100 of the *Standard Specifications*
in writing (for Department authorizations, certifications, approvals, notifications, and orders and for Contractor assignments, proposals, requests, subcontracts, and test results)	Division 100 of the *Standard Specifications* specifies that these items are in writing.
Prior to closing a roadway to traffic to accommodate bridge removal operations, the Contractor shall have all necessary workers, materials, and equipment at the site as needed to proceed with the removal work in an expeditious manner. While the roadway is closed to public traffic, work shall be pursued promptly and without interruption until the roadway is reopened to public traffic.	covered by Public Convenience in Division 100 of the *Standard Specifications*
satisfactory to the Engineer, as determined by the Engineer, and similar phrases and clauses	covered by Engineer's Authority in Division 100 of the *Standard Specifications*
specifying what happens if the Engineer fails to do something within a specified time	covered by delay definitions and delay specifications in Division 100 of the *Standard Specifications*
to the Engineer (for submittals and requests from the Contractor)	Division 100 of the *Standard Specifications* tells the Contractor to submit documents and direct questions to the Engineer.
unless otherwise permitted by the Engineer on approval of the Engineer if authorized by the Engineer	Ambiguous. Division 100 of the *Standard Specifications* covers how changes are made.
unless otherwise specified in a project-specific specification	Project-specific specifications include wording to resolve conflicts.
The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with federal, State and local laws, regulations, and requirements.	From Division 100 of the Standard Specifications: "The Engineer's certification does not void any Contract part."
<Work description> includes furnishing materials.	From Division 100 of the *Standard Specifications*: "Furnish the resources, except Department-furnished materials, required to complete the work under the Contract."

10 COMMON CLAUSES AND PHRASES

Use these common clauses and phrases. For additional common clauses, see Payment Clauses and References.

To	Write
designate work as force account work	<Work description> is force account work.
say the Department does not pay for something (Do not use for optional use of materials or equipment or for samples. See Payment Scope of the *Standard Specifications* for descriptions of what the Department pays for.)	The Department does not pay for < >. The Department does not adjust payment for < >. [Do not use *at no additional cost to the Department* or *at the Contractor's expense*.]
say one specification does not relieve the Contractor of the responsibilities in another specification	< > does not void < >. Example: Partnering does not void any contract part.
direct the Contractor to dispose of materials	Dispose of <the material>.
submit documents to someone other than the Engineer	Submit <document> to <location>. Notify the Engineer of the submittal. Include in the notification the date and contents of the submittal.
submit drawings to the Engineer signed by a registered civil engineer	Submit drawings.
submit drawings signed by a registered civil engineer to Structure Design	Submit drawings to Structure Design.
submit drawings signed by a registered mechanical or electrical engineer to the Engineer	Submit drawings signed by an engineer registered as a(n) < > engineer in the State.
submit drawings signed by a registered mechanical or electrical to someone other than the Engineer	Submit drawings signed by an engineer registered as a(n) < > engineer in the State to <location>. Notify the Engineer of the submittal. Include in the notification the date and contents of the submittal.

11 PAYMENT CLAUSES

Division 100

To	Write
describe measurement for payment	The Department measures <how the Department measures>.
describe payment	The Department pays for <what the Department pays for>.
charge the Contractor for something	The Department deducts <these charges; the cost of this work; the cost of <modifier> work>.

Other Divisions

To	Write
describe measurement for payment	<Bid item> is measured <description of measuring basis (e.g., from end to end, along the center line)>.
describe measurement for one item in the same manner as another	<Bid item> is measured as specified for <item mimicked>.
pay for one item as another (aka transfer pay clause)	<Item> is paid for as <bid item>.
include payment for one item in another (aka full payment clause)	Payment for <item to be included> is included in payment for <bid item>.
charge the Contractor for something	<These charges; the cost of this work; the cost of <modifier> work> is deducted.

NOTE: Passive voice is appropriate because Division 100 defines who measures and pays.

Division 100 of the *Standard Specifications* refers to the Bid Item List for bid items and measurement units.

For bid item names, place modifiers after the noun. Place modifiers in the order of increasing specificity. Examples:

Reinforcing Steel

Reinforcing Steel, Bridge

Reinforcing Steel, Bridge, Epoxy Coated

But do not use *Steel, Reinforcing*. Use the industry-standard term for the base term.

For headings and clauses other than measurement and payment clauses, use standard English for placement of modifiers—i.e., modifiers before the noun.

Use imperative mood. Example: Remove Bridge; not Bridge Removal

Use arabic numerals to represent locations. (Remove Bridge, Location 2; not Remove Bridge, Location B; not Remove Bridge, Location II)

12 REFERENCES

To specify	Use	Example
That an item must comply with a specification	<Item> must comply with <Section number, ASTM, etc.>.	High-strength bolted connections must comply with Section xxx.x. Calcium chloride must comply with ASTM D 98.
That an item must comply with a specific part of a specification	<Item> must comply with the <material> specifications <for <referenced item>> in<Section No., ASTM, etc.>.	Anchorage devices must comply with the specifications for concrete anchorage devices in Section xxx.x.x. Corrugated aluminum pipe inlets must comply with the material specifications in Section xxx.x.x.
That work must be performed following a specification or law	<Furnish, handle, place, test> under <section number, ASTM, law, etc.>.	Handle rock core samples under ASTM D 5079.
A reference to a Web site	For <Item> go to: <Web address> Submit <item> with <form name>. For the form go to: <Web address> For <item>, go to <Web site owner> Web site. (Do not add *Electronic copies of* to the name of the item. Except in Division 100, do not specify Web site addresses in the *Standard Specifications*. Use Indent 1 Hanging for the address line. Do not add a space before or after the address. Provide only base addresses.)	For a current list of debarred contractors go to: http://www.dir.ca.gov Submit your request on a *Request for Contractor Staking* form. For the form, go to: http://cef.dot.ca.gov For a detailed map, go to the Department's Pavement Web site.

Do not use *attention is directed to* or similar phrases; use direct references for required references.

Do not use *in this section*, *specified herein*, or similar phrases. Be specific and provide section number.

Use spacing as specified by the referenced organization. For an ASTM or AASHTO reference, add a space between the letter designation and the number. For a federal or military specification, do not add the letter or number-letter combination that indicates the version.

Examples:

ASTM A 706/A 706M
AASHTO M 314

MIL-P-236
Federal Specification TT-S-230

Refer to forms by form names. Do not include form numbers.

13 PROPRIETARY ITEMS

For a proprietary item, specify only the product's name and company's name. Do not provide company addresses and phone numbers because they may change.

14 LAW CITATION

Include a law if the law:

1. States that it must be stipulated in the Contract.
2. Provides options and the Department has chosen to specify one of the options.
3. Provides rules but does not designate the responsibilities of each party.
4. Is not widely known in the construction industry. Provide only enough information to alert the bidders to the basic requirements to be met. (Do not cite laws that may be imposed on contractors by other agencies for the purpose of running a business, having employees, owning vehicles, and protecting the public. Contractors are expected to know these laws.)
5. Involves a penalty collected by the Department.

If references are not required and are only added as an aid, make them parenthetical. Example: The Contractor must be properly licensed at the time the contract is awarded (Pub Cont Code § 10164).

If the law must be included in the Contract, use exact words only if required by law.

Use the citation format described in the *Universal Citation Guide*. For the guide, go to:

http://www.aallnet.org/committee/citation/ucg/

Exceptions to *Universal Citation Guide* format:

1. Do not include the name of the act (unless it is needed for clarity).
2. Do not include *CA* because the *Standard Specifications* specifies that a referenced law is a CA law unless specified as a federal law (exception: CA Code of Regs).
3. Do not italicize.

Federal Law Abbreviations

United States Code	USC
Code of Federal Regulations	CFR

CA Statute Abbreviations

Business and Professions	Bus & Prof Code
Civil	Civ Code
Civil Procedure	Civ Pro Code
Commercial	Com Code
Corporations	Corp Code
Financial	Fin Code
Fish and game	Fish & Game Code
Food and Agricultural	Food & Agri Code
Government	Govt Code
Harbors and Navigation	Harb & Nav Code
Health and Safety	Health & Safety Code
Insurance	Ins Code
Labor	Labor Code
Military and Veterans	Mil & Vet Code
Public Contract	Pub Cont Code
Public Resources	Pub Res Code
Public Utilities	Pub Util Code
Streets and Highways	St & Hwy Code
Vehicle	Veh Code

CA Regulation Abbreviations

CA Code of Regulations	CA Code of Regs

Other abbreviations can be found in Appendix C of the *Universal Citation Guide*.

For a CFR, do not include the section symbol.

Examples:

Reference	Citation meaning
The purpose of this form is to collect data required under 49 CFR 26.	Title 49 of the Code of Federal Regulations, Part 26
Under 49 CFR 26.13(b) . . .	Title 49 of the Code of Federal Regulations, Section 26.13(b)
29 USC § 201 et seq. applies to this Contract.	Title 29 of the United States Code, Section 201 and the following
The State makes the partial payments under Pub Cont Code § 10264.	California Public Contract Code, Section 10264

15 PUNCTUATION AND TYPOGRAPHY

15.1 Capitalization

Capitalize the following terms where used as defined in the *Standard Specifications:*

Bid Item List	Department	Structure Design
Contract	Engineer	Transportation Laboratory
Contractor	State	

Capitalize *the Bidder*. Do not capitalize *a bidder*.

