

NCDOT

Specifications

Primer*



*Clear, correct, concise, fair, contractually enforceable
Specifications is our goal.*

* A book that gives basic information about a subject

7-29-08

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Overview

This *Primer* has been developed to assist beginning Specifications writers with their technical writing skills and knowledge of Specifications in general. It may be beneficial to others who wish to improve or review their specifications knowledge and writing skills. Additionally there are listings of useful resources.

These rules and recommendations apply to all specifications whether centrally let in Raleigh, or purchase order contracts, SBE and service contracts written and let in the Divisions.

Some excerpts of the *Standard Specifications* have been added in this *Primer* for brevity. Actual provisions have been used as examples. As you review the contents of this *Primer*, you may find some current provisions are in conflict with the rules in this *Primer*. The Contract Office is making changes based on this publication.

This publication will be updated and revised as needed in order to continue to be a dynamic resource.

There are no words that can substitute for engineering judgment or just good old common sense. That must be supplied by the writer!

§§§

Resources

Begin your search at the Project Letting Website which includes provisions, standards, Trns*port pay item listing, changing a state proposal to meet federal guidelines, legal forms for the contractor, bid averages, links to other units and much more valuable information. <http://ncdot.org/doh/preconstruct/ps/contracts/letting.html>.

The Specifications Section has a library, both electronic and paper of Special Provisions that have been developed for various projects. Some are used on all projects having specific criteria that revise the requirements in the *Standard Specifications*. These may be incorporated into the next updated *Specifications Book* publication. The physical location of the SPs is at 1020 Birch Ridge Road, Century Center, Bldg. B. Raleigh. The electronic files are kept on the Project Services IT server. All provisions are available by electronic means to the reader.

Other resources include provisions that have already been written and can be used "off the shelf" or provisions may need a little tweaking to be used for a specific situation or project.

The Standard Specifications Books for 2006 and 2002 with search capabilities are available on the Project Services Website. <http://ncdot.org/doh/preconstruct/ps/contracts/default.html>. Your situation may already be covered in the *Standard Specifications*. Look here first!

Project Special Provisions (PSP) are available on the Project Services Website. A Project Special Provision is a document that is included in the proposal that adds, deletes or revises portions the *Specifications Book*. It may be written to address issues in a specific project, incorporate new technology or materials, add or remove pay items, or incorporate new laws or regulations. The readers of this *Primer* will focus on the first reason. These are used in various projects on a routine basis. An example would be SP6R01 Asphalt Pavements that is used in all projects using asphalt pavements.

Special Provision Inserts (SPI) will be available on the Project Services Website. A Special Provision called a Special Provision Insert (SPI) is used occasionally in proposals, but not often enough to warrant adding it to the line-up sheet. If an SPI is used often enough, it may be elevated to a PSP. Likewise, a PSP that is not used often anymore may be "demoted" to an SPI.

Standard Special Provisions (SSP) are available on the Project Services Website. A Standard Special Provision (SSP) has been approved for use on all projects by the Department and by the North Carolina office of the FHWA if it is to be used on federally funded projects. An SSP may be incorporated into the next publication of the *Standard Specifications Book* or may remain an SSP if subject to change (i.e. wage rates). SSPs MAY NOT BE REVISED IN ANY MANNER.

Other Units' Provisions are linked to the Project Services Website. They include Geotechnical, Structure Design, ITSS, Roadway Design, Roadside Environmental and Work Zone Traffic Control.

Division Provisions (DP) will be linked to the **Project Services** Website as they become available.

Organization of Specifications

The *North Carolina Department of Transportation Standard Specifications for Roads and Structures Book* is divided into separate chapters, called *divisions* generally following the AASHTO Guidelines. Each *division* has its own specialty.

Website address:

http://ncdot.org/doh/preconstruct/ps/specifications/specifications_provisions.html

The Divisions are as follows:

| Division | Specialty | Brief Description |
|-----------------|--|---|
| 1 | General Requirements | Definitions, contractor prequalification, bidding, letting, awarding contracts, administering and payment, claims |
| 2 | Earthwork | Clearing and grubbing, wells, demolition, grading |
| 3 | Pipe Culverts | Pipe installation, removals, cleanouts |
| 4 | Major Structures | Bridges, temporary, removing, painting, box culverts, |
| 5 | Subgrade, Bases and Shoulders | Subgrades, bases, shoulder construction. |
| 6 | Asphalt pavements | Asphalt pavement, prime, tack, QMS, OGAF, C, |
| 7 | Concrete Pavements and Shoulders | Pavement, shoulders, field lab |
| 8 | Incidentals | Mobilization, surveying, minor drainage structures, barrier, guardrail, handicapped ramps |
| 9 | Signing | Sign requirements, fabrication, erection, disposal |
| 10 | Materials | All material requirements, no measurement and payment in this section |
| 11 | Work Zone Traffic Control | All work zone requirements |
| 12 | Pavement Markings, Markers and Delineation | All markings, markers |
| 13 | Blank | N/A |
| 14 | Lighting | All lighting requirements |
| 15 | Utility Construction | Water, sewer, manholes |
| 16 | Erosion control and Roadside Development | Erosion, mulching, seeding fertilizer, planting |
| 17 | Signals and Intelligent Transportation | Signals, cables, conduit, controllers |

Definitions

This is a quick reference for terms used in preparing a proposal and using this *Primer*. For actual legal definitions, go to your *Specifications Book*.

