MONTANA
Department of Transportation

December 2023	MDT Civil 3D State Kit Overview

RELEASE 2022 V1.24

TABLE OF CONTENTS

OVERVIEW

This document provides a user focused overview of the **MDT Civil 3D State Kit** (hereafter referred to as "**State Kit**") content. The State Kit is a collection of MDT AutoCAD and Civil 3D Standards files, MDT specific Design and Survey content files, MDT developed and 3rd Party custom tools that enhance the functionality of Civil 3D for MDT workflows, and an Updater application for installing updates and additions to the State Kit.

COMPANION DOCUMENTATION

MDT Civil 3D State Kit Subassembly and Assembly Guide

https://www.mdt.mt.gov/other/webdata/external/ESDC/library/ 2022StateKit-Asm_Subasm.pdf

MDT Civil 3D State Kit Survey Tools

https://www.mdt.mt.gov/other/webdata/external/ESDC/library/2022StateKit-Surv.pdf

Use the ROW Parcel Tool (Montana State Kit)

https://knowledge.autodesk.com/support/civil-3d/learn-explore/caas/CloudHelp/cloudhelp/2021/ENU/Civil3D-PPK/files/GUID-6489FA26-D298-4979-BB44-3EF1AFE7E09E-htm.html

Engineering Apps & Resources - MDT Civil 3D State Kit

https://www.mdt.mt.gov/business/engops/mdt-state-kit.aspx

DISCLAIMER

The State Kit is verified to work on internal MDT workstations and MDT internal networks. The customizations are also verified to work with a standard "out-of-the-box" Civil 3D installation. Every effort is made to make the State Kit compatible with any Civil 3D configuration, but in the event there are conflicts between State Kit customizations and your Civil 3D configuration, please submit an MDT Engineering Systems (CADD) Request for guidance or assistance.

MDT Engineering Systems (CADD) Request:

https://mt.accessgov.com/mdt/Forms/Page/engineering-division/cadd-support-request/0

MDT CIVIL 3D STATE KIT USER GUIDE

INSTALLING AND UPDATING THE MDT CIVIL 3D STATE KIT

The State Kit is installed and updated via the **MDT State Kit Updater** application. The Updater is used for initial installation of the State Kit and for installing updates when they are released. A version of Civil 3D compatible with the State Kit must already exist on the target machine for the State Kit to install.

MDT EMPLOYEES AND INTERNAL USERS

The MDT State Kit Updater application is pre-installed on all MDT machines with Civil 3D installed.

CONSULTANTS AND EXTERNAL USERS

Consultants and external users can download an MDT State Kit Updater installation package. A Windows Installer (MSI) is available from the MDT website.

THE MDT STATE KIT UPDATER APPLICATION

The Updater application can be accessed from the "**MDT State Kit Updater**" Desktop shortcut.

The Updater application displays the currently installed version of the State Kit and shows if there is an updated version available. Reference the **MDT State Kit Updater User's Guide** for instructions on how to use the Updater. The Guide can be accessed by clicking the "**?**" button in the Updater app.
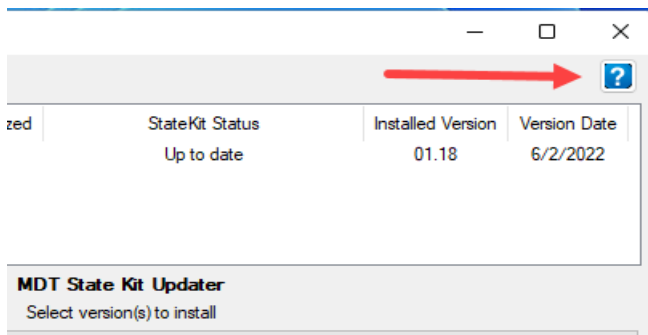
The State Kit Updater is installed to:

C:\Program Files\MDT\MDT StateKit Updater

Note: External users can customize the operation of the Updater. Refer to the MDT State Kit Updater Operational Guide for more info.

C:\Program Files\MDT\MDT StateKit Updater\MDT StateKit Updater Operational Guide.pdf

or

https://www.mdt.mt.gov/other/webdata/external/ESDC/library/MDT-StateKitUpdaterOperationalGuide.pdf

3RD PARTY MDT STATE KIT TOOLS

3rd party MDT State Kit Tools are add-ins developed for MDT to aid in content creation workflows and data processing. These add-ins are unique tools provided by MDT separate from the State Kit. A stand-alone installer package can be downloaded from the MDT website.

After installation, these files are located in:

C:\ProgramData\Autodesk\C3D 2022\enu\Data

C:\Program Files\Autodesk\AutoCAD 2022

Upon installation, the tools are accessible from the Toolbox tab in the TOOLSPACE palette within Civil 3D.

SURVEY EXTENDED ATTRIBUTES

Survey Extended Attributes has a subset of tools for enhancing the fieldbook and importing extended survey attributes.

MDT Civil 3D State Kit Survey Tools is available for further information.

PARCEL TOOLS

Use the ROW Parcel tool to create right of way parcels from property lines and alignments in drawings with Montana coordinate systems.

Note: This transformation is only available for Montana coordinate systems.

Use the ROW Parcel Tool (Montana State Kit) is available for further information.

