OpenBridge Designer

Workspace Contents

Bridge Division

Table of Contents

Introduction

The intent of this document is to describe the bridge specific contents of TxDOT's Workspace located here Bentley CONNECT Edition Data (txdot.gov). For information about the roadway standards contact the 3D Design Group at 3ddesign@txdot.gov.

TxDOT Bridge Workspace Information

The Statewide Bridge Workspace Standards are setup in a way that OpenBridge Designer reads them in the Organization-Civil level. This means that companies using the workspace will need to move or copy elements from the Organization-Civil folder to the Workspaces folder or where their respective TxDOT Standards are located.

The TxDOT Organization-Civil folder is located in:

C:\TxDOT\CONNECT\Configuration\

The TxDOT Bridge Standards are located within this location in:

C:\TxDOT\CONNECT\Configuration\Organization-Civil\TxDOT_Bridge\

The TxDOT Bridge Standards are included in the main configuration by using the %include command inside the TxDOT.cfg. The include command includes both the TxDOT_Bridge_Standards.cfg and the Prostructures.cfg

Most of the configuration files for ProStructures are directly copied from the Out of the Box (OTB) Bentley configuration. The custom configurations included are rebar definition and bend definition.

The configuration files for OpenBridge Modeler (OBM) are OTB configuration with modifications to meet TxDOT's needs.

What was not modified:

- Level Names
- Feature Definitions
- Element Templates

What was modified or added:

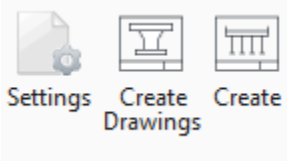
- Modified
    - Dimension Styles
    - Text Styles
    - Drawing Seeds
    - Feature Definitions (Annotation Groups only)
    - Border Files
    - Sheet Seeds
    - Seed files

- Bridge Templates
  - Pier Templates
  - Beam Templates
  - Barrier Templates
  - Steel Cross Frame Templates
  - Deck Templates
- Added
  - 3D Line Styles for additional Barriers
  - Functional Components

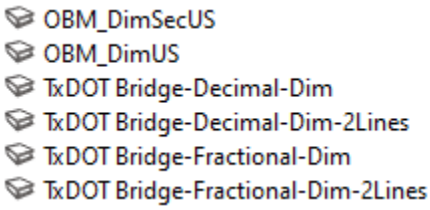
Dimension Styles

The TxDOT workspace has dimension styles to match those used in the Bridge Standard Drawing Sheets.

The dimension styles are contained within the ***TxDOT_Bridge_Text Styles_Dimension Styles.dgnlib*** file. These dimension styles are to be used with the Drawing Settings, and the Substructure and Superstructure drawing creation tools.



The dimensions styles within the dgnlib file are:



Text Styles

The TxDOT workspace has text styles that match those used in the Bridge Standard sheets and should be used along with the dimension styles above.

The text styles are contained within the ***TxDOT_Bridge_Text Styles_Dimension Styles.dgnlib*** file. The text styles use the new Engineering Font, but the FDOT font will still work in CONNECT Edition applications. Some of the text styles in this file are used for the OBM Decorations of each element.

The text styles within the file are:

- Bridge-Dimension-Text
- Bridge-Main-Title-Text
- Bridge-Subtitle-Text
- OBM_Decorations_CtrBot
- OBM_Decorations_LtCtr
- OBM_Decorations_RtCtr
- OBM_General_US
- OBM_Title_US

