1 - UNIT PROCEDURES

SIGNALS

Contracts (pp. 4-17)

Updated May 14, 2009

INTRODUCTION

Editing or updating Signal Drawings is expedited when the following standards are maintained. Note that individual jobs may have unique situations that do not match a preset standard, in these cases please contact the Signal Operations Section of Traffic & Safety before preceeding.

The MicroStation V8 configuration for Signals uses the mdot_traffic workspace.

In the MicroStation Manager, select mdot_traffic for the User.

If the mdot_traffic workspace is not available, it must be installed

Double-click on M:\bin\v8usersetup.exe

Hit "Uncheck All", check "Copy Traffic Workspace", then hit "Run Setup". Restart V8 and select the mdot_traffic User.

A. SEED FILES & FILE NAMING

(M:\mst\seed\traffic*.dgn)

“Seed Files” are used to create new drawing files, they can be copied, or, selected when creating a “new” file from within MicroStation. The parameters in each Seed File are pre-configured for each scale.

This includes such parameters as: text size; active scale (AS=), level, weight, line code/style, color; file working units, dimension style, etc.

"seedtr_signal_30.dgn" is the 1”=30’ scale seed file (AS=0.75)
"seedtr_signal_40.dgn" is the 1”=40’ scale seed file (AS=1.0)

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Use the following guidelines for naming Signal Files:

EXAMPLE FILENAME:

6107301001e-pr060905ct_sample.dgn

Control Section - 61073
Signal Type - 01 (Stop & Go)
Spot - 001
English Units - e
hyphen
Proposed - pr
Date - 060905 (6/9/05)
Contract - ct
(Used to indicate this sample file only - _sample)
File Extension - dgn (MicroStation default)

ROAD SECTION

61073 - Use Trunkline Control-Section number

SIGNAL TYPE

01 - Use one of 9 standard signal types

SIGNAL LOCATION

001 - Use 3 digit Spot Number (as determined by Traffic & Safety)

METRIC/ENGLISH

e - English File
m - Metric File (not used for new jobs as of 9/29/2000)

hyphen - to help readability of filenames.

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DRAWING STAGE

py - Preliminary Drawing, plan is in progress, promote to **Proposed** when plan has been approved for construction.

pr - Proposed Drawing, construction is pending or in progress, promote to **Existing** when construction has been completed (promote to As-Built if drawing has been updated to reflect any changes that occurred during construction).

ab – As-Built Drawing, reflects any changes that occurred during construction pending, promote to **History** when a new As-Built or Existing plan is available.

ex - Existing Drawing, construction complete, promote to **History** when updated from Proposed.

hs - History Drawing, all Historical drawings previous to the most recent **Proposed** and **Existing/As-Built**.

tb - TurnBack Drawing, all drawings for this location have been renamed to the Drawing Stage "tb". **This location is no longer a State Trunkline.** All drawings may be moved from the Region folders to the "TurnBacks" folder, and, may no longer be available from within the SafeStat Program.

DRAWING DATE

060905 - Use the Date from **inside the Title Block**, in 6 digit "mmddyy" format.

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DRAWING TYPE

ct - 34" x 22" (36" x 24") Contract drawing, horizontal Title Block along bottom of drawing.
wo - 17" x 11" Work Order drawing, vertical (but not always) Title Block along right side of drawing (and other sheet sizes).
nt - Interconnect drawing, several signalized intersections connected with electrical cable.
lj - 8 ½" x 11" Log-Job Drawing, usually not-to-scale.
pe - Preempt Drawing
ph - Phasing Drawing
rm - Removal Drawing Only (no proposed in the file, only removals)
st - Staging Drawings Only (no final drawing in the file, only staging)

FILE EXTENSION

dgn - Standard MicroStation Extension

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B. CELL LIBRARIES

(M:\mst\cell\traffic*.cel)

"Cell Libraries" contain "cells", which are preconstructed drawing components that can be placed in drawing files. (Similar to an AutoCad "block")

SIGNALS.CEL - contains all of the Signal cells except cells for the "List of Material" cell.

