

Specification Style Guide



DEVELOPED BY:

MONTANA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION ADMINISTRATION SERVICES

General Purpose

This manual provides guidance for writing highway construction specifications in a manner that promotes the dissemination of clear and concise information in uniform formats for all Department projects. The guidance provided details the Department's approved process for development of highway construction specifications included as project specific special provisions, standard special provisions, and supplemental specifications.

This guide is based on information from several sources, including the Federal Register's writing guidelines, 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. Do not consider them to be or use them as actual specifications.

In the following section, we will briefly discuss the various types of highway construction specifications, hierarchy of contract documents, and general considerations needed prior to writing highway construction specifications.

Highway Construction Specifications

Highway construction specifications are the written requirements associated with a contract. They are intended to clearly communicate the work requirements and assign the roles, responsibilities, and risks associated with the work. In Department contracts, these are incorporated into contracts as:

- Special Provisions (Project Specific and Standard)
- Supplemental Specifications
- Standard Specifications
- Detailed Drawings

Standard Specifications

Standard Specifications are a form of highway construction specifications that apply to all Department contracts awarded by the Transportation Commission. The current MDT Standard Specifications for Road and Bridge Construction can be found at the following web address:

http://www.mdt.mt.gov/business/contracting/standard_specs.shtml

There are two different types of specifications, method and end result. Method specs describe the means and methods the Contractor must use to accomplish the contract requirements. End result specs describe the final product and how the product will be tested/measured to ensure those requirements are met. End result specs allow the Contractor to choose the most efficient method for their operation to accomplish the work. End result specs are usually desirable as they lessen the risk to the Department. It is common for project specifications to be one or a combination of the two.

Supplemental Specifications

Supplemental specifications are a form of highway construction specifications that are revisions made since the time of the original publication of the standard specifications. These physically get printed into each contract and effectively modify the standard specifications.

It is important to refer to the supplemental specifications printed as part of the contract when determining applicability. Contractors are only held to the agreements made at the time of the contract unless some other form of documentation such as a change order is in place.

The Department's current supplemental specifications can be found at the following web address:

http://www.mdt.mt.gov/business/contracting/standard_specs.shtml.

Supplemental specifications are developed to address necessary changes to the standard specifications. Changes can become necessary due to reasons like new technology or different business practices. The process for identifying, analyzing, and incorporating supplemental specifications can be accessed at the following web address:

http://www.mdt.mt.gov/other/webdata/external/const/proposed_spec_changes/PEC_REVISION_PROCESS.PDF

Project Specific Special Provisions

Project specific special provisions are a form of highway construction specifications that are unique to and developed specifically for the projects they are included in. These are developed by the design team and apply to some unique feature or process associated to the project.

Prior to writing/including project specific special provisions, verify that standard specifications, supplementals or standard specials do not cover the intended work.

Standard Special Provisions

Standard special provisions are a form of highway construction specifications that have been developed to uniformly address unique features or modifications to Department specifications. The Department has developed a set of "standard" specials as a repository for frequently used special provisions so project specific specials do not need to be developed for each project. Links to the Department's current standard special provisions can be accessed at the following address:

http://www.mdt.mt.gov/business/contracting/special_provisions.shtml

There are some standard special provisions that require slight modifications for each project. These have been developed and are used to provide uniform language that promotes consistent implementation.

Often times, standard special provisions have been developed to address situations needing immediate attention and are incorporated into supplemental specifications once the "kinks" are worked out a static format addressing both Department and Contractor concerns is in place.



Once the appropriate project specific and standard specials provisions are included in the contract, they are all referred to as “Special Provisions” and no differentiation is made between the two.

Contract Document Hierarchy

With so many different means of providing information to the Contractors in our bid documents, although not desirable, it is noted that discrepancies may occur. To address any discrepancies, Subsection 105.04 provides the following guidance:

If discrepancies in dimensions exist, the governing ranking is as follows:

1. Plan
2. Calculated
3. Scaled

If discrepancies in information exist, the governing ranking is as follows:

1. “Question and Answer Forum” Information
2. Special Provisions
3. Table of Contractor Submittals
4. Plans
5. Supplemental Specifications
6. Standard Specifications
7. Supplemental Detailed Drawings
8. Detailed Drawings

General Considerations prior to Highway Construction Specification Development

Prior to writing any highway construction specifications (including special provisions and Q&A Forum postings), consider these general guidelines:

- Do not duplicate information sufficiently covered by other contract documents.
- Keep the guidance clear by writing specifications in the active voice using the imperative mood.