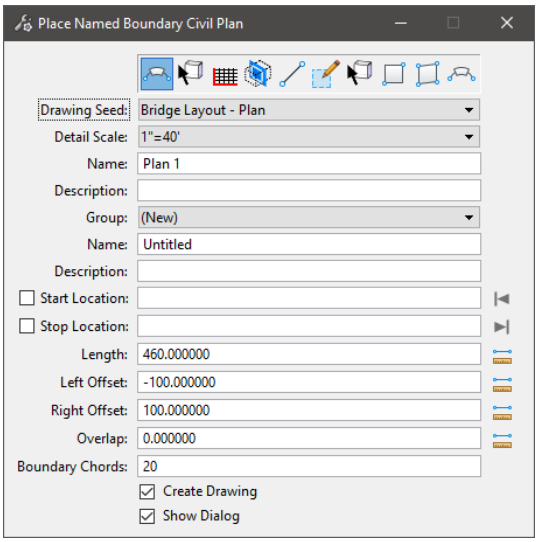
Drawing Seeds and Annotation Groups

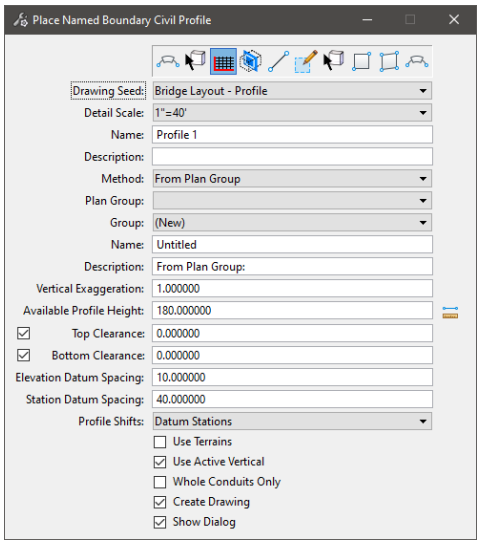
The TxDOT workspace has 2 drawing seeds, the details drawing seed and the bridge layout drawing seed. The Details drawing seeds are used with the new Plan Production tools included in OBM. The bridge layout drawing seed is used in the plan and profile workflow where the profile is set to no exaggeration.

The Drawing seeds are store in the ***TxDOT_BridgeLayout-Sheet-Definition.dgnlib,*** and the annotation groups associated to the drawing seeds are stored in ***TxDOT_Bridge_Features_Levels_Elem Temp.dgnlib***.

The following drawing seeds were created:

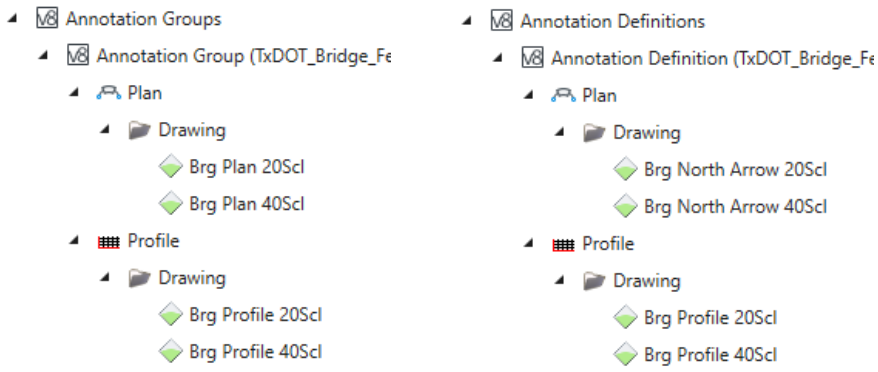
Bridge Layout – Plan
Bridge Layout – Profile





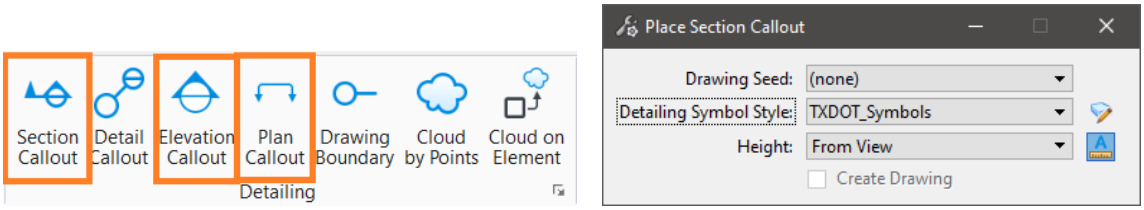
Note: The user can change the Detail Scale to meet their needs once the Drawing Seed is selected. In addition to these drawing seeds other TxDOT drawing seeds may be available, but those were created by the Roadway group. They will have different scale settings and are stored in different files.