SIGNAL_MAT.CEL - contains all of the cells to create the "LIST OF MATERIAL" section on a contract sheet. The cell name consists of the last five digits of the item code number. 7000 item-code numbers use abbreviations of the pay-item description for the cell name. These cells are placed below the cell "MAT" which contains the labels for each of the columns.

C. TEXT SIZES & ACTIVE SCALE

Text sizes are best selected from menus in one of two ways (also can be changed by "keyins": TH=, TW=, LS=, but not recommended). Either select from the blue Sidebar Menu under "Signals" (**TS_V8MODE_MDOT.SBM**, F9 to load/update this menu), or from the "mdot_traffic" pull-down menu (not available to consultants).

Descriptions of the text sizes as located on the menus are:

Dimens (Dimensioning) - Use for all dimensioning text.
Sig Lbl (Misc. Signal Text) - Use for all text that refers to "signal" items.
Notes (Notes) - Use for general notes & land usage text.
Rd Name (Road Names, Alignment) - for road name text.

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The “Active Scale” (AS=) must be set correctly in the file for above menu selections to work. Use Active Scales as shown here:

Drawing Scale/Active Scale

1”=30’/AS=0.75 - Preferred English Drawing Scale

1”=40’/AS=1.0 - First Alternate English Drawing Scale

1”=20’/AS=0.5 - Alternate English Drawing Scale
1”=50’/AS=1.25 - Alternate English Drawing Scale
1”=100’/AS=2.50 - Alternate English Drawing Scale

Alternate drawing scales may be used only when necessary to accommodate drawings that will not fit the 1"=30' scale.

D. MICROSTATION V8 CONFIGURATION FILES

Font Resource File

Font 8 from the **DESIGN.RSC** resource file shall be used as the standard for all MDOT MicroStation V8 files.

Font 8 has several special symbols on the following keys:

Key on keyboard - symbol that will be displayed in file.
< - “plus or minus”
> - Plate Line
\ - Center Line
} - Delta
! - Diameter (Phi)
^ - Degree

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Dimension Styles
(M:\mst\standards\Traffic\mdotStyle_tr.dgnlib)

There are multiple components associated with dimensions which are pre-defined in each Seed File.

To change all dimension settings at once, select the "Linear Dimension" command. From the Linear Dimension dialog box, select the appropriate signal dimension style to match the plot scale of the Design File.

E. LEVELS, COLORS, & LINE STYLES

When the Active Level is selected from the Sidebar Menu (**TS_V8MODE_MDOT.SBM**, F9 to load/update this menu), the level, color, line style, and weight is automatically set. Use Line Style 0, Solid, unless otherwise noted below.

MicroStation J level numbers are listed at the end of each level description (for cross reference only).

Use the following Levels (LV=), Colors (CO=), and Line Styles (LC=)

For Base Alignment:

ALI_LEGAL_EX, co=0, Style 4 - Centerlines (J=21)
PAVT_EDGE_EX, co=0 - Roadway Base including, but not limited to, Lane Widths, Curb-Lines, Crosswalks, Lane Usage, Land Use, North Arrow. (J=11)
PAVT_MRKGS_EX, co=0 - Pavement Markings that relate to signal items (J=none)
ROW_LINE_LEGAL_EX, co=5, Style 6 - Right of Way (ROW) (J=27)
TRAFFIC_SIGNS_EX co=1, - Traffic Signs related to signal items, but, not an actual Signal Sign (J=none)

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UTIL_MISC_EX, co=6, Various Line Styles or Patterns - Underground Utilities (J=6)

For Signal Related Items:
(All Style 0, except Overhead Wire is Style 2)

BORDER_SIGNAL_WO, co=0, - Border - Work Order (J=42)
BORDER_SIGNAL_CONT, co=0, - Border - Contract only (J=43)
TRAFFIC_SIGNAL_CONT_PR co=162, - Signal Items - Unique to Contract only (J=44)
TRAFFIC_SIGNAL_COM_PR, co=164, - Signal Items - Common to both Contract and Work Order (J=46)
MISC_ITEMS_EX, co=1, - Miscellaneous Objects, not usually plotted (J=49)
SCRATCH_LEVEL_B, co=7 - Pay-Item Numbers, NEVER PLOTTED (J=41)

Miscellaneous Levels:
PRINT_SHAPES, co=1, Style 0 - MicroStation Batch-Plotting Shapes (J=62)
PLOT_SHAPES, co=33, Style 0 - IPLOT Organizer-Plotting Shapes (J=63)

The levels to be used are also listed in an information box in each of the seed files.