Example:

Coordinate clearing, grubbing, or clearing and grubbing with the grading work to meet the approved erosion control plan in Subsection 208.03.2.

- Eliminate redundancies, ambiguities, conflicts, circular references, and obsolete provisions.
- Use end result specifications whenever possible.
- Research the subject adequately by communicating with industry and the Department's personnel to ensure specifications reflect current practices. Other states specifications can be a good resource when doing this research.
- Do not change materials requirements of standard items. Do not include obsolete materials test methods or test methods the Department cannot perform.
- Follow the standard 5-part format (Description, Materials, Construction, Measurement, and Payment) to ensure clear and uniform dissemination of information.
- Use standard language and formats whenever possible to promote consistent interpretations by both Contractors and Department personnel.

The following section discusses the formatting and terminology used, as well as the organization of each type of contract document.

Standard Specifications

Standard Specifications are laid out using a series of Divisions, Sections, Subsections, Parts, and Numbers to organize the information contained in the Department's Standard Specifications for Road and Bridge Construction book. Below is an illustration of the general concept with an in depth discussion following.

Typical Specification Layout:

(Division) **DIVISION 200 - EARTHWORK**

(Section) **SECTION 203**
EXCAVATION AND
EMBANKMENT

(Subsection) **203.01 DESCRIPTION**

This work is the excavation, placing, compacting and

(Subsection) **203.01.1 Excavation**

(Part) **A. Unclassified Excavation.** Unclassified excavation

(Part) **B. Borrow Excavation.**

(Number) **1. Unclassified Borrow.** Unclassified borrow for

2. Special Borrow. Special borrow is

Divisions:

These are the broad categories of work involved in construction. These are set up on the federal level and each state uses very similar systems to aid uniformity across the country. Our specifications employ the following divisions:

- Division 100 – General Provisions
- Division 200 – Earthwork
- Division 300 – Aggregate Surfacing and Base Courses
- Division 400 – Bituminous Pavements
- Division 500 – Rigid Pavements and Structures
- Division 600 – Miscellaneous Construction
- Division 700 – Materials

Sections:

These are more detailed portions of the Divisions which address the specific scope of work.

Subsections:

These are specifics concerning what the work in each subsection requires. The standard spec book follows the 5-part format as defined below.

Parts & Numbers:

These are used to keep the information associated with each Subsection formatted in a clear manner.

Five Part Format

Highway construction specifications are intended to clearly communicate the work requirements and assign the roles, responsibilities, and risks associated with the work. To make sure our specifications adequately address the necessary items, the information is broke down into the following parts. These parts typically correspond to each subsection of the specifications.

When specifications or special provisions are developed, it is critical to consider the purpose of and to follow the five part format to ensure the necessary information is provided as well as promote uniformity in the format of our highway construction specifications.

XXX.01 DESCRIPTION (Specification) or A. DESCRIPTION (Special Provision):

This provides a general overview of what the specification will discuss.

XXX.02 MATERIALS (Specification) or B. MATERIALS (Special Provision):

This describes the physical requirements of the materials used. It is not uncommon for this subsection to reference other areas of the specifications or test methods. Discuss any test methods cited with the Materials Bureau to determine how/if the Department can test/accept the material. This is a critical part of the specification as it ensures quality materials are furnished.

XXX.03 CONSTRUCTION (Specification) or C. CONSTRUCTION (Special Provision):

This describes the placement of materials and other associated operations at the job site. It can often be difficult to draw the line between the materials subsection requirements and the construction subsection requirements. A good rule of thumb is to consider when the material reaches the job site. Prior to any material reaching the job site, list specific requirements under the materials subsection. List all requirements after materials have reached the job site, in the construction subsection.

XXX.04 METHOD OF MEASUREMENT (Specification) or D. METHOD OF MEASUREMENT (Special Provision):

This describes the method that will be used to measure the work performed. It is essential to consider what will be required by field personnel to properly track the payments of items. If similar items exist, it is recommended that both items be measured in a similar fashion to promote uniformity among similar items.

XXX.05 BASIS OF PAYMENT (Specification) or E. BASIS OF PAYMENT (Special Provision):



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These subsections outline the pay items and pay units that are used to pay for the work. These are critical to both the Department and the Contractors as it identifies what bid items address the specific aspects of the work. Avoid the creation of unnecessary items. Research and determine if there are available pay items for the work. When including items of work for payment with other items, specify specific items. Do not include items in “other work” or “incidental” to the work, unless the work is a general project requirement (e.g. sequencing). Do not include items together that are unrelated.

WRITING STYLE

The following are common rules when writing specifications and special provisions. Follow all rules unless clarity is reduced or the context would dictate otherwise.