Capitalize *section* where used with a number (CSI).

Capitalize the following terms as used in the reference (ASTM):

type class grade

Capitalize each main word of a form name.

Use ALL CAPS only for 1st- and 2nd-level headings.

15.2 Commas

Use the serial comma (CMOS 6.19).

Use only technically necessary commas. Do not use a comma just to indicate a pause.

15.3 Emphasis

Use bold type only for table titles, headings, and definitions.

Do not use bold, caps, underlining, quotation marks, or italics for emphasis.

15.4 Font

Use 10 point in tables.

For a punctuation mark between roman and italic text, use the font of the main or surrounding text (CMOS 6.3).

15.5 Parentheses

Use parentheses only for:

1. Law citation references
2. Abbreviations

Do not enclose in parentheses information that is essential to the specification. For example, do not use parentheses as shown in the following sentence:

> Training is allowed in lower level management positions (such as office engineers, estimators, and timekeepers) if the training is oriented toward construction applications.

15.6 Spaces

Use 1 space after each period and colon (CMOS 2.12).

Use 2 spaces between a heading number and name.

16 ABBREVIATIONS

Use an abbreviation if it is either of the following:

1. Shown in:
   1.1. Section 110 of the *Standard Specifications*
   1.2. Appendix C of NIST Handbook 44
   1.3. Collegiate dictionary
2. More familiar to the reader than its spelled-out form

Exceptions:

1. Do not use an abbreviation with a superscript.
2. Do not use *min* except in tables
3. If in doubt about the familiarity of the abbreviation to the reader, define the abbreviation.

Except as previously provided, avoid abbreviations (CSI); however, you may use an abbreviation if the abbreviation is in a referenced standard.

You may use a Department-unique abbreviation only if it is used 3 or more times; but do not use an abbreviation if only a few letters are eliminated. For example, QC is defined, and only 6 letters are eliminated by using QCM instead of QC manager; therefore, do not use QCM.

Avoid using an abbreviation in a heading.

Use abbreviations in tables where practical.

In the *Standard Specifications*, define Department-unique abbreviations in Division 100.

In a project-specific specification, define an abbreviation at its 1st occurrence (CMOS 15.2).

17 DEFINITIONS

Define a term:

1. Not industry standard
2. With multiple meanings and the term can reasonably be interpreted multiple ways

If the term is defined in a *Means Illustrated Construction Dictionary*, do not define it.

Avoid using the term being defined in the text of its definition.

Avoid beginning a definition with an article.

List definitions in alphabetical order.

Capitalize the term only if it is capitalized in the text (CMOS 2.28).

End each definition with a period.

Use bold type for the word being defined.

Use a colon followed by 1 space between the word being defined and the definition.

Use Hanging (definition) style.

Example:

signal head: Assembly containing 1 or more signal faces.

18 SYMBOLS

Use keyboard symbols. If you need additional symbols, use the command *insert symbol*.

In addition to numerals, punctuation marks, and mathematical signs and symbols, use the following symbols in text:

$ & (in law citations) §

Use symbols in tables where practical.

19 NUMBERS

Use numerals for quantities, sizes, measurements, and similar entities. Exceptions:

1. Use a word at the beginning of a sentence.
2. If numbers are used to define both size and quantity, use a word for the quantity (three 1/2-inch holes; not 3 1/2-inch holes).
3. Use million and billion.

Use arabic numerals unless roman numerals are used in a referenced document or detail; in which case, match the document or detail.

Use ordinal numerals where possible. For example, 1st, 2nd, 23rd; not first, second, twenty-third; 2nd paragraph; not paragraph 2. Do not use superscripts. (Make sure Microsoft Word is not set to automatically superscript.)

Use a 0 in the unit place of a number less than 1 (0.2; not .2).

Use commas (not spaces) in numerals containing 4 or more digits (CMOS 9.22).

Do not add a space between -, +, or ± and its associated numeral when these signs are used to modify the numeral rather than combine 2 numerals (CMOS 14.14).

20 DIMENSIONS

Do not repeat measurement unit (e.g., 2 by 4 inches; not 2 inches by 4 inches).

Use *by* for dimensions 2 by 4 inches, not 2 x 4 inches (CSI).

21 EQUATIONS

Introduce an equation as you would a list.

Use the letter *x* for a multiplication sign.

Use a slash for a division sign.

Use a space before and a space after a mathematical sign except a division sign.

Avoid the use of sub- and superscript fonts.

Simple equations may be used within text. Simple equations may be written with words. For consistency, use sum, difference, product, and quotient instead of using mathematical operators.

Display more complicated equations on a separate line clear of text.

Italicize variables.

Introduce the variables with *where* followed by a colon.

Define the variables.

Use Indent 1 Hanging style.

Example:

Use the following equation to calculate the air-dry weight:

$W = (A \times 62.3)/(B - C)$

where:

W = air-dry weight, lb/cu ft
A = 90-day weight of the cylinder as dried, lb
B = saturated, surface-dry weight of cylinder, lb
C = suspended-immersed weight of cylinder, lb

Avoid using Microsoft Word's Equation Editor. If you must use Equation Editor, perform the command *Unlink Fields* to convert the equation into text format.

22 CHEMICALS

Use chemical names; avoid using chemical formulas.

23 FRACTIONS

Do not use super- and subscript fonts (1-1/2, not $1^1/_2$) (CSI).

24 MEASUREMENTS

Use an abbreviation instead of a word where used with a number. Exceptions (CSI):

1. Spell out *feet* where *inches* are not used (8 feet).
2. Spell out *inches* where *feet* are not used (8 inches).
3. Where *feet* and *inches* are both used, use symbols (8'-8" or 8'-2-1/2").
4. Spell out time measurements (year, hour).

Exception: You may use ft for foot or feet and in for inch or inches in nonheading table cells.

Use a space between a number and an abbreviation (CMOS 7.90).

Use a hyphen between a number and an unabbreviated measurement unit if the unit is an adjective before a noun. Use a space if the unit is after a noun.

Use a hyphen between combination measurements (8'-2") (CSI).

In measurement abbreviations, omit periods (NIST).

For temperatures, use *degrees* in text (CSI) and the degree symbol in tables. Use a space between the numeral and the degree symbol (NIST).

In text: 72 degrees F 22 degrees C In tables: 72 °F 22 °C

Use military time for traffic operations; otherwise, use civilian time (agreement with Traffic).

For civilian time, use midnight and noon instead of 12:00 p.m. and 12:00 a.m.

Examples from CMOS 9.42 through 9.44:

Civilian	Military
11:00 p.m.	2300
noon	1200
midnight	2400 or 0000
12:01 a.m.	0001
2:38 p.m.	1438

For periods that are not dependent on weather (submittals, notifications, review times, etc.), use days or business days, not working days.

Use one of the following:

1. *Days* for specifying periods over 5 days
2. *Business days* if specifying periods 5 days or less

Do not specify time periods in weeks or months.

Use 7 days for 1 week; 15 days for 2 weeks; 5-day increments for over 15 days. For technically related time periods, this rule does not apply if precision is needed (curing periods).

25 PERCENTAGES

Do not repeat *percent* in ranges and tolerances.

Don't say	Say
2 percent to 4 percent	2 to 4 percent
3 percent ±1 percent	3 ± 1 percent

26 ADDRESSES

Follow USPS recommendations.

Format	Example
Mailstop Code	MSC 43
Attention Line	OFFICE ENGINEER
Business/Firm Name	DEPARTMENT OF TRANSPORTATION
Delivery Address Line	1727 30TH ST
City, State, ZIP + 4	SACRAMENTO CA 95816-7005

To keep the address together on 1 page, place the address in a single-cell, borderless table.

27 PHONE NUMBERS

(area code) space xxx hyphen xxxx (CMOS 6.82)

28 RANGES

In text, indicate a range that includes the endpoints by using the words *from* and *to*. Do not repeat the measurement unit.

Example:

Don't say	Say
10 inches to 14 inches	from 10 to 14 inches

In tables, indicate a range by using a en dash.

29 SLOPES

Show slopes like this: 2:1 (horizontal:vertical)

30 TOLERANCES

For tolerances, add a space on each side of ± (CMOS 14.58).

Example: 4.2 ± 0.1 inches

31 LISTS

Avoid using *the following* in the introduction to inclusive lists.

Example:

Don't say	Say
Miscellaneous metal consists of the following:	Miscellaneous metal consists of:

Capitalize the first word of each item in a list.

Use a period at the end of each item in a list if an item is a complete sentence.

All items in a list apply unless the items are specified as choices (Division 100 of the *Standard Specifications*); therefore, if the list is not inclusive add *one of the following*, *either of the following*, *any of the following*, or other phrase that specifies how the items apply.

Avoid beginning items in a list with articles; avoid ending the introduction to a list with an article. Although they may be needed to make a grammatically correct statement, *a*, *an*, and *the* are often not needed in lists. Lists with or without the articles provide the same information, but the lists are crisper without the articles.

