



MDOT ITS Document Control and Management Plan

Document No.: MDOT-ITS 001-01-002

Version: 1.0



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August 19, 2009

Revision History

Date	Version	Description
5/9/2008	0.1	First draft for comment and review.
5/13/2008	0.2	Initial modifications to first draft for comment and review.
5/15/2008	0.3	First draft submittal to MDOT after initial revisions
11/4/2008	0.4	Second draft submittal to MDOT after final revisions to numbering system
8/19/2009	1.0	First final version

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MDOT ITS Document Control and Management Plan

1. Overview

The purpose of this document is to provide control and management procedures and standards for all MDOT ITS Program documents, drawings and marketing materials. This includes all system documents, hardware documents, specifications, special provisions, notice to bidders, project plan drawings, construction drawings, infrastructure drawings, printed marketing materials, project presentations, papers and award materials, and all marketing graphic materials. The intent is to establish a standard naming, numbering and filing convention, such that all materials are readily accessible, to put in place standard document and drawing formats ensuring consistency and accuracy, and to develop procedures for making and tracking document versions, for releasing materials and data and for performing controlled material audits.

As the MDOT ITS Program grows more and more materials will be produced and will need to be gathered by the section. This growth necessitates that a standard method for managing materials associated with the ITS Program be implemented. This document will provide a standard filing and document managing system so that all materials are on file and are readily accessible.

Also with the growth of the ITS Program will come the need for materials to be modified to reflect changes. This document serves as a guide to those both internal and external to the MDOT ITS Program allowing these modifications to occur with ease such that the document and system integrity and functional efficiency is maintained. This will not only ensure that only the most recent version of these items are available to appropriate MDOT personnel, but also that revisions may occur in a more timely fashion and receive the required approvals.

2. Materials Under Document Control

All materials described in this section are to be under document control. This means that all materials described will receive an assigned number and appropriate filing convention and will be maintained in the MDOT Statewide Transportation Management Center both in electronic and hardcopy form by the Document Control Manager. This also means that all materials described in this section shall follow the appropriate and applicable conventions described herein.

MDOT ITS Section materials under document control are defined as follows:

a) Documents – MDOT ITS Section documents include the following:

- **MDOT ITS Section System Documents** – These documents include all planning documents, manuals, guides, procedures, plans, specifications, project submittals, etc. These documents are under document control at the point of delivery to MDOT* or upon final acceptance by MDOT.

*(Project submittals, inspection reports, and software documentation and manuals distributed by vendors are under document control upon delivery to MDOT.)

- **MDOT ITS Section Hardware Documents** – These documents describe MDOT ITS Section hardware. These documents are like MDOT ITS Section infrastructure drawings listed below but are in document form. These documents will be under document control at the point of delivery to MDOT* or upon final acceptance by MDOT.
*(Hardware documentation and related manuals distributed by vendors are under document control upon delivery to MDOT.)
- **Specification (Base) Documents** – These documents are used as base specifications for new projects. Specifications include all the applicable traffic engineering and ITS related specifications in the current version of the MDOT Redbook. These specifications are under MDOT Construction Division control but a record of these specs will be maintained internally at the TMC and will be updated as updates to the MDOT Redbook occur.
- **Special Provisions (Base and/or Project) Documents** – Special provisions are actually modified specifications listed above. These documents are used to define more specific requirements by adding, deleting or changing portions of the base specifications. New special provisions will be under document control at the point of final plan submittal to MDOT.
- **Notices to Bidder (Project) Documents** – Project notice to bidder documents are used to define project specific requirements and will often reference the base specifications or special provisions. New project notice to bidder documents are under document control at the point of final plan submittal to MDOT.

b) Drawings – MDOT ITS Section drawings include the following:

- **Project Plan Drawings** – Project plan drawings include construction plans and MDOT ITS Section infrastructure detail drawings associated with the project specifications, special provisions and notice to bidders documents noted above. These drawings will be under document control, along with the project special provisions, at the point of final plan submittal.
- **Project Construction Drawings** – Project construction drawings include all drawings supporting and developed as a result of the construction of ITS projects. This includes all project shop drawings and submittal detail drawings, as-builts, etc. Document control for these drawings will occur upon submittal to MDOT.
- **MDOT ITS Section Infrastructure and Operational Drawings** – Infrastructure and operational drawings include assemblies, floor plans, network diagrams, communications infrastructure, operational diagrams, jurisdictional maps, organizational charts, etc., which define the overall MDOT ITS Section system and operational structure. Document control for these drawings will occur after final acceptance by MDOT.