The following annotation groups were created:



Note: Users can create additional annotation groups prior to be used with the plan production tools. The Plan annotation group will only place the north arrow, while the Profile annotation group will place the Profile Grid, Stations, Strip Elevations (Exist and Prop), and Grid Elevations.

The details drawing seed is used with the detailing tools. These are stored in the ***TxDOT_BridgeDetails_Sheet_Definition.dgnlib*** file and only 3 drawing seeds were created.
All the drawing seeds are associated to the TxDOT_Symbols and are associated with the detailing drawings shown below.



The Bridge division created 3 drawing seeds that will only appear when the respective tool is selected.

_TxDOT_Bridge_Elevation_View **–** Set to the Forward Hidden Lines Display style and will only be available in the Elevation Callout tool.
_TxDOT_Bridge_Plan_View – Set to the Forward Hidden Lines Display style and will only be available in the Plan Callout tool.
_TxDOT_Bridge_Section_View – Set to the Cut Display style and will only be available in the Section Callout tool.

Note: The drawing seeds are set to a 3/8" =1'-0". However, the user can change the scales as needed. In addition to these drawing seeds, other TxDOT drawing seeds may be available, but those were created by the Roadway group, will have different scale settings and are stored in different files.

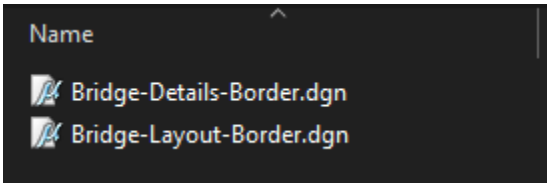
Border Files and Sheet Seeds

The Border files and Sheet seeds are in a way linked with the Drawing Seeds since they are defined in the same DGNLibs as listed above.

The files are the same size, and visually the same with one exception, the border file used for Bridge Layouts has levels for the Profile Grid which are set to be off.

The border files are in the Workset directory and are part of the TxDOT workset template. If a TxDOT workset template is not used, then the border files will not be available. The path to the border files is defined in the Workset configuration file and therefore they are attached automatically.

Path to Bridge Border files: **4 - Design\Bridge\Borders**



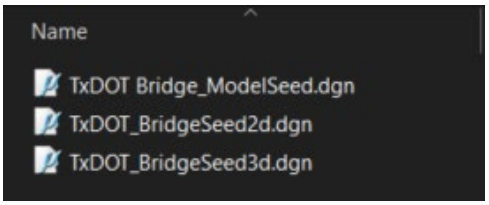
These Border files are attached by default to the Sheet Seeds. The Sheet seeds are stored in the same DGNLibs as the Drawing seeds. There is one sheet seed for Bridge Details and one for Bridge Layouts.

Seed Files

The Bridge OpenBridge Modeler seed files are similar to the OpenRoads Designer seed files; however, the OBM seed files have been set to have the working units in Feet and Inches.

There are 2 seeds files provided within the workspace, one for 3D files and one for 2D files. All files for ProStructures and OpenBridge modeler use the 3D seed file. The Bridge Division provided the 2D seed file to be used with MicroStation CONNECT Edition, since it is understood that 2D files will still be needed during the transition and possibly after.

Path to the seed files: **Configuration\Organization-Civil\TXDOT_Bridge\OpenBridge Modeler\Seed**

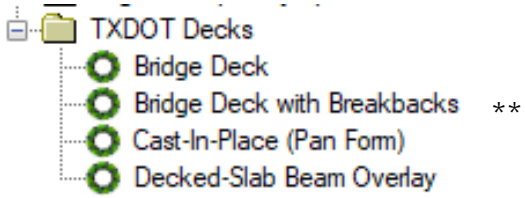


Bridge Templates

Bridge templates are the most important part of the configuration, these were developed based on the CAD Standards. The Bridge Division created a template per beam standard group and set the default to be the smallest version of that group i.e. 24-foot roadway is the smallest for the TxGirder standard group.