STARTING CIVIL 3D AND THE MDT CIVIL 3D STATE KIT

CIVIL 3D 2022 MONTANA DESKTOP SHORTCUT

To access the State Kit functionality users **must** start Civil 3D by using the "**Civil 3D 2022 Montana**" desktop shortcut.
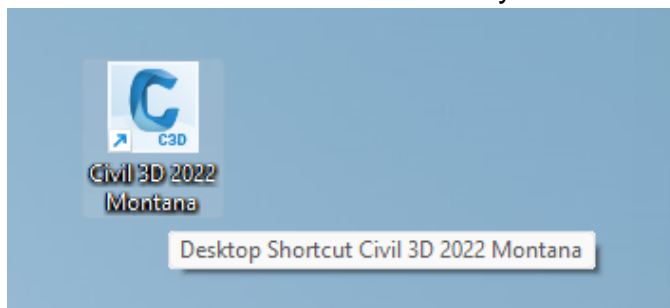
Using the "**Civil 3D 2022 Montana**" desktop shortcut ensures that all the State Kit standards and customizations are available to a user during the application session.

Starting Civil 3D using any other method will not load the full State Kit functionality.

Note: State Kit users should never double-click a *.dwg, *.dwt, or *.dst to open the file or start a Civil 3D application session. Not all MDT standards and customizations will be available if a Civil 3D file is opened this way.

MDT CIVIL 3D STATE KIT FIRST RUN

During the process of opening Civil 3D immediately after a State Kit install or update, two **"Security – Unsigned Executable File"** warning dialog boxes may appear. The dialog boxes will warn that the publisher of specific executable files cannot be verified.

The file names in each dialog box are **MDT2022settings.VLX** and **MDT2022Tools.VLX**. **These two MDT files are published by MDT, are safe, and are required for the State Kit to function.** Please click the "**Always Load**" button for each of these files as shown below. Clicking the "Always Load" button will suppress these dialog boxes from appearing again until the next time the State Kit is updated.
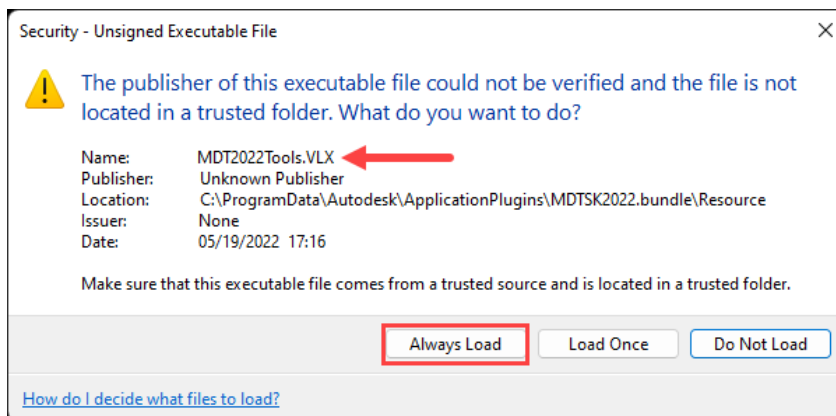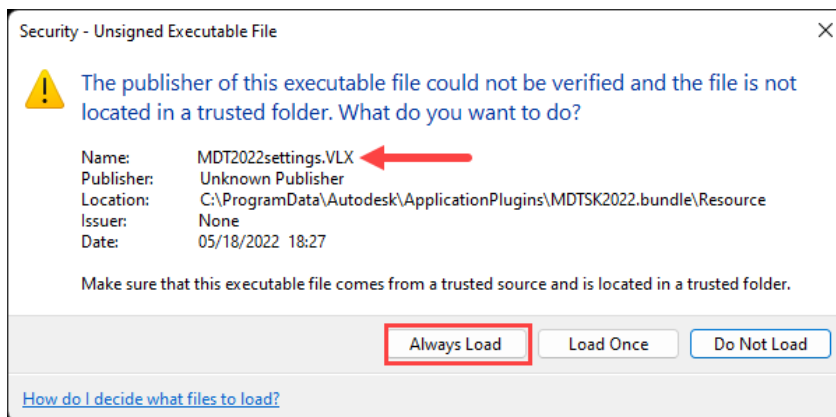
MDT CIVIL 3D APPLICATION START

Upon launching Civil 3D with the "Civil 3D 2022 Montana" Desktop shortcut, Civil 3D will open to the "**Start**" tab. Users can open an existing drawing or sheet set, begin a new drawing, browse recently opened drawings, or browse to Autodesk Docs locations.

MDT CIVIL 3D USER INTERFACE (UI)

MDT CIVIL 3D USER INTERFACE SETTINGS

MDT Civil 3D user interface settings are stored in **Workspaces** and **Profiles**. Custom MDT tools and MDT drawing content are accessible from **MDT Tool Palettes** and **MDT Ribbon Tabs**.

CIVIL 3D WORKSPACES

A Civil 3D "Workspace" controls the UI elements that are visible during an application session. Multiple different Workspaces can be saved in a Civil 3D Profile. There are four standard Workspaces in the State Kit.

1. Civil 3D   Civil 3D specific tools and general AutoCAD tools
2. Drafting & Annotation   AutoCAD 2D drawing and annotation tools
3. 3D Modeling   AutoCAD 3D modeling tools
4. Planning and Analysis   Map 3D specific tools and general AutoCAD tools

