

Michigan Department of Transportation - M•DOT

Mates



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EVERYTHING YOU EVER WANTED TO KNOW ABOUT SPECIFICATIONS...but were afraid to ask

Several thoughts come to mind: what is a specification; are there different types; what are they; when and where is each type used; why are they important; who cares; who should care; who writes, reviews and distributes our specifications?

Based upon comments made to, or overheard by M&T's Specifications Unit, some people do not care about specifications and consider them to be dry and nothing more than a necessary evil. Everyone should care, since specifications are a part of the legal documents required to ensure that the Department gets the best possible transportation system for the citizens of Michigan.

What is a specification? Formally, a specification is a precise statement of requirements to be satisfied by a material, product, system, or service. They function in our contracts as the bridge between the Department and our contractors and producers, setting forth exactly what we expect of them for a particular job.

Let's answer some of the other questions posed above, starting with the base document, MDOT's Standard Specifications For Construction, the 647-page 1990 edition being the most current. In Subsection 1.01.02, we find definitions for:

- 1. Standard Specifications.** - All requirements and provisions contained in this document of Standard Specifications for Construction.
- 2. Supplemental Specifications.** - Detailed specifications supplemental to or superseding the Standard Specifications.
- 3. Special Provisions.** - The special requirements, regulations, or directions prepared to cover work on a particular project not provided by the Standard Specifications or Supplemental Specifications. An addendum is a Special Provision.

Special Provisions

Starting in reverse order, a Special Provision is needed whenever a new or untried, but promising, product or construction procedure is to be used on a trial basis or for a unique requirement on a specific project. A Special Provision can be written by just about anyone in MDOT or even by our outside design consultants. Therefore, a Special Provision is the most difficult to control as to content, format and correctness due to the lack of a central review area within MDOT. This type of specification is the easiest and quickest to produce since it normally has the least review, sometimes only by the writer. Occasionally, a Special Provision proves so useful that it falls within a 'frequently used' category which is available on the Design Division's Information Retrieval System, until the M&T Specifications Unit can place it into the category of Supplemental Specifications.

Although production of Special Provisions seems rather informal, their importance must be stressed. Since on any individual project, Special Provisions are included in the

proposal that add something to, or even contradict Supplemental or Standard Specifications, they take precedence over both. Therefore, careful use cannot be stressed too much.

As a reminder, anyone writing a Special Provision for MDOT projects should use an identifying letter code for their MDOT Division or consultant firm (such as 'D' for Design Division, or 'M&T' for Materials and Technology Division, etc.) followed by the author's initials plus the current date near the top of each page for traceability purposes. Figure 1 shows a Special Provision having good format, clear discernible sections, and proper spacing on the page.

Grading Requirements

MI Series & Class	Sieve Analysis	Total Percent Passing	% Loss by
3G (M1)	1-1/2" 1" 3/4" #8 #30	Washing	
	100 85-100 40-75 0-20 0-8	5.0 Max.	

Physical Requirements

MI Series & Class	3G (M1)
Crushed Material, min.	90% (*)
Loss, max, Los Angeles	
Abrasion (AASHTO T96)	45%

Figure 1. Sample Special Provision with good format.

Failure to indicate the origin of a Special Provision can be a major problem. For example, a Special Provision found in a local government (Wayne County) proposal contained no identifying codes indicating the place of origin or author's initials, making it difficult to contact the originator to correct a serious error. The key paragraph of the Special Provision stated:

The article titled "Additional Requirements for Mixes Using Fly Ash" under subsection 701.04 shall be considered

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omitted in its entirety. The coarse aggregate shall be 6AA with a freeze-thaw dilation of 0.010% when utilized in grade 45D concrete and 0.36% for all other concrete grades in accordance with MTM-115.

The problem here is that the author specified a source of coarse aggregate that has freeze-thaw dilation properties of exactly 0.010 and 0.036 percent for two types of use. Freeze-thaw dilation requirements are specified as maximum limits, thus allowing a range instead of one value for dilation. It will be next to impossible for the contractor to find a source satisfying the exact limit, resulting in further delay, possible extras, or even litigation because of this error. In this same proposal, there are over 30 other unidentified Special Provisions in violation of Bureau of Highways policy.

Any time an existing Special Provision is modified, the date should be changed to signal to the reader that something has been modified. As a rule of etiquette in specification preparation, one should never change another author's Special Provision and leave their initials on it; use your own initials and change the date. The original author does not want to be held accountable for any errors you may have accidentally inserted. If possible, talk to the originator first for background information and permission to use it as the basis for your version. When writing a Special Provision, the choice of words, grammar, numerical limits and realistic tolerances are paramount to producing a clear specification that will not result in a dispute with the contractor or producer which may result in 'extras' being charged to the project. When in doubt about technical content, our M&T staff can assist you or direct you to other resource people to help specify the proper tests, procedures, and construction practices needed for a successful specification.