Don't say	Say
Bring: 1. A pen 2. A pencil 3. A calculator or Bring a: 1. Pen 2. Pencil 3. Calculator	Bring: 1. Pen 2. Pencil 3. Calculator

Space and number lists as shown in the following example:

Specification writing requires:

1. Familiarity with:
   1.1. Material properties
   1.2. Construction procedures
2. Knowledge of contract law
3. Proficiency in English because using words incorrectly:
   3.1. Creates confusion
   3.2. Costs time and money
   3.3. Reflects poorly on the Department
4. Mastery of punctuation

32 TABLES

Display tabular work as shown Table 32:1. Introduce a table as you would a list. If you are referring to a table from somewhere other than the introduction, refer to it by its number; e.g., shown in Table 32:1.

Table 32:1 Table Parts

		Column heading	
Column heading	Column heading	Column subheading	Column subheading
Row heading[a] Subheading	This entry is an overrun entry.		
Row heading			--

NOTE: A general note applies to the table as a whole.
[a]Use alphabetic superscripts to reference notes to specific table elements.

Number the table with the section number in which the table appears. Include *(RSS)* for a revised standard specification. Include *(PSS)* for a revised project-specific specification. If a section contains more than 1 table, follow the number (or type designation for an RSS or PSS) with a colon and the sequential number of the table within the section.

Table 32:2 Table Numbering

Section	Number of tables in section	Specification type	Table designation
106.3.4.2	1	SS	106.3.4.2
101.5	2	SS	101.5:1 for the 1st table in the section 101.5:2 for the 2nd table in the section
101.5	1	RSS	101.5 (RSS)
107.2.8	2	PSS	107.2.8 (PSS):1 for the 1st table in the section 107.2.8 (PSS):2 for the 2nd table in the section

Do not use outside borders.

Use 1/2 point gridlines between cells.

Make the table no wider than the paragraph width. Horizontally center the table on the page.

If the table is less than the paragraph width, center the table.

Center 2 hyphens in a cell with no data.

Add a line space before and after the table. If the style of the text before the table is Normal, do not add an additional space. (A space after the paragraph is built into the style Normal.)

If a simple list does not adequately provide a clear product, consider using an if-then table. The example below is from plainlanguage.gov with the format slightly modified to be more consistent with the preceding guidance. Refer to plain language Web sites for other examples, but use the format described in this guide.

Table 32:3 Forest Management Deductions

If . . .	and . . .	then the percentage of the deduction is . . .
a tribe requests an increase in the deduction through a tribal resolution	they send us a written request	the percentage requested by the tribe.
an authorized tribal representative requests a decrease in the deduction	an authorized tribal representative requests a decrease in the deduction	the percentage requested, with a one percent minimum.
an authorized tribal representative requests a waiver of the deduction	we approve the waiver	waived.
none of the above conditions apply		the percentage in effect on November 28, 1990, or 10 percent, whichever is less.

You read the ellipses in the column headings as if they were replaced with the text below the column headings.

APPENDIX A ORGANIZATION

Go to appendix A to *2010 Style Guide* at:

http://oe.dot.ca.gov/

APPENDIX B REVISED STANDARD SPECIFICATIONS AND PROJECT-SPECIFIC SPECIFICATIONS

Go to appendix B to *2010 Style Guide* at:

http://oe.dot.ca.gov/

BIBLIOGRAPHY

ASTM. *Form and Style for ASTM Standards*. ASTM International, West Conshohocken, PA, 2004.

Construction Specifications Institute. *The Project Resource Manual: CSI Manual of Practice*, 5th ed. McGraw-Hill, 2005.

Federal Register, "Drafting Legal Documents," http://www.archives.gov/federal-register/write/legal-docs/index.html.

"plan." Merriam-Webster Online Dictionary. 2004. http://www.merriam-webster.com (13 Jan. 2007).

R.S. Means Company, Inc. *Means Illustrated Construction Dictionary*, 2nd ed. Kingston, MA: R.S. Means, 2003.

A1 TERMS USED FOR SECTION ORGANIZATION

1st-level heading: 1st heading level under a division; heading level of a primary section of a division; contains no period (for example: 101, 203, 1302).
1st-level section: Section with a 1st-level heading.
2nd-level heading: 1st heading level under a 1st-level heading; contains 1 period (for example: 101.1, 203.3, 1302.4).
2nd-level section: Section with a 2nd-level heading.
3rd-level heading: 1st heading level under a 2nd-level heading; contains 2 periods (for example: 101.1.2, 203.3.4, 1302.4.3).
3rd-level section: Section with a 3rd-level heading.
4th-level heading: 1st heading level under a 3rd-level heading; contains 3 periods (for example: 101.1.2.4, 203.3.4.1, 1302.4.3.2).
4th-level section: Section with a 4th-level heading.
hard heading: Heading required in each 1st-level section whether it is used or not.
soft heading: Heading included as required.

A2 DIVISIONS AND 1ST-LEVEL SECTIONS

100 GENERAL

101 GENERAL

102 BIDDING

103 CONTRACT AWARD AND EXECUTION

104 SCOPE OF WORK

105 CONTROL OF WORK

106 CONTROL OF MATERIALS

107 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

108 PROSECUTION AND PROGRESS

109 PAYMENT

200 CONSTRUCTION—GENERAL

201 GENERAL

202 MAINTAINING TRAFFIC—GENERAL

203–209 <SPECIFIC MAINTAINING TRAFFIC TOPICS>

210–219 RESERVED

220 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—GENERAL

221 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—CULTURAL RESOURCES

222 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE

223 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—NATIVE AMERICAN ISSUES

224 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—AESTHETICS

225 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—BIOLOGICAL RESOURCES

226 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—PALEONTOLOGY

227 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—NOISE AND VIBRATION

228 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—AIR QUALITY

229 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—SOLID WASTE DISPOSAL AND RECYCLING

230 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—HAZARDOUS WASTE AND CONTAMINATION