A Workspace can be made active by selecting one from the Workspace menu in the Quick Launch Bar or from the Workspace Switching menu on the Status Bar. Upon opening a drawing, the State Kit default Workspace is "**Civil 3D**".
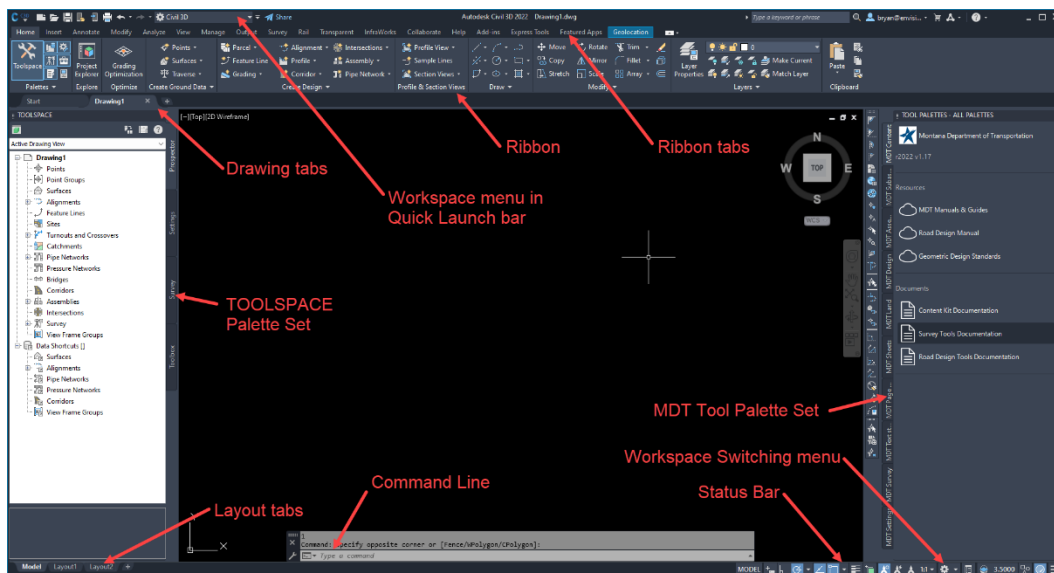
- The Workspace switcher is visible in the Quick Launch bar at the upper left of the application and the Workspace Switching menu is in the Status Bar
- The Civil 3D TOOLSPACE palette group is open and docked to the left side of the drawing window
- The default MDT Tool Palette Group is open and docked to the right side of the drawing window
- The Properties Palette is closed.

- The Civil 3D Ribbon and Ribbon tabs are visible at the top of the application
- The Drawing tabs are visible just below the Ribbon
- The Command Line is at the bottom of the drawing window
- The Layout tabs are below the Command Line to the left
- The Status Bar is below the Command Line to the right.

The following commands can be used to show/hide the basic UI elements:

RIBBON / **RIBBONCLOSE**   show/hide Ribbon

TOOLSPACE   show/hide TOOLSPACE

TOOLPALETTES / **TOOLPALETTESCLOSE**   show/hide Tool Palettes

PROPERTIES / **PROPERTIESCLOSE**   show/hide Properties Palette

COMMANDLINE / **COMMANDLINEHIDE**   show/hide Command Line

FILETAB / FILETABCLOSE   show/hide Drawing Tabs

*Note: If the Command Line is hidden, Dynamic Input must be turned on to type the COMMANDLINE command. Toggle **F12** on keyboard to turn Dynamic Input on/off.*

The following system variables can be set to show/hide some basic UI elements:

STATUSBAR   0 = Status Bar off   1 = Status Bar on

LAYOUTTAB   0 = Layout Tabs off   1 = Layout Tabs on

Saving Civil 3D Workspace Settings

Users can override the default Workspace settings if desired. A user can arrange UI elements across one or more monitors, and they can appear at the same position and size as they were when Civil 3D was last closed or when a Workspace was switched.
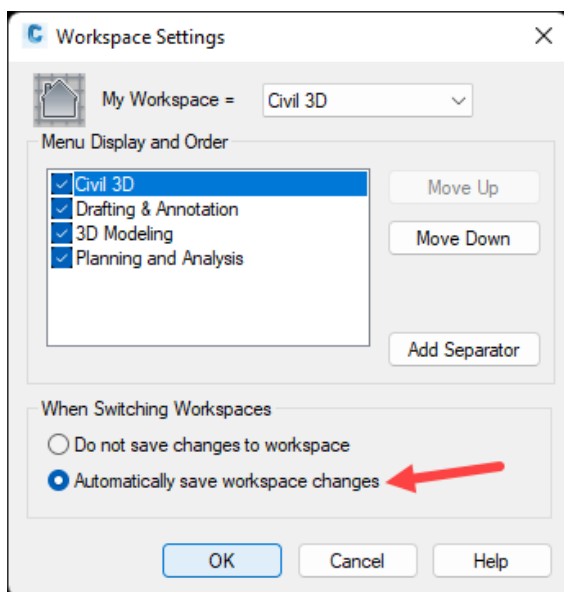
To save Workspace changes automatically:

1.   Type **WSSETTINGS** at the command line.
2.   Select "**Automatically save workspace changes**" and click "**OK**".

CIVIL 3D PROFILES

The default State Kit Profile is named "**<<MDT>>**". AutoCAD profiles store application settings such as search paths, file names, file locations, display settings, system settings, user preferences, and other default settings.

There are specific profile settings required for State Kit tools and workflows. The <<MDT>> profile must be used to enable all State Kit functionality. This profile is automatically loaded when the "Civil 3D 2022 Montana" desktop shortcut is used to start Civil 3D. Users can customize profile settings, but be aware, some settings are reset when State Kit updates are installed. Future updates to the State Kit may allow users to save and restore changes to some specific profile settings between updates.

Note: Use caution if making changes to profile settings. Changes may result in lost State Kit functionality.

Resetting the Profile

Sometimes, the profile may become corrupt or undesirable changes may have been made. The State Kit has a tool to reset the <<MDT>> profile to the default settings. Type **MDTRESETPROFILE** at the command line.

Customize Display Settings

Users can customize Display elements without affecting State Kit functionality.

1. Type **OPTIONS** at the command line.
2. Click the **Display** tab.

Settings for window elements, color theme, layout elements, display resolution and performance, crosshair size, and fade control can be customized. Drawing Window colors can be changed by clicking the **Colors…** button.

