

# Style Guide for Construction and Maintenance Specifications

**Contents:**

Section 1 — Overview.....	2
Section 2 — Organization of Specs.....	3
Section 3 — Formatting Issues.....	4
Section 4 — Abbreviations and Symbols.....	5
Section 5 — Numerals.....	8
Section 6 — Punctuation and Grammar.....	10
Section 7 — Capitalization.....	14
Section 8 — Tables and Figures.....	15
Section 9 — Wording of Articles.....	17
Section 10 — Other Wording.....	20

## **Section 1**

### **Overview**

#### **Introduction**

This chapter provides style guidelines for writing TxDOT's 2003 *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges*.

For questions not addressed here, refer to *The Chicago Manual of Style* or to a standard English dictionary.

## Section 2

### Organization of Specs

#### Basic Articles

The basic Articles required for a specification are:

- XXX.1. Description.**
- XXX.2. Materials.**
- XXX.3. Equipment.**
- XXX.4. Construction or Work Methods.**
- XXX.5. Measurement.**
- XXX.6. Payment.**

Here “XXX” represents the Item number.

#### Hierarchy of Organizational Elements

The hierarchy of organizational elements available below the Item level is as follows:

- XXX.X. Article.**
  - A. Section.**
    - 1. Section.**
      - a. Section.**
        - (1) Section.**
          - (a) Section.**

Each of these elements should have titles. Titles are bolded. Following paragraphs under these elements should not have titles, unless they are lists.

#### Bullets

Bullets may be used for items in a vertical list that do not need to be referred to by number or letter.

*EXAMPLE:*

- 764.3. Equipment.** Unless otherwise shown on the plans, provide a self-contained, single unit vehicle with:
- a high-pressure water pump capable of pumping at least 60 gpm at 2,000 psi with at least 500 ft. of hose,
  - a debris storage bin of at least 14-cu. yd. capacity,
  - a water storage tank of at least 1,300-gal. capacity, and
  - an air-conveying vacuum system capable of vacuuming pump station wells to depths of up to 55 ft. deep.

A bulleted list must have at least two items; otherwise it is not a list and should be treated as a normal sentence. See page 13 for punctuation of bulleted lists.

## Section 3

### Formatting Issues

#### Styles

Use the appropriate paragraph styles provided by the Spec Template (see “Using the MS Word Spec Template for Construction and Maintenance Specifications”).

#### Use of Nonbreaking Space

The nonbreaking space is used to prevent a line break from separating two words when they fall at the end of a line. To insert a nonbreaking space, hold down both the **Ctrl+Shift** keys and press the **Space Bar**.

Use the nonbreaking space:

- ◆ between numerals and units;
- ◆ between the parts of a two-word unit abbreviation (*e.g.*, cu. yd.);
- ◆ between the words “Section,” “Item,” and “Article” and accompanying number;
- ◆ between the letter and the number of ASTM & AASHTO specs; and
- ◆ wherever else needed to keep a numeral with an accompanying word (*e.g.*, July 4).

## Section 4

### Abbreviations and Symbols

#### Acceptable Abbreviations

Always check Item 1, “Definition of Terms,” for acceptable abbreviations. If an abbreviation is not defined in Item 1, spell it out first, followed by the abbreviation in parentheses; abbreviations are acceptable thereafter.

#### Unit Abbreviations and Symbols

Use abbreviations for names of units *only after numerical values*, for example, 25 ft., 12 in., or 300 cu. yd. Always leave a space between the number and abbreviated unit.

Names of units are written out when shown without numeric values. Linear measurements do not require the use of the word “linear”; refer simply to inches, feet, or yards.

The following table lists acceptable abbreviations for units of measurement and other common terms. Note that some abbreviations include periods and others do not.

**Abbreviations**

Units	When used in...	
	Text	Figures & Tables
ampere (amp)	A	A
bits per second	bps	bps
Celsius (see “Temperature” below)	°C	°C
cubic foot	cu. ft.	cu. ft.
cubic inch	cu. in.	cu. in.
cubic yard	cu. yd.	cu. yd.
cubic foot per minute	cfm	cfm
decibels	dB	dB
degree	°	°
Fahrenheit (see “Temperature” below)	°F	°F
foot*	ft.	ft. <i>or</i> '
gallon per minute	gpm	gpm
gallon	gal.	gal.
gram	g	g
greater than	greater than	>
greater than or equal to	greater than or equal to	≥
hertz	Hz	Hz
hour(s)	hr.	hr.