231 ENVIRONMENTAL COMPLIANCE AND STEWARDSHIP—OTHER INTERAGENCY RELATIONS

232–239 RESERVED

240 WATER POLLUTION CONTROL

241 EROSION CONTROL

242–259 RESERVED

260 EXISTING HIGHWAY FACILITIES—GENERAL

261 EXISTING HIGHWAY FACILITIES—REMOVAL

262 EXISTING HIGHWAY FACILITIES—SALVAGING

263 EXISTING HIGHWAY FACILITIES—ABANDONMENT

264 EXISTING HIGHWAY FACILITIES—RUBBLIZING

265 EXISTING HIGHWAY FACILITIES—DESTRUCTION OF WATER WELLS

266–276 RESERVED

277–288 <OTHER TOPICS>

289 <LAST KNOWN TOPIC>

290–299 RESERVED

300 COMMON MATERIALS

301 GENERAL

302 AGGREGRATE

303 BITUMINOUS MATERIALS

304 GEOSYNTHETICS

305–319 <TOPICS>

320–329 RESERVED

330 EPOXY—GENERAL

331–336 <SPECIFIC TYPES OF EPOXY>

337–339 RESERVED

340 PAINT

341–388 <OTHER TOPICS>

389 <LAST KNOWN TOPIC>

390–399 RESERVED

400 CONCRETE AND METAL MATERIALS

401 GENERAL

402 HOT MIX ASPHALT CONCRETE

403–409 <OTHER ASPHALT CONCRETE TOPICS>

410 PORTLAND CEMENT CONCRETE

411–419 RESERVED

420 REINFORCING STEEL—GENERAL

421 REINFORCING STEEL—EPOXY COATED, NONPREFABRICATED

422 REINFORCING STEEL—EPOXY COATED, PREFABRICATED

423 REINFORCING STEEL—GALVANIZED

424 REINFORCING STEEL—STAINLESS STEEL

425–426 RESERVED

427 REINFORCING STEEL—HEADED BAR REINFORCEMENT

428 REINFORCING STEEL—STRAY-CURRENT PROTECTION

429–439 RESERVED

440 PRESTRESSING STEEL

441–449 RESERVED

450 METALS—GENERAL

451–459 <SPECIFIC TYPES OF METAL>

460–469 RESERVED

470–488 <OTHER TOPICS>

489 <LAST KNOWN TOPIC>

490–499 RESERVED

500 EARTHWORK

501 GENERAL

502 DUST CONTROL

503 CLEARING AND GRUBBING

504 EXCAVATION AND EMBANKMENT—GENERAL

505 EXCAVATION AND EMBANKMENT—ROADWAY EXCAVATION AND EMBANKMENT

506 EXCAVATION AND EMBANKMENT—STRUCTURE EXCAVATION AND BACKFILL

507 EXCAVATION AND EMBANKMENT—MINOR STRUCTURE EXCAVATION AND BACKFILL

508–524 RESERVED

525 MANMADE FILL MATERIAL

526 SLOPE PROTECTION

527 ROADWAY FINISHING

528–588 <OTHER TOPICS>

589 <LAST KNOWN TOPIC>

590–499 RESERVED

600 PAVEMENTS

601 GENERAL

602 ASPHALTIC EMULSION

603 BASE COURSES—GENERAL

604 BASE COURSES—SUBBASES

605 BASE COURSES—BASE

606 BASE COURSES—AGGREGATE

607 BASE COURSES—CEMENT TREATED

608 BASE COURSES—LEAN CONCRETE

609 BASE COURSES—PERMEABLE TREATED

610–611 RESERVED

612 CONCRETE PAVEMENT—GENERAL

613 CONCRETE PAVEMENT—ASPHALT CONCRETE

614 CONCRETE PAVEMENT—ASPHALT CONCRETE REHABILITATION

615 CONCRETE PAVEMENT—PORTLAND CEMENT CONCRETE

616 CONCRETE PAVEMENT—PORTLAND CEMENT CONCRETE REHABILITATION

617–618 RESERVED

619 SUBSURFACE TREATMENTS—GENERAL

620 SUBSURFACE TREATMENTS—JACKING

621 SUBSURFACE TREATMENTS—SUBSEALING

622–623 RESERVED

624 SURFACINGS—GENERAL

625 SURFACINGS—GRINDING CONCRETE PAVEMENT

626 SURFACINGS—SEAL COAT

627 SURFACINGS—ASPHALT

628 SURFACINGS—ASPHALTIC EMULSIONS

629 SURFACINGS—SLURRY SEAL

630–644 RESERVED

645–688 <OTHER TOPICS>

689 <LAST KNOWN TOPIC>

690–699 RESERVED

700 EARTH RETAINING STRUCTURES

701 GENERAL

702 WALLS—CAST-IN-PLACE

703 WALLS—SOIL NAIL

704 WALLS—TIEBACK

705 WALLS—SOLDIER PILE

706 WALLS—MASONRY BLOCK

707 SHOTCRETE

708 MECHANICALLY STABILIZED EMBANKMENT

709–788 <OTHER TOPICS>

789 <LAST KNOWN TOPIC>

790–799 RESERVED

800 MAJOR STRUCTURES

801 GENERAL

802 PILES—GENERAL

803 PILES—DRIVEN

804 PILES—CAST-IN-PLACE

805–814 <OTHER PILES>

815–824 RESERVED

825 STRUCTURES—CONCRETE

826 STRUCTURES—STEEL

827 STRUCTURES—SIGN

828 STRUCTURES—WOOD

829–888 <OTHER TOPICS>

889 <LAST KNOWN TOPIC>

890–899 RESERVED

900 REHABILITATE CONCRETE STRUCTURES

901 GENERAL

902 REMOVE UNSOUND CONCRETE

903 REMOVE ASPHALT CONCRETE

904–909 RESERVED

910 PREPARE CONCRETE BRIDGE DECKS

911 CLEAN CONCRETE BRIDGE DECKS

912 CLEAN EXPANSION JOINTS

913 RAPID SETTING CONCRETE PATCH

914 METHACRYLATE RESIN

915 POLYESTER CONCRETE OVERLAY

916 REFINISH BRIDGE DECK

917 CLOSE ACCESS DECK

918 TEMPORARY SUPPORT

919–924 RESERVED

925 REPLACE BEARING

926 REPLACE STEEL GIRDER

927–988 RESERVED

989 <LAST KNOWN TOPIC>

990–999 RESERVED

1000 DRAINAGE SYSTEMS

1000 GENERAL

1002–1088 <TOPICS>

1089 <LAST KNOWN TOPIC>

1090–1099 RESERVED

1100 TRAFFIC CONTROL

1101 GENERAL

1102–1188 <TOPICS>

1189 <LAST KNOWN TOPIC>

1190–1199 RESERVED

1200 ELECTRICAL

1201 GENERAL

1202–1288 <TOPICS>

1289 <LAST KNOWN TOPIC>

1290–1299 RESERVED

1300 LANDSCAPING

1301 GENERAL

1302 TOPSOIL

1303 STRAW

1304 FIBER

1305 STABILIZING EMULSION

1306 COMPOST

1307 MULCH

1308 EROSION BLANKETS

1309 FIBER EMULSION

1310 FIBER ROLLS

1311 COMMERCIAL FERTILIZER

1312 SOIL AMENDMENT

1313 IRON SULFATE

1314 SEED

1315 IRRIGATION—GENERAL

1316 IRRIGATION—PIPE, GENERAL

1317 IRRIGATION—PIPE, PVC

1318 IRRIGATION—PIPE, GALVANIZED STEEL

1319 IRRIGATION—PIPE, COPPER

1320 IRRIGATION—PIPE, IRON

1321 IRRIGATION—BACKFLOW PREVENTERS

1322 IRRIGATION—VALVES

1323–1329 RESERVED

1330–1388 <TOPICS>

1389 <LAST KNOWN TOPIC>

1390–1399 RESERVED

1400 MISCELLANEOUS CONSTRUCTION

1401 GENERAL

1402 FENCES—GENERAL

1403 FENCES—BARBED WIRE AND WOVEN WIRE

1404 FENCES—CHAIN LINK

1405 FENCES—TYPE ESA TEMPORARY

1406–1419 RESERVED

1420 MINOR STRUCTURES—GENERAL

1421 MINOR STRUCTURES—CURBS AND GUTTERS

1422 MINOR STRUCTURES—SIDEWALKS

1423 MINOR STRUCTURES—SHOTCRETE

1424 MINOR STRUCTURES—SURVEY MONUMENTS

1425–1429 <OTHER TOPICS>

1430–1439 RESERVED

1440 NOISE BARRIERS—GENERAL

1441 NOISE BARRIERS—MASONRY

1442 NOISE BARRIERS—PRECAST CONCRETE

1443–1449 RESERVED

1450–1488 <OTHER TOPICS>

1489 <LAST KNOWN TOPIC>

1490–1499 RESERVED

1500 BUILDINGS

1501 GENERAL REQUIREMENTS

1502 EXISTING CONDITIONS

1503 CONCRETE

1504 MASONRY

1505 METALS

1506 WOOD, PLASTICS, AND COMPOSITES

1507 THERMAL AND MOISTURE PROTECTION

1508 OPENINGS

1509 FINISHES

1510 SPECIALTIES

1511 EQUIPMENT

1512 FURNISHINGS

1513 SPECIAL CONSTRUCTION

1514 CONVEYING EQUIPMENT

1515 RESERVED

1516–1520 RESERVED

1521 FIRE SUPPRESSION

1522 PLUMBING

1523 HEATING, VENTILATING, AND AIR CONDITIONING

1524 RESERVED

1525 INTEGRATED AUTOMATION

1526 ELECTRICAL

1527 COMMUNICATIONS

1528 ELECTRONIC SAFETY AND SECURITY

1529–1530 RESERVED

1531 EARTHWORK

1532 EXTERIOR IMPROVEMENTS

1533 UTILITIES

1534 TRANSPORTATION

1535 WATERWAY AND MARINE CONSTRUCTION

1536–1839 RESERVED

1540 PROCESS INTEGRATION

1541 MATERIAL PROCESSING AND HANDLING EQUIPMENT

1542 PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

1543 PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT

1544 POLLUTION CONTROL EQUIPMENT

1545 INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

1546–1847 RESERVED

1548 ELECTRICAL POWER GENERATION

1549 RESERVED

Except for the division for buildings:

1. Reserve the last 10 1st-level sections for future specifications. For example, reserve 590–599 for future earthwork specifications.
2. Reserve other 1st-level sections following subjects for which you anticipate future topics. For example, after the last known noise barrier specification, reserve a few section numbers for new noise barrier specifications so that any new noise barrier specification will be near the other noise barrier specifications instead of at the end of the division.

Specify a temporary item in or near the section of the corresponding permanent item. If a temporary item doesn't correspond with the permanent item, create a new section in the applicable division or in the Miscellaneous Construction division.

Specify a reconstructed item in or near the section of the corresponding item for new work.

A3 SECTIONS–GENERAL

Write *Not Used* under hard headings under which no specifications are included.

Write *Reserved* under soft headings under which no specifications are included.

For a 1st-level general section that is not titled "GENERAL," add "–GENERAL" to the title (as in the title of A3).

Include a heading titled "General" for specifications that apply to multiple sections and as a placeholder for project-specific specifications that do not fall under the other headings. If used only as a placeholder, write *Reserved* under the heading.

A4 DIVISION 100 SECTIONS

Each Division 100 section begins with a general section that summarizes the contents of the section.

Include in Section 101.3 abbreviations used in the *Standard Specifications*.

Include in Section 101.4 definitions of terms used in:

1. Division 100 of the *Standard Specifications*
2. Multiple divisions

Headings:

XXX.1 GENERAL

XXX.2 SECTION TITLE (as required)

XXX.2.1 General (if a 3rd-level section is required)

XXX.2.2 Section Title (as required)

A5 1ST-LEVEL GENERAL SECTIONS EXCEPT IN DIVISION 100

Include general and common specifications for the division. These specifications do not have to apply to all sections of the division; the more specific sections will govern over the specifications in the general section. These specifications may be of the general, material, construction, or payment categories.

In Section 201, include general construction specifications that either apply to multiple divisions or are incidental to other Division 200 sections.