MDT TOOL PALETTES

Some State Kit standards content and custom tools can be accessed through MDT Tool Palettes. These tool palettes will evolve as MDT workflows are developed and refined, and tool palettes may be added or removed in future State Kit updates.

Default MDT Tool Palette Group

The default "MDT" tool palette group is loaded upon initial open after a State Kit installation or update. This group contains the following tool palette tabs:

MDT Content tab: Tool buttons for MDT design resources and MDT Civil 3D documentation

MDT Groups tab: Tool buttons for other MDT palette groups

**MDT Subassemblies tab:** Tool buttons for MDT custom subassemblies

MDT Assemblies tab: Tool buttons for MDT custom assemblies

MDT Sheets tab: Tools to insert specific MDT layout sheets into drawings

MDT Page Setups tab: Tools to bring page setups (preset plot settings) into drawings

MDT Textstyles tab: Tools to create specific types of MDT standard text

MDT Tools tab: Tool buttons for MDT custom commands
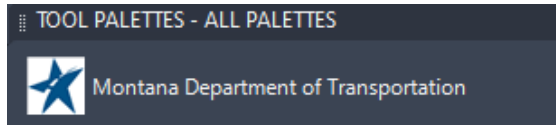
Some tool palette buttons launch other "MDT" palette groups and application starts will load the active palette group from the previous Civil 3D session. To return to the default "MDT" tool palette group, press the "**Montana Department of Transportation**" logo button at the top of an "MDT" tool palette or type **MDTPALETTES** at the command line.

The "MDT" tool palettes are locked to ensure consistent functionality between application sessions. Locked tool palettes cannot be edited. Any custom palettes added to an "MDT" tool palette group will be locked when Civil 3D is restarted.

If a user unlocks and alters a tool palette in an "MDT" tool palette group, the changes will be overwritten when the State Kit is updated. After an update, any changes made to an "MDT" tool palette will be lost, and any custom palettes added to an "MDT" tool palette group will not remain in the group.

To create and use custom tool palettes, add them to the User Tool Palette Group.

User Tool Palette Group

The State Kit includes a user editable tool palette group. Users can add content to the default "User" palettes or add personal tool palettes. The "User" palette group can be accessed from the **"User Palette Group"** tool button on the **MDT Groups** tool palette or by typing **MDTPALETTE-USER** at the command line. To return to the default "MDT" tool palette group, press the "**Montana Department of Transportation**" logo button at the top of a "User" tool palette or type **MDTPALETTES** at the command line.

User palette files are stored in **C:\MDOH\StateKit\Civil 3D\User\Toolpalette**

The User Palette Group contains four default tool palettes:

Main tab: Suggested use: add frequently used content.

Assemblies tab: Suggested use: add custom user assemblies.

Blocks tab: Suggested use: add custom user blocks.

Tools tab: Suggested use: add custom user tools.

Press the "User Tool Palettes HELP" button on the Main tab to access documentation about how the user tool palette group functions.

Grading Optimization Palette Tabs

If the optional Civil 3D Grading Optimization tools are installed, the Grading Objects tool palettes will be added by default to the active tool palette group upon application start. To hide these tool palettes, press the **"Montana Department of Transportation"** logo button to reload the default "MDT" tool palette group. To show the Grading Objects tool palettes, press the **"Autodesk Grading Optimization Palette Group"** button on the **MDT Groups** tool palette.

MDT RIBBON TABS

Some State Kit standards content and tools will be accessed through custom MDT Ribbon Tabs in future State Kit versions. These ribbon tabs will be added as MDT workflows are developed and refined.

MDT CIVIL 3D STATE KIT MAIN FILETYPES

CIVIL 3D DRAWING FILES

A typical drawing file in Civil 3D is called a **DWG** and has a **.dwg** file extension. DWG files are the main Civil 3D file type used to store 2D & 3D design data and metadata for creating existing conditions models, design models, cadastral drawings, and survey drawings. DWG files can also be used for plan production drawings to create published or plotted output or used to store data such as AutoCAD block libraries, AutoCAD drawing components, or other static, reusable drawing content.

The current DWG file format version is **DWG 2018/AC1032** and is compatible with Civil 3D releases 2018 through 2024. This version is more commonly referred to as **AutoCAD 2018 Drawing (*.dwg)**. All MDT DWG files should be saved as a 2018 drawing unless the drawing file needs to be converted to a previous DWG file format version for compatibility with other software packages.

Note: Converting a Civil 3D drawing to a previous DWG file format version will result in the loss of some design data due to backwards compatibility issues. Users should not save a drawing backwards to a previous DWG version and then save the drawing forward to a more recent DWG version. Not all design data will make the round trip when saving between versions. While graphical elements may appear the same, Civil 3D object data may be lost, so design intent may no longer be clear.

CIVIL 3D DRAWING TEMPLATE FILES

A drawing template file in Civil 3D can be used to hold predefined drawing components, drawing settings, drawing references, blocks, Civil 3D Styles, and/or Civil 3D Label Styles. A drawing template file is called a **DWT** and has a **.dwt** file extension. DWTs can be used in Civil 3D to start new drawings, create new sheet layouts for plan production, or as reference templates.

The State Kit includes specific DWTs used for drawing start templates and drawing sheet templates. MDT start templates are used to create new drawings and MDT sheet templates are used to import sheet layouts into a drawing.

Some State Kit DWTs are also used as reference templates. Reference templates can be attached (referenced) to a DWG and used to share standards for drawing settings, AutoCAD component styles, Civil 3D Styles, Civil 3D Label Styles, and other content. An advantage to using reference templates to share standards is if there is an update or revision to any content or settings in a reference template, the changes automatically propagate into the DWGs it is attached to. In drawings that don't use reference templates standards changes have to be added manually.