GRAMMAR AND USAGE

1. Write in the active voice.

Active voice is clearer and simpler. Use direct sentences that clearly direct the Contractor what work to perform. One possible way to change from passive to active voice is to move the verb to the beginning of the sentence. Examples of how passive voice language can be changed to active voice with minor editing are shown below.

1. Passive - The gravel shall be placed and shaped by power equipment to the specified lines, grades, cross-sections, and depths, without segregation.

Active voice - Place and shape gravel to the specified dimensions without segregation using power equipment.

2. Passive - A mechanical broom or sweeper shall be provided which is adjustable to uniform contact with the surface and designed to thoroughly clean without cutting into the surface being swept.

Active Voice - Provide a mechanical broom or sweeper that can be adjusted to uniform surface contact and does not cut into the surface.

3. Passive - Concrete shall be thoroughly consolidated against the faces of all forms and joints, including concrete in a previously constructed lane of pavement, by means of vibrators inserted in the concrete.

Active Voice - Consolidate fresh concrete against all form faces, joints, and previously constructed pavement using insertion type vibrators.

2. Use action verbs.

Do Not Say	Say
is applicable to	applies to
make payment	pay
give recognition to	recognize
is concerned with	concerns

3. Do not use "shall." Ensure the use of "will", "must", "should" and "may" are in the appropriate context.

shall	imposes an obligation to act, but may be confused with prediction of future action. DO NOT USE!
will	predicts future action (By definition, "will" refers to Department actions, Subsection 101.01)
must	imposes obligation, indicates a necessity to act
should	infers obligation, but not absolute necessity
may	indicates discretion to act

4. Use the imperative mood (be direct).
Talk directly to your readers (Contractor).

This style results in procedures that are shorter and easier to understand.

5. Write professionally.
If you can accurately express an idea either positively or negatively, express it positively. Do not write specifications with the expectation of failure.

6. Use of exceptions.
If possible, state a requirement or condition directly rather than describing that rule or category by stating its exceptions.

Do Not Say	Say
Montana law requires all contractors, except those exempted...	All Contractors not exempted must ...

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.

7. 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.

Do Not Say	Say	Unless you mean
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.	The guard will issue a security badge to each employee who works in both Building D and Building E.

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

Do not Say	Say
The work is applying a fog seal coating over Seal & Cover (chip-seal) surface. Do not perform final sweeping and brooming on seal-coats covered by fog-seal.	The work is applying a fog seal coating over a freshly seal-coated surface. Do not perform final sweeping and brooming on seal-coats covered by fog-seal.

9. Use parallel structure.

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

Nonparallel structure:

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

- To take minutes of all the meetings; (phrase)
- The Executive Secretary answers all the correspondence; and (clause)
- Writing of monthly reports. (topic)

Parallel structure:

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

- To take minutes of all the meetings;
- To answer all the correspondence; and
- To write the monthly reports.

10. Omit needless words.

Do Not Say	Say
because of the fact that	because
for the period of	for

11. Avoid redundancies.

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

Examples of word pairs to avoid are:

- | | |
|-----------------------------|--------------------------------|
| <i>any and all</i> | <i>full and complete</i> |
| <i>authorize and direct</i> | <i>order and direct</i> |
| <i>cease and desist</i> | <i>means and includes</i> |
| <i>each and every</i> | <i>necessary and desirable</i> |

12. Ambiguities

Avoid ambiguities by selecting words that convey the exact meaning, and using measurable standards where practical. Select words that say what you mean. Use measurable or definable standards where possible that are not subject to interpretation.

Example:

Ambiguous: "Crush any oversize material."
Clear & Concise: "Crush all oversize material."
Measurable or Definable: "Crush material not passing through a ¾ inch (19 mm) sieve. "

In addition to the discussion above, do not use words with multiple meanings. Avoid using adjectives and adverbs with meaning that may vary from reader to reader. Select words that have restrictive interpretations.

Example:

Unclear Definition: "Clean the concrete surface before applying the coating."
Restrictive Interpretation: "Provide concrete surface free of dirt, grease, oil, or other foreign materials before applying the coating."
Even Better: "Clean the concrete in accordance with manufacturers recommendations."

Often times, ambiguities can arise due to the selection of an incorrect word on the writer's end.

13. Don't use gender-specific terminology.

Avoid the gender-specific job title:

Don't Say	Say
crewman	crew member
foreman	supervisor
manpower	personnel, workforce

14. Write short sentences.

Readable sentences are simple, active, affirmative, and declarative. The more a sentence deviates from this structure, the harder the sentence is to understand. The more complex the sentence, the greater the possibility for difficulty in determining the intended meaning of the sentence.