c) Marketing Materials – MDOT ITS Section marketing materials include the following:

- **Printed Materials** – Printed Materials include all brochures, fact sheets, press releases, newsletters, project maps, performance measure reports, project reports, etc., that are produced to promote the MDOT ITS Program and educate the public or others internal to MDOT about the ITS program. Document control for all printed materials will occur after final acceptance by the MDOT ITS Section and/or the MDOT Public Affairs Division.
- **Project Presentations, Papers and Award Materials** – This includes all project power point presentations, papers, award applications, videos, booklets, etc. Document control for these materials will occur after final acceptance by the MDOT ITS Section and/or the MDOT Public Affairs Division.
- **Graphic Materials** – This includes all graphics, logos, banners, website images, etc., that are produced to trademark and symbolize the MDOT ITS Section and msTraffic.com. Control for these materials will occur after final acceptance by the MDOT ITS Section and/or the MDOT Public Affairs Division.

3. Document Management Control Procedures

3.1. Overview

The Document Control Manager is responsible for all materials under document management and control and all related policies, procedures and functions. This section of the Document Control and Management Plan provides an overview of the elements of document management that are defined in detail throughout this document and that are controlled and maintained by the Document Control Manager. Included are the following:

a) Material management procedures

For the purposes of providing consistency and traceability of all documents, drawings, and marketing materials under document control, methods by which they are produced and controlled must be defined. These procedures establish the naming conventions ([See Section 3.5](#)) and numbering conventions ([Section 3.3](#)), filing system ([Section 3.4](#)), formats ([Section 3.6](#)), version control ([Section 3.7](#)) and issuance of numbers ([Section 3.2](#)) for materials under document control.

b) Material archive and release control

This procedure describes the archive, release and overall control of documents, drawings, and marketing materials. This is associated with new material releases and material updates as a result of revision activity.

c) Audits

In order to ensure the benefits of this plan are realized and that the procedures and policies established herein are implemented effectively, a plan for the continual review of the document management and control processes and procedures must be established and maintained. This procedure establishes the required audits, their content and timing within the MDOT ITS Section.

3.2. Material Numbering Issue Process

This procedure describes how numbers for all MDOT ITS section materials under document control are issued and controlled.

- All MDOT ITS Section materials under document control must receive a number from the Document Control Manager.
- A number must be requested and assigned to all materials under document control* prior to any QAQC check, comment review, or any other function being performed outside the originators control.
*(Construction plans and other drawings for non-MDOT ITS projects, project submittals, inspection reports, and software and hardware documentation and manuals distributed by vendors are assigned numbers by the Document Control Manager upon delivery to MDOT. Marketing Materials produced in-house by the MDOT Public Affairs Division will receive a document number upon delivery to the MDOT ITS Department for comment review.)
- A title for the document, drawing or marketing item must be supplied along with the request for a number.* The Document Control Manager will approve titles for consistency across the MDOT ITS Program.
*(The exception to this rule is that titles for construction plans, and other drawings for non-MDOT ITS projects, project submittals, inspection reports, software and hardware documentation and manuals distributed by vendors, and marketing materials produced by the MDOT Public Affairs Division will be supplied by the originator. The Document Control Manager may however modify these titles if desired for consistency.)
- Obsolete numbers that have been previously assigned to any material under document control are not to be reused.
- The Document Control Manager will maintain an active up-to-date database of all issued numbers.

3.3. Material Numbering Conventions

This procedure describes the numbering conventions for documents, drawings and marketing materials under document control. All materials under document control will have a unique identifier assigned and maintained by the Document Control Manager.