The State Kit makes use of reference templates to control the flow of components, drawing settings, and Civil 3D Styles to the start drawing templates.

Note: Users should not edit MDT drawing template files. Altering MDT drawing template files will result in lost State Kit functionality. Drawing template file changes will only be saved to the local machine and drawings created from an altered template can have content or settings that may not be available when a drawing is opened on a different machine.

CIVIL 3D DRAWING STANDARDS FILES

A drawing standards file (**DWS**) can be used as a standard to check drawings for consistency. Standards define a set of common properties for named objects such as layers and text styles. DWS files have a **.dws** file extension and can be created by saving a DWG as a DWS.

The State Kit uses a drawing standards file for layer translation mapping from legacy drawings to the current MDT layer standard.

CIVIL 3D SHEET SET FILES

A sheet set is a collection of individual sheet layouts from one or more drawing files. A sheet set can be used to plot or publish multiple layouts from different drawing files without having to open each drawing file individually. The associations and information that define a sheet set are stored in a sheet set (**DST**) file with a **.dst** file extension.

Sheet set files can also be used to hold metadata that can be shared with other drawings in a sheet set. For example, a DST can contain the project name and project

location and that metadata can be used to automatically populate text fields in a drawing, saving the trouble of entering that information into each individual drawing.

CIVIL 3D LAYER STATE FILES

Layer state files (**LAS**) are used to change layer property settings as a group. Layer state files have a **.las** file extension. Property settings for one or more layers can be preset and saved to a LAS file and then imported or exported from the Layer State Manager dialog box. Restoring a layer state will change all the current layer property settings to the settings in the layer state. Layer states can be leveraged to quickly change layer display settings for various workflows and to set up a drawing for different plotting scenarios.

MDT CIVIL 3D STATE KIT CONTENT

STATE KIT CONTENT OVERVIEW

The State Kit includes custom AutoCAD and Civil 3D content to aid in the creation of design drawings and plan documents, and to process survey data in association with MDT projects.

STATE KIT FILE STRUCTURE

The State Kit file structure is designed in a way so that the MDT CAD standards content is distributed into **single-source component files and reference files**. To the extent possible, content is not duplicated in these files, so each individual component file or reference file is a single source of specific drawing standards and settings. This creates a system that is easy to understand, easy to update, and easy to maintain. This system also serves as a standards verification method to minimize the need to reference external documentation. The individual standards and settings files serve as de facto CAD standards for the State Kit.

Most State Kit content and supporting Civil 3D application files have been moved from the default Autodesk install locations to local user storage to remove the need for a user to have administrative rights on a computer to install or update the State Kit.

The State Kit content is installed in three general locations. The files and folders are organized by Civil 3D version year.

1. MDT drawing (CAD) standards content:

   C:\MDOH\StateKit\Civil 3D\2022

2. MDT AutoCAD settings files, customization files, and code files:

C:\ProgramData\Autodesk\ApplicationPlugins\MDTSK2022.bundle

3. Survey database settings files, subassembly runtime files, and other misc. files:

C:\ProgramData\Autodesk\C3D 2022\enu

Note: Altering MDT State Kit files or directories may result in lost functionality.

MDT DRAWING (CAD) STANDARDS CONTENT

The State Kit makes use of predefined AutoCAD objects, object properties, object settings, Civil 3D Styles, and Civil 3D Label Styles to control the display, plot output, and content definition in MDT drawing files and plan sets.

All State Kit drawing standards content and default settings are preloaded into the drawing start templates as a convenience.

Note: Standards and settings files are to be treated as reference only. Altering individual files will result in application errors and lost State Kit functionality.

State Kit drawing standards content is located in:

C:\MDOH\StateKit\Civil 3D\2022\Annotation
C:\MDOH\StateKit\Civil 3D\2022\Assemblies
C:\MDOH\StateKit\Civil 3D\2022\Blocks
C:\MDOH\StateKit\Civil 3D\2022\Drainage
C:\MDOH\StateKit\Civil 3D\2022\Help
C:\MDOH\StateKit\Civil 3D\2022\Layers
C:\MDOH\StateKit\Civil 3D\2022\Linetypes
C:\MDOH\StateKit\Civil 3D\2022\Plotting
C:\MDOH\StateKit\Civil 3D\2022\Templates
C:\MDOH\StateKit\Civil 3D\2022\Toolpalette
C:\MDOH\StateKit\Civil 3D\2022\Tools

CUSTOM AUTOCAD BLOCKS

MDT has developed numerous custom MicroStation cells over the years to aid in the creation of CAD content. Many of these cells have been converted into AutoCAD blocks and are available for use with Civil 3D. In addition, many custom AutoCAD blocks have been created specifically for use with the State Kit. MDT custom blocks are stored in DWGs. The standard block files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Blocks

There are many ways to access this content in Civil 3D. Users can use AutoCAD Design Center, the AutoCAD Blocks Palette, MDT custom tool palettes, or the CLASSICINSERT dialog box to add blocks to a drawing.

LAYERS, LAYER STATES, AND LAYER FILTERS

The MDT **layers.dwg** drawing serves as the standard for layers in the State Kit.

The State Kit layer naming convention is based on the American Institute of Architects (AIA) CAD Layer Guidelines: U.S. National CAD Standards. Each layer name allows for the following:

- discipline designator (1 or 2-character abbreviation)
- major group (4-character abbreviation)
- minor group (optional, modifies major group, 4-character abbreviation)
- 2nd minor group (optional, modifies major or minor group, 4-character abbreviation)
- status/phase (optional, 1-character abbreviation)

Each grouping of characters described above is separated by a dash. Abbreviations for each layer are defined in the layer name description and may be reviewed from the Layer Properties.