Bid An offer made to NCDOT by a bidder to perform work.

Proposal A proposal is the document that is developed to advertise a project.

Contract When a proposal has been advertised, awarded and executed, it becomes the contract.

Engineer The Engineer is the Chief Engineer, who delegates his authority to others. Refer to the Engineer in your proposals. Stating the Roadway Engineer, Resident Engineer, and Traffic Control Engineer is not needed in the Specifications as this is only used internally at NCDOT.

Executed Contract A proposal signed by both parties becomes an executed contract.

Inspector A designated representative of the Engineer assigned to inspect portions of the work and materials.

Line up sheets An index of provisions used to develop a proposal in the Raleigh Contract Office. It follows the order of sequence in which the provisions appear in the proposal.

Primer, Refers to *NCDOT Specifications Primer* publication.

Resident The Engineer in the Division to whom authority has been designated by the Chief Engineer after award of the contract.

SSP Standard Special Provision Used in all contracts.

PSP Project Special Provision Specific provisions listed on the lineup sheet used in specific contracts.

Standard Specifications refers to The NCDOT *Specifications Book*.

Provision A condition, requirement, or item specified in a legal instrument, (contract documents). Generic term in this *Primer* referring to a Project Special Provision, Standard Special Provision, Special Provision Insert or *Specifications Book* language.

Metric Specifications

If there is an occasion to develop a metric proposal, the Raleigh Contract Office has a "mirror image" lineup sheet and the same provisions as shown in General Construction or Municipal converted to metric measurements. Additionally there is an errata provision for the *2006 Metric Specifications Book*. The number of requests for metric provisions will determine if they will be made available on the website. If needed, contact the Raleigh Contract Office.

How to Develop a Proposal

Line up sheets

The Raleigh Contracts Office uses a *lineup sheet* as the guide for developing proposals. This document has a listing of all the usual documents that are included in the proposal as well as other project-specific provisions. Therefore, generating a proposal by starting at the beginning of the lineup sheet will result in developing the proposal in a logical and sequential manner. There are instructions or recommendations as to when to use the particular provision on the lineup sheet. Not all projects will need all provisions. For example, if there are no bridges on the project, there will be no need for the provision limiting weight limits on bridges; do not include it in the proposal.

There are three specific lineup sheets for specific types of projects on the website. They include (1) General Construction, (2) Resurfacing and (3) Municipal, POCs and PEFs.

Link to http://ncdot.org/doh/preconstruct/ps/specifications/specifications_provisions.html

Developing Project Special Provisions

(A) *Amending the Specifications Book*

When developing a Project Special Provision that revised the *Specifications Book*, be very careful that you review all appropriate areas. The PSP will override the *Specifications Book* if there is a conflict.

NCDOT uses the following formatting for amending individual portions of the *Specifications Book*.

Use this format for developing Project Special Provisions:

(1) Title: Begin with a title that describes the work or reason for the revision.

(2) Add as a first sentence:

Revise the 2006 Standard Specifications as follows:

State which *Specifications Book* is being amended. This will eliminate any confusion as to whether the *2002 Standard Specifications Book*, the *2006 Standard Specifications Book* or the *2006 Metric Standard Specifications Book* is addressed. If all three books are being revised, create a specific Special Provision for each one, as each one will have different page numbers and paragraph locations.

(3) Page Numbers

Identify the page to be amended.

- Example: **Page 6-75**
- (4) Section, Article, Subarticle
- (a) If an entire division of the *Specifications Book* is to be addressed use Division _____,
Example: **Division 4 Major Structures.**
- (b) If an entire section of the *Specifications Book* is to be addressed use Section _____,
Example: **Section 400 Temporary Structures.**
- (c) If a portion of a first division of a particular section is addressed, use Article _____, Example: **Article 400-1 Description.**
- (d) Any further subdivision of a section is addressed by Subarticle, however subdivided, use Subarticle __,

Examples **Subarticle 400-3(A) Furnishing Plans**
Subarticle 600-5(C)(2)(a) Binder Content
Subarticle 660-9(B)(4)(d)(i)

- (5) Next state which paragraph is affected if applicable
Example: **Page 6-74, Subarticle 660-9(B)(4)(d), replace the first paragraph with the following:**
- (6) State which sentence is affected if applicable
Example: **replace the fourth full sentence**
- (7) The completed revision would be similar to the example in Appendix 1.

(B) *Revising the Specifications Book by means of an existing Project Special Provision*

Many times, an existing Project Special Provision can be revised for a specific use. When revising the provision, bold or highlight the changes so that it will be obvious to the reader that this PSP has been changed. Also, change the date or add a revision date to the PSP.

(C) *Revising the Specifications Book by writing a Stand-alone Provision*

- (1) Use this format. This works 99.9% of the time.

TITLE: The title should describe briefly the main point of the provision. DO NOT add specific details to the Description.