Headings:

XXX.1 SUMMARY

XXX.2 SECTION TITLE (as required)

XXX.2.1 General (if a 3rd-level section is required)

XXX.2.2 Section Title (as required)

A6 2ND-LEVEL AND REQUIRED 3RD-LEVEL SECTIONS EXCEPT IN DIVISION 100 AND FOR THE 1ST-LEVEL GENERAL SECTION OF EACH DIVISION

XXX.1 GENERAL

XXX.1.1 Summary

XXX.1.2 Definitions

XXX.1.3 Submittals

XXX.1.4 Quality Control and Assurance

XXX.2 MATERIALS

XXX.3 CONSTRUCTION

XXX.4 PAYMENT

Use all of these headings in each 1st-level section. If a section is not used, write *Not Used* under the heading.

A7 ADDITIONAL 3RD-LEVEL AND 4TH-LEVEL SECTIONS

As required for clarity. Avoid using sections beyond the 4th level.

A8 SECTION CONTENTS EXCEPT IN DIVISION 100 AND FOR THE 1ST-LEVEL GENERAL SECTION OF EACH DIVISION

Bold text indicates headings for required sections. Nonbolded text indicate contents of the sections.

XXX.1 GENERAL

XXX.1.1 Summary

Summary of section contents

Legal references

General specifications that do not follow under the other headings

XXX.1.2 Definitions

Definitions

XXX.1.3 Submittals

Shop drawings

Product data

Samples

QC/QA submittals (design data, test reports, certificates, manufacturers' instructions, manufacturers' field reports, qualification statements)

Closeout submittals

XXX.1.4 Quality Control and Assurance

Qualifications

Regulatory requirements

Certifications

Manufacturer's field services

Preinstallation meetings

Source quality control (tests, inspection, performance verification)

Field quality control (site tests, inspection, field samples)

Warranty

Mock-ups

XXX.2 MATERIALS

Specifications for materials before they are delivered to the job site (fabrication, proportion, handling, delivery)

XXX.3 CONSTRUCTION

Specifications for how the materials are used after they are delivered to the job site. Specify in the order the element is constructed during construction.

Order-of-work specifications. Place an order of work specification in the specification of the item that occurs first.

XXX.4 PAYMENT

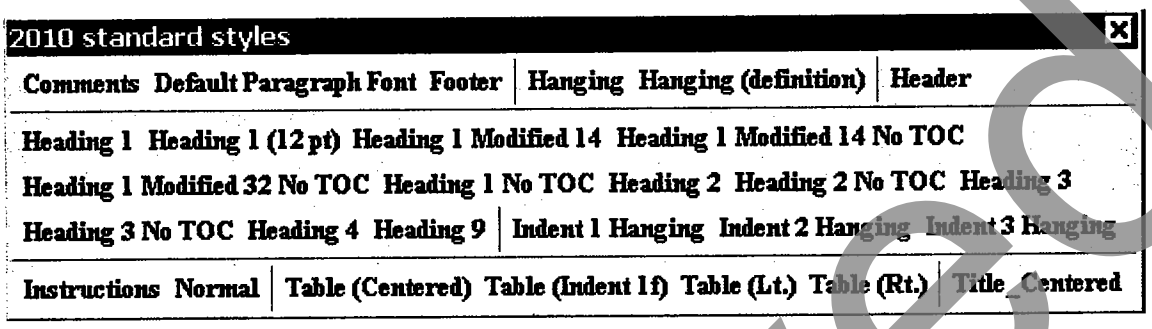
Payment clauses, including how bid items are measured for payment.

A9 SPECIFICATION FORMAT-STYLE OUTLINE

1. Use the 2010 template available at:

   http://oe.dot.ca.gov/

   The standard styles for this template are:



2. Do not use:

   2.1. Tracked changes
   2.2. Hyperlinks
   2.3. Comments
   2.4. Highlighted text
   2.5. Fields (Headers are ok.)
   2.6. Embedded pictures
   2.7. Bullets
   2.8. Smart quotes

3. Check spelling.
4. Check document formatting with hidden text on, and then check it with hidden text off.
5. For project-specific specifications, after all edits have been made, run "99HeaderFix." **DO NOT UPDATE THE HEADER MANUALLY.**

Normal	¶
Heading 1 Modified 14	**DIVISION·X00¶**
Normal	¶
Heading 1 (12 pt)	**X01··GENERAL¶**
Heading 2	**X01.1··SUMMARY¶**
Normal	Add·text·here.¶
Heading 2	**X01.2··DEFINITIONS¶**
Normal	Add·text·here.¶
Heading 1 (12 pt)	**X02··1ST-LEVEL·SECTION·TITLE—GENERAL¶**
Heading 2	**X02.1··SUMMARY¶**
Normal	Section·<section·number>·includes·general·specifications·for·<description·of·work>.¶
Heading 2	**X02.2··DEFINITIONS¶**
Hanging (definition)	**word:**·Use·Hanging·(definition)·style·for·definitions.·The·"word"·is·in·bold·text·and·with·case·matching·case·used·in·the·specifications,·followed·by·a·bold·colon.·Description·of·word·is·in·plain·text.·Maintain·the·"hanging"·to·emphasize·the·word.¶
Hanging (definition)	**word2:**·Do·not·leave·a·carriage·return·between·"words."¶
Heading 2	**X02.3··ADDITIONAL·2ND-LEVEL·SECTION·TITLE¶**
Normal	Add·text·here.¶
Heading 2	**X02.4··ADDITIONAL·2ND-LEVEL·SECTION·TITLE¶**
Normal	Add·text·here.¶
Heading 1 (12 pt)	**X03··1ST-LEVEL·SECTION·TITLE¶**
Heading 2 No TOC	**X03.1··GENERAL¶**
Heading 3 No TOC	**X03.1.1··Summary¶**
Normal	Section·<section·number>·includes·specifications·for·<description·of·work>.¶
Heading 3 No TOC	**X03.1.2··Definition¶**
Hanging (definition)	**word:**·Use·Hanging·(definition)·style·for·definitions.·The·"word"·is·in·bold·text·and·with·case·matching·case·used·in·the·specifications,·followed·by·a·bold·colon.·Description·of·word·is·in·plain·text.·Maintain·the·"hanging"·to·emphasize·the·word.¶

Hanging (definition)	**word2:** Do not leave a carriage return between "words."¶
Normal	If definitions are not covered elsewhere, add text here; otherwise add *Not Used* here.¶
Heading 3 No TOC	▪ **X03.1.3 Submittals**¶
Normal	If submittals are not covered elsewhere, add text here; otherwise add *Not Used* here.¶
Heading 3 No TOC	▪ **X03.1.4 Quality Control and Assurance**¶
Normal	If quality control and assurance is not covered elsewhere, add text here; otherwise add *Not Used* here.¶
Heading 4	▪ **X03.1.4.1 4th Level Section Title**¶
Normal	If this section is applicable, add text here. Additional sections may be included after this section as necessary.¶
Heading 2 No TOC	▪ **X03.2 MATERIALS**¶
Normal	If materials are not covered elsewhere, add text here; otherwise add *Not Used* here.¶
Heading 3 No TOC	▪ **X03.2.1 General**¶
Normal	If a 3rd-level section follows and text is required, add text here. If not, add text *Reserved* here.¶
Heading 3 No TOC	▪ **X03.2.2 3rd Level Section Title**¶
Normal	If a 4th-level section does not follow, add text here.¶
Heading 4	▪ **X03.2.2.1 General**¶
Normal	If a 4th-level section follows and text is required, add text here. If not, add text *Reserved* here.¶
Heading 4	▪ **X03.2.2.2 4th Level Section Title**¶
Normal	If this section is applicable, add text here. Additional sections may be included after this section as necessary.¶
Heading 2 No TOC	▪ **X03.3 CONSTRUCTION**¶
Normal	If construction is not covered elsewhere, add text here; otherwise add *Not Used* here.¶
Heading 3 No TOC	▪ **X03.3.1 General**¶
Normal	If a 3rd-level section follows and text is required, add text here. If not, add text *Reserved* here.¶
Heading 3 No TOC	▪ **X03.3.2 3rd Level Section Title**¶
Normal	If a 4th-level section does not follow, add text here.¶
Heading 4	▪ **X03.3.2.1 General**¶
Normal	If a 4th-level section follows and text is required, add text here. If not, add text *Reserved* here.¶

Heading 4	**X03.3.2.2 4th Level Section Title**
Normal	If this section is applicable, add text here. Additional sections may be included after this section as necessary.
Heading 2 No TOC	**X03.4 PAYMENT**
Normal	If payment is not covered elsewhere, add text here; otherwise add *Not Used* here.
Heading 1 (12 pt)	**X04 1ST LEVEL SECTION TITLE**
Heading 2 No TOC	**X04.1 GENERAL**
Heading 3 No TOC	**X04.1.1 Summary**
Normal	Section <section number> includes specifications for <description of work>.
Heading 3 No TOC	**X04.1.2 Definition**
Hanging (definition)	**word:** Use Hanging (definition) style for definitions. The "word" is in bold text and with case matching case used in the specifications, followed by a bold colon. Description of word is in plain text. Maintain the "hanging" to emphasize the word.
Hanging (definition)	**word2:** Do not leave a carriage return between "words."
Normal	If definitions are not covered elsewhere, add text here; otherwise add *Not Used* here.
Heading 3 No TOC	**X04.1.3 Submittals**
Normal	If submittals are not covered elsewhere, add text here; otherwise add *Not Used* here.
Heading 3 No TOC	**X04.1.4 Quality Control and Assurance**
Normal	If quality control and assurance is not covered elsewhere, add text here; otherwise add *Not Used* here.
Heading 4	**X04.1.4.1 4th Level Section Title**
Normal	If this section is applicable, add text here. Additional sections may be included after this section as necessary.
Heading 2 No TOC	**X04.2 MATERIALS**
Normal	If materials are not covered elsewhere, add text here; otherwise add *Not Used* here.
Heading 3 No TOC	**X04.2.1 General**
Normal	If a 3rd-level section follows and text is required, add text here. If not, add text *Reserved* here.
Heading 3 No TOC	**X04.2.2 3rd Level Section Title**
Normal	If a 4th-level section does not follow, add text here.