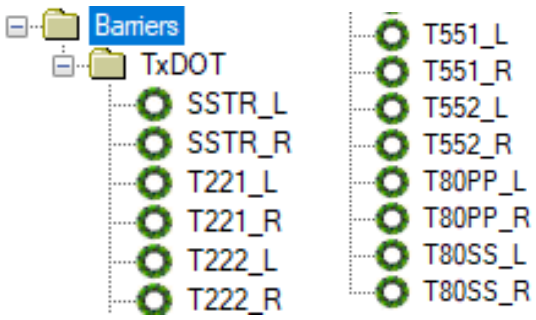
The following templates were created and are part of the workspace:

- Decks – This only sets the standard deck thickness (8.5”). Two templates are available.

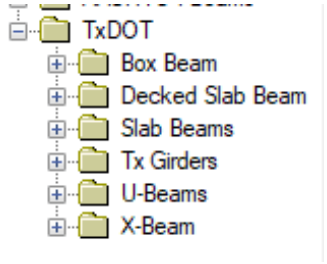


*** The deck with breakbacks includes additional points to indicate where the breakbacks are in preparation for when OBM supports this feature. Currently OBM does not support breakbacks.*

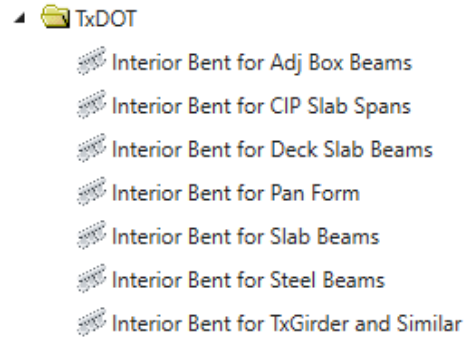
- Traffic Rails – OBM only supports solid elements, so templates are limited to the solid traffic rails.



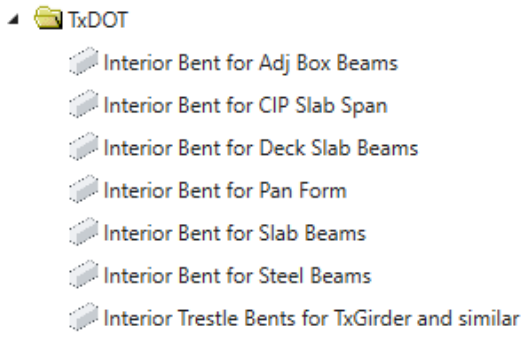
- All Standard Concrete Beams – Steel beams must be defined per case, rolled beams are available for selection.



- Standard Interior Bents

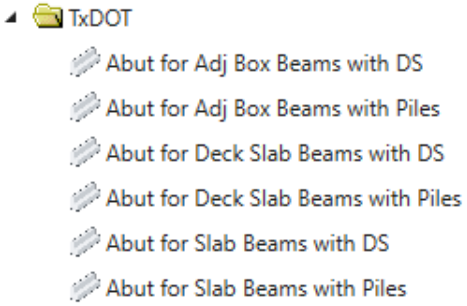


(with Columns and Drilled Shafts)

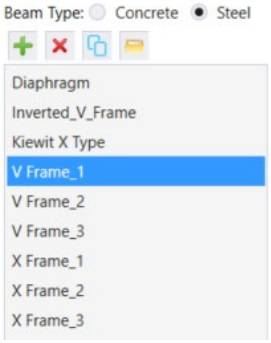


(with Square piles)

- Standard Abutments and Wingwalls – Only abutments that do not have break backs were created as templates.

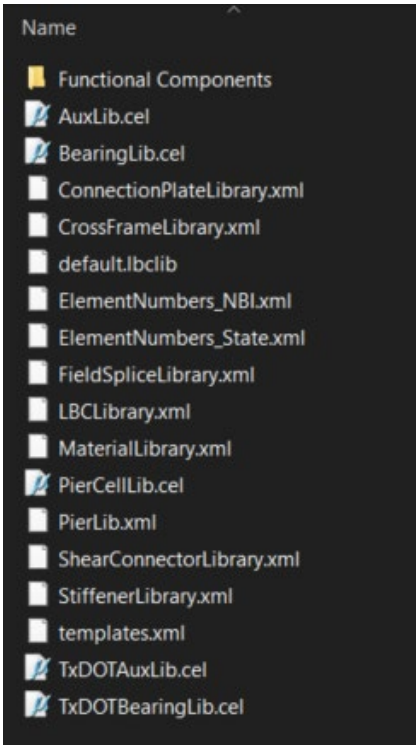


- Standard steel cross frames – Only cross frames defined in the Steel Beam standards.