Solutions:

- State one thing and only one thing in each sentence.
- Divide long sentences into two or three short sentences.
- Remove all unnecessary words. Strive for a simple sentence with a subject and verb. Eliminate unnecessary modifiers.
- If only one or two simple conditions must be met before a rule applies, state the conditions first and then state the rule.
- If two or more complex conditions must be met before a rule applies, state the rule first and then state the conditions.
- If several conditions or subordinate provisions must be met before a rule applies, use a list.

15. Make lists clear and logical in structure.

List items by sequence of work or most important to least important. If no logic, list alphabetically. Display lists of 3 or more items in vertical lists.

16. 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.

BREVITY

Be as brief as possible without reducing clarity.

Avoid prepositions. Do not eliminate prepositions if nonparallel clauses and phrases are created as a result.

Examples:

Don't Say	Say
The titles, and heading of the sections, ...	Titles, section headings, ...
working drawings for the falsework	falsework working drawings

Use elliptical clauses.

Examples:

Don't Say	Say
For excusable delays that are not caused by weather, the State pays the Contractor's added costs	For excusable delays not caused by weather, the Department pays the Contractor's added costs
Bid submission shows that the bidder has investigated the site and understands the scope of work	Bid submission shows the bidder has investigated the site and understands the scope of work.

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." According to The Elements of Style by William Strunk, Jr., "These words may usually be omitted with advantage."

Examples:

Don't say	Say
A minimum and maximum pad thickness of $\frac{1}{16}$ -inch (2 mm) and $\frac{1}{8}$ -inch (3 mm), respectively.	Ensure pad thickness is minimum $\frac{1}{16}$ -inch (2 mm) and maximum $\frac{1}{8}$ -inch (3 mm).
The maximum liquid limit and plasticity index for the material passing the No. 40 sieve must be 30 and 7 respectively.	For material passing the No. 40 (0.425 mm) sieve, the liquid limit must not exceed 30, and the plasticity index must not exceed 7.

DEFINITIONS

Use definitions in Division 100 of the Standard Specifications appropriately. Do not redefine terms that have been defined in Subsection 101.03

INDUSTRY STANDARD

Use industry-standard terms.

Use terms in prevalent use by other states and the construction industry when possible.

PREFERRED EXPRESSIONS

Use these preferred expressions.



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Use	Do Not Use Synonyms
accept (for an agreement to receive something)	approve authorize
approve (for CCOs, change order bills, and working drawing)	accept authorize
adjacent	next (Adjacent can be used as an adjective. Reduced variation over easier word.)
after ^a	subsequent to
after June 30 ^a	on or after July 1
all	all the all of the
allow	permit
at	located at at the following location
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
complete	finish
comply with	adhere to follow
contract with ^a	enter into a contract with
count ^a	enumerate
during ^a	during the course of during the duration of
enough	adequate number of
ensure	assure insure
for ^a	in the interest of with reference to
furnish	give provide
how ^a	the manner in which
if	in the event that ^a
in accordance with (to refer to the specifications and the drawings; to refer to the contract, to refer to drawing details or notes, to refer to test methods)	indicated in according to described in shown on per under
instead of ^a	in lieu of

Use	Do Not Use Synonyms
keep ^a – exception, use: retain (for records)	retain
limits	parameters
notify	inform
obtain – exception, use: procure (materials)	procure get secure
on	upon (unless introducing an event or condition)
practicable (qualitative)	possible
project	job
quantity	amount (unless related to dollars)
request	ask
require ^a	necessitate
result ^a	consequence
start	begin commence
stop	cease (unless related to enforcement)
the, this, these, that, those (the, preferred; unless more specificity is required)	such (when preceeding a noun)
to	in order to
too many ^a	excessive number of
traffic	public traffic
until ^a	until such time as
use ^a	utilize employ (in the sense of "use")
while ^a	during such time as
withhold	retain

^aFrom the Federal Register's Guidelines, Drafting Legal Documents, Appendix B – Preferred Expressions

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., a 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).

SPECIFICATION DUPLICATION

Include only specifications not already covered by other specifications. In technical specifications, do not include specifications covered by implied warranty, intent of plans and specifications, payment scope, work definition, or other specifications.

REFERENCES

When referencing the specifications, do not reference the “Standard Specifications.” This implies reference to the printed spec book. Instead, say, “...in accordance with Subsection ABC.” This implies reference to the revision in effect at the time of the contract.

Be aware of the difference between Section and Subsections. Reference Test methods correctly. The term “conditions” is typically reserved for permit compliance.