*(continued...)*

**Unit Abbreviations and Symbols** *(continued)*

Units	When used in...	
	Text	Figures & Tables
inch*	in.	in. <i>or</i> "
joule	J	J
Kelvin	K	K
kilogram	kg	kg
kilometer	km	km
kilopound per square inch	ksi	ksi
kilo volt amp	KVA	KVA
kilowatt	kW	kW
liter	l	l
less than	less than	<
less than or equal to	less than or equal to	≤
meter	m	m
mile	mi.	mi.
mile per hour	MPH	MPH
milliliter	ml	ml
millimeter ( <i>NOTE: no centimeters</i> )	mm	mm
minus	minus	–
minute	min.	min.
Newton	N	N
number	No.	# <i>or</i> No.
ounce	oz.	oz.
per	per	/
percent (see “Percent Symbol” below)	%	%
plus	plus	+
plus or minus	±	±
pound	lb.	lb.
pound per cubic foot	pcf	pcf
pound per square foot	psf	psf
pound per square inch	psi	psi
pound force	lbf	lbf
second	sec.	sec.
square foot	sq. ft.	sq. ft.
square inch	sq. in.	sq. in.

\* Tick marks may be used to show feet and inches on graphics only.

*(continued...)*

**Unit Abbreviations and Symbols** *(continued)*

Units	When used in...	
	Text	Figures & Tables
square yard	sq. yd.	sq. yd.
volt	V	V
volt alternating current	VAC	VAC
volt direct current	VDC	VDC
watt	W	W
weight	wt.	wt.
yard	yd.	yd.
year	yr.	yr.

*NOTE:* Only use unit abbreviations in text when preceded by a numeral (not by “per”). The same abbreviation is used for singular and plural.

**Temperature**

When describing temperature, do not include a space between the number and degree symbol or between the degree symbol and the abbreviation. Do not use a superscript “o” in place of the degree symbol. Use ASCII decimal character code 176. Use “normal text”, not “symbol.” In most text fonts (not Symbol), typing **Ctrl+@** followed by a space will produce this symbol.

*EXAMPLES:*

Correct:	Incorrect:
heat to 30°F	heat to 30 °F heat to 30° F

**Percent Symbol with Number**

Do not include a space between the number and the percent symbol.

*EXAMPLES:*

Correct:	Incorrect:
30% by weight	30 % by weight

**Abbreviation at End of Sentence**

When an abbreviation ends a sentence, use only one period.

*EXAMPLES:*

Correct:	Incorrect:
trench exceeds 5 ft.	trench exceeds 5 ft..

## Section 5

### Numerals

#### General

Use numerals for all numbers, except for the following:

- ◆ Spell out numbers at the beginning of sentences.
- ◆ When numbers are used to define both quantity and size, use the written word for the quantity (*e.g.*, three 1/2-in. holes).
- ◆ Use the word “one” if “single” or “each” could just as easily be used (“in one operation” vs. “in a single operation”). As a general rule, spell out the word “one” unless it is followed by a unit of measurement or is truly intended as a quantity (*e.g.*, “within 1 hr.” or “provide 1 bolt for each hole”).

#### Decimals

Express decimals in numerals (*e.g.*, 6.235). For quantities less than 1, use a 0 before the decimal point (*e.g.*, 0.235).

#### Time and Date

Express clock times and dates in numerals (*e.g.*, 2:10 P.M.). Exceptions to this are the use of the words “noon” and “midnight.” For example, use “noon” rather than “12 noon,” “12:00,” or “12:00 P.M.”

Omit ordinal designators (*e.g.*, “th”) from dates.

*EXAMPLES:*

Correct:	Incorrect:
June 15, 1992	June 15th, 1992

#### Unneeded Zeros

Omit unneeded zeros in time and money references.

*EXAMPLES:*

Correct:	Incorrect:
\$200	\$200.00
9 P.M.	9:00 P.M.



## Fractions

Determine whether it is technically correct to use fractions or decimals.

Create fractions using a slash mark, not with the word processor's fraction symbol.