Use the following “Color Tables” to help display Element Colors:
(Use Ctrl-F-Key when using consultant configuration, mdotts_v8)

For normal display while constructing file:
Shift-F3 - M:\mst\ct\rd_V8color.ctb

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For color on white display, to view color on white:
Shift-F4 - M:\mst\ct\ts_V8ColorCW.ctb
For color on white display, to view as printed with some colors changed to allow for better printing:
Shift-F5 - M:\mst\standards\Traffic\traffic_V8colorPlot.ctb
For color on black display, to view with "user defineable" colors
Shift-F6 - D:\work\ts_V8colorUserOverRide.ctb

For white on black display:
Shift-F1 - M:\mst\ct\ts_V8ColorBWR.ctb
For black on white display, to view as printed:
Shift-F2 - M:\mst\ct\ts_V8ColorBW.ctb

F. LINE WEIGHTS

Use the following Line Weights (WT=):

Roadway Alignment Base
Weight 0 - All except Stop Bars
Weight 3 - Stop Bars
Signal Items on Plan
Weight 0 - All Existing Signal Items, Leaders, and Wiring Diagrams
Weight 1 - All TEXT labeling/describing any PROPOSED Signal Item.
Borders
Weights as predefined in Seed Files

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G. LINE STYLES

Use the following Line Styles (Line Code, LC=):

Style 0 - Everything except as noted below
Style 2 - Some movements in Phasing Diagrams
Style 3 - Lane Lines on Base Alignment
Style 4 - Centerlines on Base Alignment
Style 6 - Right-of-Way (ROW) on Base Alignment

H. MENUS

SideBar Menu (M:\mst\standards\traffic**TS_V8MODE_MDOT.SBM)**, F9 to load/update this menu)

The menu is used to select various Levels, Text Sizes, Cell Libraries & Cells, User Commands and other Macros, Scales, Plotting, and, Placing Batch-Plot Shapes. Signing, Signals, and Typicals/Maintaining-Traffic have their own respective menus. Select "Signals" for Signal Contracts.

Function Key Menu (M:\mst\standards\traffic**MDOTTS_V8FUNC.MNU**)

The Function Key Menu has these, and other shortcuts, to help with Signals. Go to “Workspace, Function Keys...” to view what each function key does.

F1	**Help** about the active MicroStation command.
Shift-F1	Loads Reverse B/W color-table
F2	Displays View Attributes dialog box.
Shift-F2	Loads B/W color-table
F3	Use to backup file to backup-folder. (Shft-Alt-F3)

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Shift-F3	Loads standard color table
F4	Load IPLOT ("Plot" for consultant configuration)
Ctrl-Alt-F4	Load MicroStation plotting for the default Windows Printer
F5	Toggles "Parse All" on or off
F6	Utility to quickly edit Signal text and other text (not available for consultants)
F7	Move Element
F8	Copy Element
F9	Reloads blue sidebar menu
F10	Loads UIC Date for entering File-Name and Date into Datafields. (not available for consultants)
F11	Loads SignCAD (if installed & configured for V8)
F12	Modify Text

I. CELL WEB-BROWSER

(NOTE: the cell tutorials, that were used for J, no longer work in V8)

Using the html cell library pages:

These are web pages that list cells in a cell library. Clicking on a cell in the web page will activate the cell allowing it to be placed on a drawing.

- From the blue menu, select “E-link” or, from the V8 menu, select Utilities, Connect Web Browser.

- In the Internet Explorer (IE) that just opened, select File, Open.