The layer standards drawing is located here:

C:\MDOH\StateKit\Civil 3D\2022\Layers\layers.dwg

Layer standards can be enforced by layer states. Layer states can also be used to alter plot output or temporarily change display settings.

The **LAYERSTATE** command can be used to import LAS files into a drawing. MDT LAS files can be imported from:

C:\MDOH\StateKit\Civil 3D\2022\Layers

The State Kit uses layer filters to organize layer lists in the Layer Manager. These filters are preloaded into the start templates. To add MDT layer filters to a drawing that does not have them, layer filter (LFT) files can be imported into a drawing from:

C:\MDOH\StateKit\Civil 3D\2022\Layers

Note: Importing a layer filter file will overwrite any existing layer filters in a drawing.

TEXTSTYLES

There are three main textstyles in the State Kit, **MDT Arial**, **MDT Arial Italic**, and **MDT Arial Bold Italic**. A standard Microsoft True Type font was chosen for maximum software compatibility with both internal and external users of the State Kit. A standard font was also chosen to remove the need to license and distribute custom fonts with the State Kit.

These Arial-based textstyles are **annotative** (change size according to drawing scale) and set to a **zero text height**. A zero text height allows an AutoCAD textstyle to be used at any size. Combining the annotative setting with a zero text height eliminates the need to have multiple textstyles of the same type for different combinations of size and scale. For example, if 0.07 size Arial text is desired, set the textstyle to MDT Arial and set the text height in the object properties to 0.07. The annotative property of the textstyle will automatically adjust the actual text height in the drawing to appear the correct size in context to the annotation scale and in the sheet layouts.

A few extra "MDT" textstyles might be encountered in some MDT production DWG files or State Kit standards files. These textstyles are not annotative and have fixed text height. They should only be used for consistency with legacy drawings or with drawings brought forward from earlier State Kit versions. They will be removed from State Kit standards files in the future, so it is preferred to use the MDT Arial, MDT Arial Italic, and MDT Arial Bold Italic textstyles moving forward.

The textstyle drawing standards files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Annotation

DIMENSION STYLES, MULTILEADER STYLES, AND TABLES

The State Kit makes use of predefined dimension styles, multileader styles, and table styles to aid in the annotation of MDT drawings. All MDT annotation styles are preloaded into the start templates and subsets of these styles exist in other State Kit drawing templates and content drawings. The annotation drawing standards files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Annotation

LINETYPES

The State Kit uses both standard AutoCAD linetypes and custom MDT linetypes. There is a graphical reference drawing located at:

C:\MDOH\StateKit\Civil 3D\2022\Linetypes\linetypes.dwg

The linetype standards files consist of an AutoCAD LIN file and a reference template file (DWT). These two files are used to insert or reference the custom MDT linetypes into a drawing and they are located at:

C:\MDOH\StateKit\Civil 3D\2022\Linetypes\MDT_Linetypes.lin

C:\mdoh\StateKit\Civil 3D\2022\Linetypes\DGNlinetypes.dwt

DRAWING TEMPLATES AND SHEET SET TEMPLATES

The State Kit uses drawing templates (DWTs) and sheet set templates (DSTs) for specific purposes in the State Kit.

Start Templates

All new C3D models, design drawings, survey drawings, cadastral drawings, and plan production drawings should be created from a "start" template. "Start" templates are preloaded with MDT standards content and Civil 3D Styles necessary to create drawing files that adhere to MDT standards. There are three "start" templates located in:

C:\MDOH\StateKit\Civil 3D\2022\Templates_Start-Dwg

- **design-start.dwt:** For starting design, detail, or general-purpose drawings. Includes MDT-TMP (temporary) layout as a placeholder layout preceding insertion of sheet layouts.
- **survey-start.dwt:** For starting survey (including cadastral) drawings. Includes MDT-TMP (temporary) layout as a placeholder layout preceding insertion of sheet layouts.
- **x-mdt-build.dwt:** This is a special base template used only for creating new reference templates, creating new standards content drawings, or inserting drawing objects for export. This template contains no preloaded MDT content and no custom MDT Civil 3D styles. It is a clean base file on which to build from or insert objects into.

Sheet Templates

Sheet templates are used to bring MDT sheet layouts into drawings. MDT sheet layouts contain pre-created sheet borders, companion blocks, and pre-loaded plot settings. Tool Buttons to insert MDT sheet layouts in a drawing are located on the **MDT Sheets** tool palette tab.

State Kit standard drawing sheet template files are stored in:

C:\MDOH\StateKit\Civil 3D\2022\Templates\Sheets

*Note: Sheet templates do not have a complete set of MDT standards content or settings and **should not** be used to start a new drawing.*

Reference Templates

Reference templates are used as single-source reference files for Civil 3D Styles, Label Styles, Object Settings, and Drawing Settings. Reference templates are also used to "funnel" specific standards content into the individual "start" templates. The State Kit standard reference templates are located in:

C:\MDOH\StateKit\Civil 3D\2022\Templates\Reference

*Note: Edits to Civil 3D Styles should not be made in the reference templates (DWTs). Instead, use the **"Make a local copy of the style with a unique name"** option in the consuming drawing file (DWG), edit and rename the copy of the Style, and apply the new Style to the Civil 3D object.*

Edit a Reference Style

⚠️ This style comes from a reference template that cannot be edited.
What do you want to do?

→ Cancel
The edits to the style will be discarded.

→ Make a local copy of the style with a unique name
A new, local copy of this style will be created with a new name. It will exist in the drawing and will not be added to the reference template.