*EXAMPLES:*

<b>Correct:</b>	<b>Incorrect:</b>
1/2	½

When expressing a number composed of a whole number and a fraction, include a nonbreaking hyphen between the whole number and the fraction (*e.g.*, 1-1/2). To insert a nonbreaking hyphen, hold down both the **Ctrl+Shift** keys and press the **hyphen** key.

## Commas with Numbers

In most numbers of 1,000 or greater, commas should be used between groups of three digits, counting from the right. This includes numbers less than 10,000.

*EXAMPLES:*

<b>Correct:</b>	<b>Incorrect:</b>
1,300 psi	1300 psi

Exceptions to this rule are page numbers, addresses, years, and decimal fractions less than 1.

## Section 6

### Punctuation and Grammar

#### Series Commas

When a conjunction (“and” or “or”) joins the last 2 elements in a series of 3 or more, always use a comma before the conjunction.

*EXAMPLES* (underlining added to relevant conjunctions):

Protect trees, shrubs, and other landscape features specifically designated by the Engineer for preservation from abuse, marring, or damage during construction operations.

Plug all abandoned storm sewers, culverts, sanitary sewers, conduits, and water or gas pipes over 3 in. in diameter.

#### Semicolons

Semicolons are used if items in a series contain commas within them.

*EXAMPLE:*

This price is full compensation for excavating and backfilling; constructing, furnishing, and installing the ground boxes and concrete aprons when required; and labor, equipment, materials, tools, and incidentals.

Note that in such a series, the semicolons function as “super commas” separating the major groupings. Also note that a conjunction (in this case “and”) is needed after the final semicolon, just as it is in a series set off by commas.

#### Punctuation With Closing Quotation Marks

Always place periods and commas inside closing quotation marks, regardless of whether or not the period or comma is part of the quoted matter.

*EXAMPLE* (underlining added to example punctuation):

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Disposal of Water Well<sub>”</sub> “Disposal of Petroleum Well<sub>”</sub> or “Disposal of Sulfur Well<sub>”</sub>”

Place other punctuation (such as exclamation marks, question marks, and dashes) inside closing quotation marks when it is part of the quoted matter; otherwise, place it outside.

*EXAMPLE* (underlining added to example punctuation):

Perform work in accordance with Section 123.4.A, “General”; Article 234.3, “Constriction”; and federal, local, and state requirements.

Colons and semicolons should be placed outside quotation marks. When matter ending with a colon or semicolon is quoted, the colon or semicolon is dropped.

## Quotation Mark Style

Use so-called “curly” quotation marks (also called “smart quotes” in MS Word).

*EXAMPLES:*

Correct:	Incorrect:
“Measurement”	"Measurement"

*NOTE:* This does not apply to ditto marks or to tick marks used for inches and feet in graphics.

## Spacing After Punctuation

Use only one space after all punctuation marks, including semicolons and periods at the ends of sentences.

## And/Or and Other Word Pairs Connected by a Slash

Do not connect words with a slash mark. Use a conjunction or, where appropriate, a hyphen.

Do not use “and/or.” Instead use the applicable conjunction (“and” or “or”).

Use “and” when all requirements apply. Use “or” when there is an option. However, the use of “or” without “and” does not always exclude the combining of the items to which the conjunction applies.

*EXAMPLE WHERE “OR” IS SUFFICIENT:*

Do not park *and/or* service equipment under the branches of trees marked for preservation.

In the preceding example, the use of “and/or” is unnecessary to convey the requirement that both activities (whether done together or separately) are prohibited. The word “or” is sufficient in place of “and/or” in this instance.

*EXAMPLE WHERE “AND” IS SUFFICIENT:*

Conformance to the plans *and/or* other approved drawings does not relieve the Contractor of the responsibility for providing proper fit of components.

In the preceding example, no one would argue that the Contractor would be relieved of the responsibility for providing proper fit if he only conformed to the plans and not to “other approved drawings.” The word “and” is sufficient in place of “and/or” in this instance.

When it is necessary to state explicitly that two or more options together or separate meet the criterion, then wording such as “this, that, or both” may be appropriate.

*EXAMPLE:*

Mark each length with the manufacturer’s name, trademark, or both.

### Indicating Both Singular and Plural

Do not use an “s” or other letters in parentheses — “(s)” — at the end of a word to indicate both singular and plural forms. In most cases, the plural form alone will suffice.