In general the numbering system for all controlled items shall be of the form MDOT-ITS xxx-yy-zzz. MDOT-ITS represents that the material is under document control for the MDOT ITS Section. Number identifiers are required for the following ITS Section materials:

a) Documents

All documents including all system documents, hardware documents, specifications, special provisions and notice to bidders shall be numbered with a unique MDOT ITS number. Of the numbering convention template, the first three digits, xxx, (001 through 999) represent the project or task category number. This number is assigned by the Document Control Manager and is not related to the project number assigned by any other MDOT division. The purpose of this is to provide a commonly shared number for all types of materials under document control that relate to the same project. The second two digits, yy, indicate the material type, which for documents is 01. The last three digits, zzz, are assigned sequentially for the unique project and material type and represent the specific document, 001 through 999:

MDOT-ITS 001-01-001 through MDOT-ITS 999-01-999

b) Drawings

All drawings including project plan drawings, project construction drawings, and all MDOT ITS infrastructure and operational drawings shall be numbered with a unique MDOT ITS number. Again the first three digits, 001 through 999, represent the MDOT ITS project or task category number that is assigned by the Document Control Manager. The second two digits shall be 02, indicating the material under document control is a drawing and the last three, 001 through 999, specify the unique drawing for the specific project.

MDOT-ITS 001-02-001 through MDOT-ITS 999-02-999

c) Marketing Materials

All marketing materials, including printed materials, project presentations, papers and award materials, and graphic materials shall be numbered with a unique MDOT ITS number. As is the case with documents and drawings the first three digits, 001 through 999 represent the project or task number. The second two digits, 03, indicate the item is a marketing material. The third designation, 001 through 999, again represents the unique marketing material for the ITS project.

MDOT-ITS 001-03-001 through MDOT-ITS 999-03-999

3.4. Material Filing System

This section describes the filing procedures for all MDOT ITS Section controlled materials.

All materials under document control are to be filed both in hardcopy and electronic form according to their unique document number. Electronic and hard file folders will be created and named by the material number for each material under document control. These folders will contain all versions (1.0, 2.0, 3.0 etc.) of a particular document and the latest revision (3.1 for example), if applicable, of that document. [See section 3.7](#) for further instruction on version control.

A Microsoft Excel workbook file containing all documents under control shall be filed with the current control documents. The file will be kept up to date by the Document Control Manager. The worksheets included in this file will provide hyperlinks to all documents on file. A hard copy form of this file will also be available.

As stated previously, all documents, drawings and marketing materials under document control shall be filed both in electronic and hard copy form at the MDOT Statewide TMC. In some rare cases electronic and hard copies may not be available or may not be appropriate for filing. For example, project boards, large maps and some banners do not need to be filed in hard copy form. The responsibility to determine the forms of all controlled documents that are filed is the Document Control Manager's. All files are to be managed and maintained by the Document Control Manager.

All electronic forms (i.e. Word, PDF, Visio, Microstation, etc.) of the same document, drawing, or marketing material will be filed in the same file folder under the appropriate material number. The exception to this is that Microstation files for construction plans and project details may be filed in the appropriate MDOT drive network folder, as is the standard. In this case, a shortcut to the electronic file folder containing the drawing's Microstation files will be located in the same file folder as the drawing PDF.

Refer to [section 3.6](#), Material Formats, for specifics on the required and preferred electronic forms of all materials that are to be filed.

3.5. Material Naming Conventions

This procedure details the file naming formats for all MDOT ITS Section documents, drawings and marketing materials under document control.

Materials under document control* shall be named according to the document title, document number, version number, and date.

(*Certain materials under document control such as construction plans and other drawings or documents for non-MDOT ITS projects, project submittals, inspection reports, software and hardware documentation and manuals distributed by vendors, and marketing materials produced by the MDOT Public Affairs Division will be supplied by the originator and may not follow this naming format when received by the MDOT ITS Section. The Document Control Manager will however modify these titles as he or she deems appropriate to follow the format described in this section for consistency. Also MDOT Special Provisions, Specifications and Notice to Bidder Documents will be named according to the number supplied by the MDOT Construction Division and will not follow the naming convention described below.)

a) Documents

All documents, excluding the items noted in the paragraph above, including all MDOT ITS Section system documents and hardware documents shall be named following the format:

General Fiber Allocation [MDOT-ITS 001-01-003(ver1.0)8-9-07].doc

The Word and PDF formats of the same document will follow the same file naming format only the file type extension will change.

b) Drawings

All drawings, excluding the items noted in the paragraph above, including all project plan drawings, project construction drawings, and MDOT ITS Section infrastructure and operational drawings shall follow a standard naming convention. Visio and PDF file forms and Microstation infrastructure and operational drawings shall be named according to the title or project number (i.e. for construction plans), drawing number, version number, and date. These drawings shall be named in the following format:

TMC Operations Flow [MDOT-ITS 008-02-002(ver1.0)5-8-08].pdf

or

SP-0017-00(001) [MDOT-ITS 105-02-001(ver1.0)6-17-08].pdf

The Visio and PDF file forms of the same drawing will follow the same file naming format; only the file extension will change. The Microstation and PDF file forms of the same infrastructure or operational drawing file will also follow the same naming format. Microstation files for construction plans will be named according to the MDOT standard. The PDF file equivalent of the Microstation files that make up the plan set will follow the naming format shown above.

c) Marketing Materials

All Marketing materials, excluding the items noted in the paragraph above, including all printed materials, project presentations, papers and award materials and graphic materials shall be named following the format:

MDOTBanner [MDOT-ITS 011-03-001(ver1.0)9-19-06].pdf

Various file forms of the same marketing material item will follow the same naming format; only the file extension type will change.

3.6. Material Formats

This procedure defines the standard forms and formats to be used for all controlled materials. MDOT ITS Section controlled materials will use standard formats to assure consistency and accuracy. Exceptions to the format guidelines listed below may be construction plans and other drawings for non-MDOT ITS projects, project submittals, inspection reports, and software and hardware documentation and manuals distributed by vendors.

a) Documents (Other than Specifications, Special Provisions or Notice to Bidders)

Documents will normally be 8.5 in. by 11.0 in. Larger size inserts may be included in the document if necessary. An example of this may be a figure or list as an 11 in. by 17 in. foldout.

All documents must be submitted in electronic format in both PDF and Microsoft Word format unless otherwise approved by the Document Control Manager.

The standard document form consists of a cover sheet, a revision history sheet (the revision history sheet shown after the title sheet on this document, or another approved equivalent, shall be used for all applicable materials under document control), and table of contents, followed by the document body.

The cover sheet shall contain the following information:

- **Title:** The title is usually standard for the particular type of document being created. All titles will be approved by the Document Control Manager for consistency.
- **Prepared By:** The name of the company, organization or individual, which prepared the document.
- **Date:** The date the document was submitted. If the document is changed due to a revision, the date will correspond with the date shown on the revision history sheet.
- **Version:** The current version of the document.
- **Document No.:** The number issued by the Document Control Manager.

The revision history sheet is to be completed as follows:

- **Date:** The date of the version.
- **Ver:** The current version of the document
- **Description:** Enter the description of the change(s) and the section(s) of the document where change(s) occurred (if applicable).

b) Documents (Specifications, Special Provisions and Notice to Bidders)

Format control for these documents is dictated by state mandated requirements, although for MDOT ITS Section specifications, special provisions and notice to bidder documents a revision history sheet will be created and filed with each of these documents in the appropriate document file folder.

Both Microsoft Word, or other approved equivalent, and PDF formats of these documents will be submitted.

c) Drawings (Other than Construction Plan Sets)

Drawings will be represented in varying sizes as indicated below. Care should be taken in selecting the proper size drawing format that will best illustrate the drawing. Examples of drawing sizes include: 8.5 in. x 11.0 in., 11.0 in. x 17.0 in., and 22.0 in. x 34.0 in.

Drawings will be submitted in both their native (i.e. Microstation or Visio) and PDF file forms. For infrastructure and operational drawings it is preferred that each drawing be submitted in Visio and PDF formats. Microstation or other approved equivalent formats may also be acceptable if approved by the Document Control Manager.

Clearly visible on the drawing shall be the title of the drawing, the current version of the drawing, the date of the current version, and the drawing number.

d) Drawings (Construction Plan Sets)

Format control for Construction Plan Sets is dictated by state mandated requirements.

In general, for plans and other construction and project details, it is preferred that each drawing be submitted in both Microstation and PDF file formats.

e) Marketing Materials

Marketing materials are not constrained to a specific size. The use will dictate the size of the marketing material that is to be under document control.

Marketing materials should be submitted in both their native or design format (i.e. Microsoft Word, InDesign, Illustrator, etc.) and flattened (i.e PDF, JPEG, BMP, etc.) file format.

Marketing materials may contain the version number, date, title, and document number when applicable and appropriate. The Document Control Manager will determine the need for this on a case by case basis.