Examples:

Topsoil under Section 610 is soil that supports normal plant growth and meets Subsection 713.05 requirements.

Prepare concrete test cylinders according to MT 101 and MT 105, and test for compressive strength in accordance with AASHTO T 22.

Adhere to applicable permit conditions

NUMERALS AND WORDS

In general, use numerals when addressing values and avoid writing out values that can be expressed as numerals. There are unique circumstances when it is acceptable to write out the values such as the beginning of a sentence or when there is a quantity and size combination. Following is an example of each of these situations.

Example:

Beginning of sentence: Three bolts are located on each end.

Note: This situation is avoidable if sentences are reordered.

Quantity and Size: Drill three 3/4" holes.

Times and Dates

Use the standard 12 hour system followed by a.m. or p.m. do designate morning or evening. There are two acceptable deviations to this rule and these are when designating noon or midnight.

Write out the full name of the month followed by numerals representing the day. Provide numerals representing the year if it is included as part of the date.

Example:

Times: Deliver the records and totals before 10:00 a.m. the next business day following the shift.

Dates: Be responsible for all traffic control and maintenance during winter weather shutdowns, including the time between November 16th and April 15th.

Money

Use numeral when representing monetary values. Do not include decimals when the values are to the whole dollar.

Example:

Obtain commercial general liability insurance with a general aggregate limit of \$2,000,000; an occurrence limit of \$1,000,000; and products and completed operations limit of \$1,000,000.

Adjustments will be made only when the monthly average price exceeds \$0.25 per gallon more or less than the base price.

Decimals

When providing a decimal value, provide a number on both sides of the decimal point.

Example:

Aluminum sheet, aluminum sheet increment, and plywood signs are measured by the square foot (square meter) to the nearest 0.1 square foot (0.1 square meter) of sign face.

Signs with a surface area of up to 30 square feet (2.8 square meters) on one side are accepted in lots of five or more.

Fractions

When providing a fraction value, use either fraction symbols, such as $\frac{1}{2}$, or full numerals separated by a forward slash, such as 1/2.

Example:

Apply the markings to within $\pm 1/4$ inch (6 mm) of the specified width.

Decimals vs. Fractions

There is no “one size fits all” solution when deciding to show values as decimals or fractions. The best guidance that can be offered is to follow industry

standards whenever available for English values. Metric values are typically decimal values.

Example:

Sieve Size	Percent Passing
¾-inch (9.5 mm)	100
No. 4 (4.75 mm)	95-100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	50-85
No. 30 (0.600 mm)	25-60
No. 50 (0.300 mm)	5-30
No. 100 (0.150 mm)	0-10
No. 200 (0.075 mm)	0-3

Furnish 1 1/2-inch (37.5 mm) aggregate meeting the gradations in Table 701-4 for No. 4 (4.75 mm) to 1 1/2-inch (37.5 mm) size material.

Percentages

When percentages are required, use the % symbol. The % symbol results in clearer format.

Example:

When the coarse aggregate is subjected to five cycles of the sodium or magnesium sulfate soundness test, the total percentage loss cannot exceed 12 and 18% by weight respectively.

SUBSTANCE	MAXIMUM % BY WT
Coal and Lignite	1.00
Clay Lumps	0.25
Soft Fragments	5.00
Thin or elongated pieces having a length greater than five times average thickness	15.00
Material passing the No. 200 sieve	1.00 ¹

Commas vs. Spaces

Use a comma to separate values with 4 or more figures when writing highway construction specifications for the Department. (Not including decimals)

Example:

All display indicators must have a minimum design life of 20,000 hours at the rated voltage.

The maximum area allowed to be disturbed at one time within the highway right-of-way is 750,000 square feet (69,750 square meters) of clearing and grubbing and 750,000 square feet (69,750 square meter) of borrow, excavation and embankment.

CAPITALIZATION

The Department applies the general rules of the English language when choosing to use capitalization or not. When writing highway construction specifications, aim for uniformity and consistency. Be cautious when choosing to capitalize or not, as over capitalization may actually reduce the very emphasis that capitalization is meant to achieve. When in doubt, grab the spec book and look to see how it has been treated in other situations or if similar situations exist.

Acronyms

Always capitalize all letters within acronyms. A list of acronyms commonly used by the Department can be found in Subsection 101.02.

Example:

Reference to a specification or test designated in AASHTO, ASTM, Federal Specifications, or other recognized, nonproprietary national organization, is the specification or test method that is current on the date of advertisement for bids and as amended by the Department's Test Method Manual.