EXAMPLES:

Correct:	Incorrect:
Pick up materials at the locations and times set out in the General Notes and Specification Data Sheets.	Pick up materials at the location(s) and time(s) set out in the General Notes and Specification Data Sheet(s).
Coat threads of anchor bolts with pipe joint compound before installation of the nuts.	Coat threads of anchor bolts with pipe joint compound before installation of the nut(s).

NOTE: In the second example, since “bolts” is plural, the singular, “nut,” would not even be applicable.

If necessary for clarity, indicate both the singular and plural as shown in the following examples.

EXAMPLES:

Correct:	Incorrect:
The sign assembly consists of the sign or signs, sign supports, foundations, and associated mounting hardware.	The sign assembly consists of the sign(s), sign support(s), foundation(s), and associated mounting hardware.
One or more test panels will be required before approval of the mix design.	Test panel(s) will be required before approval of the mix design.

### Hyphenation of Number or Letter Modifiers

Always use a nonbreaking hyphen as part of a letter or number modifier (e.g., “9-in. nail” or “A-frame structure”). If a number modifier precedes a two-word unit abbreviation, such as “sq. ft.,” then use a hyphen only after the number.

EXAMPLES:

Correct:	Incorrect:
100-sq. ft. area	100-sq.-ft. area

### Parallel Structure

Always use parallel structure. Parallel structure is the use of the same pattern of words to show that two or more ideas have the same level of importance. This applies at the word, phrase, clause, and list levels. Parallel structures are usually joined with the coordinating conjunctions “and” or “or.”

EXAMPLES:

Correct (parallel):	Incorrect (not parallel):
Provide a finished asphalt cement-latex additive blend that is smooth, homogeneous, and in compliance with the requirements in Table 2.	Provide a finished asphalt cement-latex additive blend that is smooth, homogeneous, and complies with the requirements in Table 2.

## Punctuation of Bulleted Lists

A bulleted list should be introduced by a “lead.” The lead may be either a complete sentence or sentence fragment. The lead normally ends with a colon.

If the lead is a sentence fragment completed by the list or if the lead is a complete sentence but the bulleted items are only phrases or clauses, then:

- ◆ begin each list item with a lower case letter (unless the word is always capitalized),
- ◆ use commas or semicolons (as appropriate) after each list item except the last,
- ◆ use a conjunction (“and” or “or”) after the next-to-last list item, and
- ◆ use a period after the last list item.

If the bulleted items are punctuated as separate sentences, then the lead should always be a complete sentence.

Ensure that all list elements conform to the principle of parallel structure (see above). So, if the list includes both phrases and sentences, rewrite the phrases to make them complete sentences.

*EXCEPTION:* Do not punctuate the lists of referenced Items in “Materials” articles, except for a period at the end of the last one.

See page 3 for more information on bullets.

## Mixed Units

Mixed-unit measurements are represented as shown in the following table.

<b>Mixed Units</b>	
<b>Type of Mix</b>	<b>Example</b>
abbreviated units	2 ft. 5 in.
tick marks or other symbols	2' 5"

Separate inches and feet with nonbreaking spaces.

## Section 7

### Capitalization

#### General

Be consistent with capitalization within specifications. Use capitals when referring to Item titles. Use capitals for proper nouns.

Any title defined in Item 1 should be capitalized.

#### Specifics

Capitalize the following words and terms:

<u>Word or Term</u>	<u>Notes</u>
Area Engineer	
Commission	when referring to the Texas Transportation Commission
Contract	
Contractor	
Department	when referring to TxDOT
District	when referring to the Districts of TxDOT
District Engineer	
Division	when referring to the Divisions of TxDOT
Engineer	
General Notes	
Inspector	
Item	When referring to a numbered Item of the TxDOT Specifications
Specification	when referring to TxDOT Specifications or when part of a specific document name

## Section 8

### Tables and Figures

#### Tables

Tables should be numbered. Table numbers are centered above the table title and set in bold type. The table numbering sequence begins with each new specification.

*EXAMPLES:*

“**Table 1,**” “**Table 2,**” etc.

Table titles are centered below the table number and above the table itself. They are set in bold type.