→ Apply the edits for this drawing session only
Your edits will be applied for the duration of this drawing session. When you close this drawing, the original style from the reference template will be applied.

Sheet Set Templates

The State Kit uses sheet set templates (DSTs) with predefined metadata to populate some of the text in sheet borders.

MDT standard sheet set templates are located in:

C:\MDOH\StateKit\Civil 3D\2022\Templates\Sheets\Sheet Sets

INSERTING OR UPDATING DRAWING STANDARDS CONTENT

All State Kit drawing standards content and default settings are preloaded into the drawing start templates as a convenience, but as production drawings progress through changes and CAD standards evolve, discrepancies may exist between existing drawings and current CAD standards. MDT has developed custom commands that use the standards content files to add or update AutoCAD content in existing drawings.

There is a command to add or refresh all MDT AutoCAD Drawing Components (layers, linetypes, textstyles, dimension styles, multileader styles, and table styles). See Appendix A of this document for a list of all MDT custom AutoCAD commands.

PLOTTING

The State Kit uses **CTB** plot style tables. CTB plot style tables use the object or layer color setting to determine how the plotted output is displayed. Plot style tables can control color, screening, linetype, lineweight, end style, and join style among other settings, but the MDT plot style tables are mostly used just to control color output.

MDT CTB plot style tables can be found in:

C:\MDOH\StateKit\Civil 3D\2022\Plotting\Plot Styles

MDT - Standard.ctb is the standard plot style table used in all predefined layouts and page setups in the State Kit. Other MDT plot style tables are provided to plot in full color or full grayscale. MDT - Standard.ctb is the preferred standard plot style table.

MDT - Standard.ctb produces grayscale output (black/gray/white) when using standard AutoCAD colors (1-255). The following plot style properties apply:

- Colors 1-9 plot black
- Even numbered colors plot black
- Colors ending in 7 (17, 27, 37, etc.) or 9 (19, 29, 39, etc.) plot black
- Colors ending in a 1 (11, 21, 31, etc.) plot dark gray (color 250)
- Colors ending in a 3 (13, 23, 33, etc.) plot medium gray (color 251)
- Colors ending in a 5 (15, 25, 35, etc.) plot light gray (color 252)
- Colors 250-255 will plot true to the color displayed (black, gray, white)

Color plotting using this plot style table is supported by changing an object or layer to a "True Color" (RGB color) setting rather than "Index Color" within the Select Color dialog. Layer States can be used to facilitate the changing of color settings to allow different types of plotted output from one drawing.

Plot style tables may be added or removed in future updates as MDT workflows are developed and refined.

PC3 files are used to store preset plotter settings. PC3 files can be created for physical or virtual plotters. The State Kit includes a PC3 file for publishing to PDF:

C:\MDOH\StateKit\Civil 3D\2022\Plotting\Plotters\MDT PDF (General Documentation).pc3

SUBASSEMBLIES

MDT has developed custom subassemblies that aid in the creation of Civil 3D corridors that adhere to MDT standards and practices. Some of these MDT subassemblies have functionality that is not available in the standard "out-of-the-box" Civil 3D subassemblies.

The subassemblies are accessible from the **MDT Subassemblies** tool palette in the MDT Default Tool Palette Set or by pressing the **MDT Assemblies and Subassemblies Palette Group** button on the **MDT Groups** tool palette. Out-of-the-box Civil 3D subassemblies can be accessed by pressing the **Autodesk Civil 3D Subassemblies Palette Group** button on the **MDT Groups** tool palette.

Subassembly packet (**PKT**) files are provided as a separate zip file download for convenience to users that do not have or cannot install the State Kit but want the MDT subassembly functionality. PKT files are used to manually install single subassemblies in Civil 3D. Users may distribute the MDT PKT files individually, provided the **MDT_CADD_EULA** file is included with the PKT files.

The MDT subassembly PKT files and EULA are located on the [Engineering Apps & Resources - MDT Civil 3D State Kit](#) website.

[MDT Civil 3D State Kit Subassembly and Assembly Guide](#) is available for further information.

ASSEMBLIES

The State Kit includes predefined assembly drawing files. These files contain pre-built assemblies that are made up of MDT and Autodesk subassemblies. The assemblies are constructed from subassemblies with default settings preset to MDT design standards and practices. These assemblies can be inserted into a drawing from the **MDT Assemblies** tool palette tab. The assembly drawings are located in:

C:\MDOH\StateKit\Civil 3D\2022\Assemblies

[MDT Civil 3D State Kit Subassembly and Assembly Guide](#) is available for further information.

TOOL PALETTES

The State Kit uses custom Tool Palettes to bring in MDT content and provide access to MDT custom Civil 3D tools.

MDT tool palette files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Toolpalette

MDT PIPE NETWORK CATALOG

The State Kit uses a custom Civil 3D Pipe Network catalog.

The pipe catalog files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Drainage

The catalog path is set automatically by the State Kit profile and predefined parts lists exist in the reference templates.

MDT CUSTOM TOOLS

MDT is developing custom AutoCAD and Civil 3D tools to aid in MDT specific content creation workflows and data processing. Access to some MDT tools will be incorporated directly into the MDT Civil 3D user interface.

Other standalone tools can be found in:

C:\MDOH\StateKit\Civil 3D\2022\Tools

PROJECT EXPLORER

Project Explorer style files have .xmp* file extensions and can be used to load custom styles for specific project development processes within the Project Explorer.