Heading 4	▪ **X04.2.2.1··General¶**
Normal	If·a·4th·level·section·follows·and·text·is·required,·add·text·here.·If·not,·add·text·*Reserved*·here.¶
Heading 4	▪ **X04.2.2.2··4th-Level·Section·Title¶**
Normal	If·this·section·is·applicable,·add·text·here.·Additional·sections·may·be·included·after·this·section·as·necessary.¶
Heading 3 No TOC	▪ **X04.2.3··3rd-Level·Section·Title¶**
Normal	If·a·4th-level·section·does·not·follow,·add·text·here.¶
Heading 4	▪ **X04.2.3.1··General¶**
Normal	If·a·4th·level·section·follows·and·text·is·required,·add·text·here.·If·not,·add·text·*Reserved*·here.¶
Heading 4	▪ **X04.2.3.2··4th-Level·Section·Title¶**
Normal	Format·list·as·follows:¶
Hanging	1.→ Do·not·leave·a·carriage·return·before·the·1st·list·item.¶
Hanging	2.→ Start·with·Hanging·style.¶
Hanging	3.→ Type·the·list·item·number·and·ctrl+tab·over·to·add·list·item·description.¶
Hanging	4.→ Do·not·use·"Bullets."¶
Indent 1 Hanging	4.1. → Do·not·leave·a·carriage·return·above·the·1st·list·item.¶
Indent 1 Hanging	4.2. → Use·Indent·1·Hanging·style.¶
Indent 2 Hanging	4.2.1. → Do·not·leave·a·carriage·return·above·the·1st·list·item.¶
Indent 2 Hanging	4.2.2. → Use·Indent·2·Hanging·style.¶
Indent 3 Hanging	4.2.2.1. → Do·not·leave·a·carriage·return·above·the·1st·list·item.¶
Indent 3 Hanging	4.2.2.2. → Use·Indent·3·Hanging·style.¶
Indent 3 Hanging	4.2.2.3. → After·the·last·list·item,·leave·a·carriage·return·before·next·line·of·text.¶
Indent 3 Hanging	¶
Heading 2 No TOC	▪ **X04.3··CONSTRUCTION¶**
Normal	If·construction·is·not·covered·elsewhere,·add·text·here;·otherwise·add·*Not·Used*·here.¶
Heading 3 No TOC	▪ **X04.3.1··General¶**
Normal	If·a·3rd-level·section·follows·and·text·is·required,·add·text·here.·If·not,·add·text·*Reserved*·here.¶
Heading 3 No TOC	▪ **X04.3.2··3rd-Level·Section·Title¶**
Normal	If·a·4th-level·section·does·not·follow,·add·text·here.¶
Heading 4	▪ **X04.3.2.1··General¶**
Normal	If·a·4th·level·section·follows·and·text·is·required,·add·text·here.·If·not,·add·text·*Reserved*·here.¶

Heading 4	▪ **X04.3.2.2··4th-Level·Section·Title¶**
Normal	If·this·section·is·applicable,·add·text·here.·Additional·sections·may·be·included·after·this·section·as·necessary.¶
Heading 3 No TOC	▪ **X04.3.3··3rd-Level·Section·Title¶**
Normal	If·a·4th-level·section·does·not·follow,·add·text·here.¶
Heading 4	▪ **X04.3.3.1··General¶**
Normal	If·a·4th·level·section·follows·and·text·is·required,·add·text·here.·If·not,·add·text·*Reserved*·here.¶
Heading 4	▪ **X04.3.3.2··4th-Level·Section·Title¶**
Normal	Add·text·here·that·ties·to·the·table:¶
Normal	Add·table·here.··Table·width·must·be·a·maximum·of·4.4·inches.¶
Heading 2 No TOC	▪ **X04.4··PAYMENT¶**
Normal	If·payment·is·not·covered·elsewhere,·add·text·here;·otherwise·add·*Not·Used*·here.¶
	—

A10 STANDARD SPECIFICATION SECTION EXAMPLES

1302 FENCES—GENERAL

1302.1 SUMMARY

Section 1302 includes general specifications for fences.

1302.2 DEFINITIONS

resisting moment: Product of a member's section modulus about the designated axis and its yield strength. [This definition will be included in the definition section of Chain Link Fences. Added here as an example of how to show a common definition.]

1302.3 LIVESTOCK PROTECTION

Prevent livestock escape during fence construction.

Place a corner post with a brace for each direction of strain at each junction with an existing fence.

Fasten the wire in the new and existing fences to each post.

If ordered, at a structure, connect the new fence to the structure such that stock can pass freely through or under the structure; otherwise, install an end post and connect the fence to it.

1302.4 FOOTINGS AND DEADMEN

For portland cement concrete for metal post and brace footings and for deadmen, use:

1. Commercial quality aggregates and cementitious material
2. At least 470 pounds of cementitious material per cubic yard

Crown each concrete footing to shed water.

1302.5 POST PLACEMENT

Measure post spacing parallel to the ground slope. Place each post in a vertical position except where the Engineer orders you to set the post perpendicular to the ground surface.

1302.6 SURPLUS EXCAVATED MATERIAL

After constructing a fence, uniformly spread the surplus excavated material along the adjacent roadway as directed by the Engineer.

1302.7 TEMPORARY FENCES

Except for temporary fence (Type ESA), a temporary fence must comply with the specifications and drawings for a permanent fence of the same type except:

1. You may use used materials if the used materials are good, sound, and suitable for the purpose intended.
2. Materials may be commercial quality if the dimensions and sizes of the materials are equal to or greater than the dimensions and sizes shown on the drawings or specified in Section 1302.
3. Posts may be either metal or wood.
4. The Department does not require:
   - 4.1. Galvanizing or painting of steel items
   - 4.2. Treating wood with a wood preservative
   - 4.3. Concrete footings for metal posts

1302.8 GATES [Gates may (1) go here, (2) be a 1st-level section, (3) be a section of one of the fence types with the other referring to it, (4) be under each fence type, or (5) be split using a combination of these options.]

Each drive gate for a chain link fence must be the width shown in the bid item description.

Each drive gate for a barbed or woven wire fence must be at least 48 inches and at most 58 inches high.

Each walk gate must be 4 feet wide.

A gate greater than 8 feet in width must have vertical stays such that no panel exceeds 8 feet in width.

Construct a gate frame with at least 1-1/2-diameter pipe. Construct interior vertical stays with at least 1-inch-diameter pipe. Pipe must comply with the specifications for posts and braces in Section 1304.2.2 <Chain Link Fence, Posts and Braces> [For referenced sections, include green section titles within green angle brackets. CCSB will delete green text before publication.]

Cross truss each gate frame panel with adjustable truss rods with diameters at least 3/8 inch.

Fasten and reinforce each corner of a gate frame with a malleable iron or pressed steel fitting or by welding.

Each pressed steel fitting must:

1. Have a nominal thickness before galvanizing of at least 0.135 inch
2. Be fastened to develop the strength of connected members

Welds must be smooth and develop the strength of the connected member.

Galvanize fittings, latches, rods, and other gate hardware under Section 375 <Galvanizing>.

Fabric for gates in barbed or woven wire fence must comply with the specifications for nonslatted chain link fence.

Fabric for gates in chain link fences must comply with the specifications for the fabric for the fence in which the gate is installed.

Attach chain link fence fabric to the gate frame using stretcher bars and tie wires as specified for fence construction. Space tension connectors at 1-foot intervals.

Hang each gate with at least 2 steel or malleable iron hinges at least 3 inches in width such that the gate is securely clamped to the gate post and permits the gate to be swung back against the fence. The bottom hinge must have a socket to take the ball end of the gate frame.

For a chain link walk gate installed in an existing fence, gate mounting hardware must not contain open-end slots for the fastening bolts.

Each gate must have a combination steel or malleable iron catch and locking attachment that does not rotate around the latch post.

For a walk gate constructed in an existing fence, remove a line post and install the gate such that the gate is centered on the hole of the removed post. When not working on the walk gate, close the opening made in the existing fence with one of the following:

1. Existing fence fabric
2. 6-foot chain link fence fabric

1302.9 PAYMENT

The fence payment quantity does not include the width of openings.