- Rolled Steel Beam shapes and Steel Stiffeners were left as delivered by OBM.

Path to the seed files: **Configuration\Organization-Civil\TXDOT_Bridge\OpenBridge Modeler\ Bridge Templates**



Templates.xml – Stores the Barriers, Decks, Columns, and Beam templates
PierLib.xml – Stores all Bents and Abutment templates
Other XML files store their respective templates as specified by the Names.
Default.lbclib and LBCLibrary.xml are important files, these files store all LEAP Bridge Concrete and Steel templates, if the files are missing OBM will not function properly when using the Bridge Wizard.

Additional Components

In addition to the Bridge Template the TxDOT workspace contains 3D Line Styles and Functional Components.

These additional components are used when the templates are not suitable.

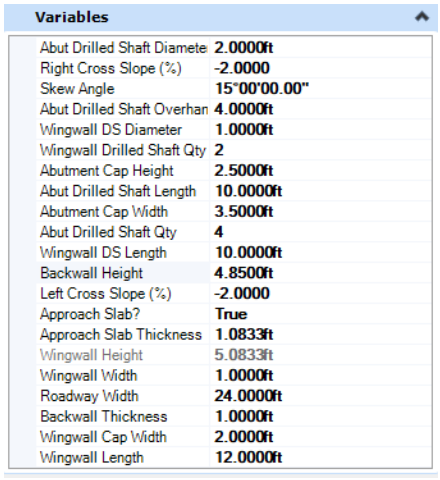
The following Functional Components and 3D Line Styles were developed.

- 3D Line Styles – These are mainly used for visualization purposes, OBM does not see these as real 3D elements and will not "see" them when Section Callout tool is used.

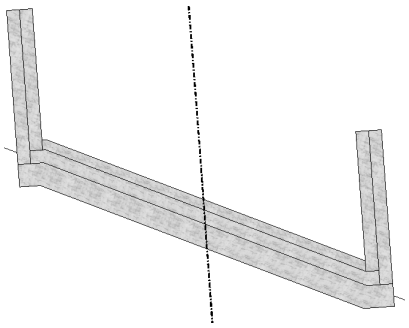
T1F	C1W
T1W	C2P
T2P	C221
T223	C223
T224	C402
T401	C411
T402	C412
T411	C66
T631	PR11
T631LS	PR22
T66	PR3
T80HT	C1W

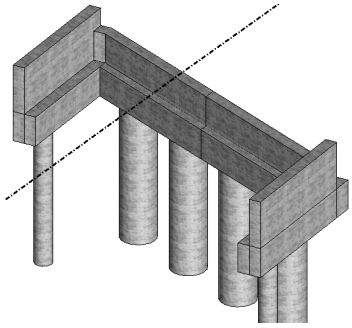
***Note**: The respective Barrier template was created in OBM so that they can be placed as templates, however, the templates are solid and will not show the window. The user must place both 3D Line Style and Template and turn on or off as needed.*

- Functional Components – Also known as Parametric Cells.
    - *Cells that are Dynamic*
    - *Parameters are built into the cell and can be changed after placement.*
    - *Used functional components to accomplish breakbacks in abutments.*



- Functional components support cross slope, breakbacks, wingwalls, different number of columns/drilled shafts, and drilled shafts in wingwalls when needed.





The following Functional Components were developed:

Abutment for TxGirders
Abutment for X Beams
Abutment for U Beams
Abutment for Slab Beams
Abutment for CIP Slab Spans
Abutment for Steel Beams
Abutment for Pan Forms

The 3D Line Styles are stored in the general workspace location.

Configuration\Organization-Civil\TXDOT\Dgnlib\Line Styles\BridgeRSC

And the Functional Components are stored along with the rest of the Bridge Templates

Configuration\Organization-Civil\TXDOT_Bridge\OpenBridge Modeler\ Bridge Templates\Functional Components

Support and Questions

bridge3ddesign@txdot.gov