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-Browse to: M:\mst\cell\traffic\html\signals.htm
(or any other available cell library .html file listed here)
(for consultants, C:\mdotts_v8\mst\cell\traffic\html\signals.htm)

- Hit Open, then OK

- The cell library list opens in the IE web browser that is linked to V8. Select a cell from the web page to place in your file.

Use the IE “links” bar to create short cuts to each cell library .htm file.

Note that in IE 7, only the first browser tab is linked to V8, any new tabs that are opened will not function correctly to place cells.

It appears the web browser will not work in IE 8.

J. CONTRACT SHEET

The standard Contract Border Sheet is 36” x 24”. The standard size for printing to PDF is 17” x 11”.

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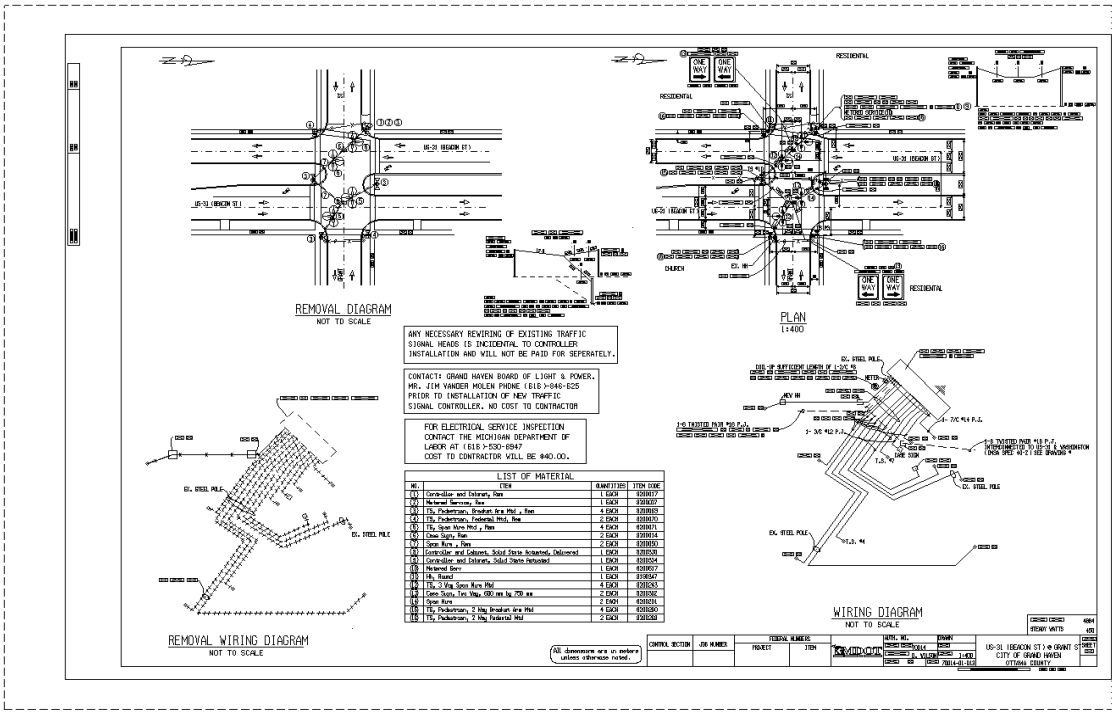
K. SAMPLE SIGNAL LAYOUT FILES

(K:\mdot_v8\dgn\Signals, not yet available)

Use the following Sample Files as a guide to help construct Signal Layouts:

(Updated V8 file not available) - Sample Signal Contract file with both Existing/Proposed and Removals on 1 sheet.