For table footnotes, create another row at the bottom of the table with no borders, and combine the whole row into one cell. When footnotes are placed into this cell, the footnote margins will always coincide with table margins. Use superscript numerals rather than symbols (such as asterisks) as footnote references. Number the footnotes in the order in which they are referenced in the table, from left to right across rows. Use a full-size numeral and a period for numbering footnotes. Use the “TBL-Text” style, modified as necessary, for footnotes.

*EXAMPLE:*

**Table 4**  
**Rapid Curing Cutback Asphalt**

<b>Title</b>		
Text <sup>1</sup>		Text <sup>2</sup>
	Text <sup>3</sup>	

1. Footnote 1.
2. Footnote 2.
3. Footnote 3.

Tables may be created with or without lines. Use tables for all tabular material; never use tabs to set up columns of text or figures.

The template automatically creates a vertical space before the table. When necessary, use an empty paragraph formatted with the “Normal” style to add vertical space after the table.

#### Table Adjustments

The Spec template’s table macro creates tables exactly 4.3 in. wide (the width of the finished book’s margins). Do not expand tables beyond this width, unless it will be presented in landscape. If the table will be presented in landscape, then the maximum overall width is 7 in., and the maximum height (with table number and title) is 4.3 in.

Adjust column widths as necessary. Merge and split cells as necessary.

Standard table font size is 10 points. Reduce font size if necessary. Seven points is about the minimum for readability.

## Figures

Figures should be numbered. Figure numbers are centered below the figure itself and above the caption. The figure number is set in bold type. The figure numbering sequence begins with each new specification. Maximum figure size is 4.3 in. by 7 in. (portrait or landscape). The Bridge Division will be creating the graphics files for all figures. Contact Sharon Slagle at [sslagle@dot.state.tx.us](mailto:sslagle@dot.state.tx.us) or 512/416-2278.

*EXAMPLES:*

“**Figure 1,**” “**Figure 2,**” etc.

Figure captions are centered below the figure number and are set in bold type.

*EXAMPLE:*

**Figure 1**  
**Roadway Cross-Sections Showing Payment for**  
**Excavation and Embankment**

## Referencing Tables and Figures

Every numbered table and figure must be referenced in the accompanying text. Tables and figures should appear in the order they are referred to, no matter how fleeting the reference.

*EXAMPLE:*

...in accordance with Figure 1.



## Section 9

### Wording of Articles

#### Introduction

The examples provided in this section are generic in nature. Each specification may require some modifications for customization.

#### Active Voice and Imperative Mood

Use the active voice instead of the passive whenever possible, except where noted below.

Use the imperative mood for instructions directed to the Contractor.

*EXAMPLES:*

- Furnish and install high strength fasteners for structural connections...
- Meet the requirements of Item 264, "Lime and Lime Slurry."
- Furnish 2 copies of the completed material identification form to the Engineer...
- Consult with the appropriate utility company before beginning work.
- When using mineral filler, provide an additional bin.
- Heat the sealants in a double-jacketed heater using heat transfer oil so that...

Use the indicative mood for conveying information.

*EXAMPLES:*

- Salvaged materials remain the property of the State.
- Wood forms may be used for curves and transitions.
- A day's paving is defined as...
- A Daily Average Profile Index is a roughness value obtained by averaging...
- Computer printouts for design calculations will not be acceptable unless accompanied by...
- Radial cracks from the grout injection holes will be considered the result of improper injection techniques.
- This Item will be measured by the square yard...
- This price is full compensation for...

#### Description Articles

For Description Articles, use active voice and imperative mood.

*EXAMPLE:*

- XXX.1. Description.** Excavate, remove, use, or dispose of material.

## Material Articles

For Material Articles, use active voice and imperative mood.

*EXAMPLE:*

**XXX.2. Materials.** Furnish materials in accordance with the following:

- Item 100, “Excavation”
- Item 132, “Embankment”
- Item 400, “Excavation and Backfill for Structures.”

**A. Topsoil.** Furnish fertile soil easily cultivated free from objectionable material.

**B. Water.** Furnish water in accordance with Item 204, “Sprinkling.”

*NOTE:* The reference list is not required and is shown for example only.

## Equipment Articles

For Equipment Articles, use active voice and imperative mood.

*EXAMPLE:*

**XXX.3. Equipment.** Provide equipment able to efficiently produce the desired results.

## Construction Articles

For Construction Articles, use active voice and imperative mood.