The fence is measured:

1. Parallel to the ground slope
2. Along the fence

The gate payment quantity is the quantity of gate units. A gate unit includes one gate with fittings, hardware, and gate posts with braces.

Payment for fence removal involved in construction of gates in existing fences is included in payment for the gate involved.

1303 FENCES—BARBED WIRE AND WOVEN WIRE

1303.1 GENERAL

1303.1.1 Summary

Section 1303 includes specifications for constructing barbed wire and woven wire fences.

1303.1.2 Definitions

alignment angle: Change in a line where the angle of deflection is less than:

1. 5 degrees for a steel post barbed wire or woven wire fence
2. 15 degrees for a wood post barbed wire or woven wire fence

corner: Change in a line where the angle of deflection exceeds:

1. 5 degrees for a steel post barbed wire or woven wire fence
2. 15 degrees for a wood post barbed wire or woven wire fence

fence, Type BW: Barbed wire fence consisting of 5 lines of barbed wire.

fence, Type WW: Woven wire fence consisting of woven wire fabric and 3 lines of barbed wire.

1303.1.3 Submittals

Not Used

1303.1.4 Quality Control and Assurance

Not Used

1303.2 MATERIALS

1303.2.1 General

Reserved

1303.2.2 Metal Posts and Braces

Line posts must comply with ASTM A 702 except packaging of posts is not required. Each post must be Class B steel. You may omit the anchor plate if the post is set in a portland cement concrete footing with a minimum cross section of 6 inches and a depth equal to the full penetration of the post.

Each end, latch, pull, and corner post must:

1. Have a minimum resisting section modulus of 0.32 cubic inch in any direction
2. Be at least 7 feet long
3. Be at least 3.1 psf

Each brace and brace post must be at least:

1. 7 feet long
2. 1.93 psf

1303.2.3 Wood Posts and Braces

1303.2.3.1 General

Each wood post and brace must be treated except where untreated wood is specified.

Sweep must not be over 0.08 foot in 6 feet.

1303.2.3.2 Untreated

Each untreated wood post and brace must be:

1. Redwood, cedar, Douglas fir, or Southern yellow pine
2. Straight
3. Free from:

3.1. Loose or unsound knots
3.2. Shakes over 1/3 the post thickness
3.3. Other defects that would make it unfit structurally for the purpose intended

Post knots must be:

1. Sound
2. Tight
3. Well spaced
4. Not over 2 inches on any face

Each untreated wood line post and brace may be split material and must:

1. Be at least 7 feet long
2. Have a perimeter of at least 16 inches
3. Have each dimension at least 4 inches

Each untreated wood end, corner, and brace post must be:

1. Sawed or hewed
2. At least 8 feet long
3. At least 6 by 6 inches nominal size

1303.2.3.3 Treated

Each treated wood post and brace must be:

1. Douglas fir, Hem-fir, Southern yellow pine, round fir, or pine
2. Sawed rectangular
3. Free of heart center

Each Douglas fir, Hem-fir, and Southern yellow pine post and brace must be graded under Section 828 <Structures—Wood>.

Each sawed post and brace must be of the minimum grade and species shown in the following table:

Table 1303.2.3.3 Grades and Species

Nominal size	Minimum grade	Species
4 by 4 inch	Construction light framing	Douglas fir
	No. 1 structural light framing	Hem-fir
	No. 2 structural light framing	Southern yellow pine
6 by 6 inch	Select structural posts and timbers No. 1	Douglas fir
	Select structural posts and timbers	Hem-fir
	No. 1 timbers	Southern yellow pine

Each round post and brace must be free from:

1. Decay
2. Shakes over 1/3 the post diameter
3. Splits longer than the thickness or diameter of the post
4. Loose or unsound knots
5. Multiple crooks
6. Other defects that would weaken the post or brace or otherwise make it structurally unsuitable for the purpose intended

Pressure treat each post and brace under Section 671 and AWPA Use Category System: UC4A, Commodity Specification A or B.

Instead of the imprinting requirement in Section 671, the treating plant may hammer stamp either end of a treated post and brace with the symbol or name of the company performing the treatment.

For each round post and brace:

1. Peel to remove outer bark and inner cambium bark except minimal strips of inner bark may remain if not over 1/2 inch wide or over 3 inches long
2. Trim knots flush with sides
3. Remove spurs and splinters
4. Cut ends square

Each line post and brace must be 7 feet long. Any other post must be 8 feet long. Each length may be at most 1 inch shorter and 2 inches longer.

The small end of each line post and brace must have a cross-sectional dimension between 3-1/2 and 5 inches. The small end of any other round post must have a cross-sectional dimension between 5-1/2 and 7 inches.

The taper from end to end of each round post and brace must not exceed 1-1/2 inches.

Each sawed rectangular line post must have a nominal size of at least 4 by 4 inches. Any other sawed rectangular post must have a nominal size of at least 6 by 6 inches.

1303.2.4 Barbed Wire

Barbed wire must:

1. Comply with ASTM A 121
2. Have 2 point barbs
3. Be one of the following:
   3.1. 12-1/2 gage, Class 1
   3.2. 13-1/2 gage, Class 3
   3.3. 15-1/2 gage, Class 3

1303.2.5 Woven Wire

Woven wire must:

1. Comply with ASTM A 116, Class 1
2. Be 32 inches wide
3. Have 8 horizontal wires with vertical stays spaced 6 inches apart

The top and bottom wires must be 10 gage.

The intermediate wires and vertical stays must be 12-1/2 gage.

1303.2.6 Tension Wires, Hardware, and Grounding Materials

Tension wire must be 8-gage galvanized wire.

Galvanized bolts and nuts for attaching braces and straps to metal posts and galvanized devices for holding barbed wire and woven wire in position must be commercial quality.

Each staple used to fasten barbed wire and woven wire fabric to wood posts must be:

1. At least 1-3/4 inches long
2. Manufactured from 9-gage galvanized wire

Wire used to fasten barbed wire and wire mesh to metal posts must be galvanized and at least11 gage. Each clip and hog ring must be at least 9 gage.

Wire used to tie the lower line of barbed wire to the top wire of woven wire must be 12-gage galvanized wire.

Each ground rod must be:

1. Galvanized or copper-coated steel
2. 8 feet long
3. 1/2-inch minimum diameter

Conductor must be No. 6 solid copper or equal.

1303.2.7 Gateways

Fence materials and end post bracing must comply with the specifications and drawings for the fence type in which the gateway is constructed.

Except for length, end bars must comply with the line post specifications and drawings.

Vertical stays for gateways must be:

1. Pretwisted
2. 9.5-gage galvanized wire
3. Evenly spaced between end bars at 66-inch maximum intervals

Wire loops must be 6-gage galvanized wire.

The chain for the latching device must be commercial quality short link steel coil chain. The latching bar for the latching device must be commercial quality steel pipe. Bolts and nuts for attaching the chain to the end posts and latching bar must be commercial quality and galvanized.

1303.3 Construction

Excavate high points that interfere with placing fence fabric to the clearance shown on the drawings.

Brace adjacent line posts at alignment angles with diagonal tension wires unless impractical. If impractical, brace as specified for bracing corner posts.

Set each metal diagonal brace and metal corner, end, latch, gate, and pull post in a concrete footing.

You may drive metal line posts.

Set solid each wood line post one of the following ways:

1. Drive it into place.
2. Install it firmly in a drilled hole of the same dimension as the post.
3. Install it in a drilled or dug hole larger than the dimension of the post, backfill around the post, and compact the backfill.

Install each wood post that is not a line post in a drilled or dug hole larger than the dimension of the post, backfill around the post, and compact the backfill.

Install butt end down each round post installed in a drilled hole.

At the plant before treating, machine point the small end of each line post to be driven.

Securely fasten tension wires to wood posts. Make an extra loop around each post at each attachment point and staple the wire to the post.

Connect each wood brace to its adjacent post with a 3/8-by-4-inch steel dowel. Twist the tension wires until the installation is rigid.

Stretch barbed and woven wire fabric and fasten to each wood post.

Attach barbed wire and woven wire fabric to the private property side of posts.

On woven wire fence, tie the lower line of barbed wire to the top wire of the woven wire with wire at 4-foot intervals between posts. Attach the wire mesh fabric to each post by fastening the top and bottom wires and alternate longitudinal wires with at least 5 fasteners.

At each grade depression, snub or guy the fencing with wire connected to:

1. Each horizontal line of barbed wire or to the top and bottom of woven wire fabric
2. A deadman weighing about 100 lbs and buried in the ground at least 2 feet

Stretch and fasten the fencing before snubbing or guying.

Ground fence fabric and fence wires of fences using wood line posts. Ground by substituting a metal fence post for a wood post at intervals at most 500 feet with at least 1 metal post in any length of fence over 200 feet between openings. With wire, tightly fasten each line of barbed wire and alternate longitudinal wires of the fence to the metal post.

Where an electric transmission, distribution, or secondary line crosses a wood-post fence, ground the fence with a ground rod installed directly below the crossing point. Drive the rod vertically until the top is 6 inches below the ground surface. Connect the ground rod to the fence with a conductor.