Document Titles

Capitalize the document titles. These documents include those provided by the Department as well as those from outside entities.

Example:

Flared end terminal sections used with concrete pipe may be precast standard sections or cast in place as shown in the Detailed Drawings.

Fabricate pins and recessed pin nuts as detailed in the AISC Manual of Steel Construction.

Laws and Legislative Acts

Capitalize laws and legislative acts.



Example:

Furnish all seed that meets and is labeled under Montana Seed Law and meeting the contract requirements.

Defend, indemnify, and hold harmless the Department from legal actions or fines resulting from violations of the Stream Protection Act, Section 87-5-501 to Section 87-5-509 MCA, because of any act, omission, neglect, or Contractor misconduct.

Official Titles

Capitalize official titles when referring to positions both within the Department as well as those outside of the Department.

Example:

Modified versions of the “Escrow Agreement” provided by the escrow agent may be used with written approval by the Construction Engineering Services Engineer.

The District Construction Engineer will provide a written decision no more than 30 calendar days after receipt submittals.

Specific Organizations within the Department

Capitalize bureaus and sections when referring to specific organizations within the Department.

Example:

Provide written notification including copies of the Bid Documentation Inventory Affidavit and the Escrow Agreement to the Contract Plans Bureau within seven business days, including the day of bid opening.

Submit a 30 lb. (13.6 kg) sample for the first lot of the sealer proposed for project use to the Helena Materials Bureau for testing at least 20 calendar days before its intended application.

The Tricky Stuff

The rules and examples above provide good general guidance, but from experience, there are still some tricky situations you want to be aware of. Firstly, whenever we refer to MDT in the spec, we simply use the Department (capitalized). Whenever we refer to the Prime Contractor, we simply use the Contractor (capitalized). Whenever we are referring to a subcontractor to the Contractor, we simply use the subcontractor (not capitalized).

Example:

In consideration of being awarded the contract, the Contractor, on its own behalf and on behalf of its subcontractors, assigns to the Department all claims or causes of action for any antitrust law violations, or damages arising there from, as to goods, materials, and services purchased under the terms of the contract or any change order that may result from the contract.

PUNCTUATION

Punctuation is system of symbols that are used to help keep our writing clear. Punctuation is used to separate sentences and parts of sentences. The Department applies the general rules of the English language when choosing appropriate punctuation. The following provides general guidance on the types of punctuation commonly encountered when writing specifications.

Periods

Use periods at the end of a sentence. When writing specifications, the shorter and clearer the sentence, the better. All sentences must have a subject, verb, and object. Remember, when writing in the active voice, the subject is often implied.

Example:

Clean and fill rock seams and crevices with concrete.

Maintenance re-blocking and re-leveling is incidental to the work and not measured or paid for separately.

Commas

Commas are used inside sentences. Commas separate parts of a sentence into logical elements. Although commas themselves have no meaning, they can significantly impact the meaning of a sentence. Consider using multiple, shorter sentences rather than commas.

Example:

Go slow, work is in progress.

Go, slow work is in progress.

Use commas between items in a series or list of 3 or more items. It is encouraged that you place a comma before the conjunction (“and” or “or”) joining the last two elements.

Example:

Do not use pit strippings, overburden, or other deleterious material as blending material.

Have the weigh system tested, certified, and sealed by the State Bureau of Weights and Measures after each plant move and before production for a project.

Semi-colons

Semi-colons are sometimes used in place of a period. The semi-colon may be appropriate if you encounter sentences that are grammatically independent, but have a closely connected meaning. The true test as to whether a semi-colon or period is necessary is whichever provides the clearest meaning. If both are felt equally effective, keep them as stand-alone sentences.

Example:

A timing device that locks the discharge gates or a stationary mixer is not required; however, the mixer must not be emptied until the materials have been mixed the specified time.

The project does not involve federal aid funds; therefore the following preferences apply:

The majority of the use of semi-colons when writing specifications is as a “super comma”. When specifications have a list of items, we usually separate the items with commas. If the list is complicated, we may prefer to use semi-colons to add clarity.

Example:

Comply with the pertinent statutes relating to the open cut mining (Title 82, Ch. 4 MCA); the hard rock mining (Title 82, Ch. 4, Part 3); water quality (Title 75, Ch. 5); stream bank preservation (Title 82, Ch. 5, Part 5 and Title 75, Ch. 5); Montana County Noxious Weed Management Act Title 7, Ch. 22 Part 21; and all other applicable federal, state, and local statutes, regulations, or ordinances.

Colon

The job of a colon is to introduce. When writing specifications, the colon is used to introduce list and if you want to really emphasize it; the colon can be used to introduce an item.

