

**MICHIGAN DESIGN MANUAL
BRIDGE DESIGN**

CHAPTER 15

SPECIFICATIONS

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CHAPTER 15**

SPECIFICATIONS

15.00

SPECIFICATIONS

Specifications are to accompany the plans as part of the contract documents. They establish how the work is to be done, the materials and equipment that are to be used, and the method of measurement and payment for the work. It is the Design Engineer's responsibility to see that all relevant specifications are included in the contract.

For more detailed information on specifications including Special Provisions, supplemental specifications and proprietary items see [Chapter 11](#) of the Road Design Manual. (02-17-2014)

15.01

TYPES OF SPECIFICATIONS

There are three types of specifications, all accomplishing the purposes stated above. These are standard specifications, supplemental specifications, and special provisions. Should there be a conflict between plans and specifications; the order of precedence is as follows:

- A. Special Provisions (including addenda)
- B. Supplemental Specifications
- C. Project Plans and Plan Notes
- D. Standard Plans
- E. Standard Specifications

15.01.01

Standard Specifications

These are published in a volume entitled, [Standard Specifications for Construction](#), and include all items of work commonly arising in the construction of highway facilities. Unless otherwise stated in the plans or the proposal, work shall be according to these specifications. Updating occurs approximately every six to nine years, at which time a revised edition of the volume is published.

15.01.02

Supplemental Specifications

Supplemental specifications are additions or revisions to the Standard Specifications that arise between publishing dates and are issued by the Specifications Engineer in the Design Division. Once a supplemental specification is drafted it is circulated within MDOT and presented to experts from industry for review and comments. After this review Federal Highway Administration (FHWA) approval is requested. After receiving FHWA approval, the supplemental specification can be used in all applicable projects. The final, approved version is numbered and filed. Supplemental specifications are kept current by the Specification and Estimates Unit of the Design Division. The [Supplemental Specifications](#) are available on the MDOT Design Division/Services website. The Design Engineer shall determine which supplemental specifications should be included in a contract and will add them to the proposal. In general, when the Standard Specifications are revised, the current supplementals are incorporated. (10-24-2001) (02-17-2014)

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15.01.03

Special Provisions (02-17-2014)

When a special work item is required for one project, or a limited number of projects, a special provision should be written by the Design Engineer, following the specification format, and submitted to the Specifications Engineer 6 weeks prior to the plan completion date. The approval process is electronic and uses ProjectWise to route files, reviewers' comments and approvals. Special provisions must be in Microsoft Word format and must be located in ProjectWise in the "Special Provisions - Unique" folder under the "6-Letting Plans and Proposal" folder for the project it applies to. Upon receipt of the approved Special Provision the designer will insert it into the proposal package. (8-20-99)

Unique special provisions must be approved prior to advertisement. When a project is submitted to the Specifications and Estimates Unit for advertisement with unapproved unique special provisions, the Project Manager must complete [Form 2908](#), Special Provision - Exception Risk Analysis, including approval by the appropriate region engineer. Although minimal use is encouraged, this form does allow for exceptions for multiple unique special provisions.

On occasion a standard or supplemental specification is found to be in need of revision. The normal review procedures may take too long to have an approved version available in time for an urgent letting. As an emergency measure, the revisions should be introduced into the proposal as a special provision.

If the specification is not prepared by MDOT's Specifications Engineer, the author's location and initials shall appear in the upper left-hand corner as shown on the sample. The Project Manager is the "author" of record for special provisions drafted by consultants. See also Road Design Manual section [11.02.03](#).

Where all necessary information regarding a special work item can be clearly presented in one or two sentences, it is generally preferable to do so with a plan note rather than a special provision.

15.01.04

Frequently Used Special Provisions (8-6-92) (02-17-2014)

Some special provisions recur in many proposals. These are filed by the Specifications Engineer/Design Division for reference and retrieval. [The Frequently Used Special Provisions](#) are available on the MDOT Design Division/Services website. Unlike supplemental specifications they may be created and updated without formal review and approval by industry and the FHWA. Input from these agencies is highly beneficial, however, and should be requested if possible.