Where a powerline runs parallel or nearly parallel to and within 100 feet of the wood post fence, ground the fence with a ground rod at each end post or at intervals of at most 1,500 feet.

If you cannot reach the specified ground rod penetration, install an Engineer-authorized grounding system.

After you attach fencing to untreated wood posts, cut off any long post that makes the fence look nonuniform.

1303.4 PAYMENT

Not Used

B1 NUMBERING

In the header, add an underscore, a letter category (A for approved; D for Draft; T for Tentative; C for Cancelled), and a date to the revised standard specification (RSS) or project-specific specification (PSS) number. Example:

203-1-3_A04-16-05

Use same number and title as the standard specification section being revised except use hyphens in the number instead of periods.

Begin each RSS and PSS with the RSS or PSS number in a heading style that matches the style of the heading at the location where it fits in the *Standard Specifications*. Add a space, *(RSS)* or *(PSS)* indicating the type of specification, and the title.

For example, if a PSS is to modify a standard specification with the number and title 203.1.3 Submittals, the PSS would begin:

203.1.3 (PSS) Submittals

B2 INTRODUCTIONS

Follow the heading with one of the following introductions:

Need	Write
to add text to an existing section or division	Add:[a]
to delete a section	Delete.
to delete a paragraph	Delete the [ordinal number of paragraph] paragraph.
to replace standard specification section	Replace with:
to replace a paragraph within a section	Replace [ordinal number of paragraph] paragraph with:

NOTES:
Interpolate guidance to cover your modification.
The *delete* and *replace* wording is needed to avoid discrepancies. From Division 100 of the *Standard Specifications*: "A component in one Contract document applies as if appearing in each." Do not rely on governing ranking of contract parts to sort out conflicting clauses. The ranking specs exist to cover discrepancies.
[a]For a PSS or RSS not modifying an existing standard spec section (i.e., to add to a section to a division), follow the introduction with the style of a standard specification section.
If paragraph instructions are included, number the paragraphs with 1 as the 1st paragraph following the introduction. (For numbering purposes, do not count the introduction as a paragraph.)
Minimize revisions. If 1 sentence in a multiple-sentence paragraph is being revised, revise only the 1 sentence. If more than 1 sentence is being revised in a multiple-sentence paragraph, revise either the sentences or the paragraph depending on number of revisions and sentence and paragraph structure.

103-8_D01-17-08
Page 1 of 1

Use for a same-day-award contract.

103.8 (PSS) CONTRACT EXECUTION

Add:

The Department encourages you to execute the contract the same day the contract is awarded. The Department tries to approve the contract the same day it receives the executed Contract documents.

105-17-2-3_D01-17-08
Page 1 of 1

Use if (1) a bridge with a material hauling equipment loading lane is over 400 feet long (2) if the designer allows more than 1 piece of equipment on the bridge at one time. Insert value provided by designer.

105.17.2.3 (PSS) Material Hauling Equipment Lane on Bridges

Replace item 4 of the 3rd paragraph with:

1. Insert number of pieces.

4. At most _____ pieces of equipment may be on the bridge at one time.

1002-2-2-2_D08-12-06
Page 1 of 1

Use for metal posts for barbed wire and woven wire fences.

Use paragraph 1 or 2.

1002.2.2.2 (PSS) General

Add:

1

Galvanize posts under Section 360.

2. Insert color.

Paint posts _____.

Use for slatted fence. Insert color.

1002.2.3.5 (PSS) General

Add:

1. Insert color.

Plastic slats must be _____.

Appendix F

Tips for Writing in Plain Language

- Avoid the temptation to convert all specification requirements into the imperative mood. Responsibilities of the Department or its Engineer should NOT be written in the imperative mood. Reserve the imperative mood for conveying instructions to the Bidder (before award) and Contractor (after award).

  For example, consider the following excerpt taken from a specification:

  > **Incorrect:** *Measure and pay for excavated quantities in accordance with Section 202.*

  The above statement was an incorrect conversion of the following original statement:

  > *Excavated quantities will be measured and paid for in accordance with Section 202.*

  It would have been better to either have left this statement in its original passive form (allowing the traditional use of the word "will" to convey that this was a Department responsibility) than to have inappropriately converted it into the imperative.

  To add greater clarification, the statement could have been converted into the active voice, *indicative* mood, by identifying the Department as the "doer" of the action:

  > **Better:** *The Department will measure and pay for excavated quantities in accordance with Section 202.*

- In the above example, the general contracting convention of owners being responsible for measurement and payment made the conversion error rather apparent. However, as contractors assume more responsibility for items that were traditionally the responsibility of the Department, (e.g. certain sampling and testing requirements), the identification of roles and responsibilities is not always so clear.

  For example, consider the following statement:

  > *To verify compliance with smoothness requirements, the surface will be tested using a 10-ft straightedge at random locations.*

  This requirement was converted into the active voice/imperative mood as follows:

  > *Test the surface using a 10-ft straightedge at random locations to verify compliance with smoothness requirements.*

  The above statement implies that the Contractor will be performing this testing. The agency, however, had intended for this to be verification testing performed by its own inspection staff. In this light, it would have been better to convert the statement into the active voice/indicative mood as follows:

  > *To verify compliance with smoothness requirements, the Engineer will test the surface using a 10-ft straightedge at random locations.*

- When the conditional requirement "may" is used with the passive voice, it is sometimes difficult to determine the "doer" of the action or at whose discretion the work may or may not be performed. For example, consider the following:

  > *Material may be sampled and tested at any time.*

The remaining downstream culvert may be left in place if no portion of the culvert is within 4 feet of the subgrade.

An altered hole pattern may be approved based on slab testing and field conditions.

If the pavement is bonded to the subbase, brief pressure rises (10 seconds or less) to 600 pounds per square inch may be allowed.

Testing may be allowed to continue if the slabs are not interlocked or under compression.

Use of the active voice with the doer identified (i.e. indicative mood) would make these statements clearer (e.g., "The Contractor may…"; "The Department may…").

- When selecting the appropriate verbs to use in imperative statements, be careful to not turn natural processes (e.g., erosion, oxidation, settlement) into Contractor actions, as was the case in the following excerpts from published specifications:

  Original: *Any resultant rutting of the surface shall not exceed [ ] inches.*

  Incorrect Conversion: *Rut the surface a maximum of [ ] inches.* (The spec in question dealt with passing equipment over unstabilized soil. The intent wasn't, as implied by the use of imperative mood in this statement, for the Contractor to actually place ruts in the roadway. Note: I've seen similar incorrect conversions when editors are intent on switching all negative statements (e.g., *not exceed*) into the positive. This is worthy goal, but it can lead to losing some of the nuance of the original.)

  Original: *The soil shall have undergone a reasonable degree of settlement before subsequent courses are placed.*

  Incorrect Conversion: *Settle the soil before placing subsequent courses.* (In addition to just sounding awkward, this phrasing also suggests that the Contractor is to apply means and methods to actively induce settlement of the soil, which wasn't the intent)

  Better: *Allow the soil to undergo reasonable settlement before placing subsequent courses.*

  Original: *The material shall be suitably stored and protected before oxidization can occur.*

  Incorrect Conversion: *Before oxidizing the material, make sure to store and protect it properly.* (suggests that the Contractor is to actively work to oxidize the material)

  Better: *Suitably store and protect the material to prevent (or minimize) oxidation.*

  Original: *Through the proper selection and maintenance of BMPs, soil erosion shall be kept to a minimum.*

  Incorrect Conversion: *Erode the soil minimally through the proper selection and maintenance of BMPs.*

  Better: *Minimize soil erosion through proper selection and maintenance of BMPs.*

- Avoid overusing the imperative mood "crutch" of *ensure that*. When used appropriately, *ensure that* can be a powerful and efficient way to convey items that the Contractor must control. However, overuse and the resulting lack of sentence/language variation can lead to repetitive writing that isn't much easier to read than the original passive voice construction. Particularly when dealing with equipment and material requirements, passive voice construction might actually have been more useful by highlighting *what* is to be ensured, instead of *who* is to do this (which is usually the Contractor). See the following example (which probably could have benefited from the use of an itemized or bulleted list of requirements):

  > *Ensure that the controller is unaffected by radio transmissions. Ensure that the controller is capable of displaying 3 messages sequentially. Ensure that controller has an adjustable display rate with a minimum of 3 seconds per phase. Ensure that the controller is capable of storing 100 user programmed messages in nonvolatile memory that will retain the programmed messages when power is interrupted. Ensure that a controller display screen is provided that allows the operator to review messages before displaying on the message sign. Ensure that the controller display shows the operator all programming instructions. Ensure that the messages are able to be programmed at the sign with an integral or plug-in keyboard, and remotely with a cellular telephone.*

- When using introductory clauses to modify a statement constructed using the imperative mood, don't drop the subject of this clause if it is not the Contractor. For example, I've often encountered variations of "Before approving the …" immediately preceding an instruction written in the imperative mood to the Contractor. It would be better in such instances to say something along the lines of "Before *the Engineer* approves the …"