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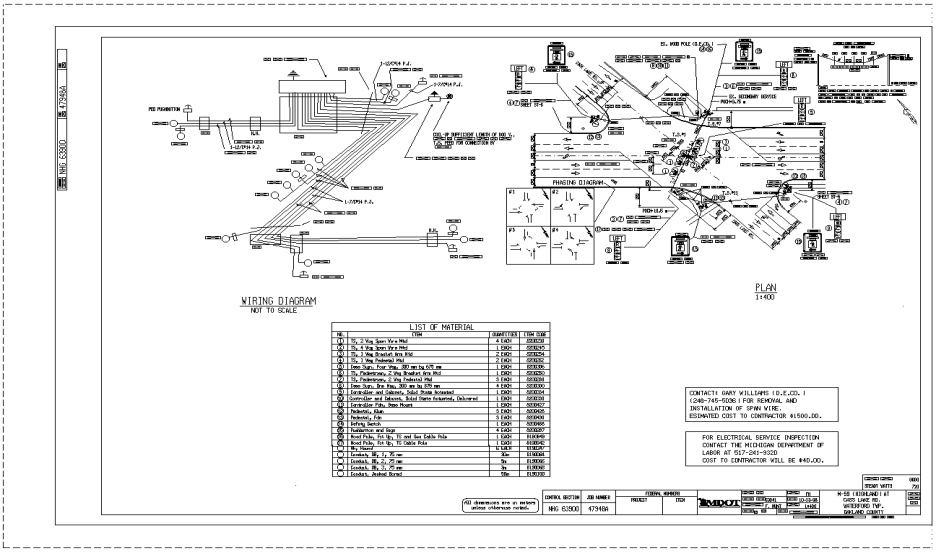
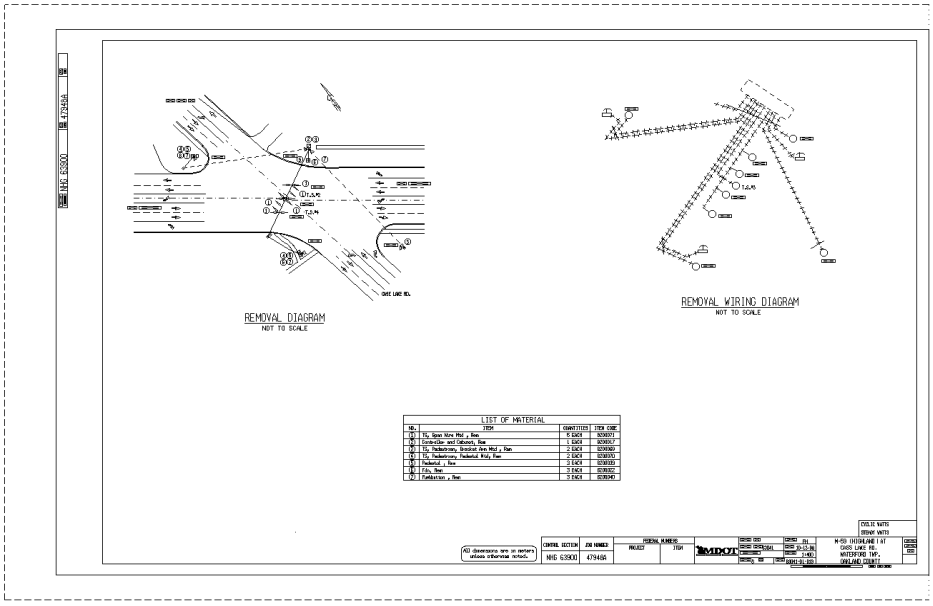
(Updated V8 file not available) - Sample Signal Contract file with 2 sheets, 1 for Existing/Proposed & 2 for removals.





SIGNALS

Consultant Guidelines (pp. 18-22)

ADDITIONAL GUIDELINES FOR "SIGNAL" CONSULTANTS

Updated May 14, 2009

The following guidelines must be used in conjunction with the general Signal Contract procedures previously outlined in the "SIGNALS", "Contracts" section of this document.

I. TRAFFIC AND SAFETY REQUIREMENTS

A. MICROSTATION V8 REQUIRED

- Create Computer Aided Drafting and Design (CADD) Plans.

The CADD program used shall be MicroStation V8 from Bentley Systems, or, one that processes data exactly as V8 with no file translations or system revisions being necessary by the Department.

B. ELECTRONIC FILES & FILENAMES

- Signal Contract files must be named using the established filenaming convention.