Description The description should be a brief, clear, concise statement of work to be performed. Do not add phrases such as No additional costs ...in this section. **Address all costs in the Measurement and Payment section only.**

Materials should address the materials used, from the *Specifications Book*, Division 10 when possible.

When it is not in the *Specifications Book*, look for ASTM, AASHTO or well-known references. Remember to locate the reference and keep a copy in your file. If it is too large to keep in the file, have an electronic link in which you can access

the document if needed. The contractor, material supplier must be able to locate the reference.

Modify existing material references here if needed

If materials Specifications are not available, write them in this section.

Address all costs in the Measurement and Payment section only.

Construction Methods should refer to the *Specifications Book* for construction methods or describe the work to be accomplished. Using references to the *Standard Specifications Book* will eliminate the need to rewrite processes or descriptions of construction methods already researched, written and approved.

Describes preliminary, interim and final acceptance testing or quality control if the responsibility of the contractor.

Address all costs in the Measurement and Payment section only

DO not add material requirements in the Construction Methods. Keep them confined to the Materials subsection.

Keep operations in chronological order to avoid confusion.

Measurement and Payment is shown as one item. Clearly list the pay item and the method of measurement.

If the pay item is already listed in the *Specifications Book* refer to the specific section, do not repeat.

If the pay item is listed in the *Specifications Book*, but includes additional items, modify the section to include the additional items. Keep in mind that incorporating several items of work into one pay item will increase the cost of that item and contaminates the Department's data for that pay item. Use this wisely.

This is the place to add all the pay items descriptions. Do not mix measurements or payments in other areas of the provision. See Appendix 2 for example.

(D) **Special Provision Insert**

The same recommendations for writing a PSP will apply to an SPI. See Project Special Provision for instructions. An example of an SPI is in the Appendix 3.

(E) **Standard Special Provisions**

The same recommendations for developing a PSP apply for developing a SSP. It would be very unusual for the Divisions to have to write a provision that would become an SSP.

An example of an SSP is in the Appendix 4.

(F) Division Provisions

There are plans to link division provisions to the Contract Website as they become available.

Formatting of PSPs

(A) Fonts

Font style Regular
Font size 12
Font New Times Roman,
Formatting "Normal"
Character Spacing normal
Text Effects none

(B) Margins

Full justified,
1 inch margins on all sides,

(C) Spaces

Use 2 spaces after a period
Use 1 space after a comma.

(D) Outlining of PSPs

Unless revising the *Specifications Book* by page number and section number, use this format

(A) bold

(B) bold

(1) not bold

(a) not bold

(i) not bold

If more subsections are needed, there may be too much detail.

(E) Formatting parts of a PSP

(1) Title

All capitals, bold, 12 font, underlined, full justification, colon at end

TITLE:

(2) Date

Insert a chart with two columns, one row. See example below. Add date in left side, left justified, 8 font; add PSP number or SPI on right side, right justified, 8 font. Select chart and click *Format*, then click on *Borders and Shading*, under

border tab select *Setting*, click none, then click OK This will eliminate the table lines in the printed document.

(Date here)

SPI

- (3) Description Bold, 12 font, no period, colon, or underline.
- (4) Construction Methods Bold, 12 font, no period, colon or underline.
- (5) Measurement and Payment, Bold, 12 font, no period, colon or underline
Begin with the actual pay item name in italics. Add the following phrase. ...will be measured and paid for ...after the pay item name. Follow this with more verbiage about measurement if needed.

Finish the section by adding: Payment will be made under:

Add table with 2 rows. Select and use instructions for eliminating table lines as shown under the Date above.

Add pay item and pay unit, followed on the next row with the pay item exactly as shown in the first sentence. Use a capital letter with each new word in the pay item. Add the pay unit in singular, beginning capital letter on each word. See example below.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| ___" Portland Cement Concrete Pavement, Ramps | Square Yard |

Use the *Standard Specifications* or current PSPs as examples for formatting and wording measurement and payment.

(F) *Tables and Charts*

Create tables and charts in Word. **Do not import tables from Excel or other programs.** Keep the tables within the margins set for the document. After the table or chart is complete, make the lines of the table **gray (15%)** if using lines. The emphasis is placed on information in the table or chart, instead of the structure lines of the table or chart. Limit the use of underlining and use bold or italics.

The standard font for a table or chart is 12 pt. However, the font may be reduced in the tables and charts if needed. The table or chart may be landscape oriented. If landscape, orient the page so that the head or top is facing the binder side of the document.

Authority of the Engineer

When writing Specifications, there is a tendency to get too detailed, as to whom information should be given. All references should be to the "Engineer". For example, specifically naming a Utilities Engineer or a Traffic Control Engineer is not correct. The State Highway Administrator of the NCDOT, by definition is the Engineer.

Remember the "Engineer" is the State Highway Administrator, who may delegate limited authority to others.

These excerpts from the *Specifications Book* state that the "Engineer" has the ultimate authority concerning the contract.

105-1 AUTHORITY OF THE ENGINEER

The Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work; all questions which may arise as to the interpretation of the contract; and all questions as to the acceptable fulfillment of the contract on the part of the Contractor. His decision shall be final and he shall have executive authority to enforce and make effective such decisions and orders as the Contractor fails to carry out promptly.