3.7. Version Control

This procedure defines the version control to most MDOT ITS Section documents, drawings, and marketing materials under document control. This may not apply to materials such as construction plans and other drawings or documents for non-MDOT ITS projects, project submittals, inspection reports, software and hardware documentation and manuals distributed by vendors. All other controlled materials will be controlled by version numbers as indicated below.

a) Draft Versions

After a draft of a document controlled material is complete, it is circulated for review, comment, and approval. This distribution of the material is limited with no intent for final general use. Although this represents a draft condition, not under formal Document control, a version status must be added. All versions in this draft condition will have a zero followed by a decimal point and a number. As an example, the first draft version on a new document or drawing will be 0.1, the second version will be 0.2 and so on. Only after the draft document has been through a Q/A process, and MDOT approves the

material, is it given a version status of 1.0. This version is then submitted to MDOT and the Document Control Manager and at this point is under formal version control.

b) Versions of Controlled Materials

After a draft document controlled material is ready for distribution, formal version control is implemented. As described in the paragraph above, this point occurs after the draft material has been through a Q/A process and after MDOT has accepted the material as being approved and is ready for general distribution. The controlled material is then given a version status of 1.0 (if it is the first controlled material version to a new material under document control) and is then submitted to the Document Control Manager, to be placed under formal control. When a change to the document is needed the version number will increment by .1 until the revised document is again approved by MDOT at which point the version number will again be increased to the next whole number.

Examples:

First draft release of a new document for comment and review: Version = 0.1

Second draft release for final comment and review: Version = 0.2

*** MDOT accepts material after Q/A verification:** Version = 1.0
(This is a final version; it is the first accepted version of the document)

After approval to revise the document, first draft version for review: Version = 1.1

Second draft version for comment and review: Version = 1.2

*** MDOT accepts material after Q/A verification:** Version = 2.0
(This is a final version; it is the second accepted version of the document)

* The Document Control Manager or designee is responsible for actual update of the revised material at this point.

3.8. Material Archive and Release Control

This procedure defines the management, archive and release for all MDOT ITS Section materials under document control. Included are processes applying to new documentation, drawings and marketing materials not previously under document control, and process applying to revised materials that are created as a result of approvals from the MDOT ITS Program Manager and Document Control Manager for updates.

a) New Materials Not Previously Under Document Control

- All new materials must be created following all applicable and related procedures and policies as defined in this Document Control and Management Plan.
- All new materials must have been through a Quality Assurance (Q/A) check process and approved by MDOT for accuracy and completeness.

- All materials will be delivered to the Document Control Manager. If it is more conducive for materials or data to be sent directly to the archive source, the Document Control Manager will make the determination. (For example Microstation drawing files produced by a contractor that will be archived by the Construction Division or Traffic Engineering Division may be sent to that division directly. In this case it is the Document Control Manager's responsibility to track the material location and provide a shortcut to it under the document control number file as described in [section 3.4.](#))
- For all materials that are to be under document control, the Document Control Manager, or designee, will enter the electronic materials and data into the repository and file materials and data according to the appropriate procedure.
- The Document Control Manager will document receipt of all archive data.

b) Materials Under Document Control

- Upon approval from the MDOT ITS Program Manager for a document update, the Document Control Manager will release the controlled materials from archive to the person or party designated to perform the update.
- After the material is updated, the Q/A check is complete, and MDOT has approved the material as final, electronic and hardcopy materials (where applicable) will be sent back to the Document Control Manager.
- The Document Control Manager will archive updated data into the appropriate electronic and hard copy (if applicable) file repository.

3.9. Audits

This procedure defines the audit criteria used to assure that the MDOT ITS Section is following and effectively implementing the procedures as outlined in this manual and that the benefits of this plan are being realized.

With prior approval from the MDOT ITS Section Program Manager the Document Control Manager, or designee, will conduct all audits. The Document Control Manager may invite others to participate in an audit if necessary at his or her discretion.

Audits shall be conducted on a quarterly basis, and perhaps more often when a new procedure or policy is implemented.

The audit will consist of, but not be limited to, the following:

- A thorough check and verification that all material updates have been incorporated into the appropriate electronic and hardcopy material files per approved versions and a verification of all material version levels.

- An inventory of all controlled materials and review of materials that may need to be put under document control.
- A verification and accuracy check of the controlled material database.
- A review of the material archive procedures and validation of current existing controlled material directories.
- A review of internal processes to determine the need for additional procedures to be created or existing ones to be modified, both for this manual and for other procedures.
- The Document Control Manager will make requests to the MDOT ITS Program Manager for any revisions to this Manual or other materials.