Many approved provisions are posted to the web in Microsoft Word (rtf) format and may be reused or revised (and in some instances must be revised) to include project specific details. Already approved special provisions must be reviewed carefully to make sure all requirements are applicable to the project.

If no changes are required, simply insert the approved special provision in the proposal package. Do not change the source code, approval code, or identification code.

If any change is required then the special provision must be resubmitted for review and approval. Use the track changes feature of Microsoft Word to make any revisions being sure to leave the source code, approval code and the identification code for the previously approved version, to allow the reviewer to check the original version.

It is unacceptable to make any changes to a document without resubmitting for review and approval. (10-24-2001)

15.01.05

Notice to Bidders

It is sometimes necessary to provide information which may be of value to the contractor, but which he/she is not compelled to act upon. This information is placed in the contract proposal not as a specification but as a "Notice to Bidders."

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15.02

SPECIFICATION FORMAT

The text of a specification should be arranged in the format shown in [Appendix 15.02](#). Depending on the nature of the specification, all of the following elements should be included in the format. The materials and construction sections might not always apply; do not omit them. The special provision should show all four parts and state "None specified." when appropriate. (02-17-2014)

15.02.01

Description

The required work shall be summarily described in one or two sentences. Reference may be made to sections in the Standard Specifications to simplify the explanation.

15.02.02

Materials

Any materials that are required shall be specified. Again, reference to sections in the Standard Specifications should be made where they apply. Proprietary items should be specified only if two or more alternatives are offered or if there is no other item available to accomplish the purpose. See section 15.04 for more information on proprietary items. (02-17-2014)

15.02.03

Construction

Controls over the manner in which the work is to be performed should be specified. Reference can be made to sections in the Standard Specifications.

Where the type or size of the equipment is significant, it should be specified. Care should be taken, however, not to impose any unnecessary restrictions.

15.02.04

Measurement and Payment

A statement shall be made identifying the items for which the contractor will be paid to accomplish the specified work item.

In this section, any pay limits or means of measuring pay items should be clarified if some doubt could arise. Also, when it is not obvious how payment is to be made for certain portions of the work, the pay item under which this work is to be included should be identified.

Judgment is required in assigning pay items. In general, there should be consistency in all MDOT contracts as to the work that is paid for separately and that which is included in other pay items. An exception occurs when the plan quantity of an item is small. In this case, payment for the item should be included in the cost of another item, preferably one that bears a significant portion of the contract cost.

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15.02.05

Naming Convention (02-17-2014)

Each file name must begin with the exact title of the special provision in Title Case (Initial capitalization and lower case for prepositions, articles, and conjunctions) followed by a dash, and then the Identification Code (less the four digits in the parentheses).

A sample Identification code is as follows:

12DS819(A055)

The Specifications Engineer will enter the remaining four digits in the parentheses, but the Project Manager should enter the first seven digits and the starting and closing parentheses.

For example: if the special provision is titled "Rocker, Align" and is being turned in by the bridge design unit, the special provision file name would be "Rocker, Align - 12DS713().doc". Where "12" signifies Specifications year, "DS" signifies Design special provision and "713" signifies Standard Specifications section.

Note that abbreviations are not to be used in special provision titles, even the standard abbreviations that we use in the pay items cannot be used when developing the special provision title.

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15.03

CLARITY AND WRITING STYLE

15.03.01

Clarity

The intent of the specification should be clear. Both the contractor and the Project Engineer must be able to understand its requirements. Nothing should be included or omitted in the specification that would allow either the contractor or MDOT to benefit from an ambiguity.

Care should be exercised when imposing restrictions on materials, equipment, and work methods. If the contractor proposes an acceptable or even preferable alternative, it cannot be approved unless he/she offers a cost rebate. It is assumed that his/her proposed alternative will save him/her money; and if competing bidders were aware that a substitution could be made, they would have bid lower.