The Engineer shall have the authority to issue any written order to the Contractor which he considers necessary to the prosecution of the work, and shall have executive authority to enforce such written orders as the Contractor fails to carry out promptly. Failure on the part of the Contractor to comply with any written order issued by the Engineer may be justification for disqualifying the Contractor from further bidding in accordance with Article 102-16.

108-9(E) Power of Engineer

The Engineer will exercise the powers and discretion vested in him by the contract in carrying out the terms of this article. He will have full power and authority to carry out any orders, directives, or resolutions issued by the Department in connection with a declaration of default. In the event that the Department fails to specify the sanctions to be imposed, the notice to be given, or the method of completing the work, the Engineer, may, in his discretion, impose such sanctions, give such notice, and select such methods of completing the work, as are authorized by this article; and such actions shall have the same effect and validity as if taken pursuant to an express order, directive, or resolution of the Department.

Writing and Citing Cited Specifications

When referencing for any types of samples, tests or other specifications, it is not necessary to show a date or year, unless specifically referring to a past issue. It is already required according to Article 106-2 of the *Standard Specifications*.

Inappropriate Example: ... in accordance with the latest version of the **MUTCD**

This Article of the *Standard Specifications* covers it completely.

106-2 SAMPLES, TESTS, AND CITED SPECIFICATIONS

All tests will be made in accordance with the most recent standard or interim methods of the AASHTO in force on the date of advertisement. Should no AASHTO method of test exist for a material, the most recent standard or tentative method of ASTM or other methods adopted by the Department will be used.

All reference made to a specification published by AASHTO, ASTM, or any other organization other than the Department, which does not indicate the date of publication, will be understood to mean the specification current on the date of advertisement for the project. When a more current specification is published during the life of the project, and when it is mutually agreed by the Contractor and the Engineer and such agreement is documented by a supplemental agreement, the Department may accept materials meeting the requirements of the latest publication.

Therefore, do NOT show a date unless referring to an older version.

Complementary and Conflicting Language

The contract is a legal compilation of documents and references. If there are conflicts, Article 105-4 of the *Standard Specifications* determines the hierarchy. Mark this page in your *Specifications Book* for future reference.

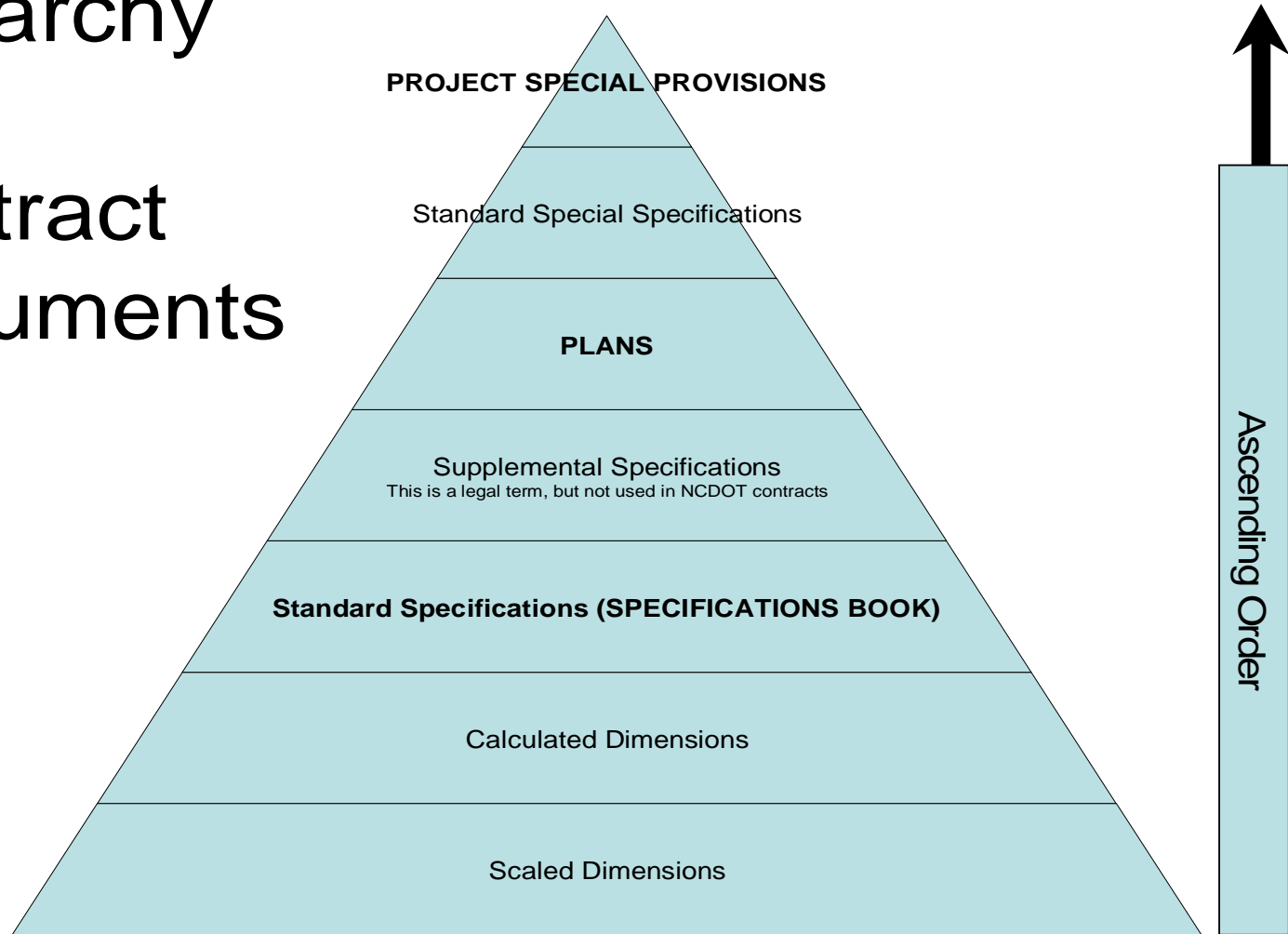
Article 105-4 Coordination of Plans, Specifications, Supplemental Specifications, and Special Provisions relates the following:

The specifications, the supplemental specifications, the plans, the special provisions, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are complimentary and provide and describe the complete contract.

In case of discrepancy, the following will apply in ascending order:

Calculated dimensions shall govern over scaled dimensions
Supplemental Specifications shall govern over *Standard Specifications*;
Plans shall govern over Supplemental Specifications and *Standard Specifications*;
Standard Special Provisions shall govern over Plans, Supplemental Specifications, and *Standard Specifications*; and
Project Special Provisions shall govern over Standard Special Provisions, Plans, Supplemental Specifications, and *Standard Specifications*.

Hierarchy Of Contract Documents



Writing Specifications

Clear, correct, concise, fair, contractually enforceable language is our goal!

The English language used by Americans has become less formal over the last 50 years. However, when writing Specifications, we must remain diligent in using correct, not-to-be misunderstood verbiage. Specifications should be written in technical language and at not more than a 12th grade level if possible.

Avoid conflicting requirements. Conflicts occur when specifications include the details of the methods to be used and the desired results. If the contractor uses the specific method and the results are not satisfactory, who is responsible?

DO NOT repeat requirements. Information stated in the General Requirements should not be repeated in other Specifications sections or Special Provisions. Information that is shown on the plans should not be repeated in the Specifications and vice versa.

Do not attempt to explain or narrate why the contractor is performing certain tasks or tests in the Specifications. The Specifications are to specify materials, direct action, testing and payment only. There are other avenues available to explain or narrate reasons.

DO NOT provide reasons for a requirement and do not include suggestions for complying with the requirement. When an additional statement is given in connection with a requirement, the contractor may consider that statement to be a controlling part of the requirement. An additional explanation may obscure the clarity of the requirement itself.

(A) DO NOT use escape phrases:

- (1) In the opinion of the Engineer
- (2) To the satisfaction of the Engineer
- (3) As directed by the Engineer
- (4) As approved by the Engineer,
- (5) To the Engineer
- (6) Of the Engineer
- (7) Any of the variations, such as accepted, authorized, contemplated, deemed necessary, designated, determined, established, given indicated, ordered, permitted, rejected, required, reserved, satisfactory, specified, sufficient, suitable, suspended, unacceptable or unsatisfactory.

EXCEPTION: If there is truly a need for the Engineer's judgment into the work, the term "unless otherwise approved or as directed may be used".

(B) Use of *shown on the plans or otherwise shown on the plans*

- (1) Use of as shown on the plans should not be a routine phrase in the provisions.
Use only if needed for direction.
- (2) Use of unless otherwise shown on the plans
Use only when flexibility is needed.

(C) *No need to introduce with "conforming to this provision ..."*, "in accordance with this provision...." Again, see 105-4 of the *Standard Specifications*.

(D) *Voices and Moods*

The NCDOT Standard Specifications use three types of voice/mood.

- (1) Passive Voice - Imperative Mood

Use in Division One

Example: The **Contractor shall** submit testing results within 24 hours of completion of the test.

- (2) Active Voice - Imperative Mood

Use in all other sections and provisions when specifying the contractor's work, (Grammar describes a verb whose subject is the person or thing performing the action described by the verb; in this case, the contractor is the subject.):

Example: Provide test results.

- (3) Passive Voice - Indicative mood

When describing the Department's responsibilities in the Specifications and provisions, write in the *indicative mood, passive voice*.

(Grammar describes a form of a verb that represents a thing as a fact, or inquires about some fact.)

Example: The **Department will** notify the Contractor within 10 working days.

Division 1 – General Requirements has been written in the *Passive Voice - Imperative Mood*. See (A) and (C) above. All other Divisions have been rewritten in the active voice. See (B) above.

(E) *Use of Shall and Will*

When writing specifications, it is important to use the correct term of *shall* or *will*.

Note: The Contractor *shall* and the Department *will*

Never use The Department SHALL... or The Contractor WILL...

The Contractor *shall* submit the test results within 24 hours of performing the tests. The Department *will* review the results within 3 days of receipt.

Shall is considered grammatically as the imperative mood, and therefore, a mood expresses a command or an order. Shall in the second and third person is defined as

"Compulsion, with the force of must in statutes, deeds, and other legal documents." Will is defined as a requirement or a command.