*EXAMPLE:*

**XXX.4. Construction.** Apply water at a uniform rate and in the required quantity.

## Measurement Articles

For Measurement Articles, use the passive voice to describe how measurement will be made.

*EXAMPLE:*

**XXX.5. Measurement.** This Item will be measured by each word, symbol, or shape eliminated; by the foot of marking eliminated; or by any other unit shown on the plans.

*NOTE:* Do not use the term “complete in place” in the Measurement Article.

For plans quantity measurement, use the wording shown in the following example at the end of the Measurement Article.

*EXAMPLE:*

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2, “Plans Quantity Measurement.” Additional measurements or calculations will be made if adjustments of quantities are required.

## Payment Articles

For Payment Articles, use the passive voice to describe how payment will be made.

*EXAMPLE:*

**150.5. Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Blading.” This price is full compensation for furnishing and operating equipment and for labor, fuel, materials, tools, and incidentals.

Note that the above example is not standard language for use in every case. Additional details may be needed to clarify specific materials or work. An example is in Article 106.4 of the 1993 Specifications, which includes “removal of structures.” It was the intent of the writers to make it clear that removal of abandoned structures will be paid for under Item 106. However, “manipulation” and similar terms for work or materials are generally not needed.

## Combined Measurement and Payment Articles

When measurement and payment are subsidiary, they may be combined into a single Article. Use passive voice, as shown in the following example.

*EXAMPLE:*

**XXX.5. Measurement and Payment.** The work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly, but will be subsidiary to pertinent Items.

## Section 10

### Other Wording

#### Introduction

Examples provided are generic in nature. Each specification may require some modifications for customization.

#### Use of “Department”

Always use “Department” when referring to TxDOT.

#### Use of “will”

Use “will” when the statement is directed to the Engineer—“the Engineer will”—or when it is understood that the responsibility is the Department’s.

##### *EXAMPLES:*

High strength bolts, nuts, and washers will be sampled for tests in accordance with Tex-719-I.

#### Quantity vs. Amount

Use quantity when referring to materials. Use amount when referring to dollars.

#### Use of “incidentals”

Use “incidentals” in the “Payment” Article only as shown in the following examples:

##### *EXAMPLES:*

**134.5. Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Backfill” of the type specified. This price is full compensation for furnishing the emulsified asphalt, water, fertilizer, mulch sod and backfill material, equipment, labor, materials, tools, and incidentals.

**441.5. Measurement and Payment.** The work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly but will be subsidiary to pertinent Items.

### Use of “conformance” and “conform”

Use “conformance” and “conform” for adapting to prevailing standards or customs. Use “Conformance” for more generic reference statements as shown in the examples below. Use “in accordance with” when referring to specific Items, Articles, test procedures, and reference materials, as explained under “Cross-References” later in this section.

*EXAMPLES:*

Conformance to the plans and other approved drawings does not relieve the Contractor of the responsibility for providing proper fit of components.

Apply sheeting to sign blanks in conformance with the recommended procedures of the manufacturer of the sheeting.

### Use of “pertinent”

Use “pertinent” for stating or attaching relevant information.

*EXAMPLES:*

When excavated materials, including topsoil, are used in constructing the required roadway sections, payment for placement is made under the pertinent placement specification.

**447.5. Measurement and Payment.** No direct compensation will be made for the installation of bolts or fasteners. Payment is subsidiary to the pertinent Items requiring the use of high-strength bolts.

### Use of “subsidiary”

Use “subsidiary” for stating when work will not have a bid code but is considered part of the Item or other Items. The word “subsidiary” should only be used in the Payment Article.

*EXAMPLES:*

When “Ordinary Compaction” is shown on the plans, all sprinkling and rolling, except proof rolling, will not be paid for directly but will be subsidiary to this Item, unless otherwise shown on the plans.

**166.5. Payment.** Unless otherwise specified on the plans, the work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly but will be subsidiary to pertinent Items.

### Use of “shown on the plans”

The phrase “as shown on the plans” and variations of it are needed when an item *may* be directed or detailed in the field during construction, or when essential information is needed to clarify for bidding purposes. When the phrase is used because direction may be given in the field, add “...or as directed.” (The phrase “by the Engineer” is not needed.)

*EXAMPLE 1:* In Item 150, “Blading,” where the Engineer usually directs blading in the field use:

...as shown on the plans or as directed.