Example:

Do not begin work before:

- A. The contract is executed;
- B. Contract bond is completed;
- C. Evidence of the required insurance is provided; and

- D. Possessing a current fuel user permit issued under 15-70-302 MCA.

Defend, indemnify, and hold harmless the Department from legal actions or fines resulting from violations of the Stream Protection Act, Section 87-5-501 to Section 87-5-509 MCA, because of any act, omission, neglect, or Contractor misconduct.

Parenthesis

The most common use of parentheses in specifications is to identify alternative units of measurement. This corresponds with the general application of parenthesis, which is to provide information that may be useful, but not necessarily required for purposes of the sentence.

Avoid using parentheses for clarification. Rewrite sentences so they do not require excessive use of parentheses for clarity,

Example:

Measurement is by the acre (ha) for the area actually cleared, to the nearest 0.1 acre (0.1 ha) to the limits in the contract or as staked by the Project Manager.

Parentheses are also commonly used to designate abbreviations or acronyms that will be used throughout the specification.

Example:

Submit bids only using the Electronic Bid System (EBS) that generates the required Proposal, Schedule of Item, Disadvantaged Business Enterprise (DBE) requirements, and indicates, acknowledgement of addenda if applicable.

LISTS, TABLES, & FIGURES

Use lists, tables, and figures to help convey information in the clearest and most concise manner feasible. Select and use these tools to formulate highway construction specifications that provide information in the simplest layout and content possible.

Lists

Lists are an excellent method of simplifying complex information. Lists can be used at any logical location and are an excellent way to clearly convey information. When writing highway specifications and important or complicated series are encountered, consider using a list to not only clarify the information, but to also draw attention to the information.

Following are some suggested phrases for addressing conjunctions typically encountered in situations that may lend themselves to lists:

Examples:

When “or” situations are encountered, consider “one of the following:”.

When “and” situations are encountered, consider “all of the following:”.

When “and/or” situations are encountered, consider “one or more of the following:” when more than one can apply individually. Consider “a combination of the following:” when items can be combined.

When all items in a list apply, but the list is not limited by the items provided, consider “including, but not limited to the following:”.

Tables

Tables are another valuable tool for simplifying complex information. Tables provide information in a manner that allows rapid access to and relatively easy comparison of information.

A table is a group of rows and columns of data. At the top of each column is a heading, which identifies the contents of that column and usually provides the unit of measurement. On the left of each row is typically another heading to identify the contents of each row. Each column and row heading may be even more refined by the use of subheading. Each table is typically assigned a table number and title. The following figure provides a visual representation of these items. Be aware of existing table numbers.

TABLE NUMBER
TABLE TITLE

		COLUMN HEADING	COLUMN HEADING	
			COLUMN SUBHEADING	COLUMN SUBHEADING
ROW HEADING		APPLICABLE INFORMATION	APPLICABLE INFORMATION	APPLICABLE INFORMATION
ROW HEADING	ROW SUBHEADING	APPLICABLE INFORMATION	APPLICABLE INFORMATION	APPLICABLE INFORMATION
	ROW SUBHEADING	APPLICABLE INFORMATION	APPLICABLE INFORMATION	APPLICABLE INFORMATION

Following are typical rules to observe when establishing table numbers:

- When writing a Standard Specification, the table number is established by using the Section it is located in and then the

number it falls within the tables of that Section. For example, Table 551-2 can be expected to be the second table in Section 551; similarly, Table ABC-Z can be expected to be the Zth table in Section ABC.

- When writing Supplemental Specifications or adding tables to existing Sections, keep the same table number if a table is being revised or replaced. If you are adding a table to a Subsection that has a table in the specification prior to and following the proposed table, use the same table number as the table proceeding with an alpha value added, e.g. Table 701-15A.
- When writing Standard Special Provisions or Project Specific Special Provisions, it is encouraged, but not necessary to provide a table number. If you do provide a table number, use a number based on the Section the Special Provision relates to and begins the numbering system at 1.

Figures

Although figures are not included in the Standard Specifications or Supplemental Specifications, they are an excellent way of showing details for Special Provisions.