(F) Use simple, short understandable words, sentences and paragraphs.

Common examples of words used but not needed:

Utilize (Use)
In the event (If)
Meets or exceeds the Specifications (Meets)

(G) Ambiguous language

(1) - / -Do not use slash with two words.

(a) Either/or,
Remove/replace,
Damaged/spalled
These terms are subjective.

(b) And/or
Use of *and/or* has crept into our specifications. Its use is incorrect in this arena. This becomes subjective to the reader.

(c) Either/each;
Incorrect: Paint lines on either shoulder.
Correct: Paint lines on each shoulder.

(2) Any, All, Every

Any describes a limited amount, based on the discretion of the reader. Replace any damaged guardrail. (How badly is it damaged?)

All describes the entire amount. There is no subjective interpretation. Replace all damaged guardrail. (If there is any damage - replace.)

Every describes each one. No interpretation needed. Replace every damaged guardrail component.

(3) Amount – Quantity

Use *amount* when describing payment or money only.

Use *quantity* when describing measurement such as volume, yards, feet.

(4) Which and That

Which refers to persons and *that* refers to inanimate objects.

Example: The General Assembly members, which are elected for 1 term that consists of 2 years....

(H) Minimum and Maximum

Minimum – use - no less than or - no greater than

Maximum – no more than, at least

This is much more specific than a vague minimum or maximum left to interpretation.

(I) *Using Acronyms*

An acronym is a word formed from the initials or other parts of several words, e.g. "NCDOT" from the initial letters of "North Carolina Department of Transportation"

Do not use an acronym in the title of a Special Provision. Only use reference to it the first time it is used in a sentence. Then only use the acronym. Repeated usage is redundant.

(J) *References*

If there is an available reference *to define a product or process*, use it instead of rewriting the product or process. Begin with the *Specifications Book* and use it as the first reference. Example: A process requiring the use of fly ash would reference "Article 1024-5 of the *Standard Specifications*" that gives the classes of fly ash and the ASTM requirements.

Be as specific as possible when referring to portions of the *Specifications Book*. It is not fair to the contractor or the field personnel to "guess" which portion of a specification is being referenced. (Example: Use concrete in accordance with Section 1000 of the *Standard Specifications*. Use concrete in accordance with Article 1000-3 of the *Standard Specifications*. If you are not sure which section to use, get some help from the experts, i.e. Materials and Tests Unit.

If there are no *Standard Specifications* in which to reference, begin with the nationally recognized Specifications organizations, such as ASTM or AASHTO, etc. The writer should have a copy of all referenced documents or have easy access to the documents referenced. *All references must be easily available to the contractor, supplier or manufacturer.*

AASHTO references are available on the Material and Tests Intranet Website for DOT personnel. These references are not to be shared with anyone other than DOT employees.

(K) *Cross References in the Specifications*

When cross-referencing other sections of the *Specifications Book*, use the following formatting:

...in accordance with Section 300 Pipe Culverts of the *Standard Specifications*

...in accordance with Article 300-1 Description of the *Standard Specifications*

...in accordance with Subarticle 300-6(A) Rigid Pipe of the *Standard Specifications*

...in accordance with *49 CFR Part 26*

...in accordance with AASHTO M-154

...in accordance with ASTM C6118 for Class F

(L) ***Tables and Charts***

Table: data usually in rows and columns for ready reference

Chart: Sheet giving information in tabular form; tabular: set up in rows and columns

A table or chart may be amended, added or deleted.

(M) ***Details and Diagrams in the Specifications***

Do not add Standard Drawings and Plans to the Special Provisions. There are **no exceptions** to this rule. This causes an immediate conflict in the *Standard Specifications*. (See *Section 105-4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions.*)

(N) ***Identifying Provisions***

In order to avoid confusion, it is necessary to add a date to all provisions. When a provision is changed or revised, it should have a revision date added to it. It can become very confusing to have several provisions with the same title, with subtle changes if there is no identifying date. See example in Appendix No. 5.

Grammar and Punctuation

Here is a review of grammar and punctuation used in the NCDOT Specifications. Use this as your guide when writing Specifications.

(A) *Its and It's*

It's is a contraction for it is. Contractions are not permitted in Specifications language.

Its is a form of possession.

(B) *Parallel structure*

Use the same pattern of words to show that two or more ideas have the same level of importance. This can happen at the word, phrase, or clause level. The usual way to join parallel structures is with the use of coordinating conjunctions such as "and" or "or". Parallel Example: this work consists of furnishing material, placing material and cleaning the jobsite...

(C) *Do not mix forms.*

Inappropriate Example: This work consists of furnishing material, placing material and *to clean* up the jobsite.

(D) *Mixed Units*

Do not mix units.

Inappropriate Example: The restaurant signs were shown at 1/4 mile intervals but the motel signs were every half mile.

(E) *Superfluous language*

Do not write meets or exceeds This will not get you a better product.

Example: Concrete shall meet the requirements of Section 1000 of the *Standard Specifications*.

(F) *Bullets*

●●Bullets have no place in Specifications.