Project Explorer style files are located in:

C:\MDOH\StateKit\Civil 3D\2022\Tools\Project Explorer

MDT AUTOCAD STARTUP FILES, CUSTOMIZATION FILES, AND SETTINGS

A State Kit AutoCAD plugin loads the necessary customization files, settings, and custom commands for the State Kit to function. These files are located in:

C:\ProgramData\Autodesk\ApplicationPlugins\MDTSK2022.bundle

Note: This information is for reference only. Altering, moving, or deleting any files in the \MDTSK2022.bundle directory will result in lost State Kit functionality.

MDT SURVEY DATABASE SETTINGS FILES AND SUBASSEMBLY RUNTIME FILES

Survey database files and subassembly runtime files reside in the Autodesk default locations. This may change in future versions of the State Kit.

SURVEY DATABASE SETTINGS

MDT Survey Database settings consist of an MDT Linework Code Set file, an MDT Figure Prefix Database file, and an MDT Survey User Settings file.

Survey Database files are located in:

C:\ProgramData\Autodesk\C3D 2022\enu\Survey

SUBASSEMBLY RUNTIME FILES

The MDT subassembly runtime files are automatically installed with the State Kit and are located in:

C:\ProgramData\Autodesk\C3D 2022\enu\Imported Tools

Note: Users should not alter MDT subassembly runtime files or directories. This may result in lost subassembly functionality.

MDT TEMP DIRECTORY

Many temporary files are created during a Civil 3D application session. These files can remain between sessions causing Civil 3D performance issues. Temporary files should be periodically deleted. The State Kit stores Civil 3D's temporary files in a separate location from the Windows %temp% directory. A dedicated location provides an easy way to find and remove Civil 3D temporary files. It also makes it easier to identify temporary files that can be used for troubleshooting or drawing recovery. The directory is located here:

C:\MDOH\StateKit\Civil 3D\Temp

The State Kit includes a tool to delete temporary files. This tool attempts to clear the C:\MDOH\StateKit\Civil 3D\Temp and Windows %temp% directories. (Files in use cannot be deleted.) It is recommended to remove temporary files frequently and especially after a Civil 3D crash. **Civil 3D must be closed before running the tool**.

A shortcut to the tool is located here:

C:\MDOH\StateKit\Civil 3D\2022\Tools\Clear Temp Files

The shortcut can be run directly from the \Tools folder, or it can be copied to the Desktop if desired. (The tool was updated in State Kit version 1.23. If the shortcut was copied to the Desktop from State Kit version 1.22 it will need to be replaced with the shortcut from the \Tools folder of version 1.23.)

MDT USER DIRECTORY

The State Kit provides a local "User" directory for users to add personal Civil 3D content. The directory structure also allows users to add custom tool palettes that can be used alongside the default State Kit tool palettes. The "User" directory is isolated from the rest of the State Kit content. Files and folders can be freely added under the "User" directory.

The User directory is located at:

C:\MDOH\StateKit\Civil 3D\User

The "User" directory and "User" tool palettes are not overwritten when the State Kit is updated.

Note: Do not remove the C:\MDOH\StateKit\Civil 3D\User\Toolpalette folder. User Tool Palette functionality will be lost.

APPENDIX A: MDT CIVIL 3D STATE KIT CUSTOM COMMANDS

The State Kit includes custom AutoCAD and Civil 3D command functions to aid in content creation, workflows, and as a general convenience. Some of the commands are accessible in the UI via tool palettes and/or ribbon tabs, but all can be accessed through the command line.

STATE KIT DOCUMENTED COMMAND LIST

Name	Description	Command Line
Reset MDT State Kit Profile	Deletes and re-imports the <<MDT>> profile to reset profile settings to default.	MDTRESETPROFILE
DWG Clean	Cleans DWG file and fixes errors	MDTDWGCLEAN
Purge All	Purge all unused items from drawing	MDTPURGEALL
Refresh ALL MDT Drawing Components	Refreshes all MDT drawing standards components to the most recent State Kit version	MDTADDALLCOMP
Add MDT Dimension Styles	Imports all MDT dimension styles from the most recent State Kit update files	MDTADDDSTYLES
Add MDT Layers	Imports all MDT layers from the most recent State Kit update files	MDTADDALLLAYERS
Add MDT Layer Filters	Imports all MDT layer filters from the most recent State Kit update files	MDTADDLFT
Add MDT Linetypes	Imports all MDT linetypes from the most recent State Kit update files	MDTADDLTYPES
Add MDT Multileader Styles	Imports all MDT multileader styles from the most recent State Kit update files	MDTADDMLEADERS
Add MDT Table Styles	Imports all MDT table styles from the most recent State Kit update files	MDTADDTABLES
Add MDT Textstyles	Imports all MDT textstyles styles from the most recent State Kit update files	MDTADDTSTYLES
Attach Xref on New Layer	Attach a DWG as an Xref overlay with a relative path on a new layer	MDTATTXREF

Unload All Xrefs	All Xrefs will be unloaded	MDTUNLOADXREFS
Reload All Xrefs	All Xrefs will be reloaded	MDTRELOADXREFS
All Xref Layers ON	All Xref layers are turned on	MDTXLAYERSON
All Xref Layers OFF	All Xref layers are turned off	MDTXLAYERSOFF
Reset Xref Layers	All Xref layers will be reset to the source drawing layer settings	MDTRESETXLAYERS
Offset Xref Object	Select Xref object to offset to current layer	MDTOFFXLINE
Restore MDT Layers to Default Settings	Restores all MDT Layers to default settings	MDTADDSLS
Load Default MDT Tool Palette Group	Loads the default MDT tool palette group	MDTPALETTES
Rotate View	Rotates a model space view	MDTDVTW
Total Length of Objects	Calculates the total length of all selected objects	MDTTLENGTH
Multi Layout Page Setup	Sets page setup for all layouts to the current layout's page setup	MDTPS2LAYOUTS