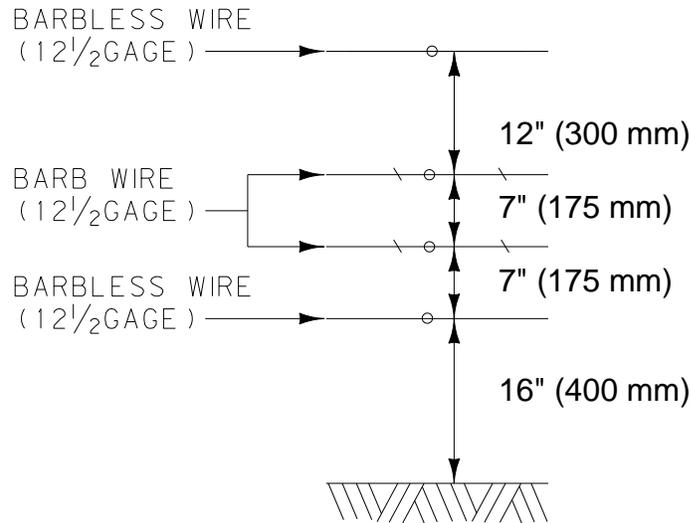
Example:

SP 607-1 WILDLIFE-FRIENDLY FARM FENCE [607] (Added 12-31-09)

A. Description. Install a 42" (1050 mm) high wildlife-friendly farm fence meeting the Detailed Drawings and the following requirements.

B. Materials. Furnish materials meeting Section 607 of the Specifications.

C. Construction Requirements. Meet the wire spacing shown in the following detail:



D. Method of Measurement. Wildlife-Friendly Farm Fence is measured by the foot (meter) in accordance with Subsection 607.04.

E. Basis of Payment. Wildlife-Friendly Farm Fence is paid in accordance with Subsection 607.05.

ELECTRONIC STYLE & FORMATTING

There are three basic formats used by the Department when incorporating Highway Construction Specifications into contract bid documents. These are as Standard Specifications, Supplemental Specifications, or Special Provisions (both project specific and standard). The following section will discuss the recommended process for setting up electronic styles and formatting associated with project specific special provisions. Please contact the Specification Section for guidance concerning the formatting associated with Standard Specifications and Supplemental Specifications, but those are typically formatted by the Specification Section and including guidance in this manual will only add confusion.

Step by Step for Creating Project Specific Special Provisions

Step 1: Obtain blank document with the appropriate styles set up.

- Use the following link to open a blank document that contains the appropriate formatting styles:
<http://www.mdt.mt.gov/other/contract/external/forms/SPECIALS-BLANK.DOTM>
- Once in the file, double click the header, press Ctrl A, then F9 to update the project control number.
- Save this file to your DGN and subsequently DMS using the appropriate DMS naming convention, i.e. 6089000RDSPC001.docx where 6089000 is the control number, RD is the DMS directory, SPC identifies that this contains special provisions, and 001 is the document number.

Step 2: On the first page of the document, list all of the standard special provisions that the design team feels need to be included as part of the bid package. Standard special provisions can be found at the following location:

http://www.mdt.mt.gov/business/contracting/special_provisions.shtml

Provide a list identifying the special provision number and title of each one required.

Example:

Following is a list of Standard Special Provisions that the design team has identified as necessary for this Contract:

301-1 Pugmill Mixing (Added 1-1-03)

301-2 Aggregate Treatment (Revised 9-9-08)

401-2 Commercial Plant Mix Bituminous Surfacing (Added 4-7-08)

Step 3: Write out any project specific special provisions that are developed for the project. The following information is only relating to the electronic formatting of these; please refer to the other sections of the guide for assistance regarding the content.

- Place heading information using the preset style for “Level 1”.
- Place the changes based on the 5-part format on Level 2.
- Place supporting paragraphs associated with each of the 5-part format sections on BidB Body Text First Indent.
- Feel free to use other formatting styles (level 3, level 4, etc.) if their use results in a more clear and concise special provision.

Specification Writer Checklist

Yes	No	
		Has the specification been thoroughly researched and discussed throughout the Design Phase?
		Is the specification needed for construction of the subject project?
		Is the provision fair to both the Contractor and the Department?
		If there are any disincentives, have they been properly calculated based on the cost of the substandard product to the public?
		Does the specification avoid repeating information that may be available elsewhere in the Contract?
		Does the provision follow the standard 5-part format? 1. Description 2. Materials 3. Construction 4. Method of Measurement 5. Basis of Payment
		Is the provision written as an end result specification opposed to a method specification?
		Is the provision written in the active voice using the imperative mood?
		Does the provision use standard language when compared to the Departments Standard Specifications?
		Does the provision state the contract requirements using clearly definable and measurable language?
		Does the provision use lists, tables, or figures to increase clarity?
		Does the provision avoid useless jargon by stating requirements in the simplest terms possible?
		Does the provision properly use numerals and words when providing values?
		Is the provision properly capitalized?
		Is the provision properly punctuated?