(G) *Using Numerals or Numbers*

When writing Specifications, it is not necessary to write double numbers, with a few exceptions. i.e. one (1)

Using the actual number in the sentence is the preferred method, except when the number is the first or last word of the sentence.

- (1) It is 1 mile to the next exit.
- (2) The next exit is at mile marker one.
- (3) Exception: The bid bond is Two Thousand dollars (\$2000) for this project.
When specifying money, you may use both. Do not use extra zeros \$2000.00.

- (4) Write decimal numbers as such: 7.456 or 0.7456.
- (5) Time It's 5:00 p.m. somewhere. It is 12 noon or midnight; otherwise, write out the time such as 1:15 p.m.
- (6) Fractions use 1/2 instead of ½ for consistency and ease of reading.
- (7) Numbers greater than 3 digits. Use comma between groups of three digits. 1,000,000 units or 1,000 psi. Exceptions: Addresses, years, decimal fractions less than one. Examples 1020 Anywhere Street. It is the year 2008. The measurement is in increments of 0.0004.

(H) Abbreviations

These abbreviations are used in the *Specifications Book* and Provisions for consistency. If an abbreviation will cause confusion to the reader, spell out the entire word.

| Word | Abbreviation | Exceptions if any |
|---|--------------|--|
| Acre | ac | Not used routinely as abbreviation |
| Cubic Yard | cu yd | Do not use exponents for the abbreviation of square and cube. 200 cu. yd. is correct; 2—yd ³ is not correct. |
| Degree | ° or deg | Do not put a space between temperature and degree mark 78°F |
| Fahrenheit | F | |
| Foot | ft | Not at the beginning or end of a sentence |
| Gallon per minute | gpm | |
| Gallon(s) | gal | |
| Greater than | > | |
| Greater than or equal to | ≥ | Find under <i>Insert Symbols, normal text, mathematical operators</i> |
| Hertz | hz | |
| Height | ht | |
| Inch | ' | Not at the beginning or ending of a sentence |
| Kilowatt | | |
| Less than | < | |
| Less than or equal to | ≤ | Find under <i>Insert Symbols, normal text, mathematical operators</i> |
| Linear Foot | lin ft | |
| Mile | mi | |
| Miles per hour | mph | |
| Minus | - | |
| Minute | min | |
| North Carolina Department of Transportation, Department of Highways | Department | N/A |
| Number | No. | |

| | |
|------------------------|-----------|
| Ounce | oz |
| Per | / |
| Per | / |
| Percent | % |
| Pounds | lb |
| Pounds per square inch | lb/sq in. |
| Second | sec |
| Square Foot | sq ft |
| Square Inch | sq in |
| Square Yard | sq yd |
| Ton | ton |
| Weight | wt |
| With | w/ |
| Without | w/o |
| Yard | yd |

Do not put a space between number and percent sign. **89%**

(I) *Commas, semicolons*

Use normal technical language when writing contract language.

Use language at no more than a 12th grade level when possible.

Using commas after listing. No comma just before and.

Example: The days of the workweek are Monday, Tuesday, Wednesday and Thursday.

Using semi-colons do not use unless that part of the sentence is a complete thought.

(J) *Apostrophes*

The use of an apostrophe in forming the plural of numbers and letters is optional: however for Specifications, do not use the apostrophe.

Do not use apostrophes showing a contraction such as *can't* in the Specifications.

(K) *Singular and Plural*

Do not use (s) for plurals. Refer to the singular unit only.

(L) *Hyphenations*

Do not hyphenate words at the end of a line. Do not use a hyphen with spelled out fractions used as nouns. Hyphenate spelled out fractions used as adjectives.

Examples: three fourths of an inch
two-thirds ton

(M) *Parenthesis*

Use parenthesis sparingly. If it is worth saying, it probably will not need to be in parenthesis.

(N) *Footnotes*

Footnotes are never appropriate in Specifications.

(O) *Capitalization*

Use the normal capitalizations rules in writing Specifications. Exceptions are as follows:

When addressing the prime contractor only, use a capital Contractor; when addressing contractors in general, use the lower case “c” in contractor.

Never capitalize subcontractor in the specifications unless it is the first word of the sentence or part of a title for a form, etc. There are specific responsibilities associated with both contractors and subcontractors. It can be argued that capitalizing the “s” in subcontractor elevates the subcontractor to that position of “the (prime) Contractor”.

Capitalize engineer when specifically describing the Department’s engineer only. All others are lower case, unless the first word of the paragraph.

(P) *Italics*

Use italics instead of underlining or using quotation marks for books, periodicals, and reference documents.

Example: *Standard Specifications* is capitalized and italicized when used to mean the *NCDOT Road and Bridge Specifications Book*.

Steps to Writing a Successful Provision

The language should be clear, correct, concise, and contractually enforceable. Additionally, the measurement and payment should be clear and fair to both the Department and the Contractor.