*EXAMPLE 2:* In Item 677, “Eliminating Existing Pavement Markings and Markers,” for surface treatment material applications use:

...at rates shown on the plans or as directed.

*OTHER EXAMPLES:*

...at locations shown on the plans or as directed.

...in conformity with the required lines, grades, and typical cross-sections shown on the plans or as directed.

*IMPORTANT NOTE:* This example wording does not include discussion of the phrase “unless otherwise shown on the plans.” (See following subheading.)

### Use of “unless otherwise shown on the plans”

Use the phrase “unless otherwise shown on the plans” when necessary for flexibility.

### Use of “as approved by the Engineer”

It is understood that the Engineer has authority to approve work and equipment in accordance with the current Item 5, “Control of Work.” There is a concern that Contractors and Engineers may interpret the phrase “as approved by the Engineer” to mean that TxDOT only has latitude when the phrase is included. This is not the case. The Engineer has the authority regardless of the inclusion of the statement. Therefore, the phrase “as approved by the Engineer” should be avoided.

In cases where the Engineer’s judgement is specifically required, it is still unnecessary to include the phrase “by the Engineer.”

*EXAMPLE:*

Unless otherwise approved, use a street sweeper that can remove cuttings and debris from the planed or textured pavement.

## Needless Words and Jargon

Omit needless words that do not add substantive meaning. Whenever possible, choose a single word instead of a phrase. Avoid jargon.

The following table provides alternatives to common verbose phrases.

<b>Instead of...</b>	<b>Use...</b>
absolutely essential	essential
as may be necessary	as necessary
at a later date	later
enclosed herewith	enclosed
having	with
in lieu of	instead of
in order to	to
linear feet	feet
not to exceed	at most
no greater than	at most
no less than	at least
no more than	at most
prior to	before
sufficient	enough
through the use of	by
until such time as	until
utilize	use

## Hyphenation, Word Separation, and Standard Terminology

The following table shows some specific word hyphenations, word separations, and standard terminology to be used uniformly in the specs.

<b>Instead of...</b>	<b>Use...</b>
as directed by the Engineer	as directed
center line	centerline
cross section	cross-section
edge line	edgeline
in the plans	on the plans
job site	jobsite
Registered Professional Engineer	licensed professional engineer
right-of-way	right of way
straight edge	straightedge (the tool)
work site	worksite

## Cross-References

When referring to Articles or Sections, use the wording shown in the following examples. If the referenced Section has a title, include it in the reference.

*EXAMPLES:*

...in accordance with Article 262.2, “Construction.”

...in accordance with Section 262.4.A.1.

The idea is to identify the location as specifically as possible, down to the Section when applicable. Never refer to a paragraph. Articles are “Description,” “Materials,” “Equipment,” “Construction,” “Work Methods,” “Measurement,” and “Payment.” Sections are anything below these.

References to more than one Item may be grouped into a list. Do what is best for the specification and be specific when you can.

*EXAMPLE:*

...to the pertinent requirements of the following Items:

- Item 100, “Excavation”
- Item 132, “Embankment”
- Item 400, “Excavation and Backfill for Structures”
- Item 424, “Precast Concrete Structures (Fabrication)”
- Item 458, “Waterproofing for Structures”
- Item 556, “Pipe Underdrains.”

When referring to another Item or other standard, use the wording shown in the following examples.

*EXAMPLES (REFERENCE SUBORDINATE TO A VERB):*

Weld in accordance with Item 440, “Reinforcing Steel.”

... in accordance with ACI 211.1 (no year, since the most current standard is to be used)

... in accordance with ASTM A 36

... in accordance with Tex-200-F

... in accordance with DMS-6250, “Geocomposite for Pavement Reinforcement”

... in accordance with AASHTO M 92 (no year, since the current standard is to be used)

*EXAMPLE (REFERENCE SUBORDINATE TO A NOUN):*

Furnish rebar that meets Item 440, “Reinforcing Steel.”



**Division Names and Addresses**

When referring to where samples or drawings will be sent, replace “Materials and Tests Division” with “Construction Division, Materials and Pavements Section.” Otherwise replace it with “Construction Division.”

For submittals to TxDOT offices, do not include the mailing address in the specification. Addresses will be handled in Items 1-9, in the proposal, or in the plans.