Supplemental Specifications

Specifications are frequently changed in order to keep abreast of the latest developments in materials and technology. Many times new Supplemental Specifications evolve from Special Provisions. Supplemental Specifications are prepared and processed in M&T's Specification Unit based upon input from the appropriate MDOT technical experts. The organization, format, and content of a Supplemental Specification tend to be more standardized than Special Provisions. Once written and initially reviewed, draft supplementals are sent to the road building industry organizations, the Federal Highway Administration (FHWA), and appropriate MDOT personnel for a 60-day review and comment period. After addressing any comments or suggested changes, the final Supplemental Specification is distributed to the industry organizations, the FHWA, and is made available to most MDOT office areas (central office and districts) through a computerized networking system (STARMAIL and the Design Division's Information Retrieval System) for use in our project proposals. Areas such as the Metro District, which have not been networked, and non-MDOT recipients receive printed copies. The final version is then sent to the FHWA for official approval for Federal-aid project use and receives an approval date. After this approval, any significant revisions go back through the same review and comment procedure. Just as the Special Provision takes precedence over Supplemental and Standard Specifications for a given project, the Supplemental Specifications take precedence over the current edition of the Standard Specifications For Construction.

Standard Specifications

The Standard Specifications For Construction book is produced on a less frequent basis, with earlier versions appearing in 1984, 1979, 1976, 1973, 1970, and so on. Producing a new spec book is a long and involved process with one

general and seven technical committees having members from the various MDOT Divisions and the FHWA. The entire process is coordinated by the Engineer of Specifications. The committees' efforts are reviewed and commented upon by industry associations, the FHWA, and other MDOT personnel before final printing of the book. This process takes approximately three years of time and effort.

Other Specifications

In addition, there are several classes of 'graphical' specifications that go along with Special Provisions, Supplemental Specifications, and Standard Specifications, each having its place in the hierarchy of specifications in general. They are called **Project Plans and Drawings** and **Standard Plans**, and are prepared in the Department's Design Division. In summary, the parts of a contract prevail over other parts in the following order:

1. Special Provisions
2. Supplemental Specifications
3. Project Plans and Drawings
4. Standard Plans
5. Standard Specifications

This article has been an overview of the important and interesting area of MDOT specifications. Some will still consider specifications to be dry and a necessary evil. However, if you feel that you need a new Supplemental Specification, need a modification of an existing one, have discovered an error, or need guidance on format and general content for a Special Provision that you want to write, please contact me at (517) 322-5669 for assistance.

-Gail Grove

PERSONNEL NOTES

We must apologize for being so tardy with our recognition of the retirements of several key employees, but the lengths of the last few MATES articles have prevented their inclusion. In order of seniority, **Bill Ireland**, Engineering Technician in our Materials Support Unit retires this month after 37 years with the Department. Bill worked all over the State in a number of capacities...**Marvin Porter**, our District 6 (Saginaw) Materials Supervisor, retired April 1 after 34 years of service. Marv worked all around the State but, spent most of his career in District 6...**Harry Patterson** spent 33 years with the Department, retiring in April as an engineer from the Pavement Technology Unit specializing in concrete pavement and bridge decks...**Vija Troms** had been a chemist with the State for 28 years, the last 26 with M&T, retiring in March from our Chemical Technology Unit...**Emerson Pull** leaves us this month after 26 years of service retiring as a sign structure fabrication inspector in the Structural Services Unit...**Bill Walden**, geologist in the Materials Support Unit, retired in March with 24 years of State service, the last two with M&T...and, finally, **Parker Fairey**, a chemist in the Chemical Technology Unit, retired in March after 18 years of service. Although this list seems a rather paltry way to recognize **200 years** of collective service to the State of Michigan, allowing us no space to acknowledge individual dedication and service, it is a symbol of the many fond memories we share of working with them, and of their contributions. A collective "Happy Retirement" to these wonderful colleagues. We have welcomed some new employees to the fold, and will acknowledge them in a future issue.

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This document is disseminated as an element of MDOT's technical transfer program. It is intended primarily as a means for timely transfer of technical information to those MDOT technologists engaged in transportation design, construction, maintenance, operation, and program development. Suggestions or questions from district or central office technologists concerning MATES subjects are invited and should be directed to M&T's Technology Transfer Unit.

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