- (A) Research first, is there anything in the *Specifications Book* already written that will work, or a Special Provision that could be revised?
- (B) Draft an Outline
- (C) Research your reference documents, *Specifications Book*, Plans, Standards, Other Provisions, AASHTO, and ASTM. Remember to cite samples, tests and samples in accordance with Article 106-2 of the *Standard Specifications*.
- (D) Write the first draft provision.
- (E) Edit and Revise. Look for chronological order of the process. Perform a spell check and grammar check.
- (F) Get someone else to review the provision. If there is not time to do it right, is there time to do it over?
- (G) Be sure it is dated with the initial letting date used or a revision date, if applicable.
- (H) Use your spell-checker as a final check before sending out for review or insertion into a proposal

More about Measurement and Payment

For every pay item, there must be a measurement and payment in the *Specifications Book* Special Provision, Special Provision Insert or Standard Special Provision. There are no exceptions. Use existing pay items when possible. Pay Items should be written in provisions exactly as shown in the Itemized Listing of Pay Items in the proposal to avoid confusion among pay items.

- (A) If there is a measurement and payment in the *Specifications Book*, refer to the Section only, do not repeat and do not add the pay item. Add the section number of the *Specifications Book* on your Itemized Listing of Pay Items in the proposal.

EXAMPLE: Pipe Clean Out will be measured and paid for in accordance with Article 350-3 of the *Standard Specifications*.

- (B) If there is a measurement and payment, but there are additional items of work added to that pay item, add the additional items under a Special Provision measurement and payment. Show "SP" instead of the section number on your Itemized Listing of Pay Items in the proposal.

EXAMPLE Pipe Clean Out will be measured and paid for in accordance with Article 350-3 of the *Standard Specifications*. Such price and payment will include

- (C) If there is no measurement and payment in the *Specifications Book*, add a measurement and payment in your SP. Show "SP" in the Itemized Listing of Pay Items. Look for examples in the *Standard Specifications Book* that meet your requirements.
- (D) Lump Sum pay items are appropriate in some situations. However, making an item of work lump sum to avoid having to calculate quantities or because there are unknowns in the work will not be in the best interest of the Department. The contractor will have to assume many variables if they are not shown in the plans or spelled out in the provisions, resulting in a higher price than specific pay items with quantities shown.

Appendices

Appendix No. 1

Page 10

AGGREGATE BASE COURSE:

12-19-06

SP5 R03

Revise the *2006 Standard Specifications* as follows:

Page 5-11, Article 520-5 Hauling and Placing Aggregate Base Material, sixth paragraph, replace the first sentence with the following:

Base course that is in place on November 15 shall have been covered with a subsequent layer of pavement structure or with a sand seal. Base course that has been placed between November 16 and March 15 inclusive shall be covered within 7 calendar days with a subsequent layer of pavement structure or with a sand seal.

Appendix No. 2

Page 11

Diamond Grinding PCC Pavement will be measured and paid for at the contract unit price of actual number of square yards of pavement ground. The length will be the actual length of diamond ground pavement measured along the pavement surface. The width will be the width required by the plans or directed, measured along the pavement surface. Such price and payment will be full compensation for this work, including but not limited to diamond grinding, regrinding, collection and disposal of slurry off-site, providing necessary traffic control, and furnishing all labor, materials, supplies, tools, equipment and incidentals as needed to complete the work.

Payment will be made under:

Pay Item

Diamond Grinding PCC

Pay Unit

Square Yards

Appendix No. 3

Page 11

FILTER FABRIC FOR PERMEABLE ASPHALT DRAINAGE LAYER:

(7-1-95) (Rev. 7-18-06)

SPI 6-5

Description

The work consists of the construction of a filter fabric under the permeable asphalt drainage layer as shown on the typical sections on the plans and as directed.

Material

Provide fabric for the permeable asphalt drainage layer meeting the requirements of Section 1056 of the *Standard Specifications* for Filter Fabric, Type 1.

Construction Method

Install the fabric for permeable asphalt drainage layer in such a manner that all splice joints are provided with a minimum overlap of 2 feet. Anchor field splices of fabric with anchor pins to insure that the required overlap is maintained.

At the time of installation, the geocomposite material will be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

After the fabric has been placed, install the permeable asphalt drainage layer so as not to damage the fabric.

Measurement and Payment

Filter Fabric for Permeable Asphalt Drainage Layer will be measured and paid for as the number of square yards of fabric, measured along the surface of the drainage layer that has been acceptably placed. No separate measurement will be made of overlapping fabric. Such price and payment will be full compensation for all work covered by this provision, including but not limited to furnishing, hauling, placing, and sewing the fabric.

Payment will be made under:

Pay Item

Filter Fabric for Permeable Asphalt Drainage Layer

Pay Unit

Square Yard

Appendix No. 4

Page 12

STANDARD SPECIAL PROVISION

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, And Other Noxious Weeds)

(3-18-03)

Z-04a

Within quarantined area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a quarantined county

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-733-6932, or <http://www.ncagr.com/plantind/> to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed or other noxious weeds.

Appendix No. 5

Page 22

FUEL PRICE ADJUSTMENT:

(11-15-05) (Rev 7-15-08)

SP1 G43

Revise the *2006 Standard Specifications* as follows:

Page 1-93, Article 109-8 Fuel Price Adjustment is amended to add the following as the first paragraph:

Contact Information

For comments and questions, please contact Norma Smith, Specifications Engineer at nsmith@ncdot.gov or 919-250-4124 ext. 215.