It is Imperative that Signal filenames use this scheme. Please refer to "A. SEED FILES & FILE NAMING" under the "SIGNALS", "Contracts" section of this document for complete instructions.

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- Submit electronic, MicroStation V8 file(s) of each final plan sheet.

An electronic MicroStation V8 file(s) of each final plan sheet(s) shall be submitted to Traffic & Safety, at the end of the contract, as soon as they are available.

1. SIGNAL-LAYOUT PLAN-SHEET FILES (Contracts)

- Submit test files at beginning of contract.

Submit **a minimum of two completed contract sheets** for preliminary review before completing the remainder of the sheets. This will allow Traffic & Safety personnel to inform consultant of any items that do not meet our standards.

- Place each location in its own design file.

This allows locating drawings from the name of the design file, and, to retain file-naming compatibility with older files.

II. **MICROSTATION SETUP**

A. DOWNLOAD REQUIRED FILES

- Download the following files from MDOT's Traffic & Safety Web site at: http://mdotwas1.mdot.state.mi.us/public/tands/plans.cfm. Select "CADD User Files" from the "Microstation/CADD Files" category and hit the Search button or "Enter" key.

1. **MicroStation Configuration Files**
   - Download **MDOTTS_V8.ZIP** from "0_V8_Workspace"
   - Unzip this file, including folder structure, to C:\ to utilize the default file locations.
   - Double-click c:\mdotts\README.BAT for further instructions.
   - Includes only English Project Configuration Files.
   - Includes Cell Libraries

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3. **Updated Files**
   The following files can be downloaded separately to procure future updates.

   - Cell Libraries from “0_V8_Signal_Cells”.
   - Sample Signal DGN and Seed files from “0_V8_Seed”.
   - Signal & Consultant Procedures from “0_V8_Signals_Readme CAD” (in "CADD Procedures" sub-category).

B. MICROSTATION CONFIGURATION NOTES

1. **English & Metric MicroStation Project Files**
   - “M**DOTTS_V8.PCF**” is the English Project Configuration File.

   - A text editor can be used to view or edit the above file.

   - Double-click c:\mdotts_v8\readme_v8.bat to view instructions about where to place the Project File, this opens “**MDOTTS_V8.PCF**” in Windows Notepad.

2. **User Commands (UCM’s)**
   - UCM’s are macros that facilitate switching between the various text sizes, backing up, and other repetitive tasks. “MicroStation Basic” is the updated Macro language and all UCM’s may be replaced with Basic macros sometime in the future. A text editor can be used to view or edit them.

   - A UCM backs-up the design file to c:\mdotts_v8\backup\ each time MicroStation is started, new file opened (note this doesn't back up the file just closed), or exited. **Use "File Close" to bypass the backup when exiting a Design file.**

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3. **Font Resources**
   - **DESIGN.RSC** is the Font Resource file for font "8", font 8 has replaced font 0 and is the standard font that the Design Division uses.

4. **File Working Units**
   - The File Working Units shall be set to 1000 sub units per foot - The correct Working Units are preset in each of the included Seed Files and Sample Design Files (when they become available).

III. **MISCELLANEOUS**

A. CONTACT INFORMATION

1. **CAD and Web Support for Traffic & Safety Division.**
   - Dave Korman, Supervisor, Technical Services Unit
     Phone: (517) 335-5993
     Fax: (517) 373-2330
     E-mail: kormand@michigan.gov

   - John Trayler, Technical Services Unit
     Phone: (517) 335-2997
     Fax: (517) 373-2330
     E-mail: traylerj@michigan.gov

2. **For details about signal installations.**
   - Doug Adelman, manager, Signal System Design Sub-unit
     Phone: (517) 373-2363.
     E-mail: AdelmanD@michigan.gov

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3. **Prepared by:**

Technical Services Unit (TSU)
Traffic & Safety (T&S)
Division of Operations
Michigan Department of Transportation (MDOT)
P.O. BOX 30050
Lansing, Michigan 48909

(Street address: 425 W. Ottawa St. 48913)

VanWagoner Transportation Building
Second floor, South side, East end