When some indication of a satisfactory means of providing a specified work item must be given on the plans or in the proposal, and when it is recognized that this indication may not be the only acceptable solution, it should be stated that an alternate for that which is shown may be substituted, subject to the approval of the Engineer.

15.03.02

Active Voice (02-17-2014)

Use active voice by putting the verb first in sentences, when possible. Active voice is preferred to directly state directions and procedures and matches the active voice used in the Standard Specifications for Construction.

15.04

PROPRIETARY ITEMS (02-17-2014)

Federal law (23CFR 635.411) regulates the use of federal funds in payment for premiums or royalties on any patented or proprietary material, specifications, or processes used in plans and specifications for a project.

Proprietary items may be purchased through competitive bidding with at least one equally suitable unpatented item or when two or more proprietary products are bid against each other and the specification or special provision includes the phrase "or approved equal". The phrase would not be required when three or more proprietary items are competitively bid.

Proprietary items can also be permitted by certification/approval of Proprietary Item Certification (PIC) and Public Interest Finding (PIF) ([Form 0304](#)). This form allows for proprietary item certification, proprietary item usage for experimental/research purposes, usage of products that are in the public's best interest, and MDOT supplied products such as advanced purchase of steel beams or other specialized materials.

More detailed information on proprietary items can be found on section [11.08](#) of the Road Design Manual and [Form 0304](#).

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
STRUCTURE REPAIR WITH LATEX MODIFIED CONCRETE, SPECIAL

CFS:TES

1 of 2

CFS:APPR:JFS:EMB:02-28-12

a. Description. This work consists of furnishing and placing latex modified concrete to repair the prepared portion of bridge substructure and/or superstructure. All work must be according to the standard specifications, except as modified herein.

b. Materials. Provide materials meeting the requirements specified in the designated section of the standard specifications. The concrete patching mixture must be Type C-L as specified in Table 703-1 of the Standard Specifications for Construction.

c. Construction.

1. General Requirements. Mixing, placing, finishing, and curing concrete patches must be according to subsection 712.03.0 of the Standard Specifications for Construction, except as modified below.

No more than 48 hours must elapse from time of air blast cleaning of substrate to placement of repair concrete. The substrate must be clean and free of dust, laitance, and other loose material.

The patch concrete must be placed and vibrated within forms in uniform layers.

Immediately after finishing the concrete, apply a layer of wet burlap to the exposed concrete surface. This burlap must be soaked in water for a minimum of 12 hours prior to its use. Place plastic sheeting securely over the burlap to protect the top surfaces from evaporation. For a minimum of the first 48 hours, the concrete must be kept continuously damp by the curing system. Concrete forms and wet burlap must serve to wet cure the concrete and will remain in place for at least 48 hours after placement of the Latex Modified Concrete. After 48 hours of cure, the plastic sheeting, the wet burlap, and concrete forms must be removed. The repair concrete must air cure for another 48 hours, for a total of 96 hours of cure.

2. Equipment. Supply latex modified concrete that has been prepared in a continuous mixer (mobile mixer).

Equipment for producing concrete by continuous mixing must conform to ASTM C 685. The Contractor will be required to demonstrate that the equipment is properly calibrated for yield and proportions by certification or by field tests. Use of this equipment will be permitted provided that a satisfactory product is obtained as determined by the Engineer.

For small quantities, the Engineer may permit the use of an on-site portable drum mixer to produce the concrete mixture. In this case, all materials must be individually proportioned by weight according to the repair concrete mix requirements included in this specification. Prior to placing concrete, the Contractor must demonstrate to the satisfaction of the

Engineer that the proposed batching and mixing protocol must produce the concrete mixture conforming to specification requirements.

Supply hand held vibrating equipment capable of consolidating the repair concrete.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Patching Concrete, (Type C-L), Special.....	Cubic Yard

Patching Concrete, (Type C-L), Special will be measured by the cubic yard and includes furnishing, placing, consolidating, finishing, and curing (96 hour) the repair concrete with no additional compensation permitted.