CONNECT Seed Files and Naming Conventions

For CONNECT projects there are several seed files for use with OpenBridge Modeler (OBM), OpenRoads Designer (ORD), and ProStructures. When creating a file, make use of the file Description and apply a logical description or use one that is similar to the format in the example Descriptions shown in various locations of this document.

These seed files contain the models needed to develop the layout and modeling of structures and plan sheets. Some of the seed file options provided have the Iowa Regional Coordinate System (IaRCS) survey zone applied. The correct seed file must be used to appropriately model all structures in the correct coordinate location. For guidance on setting the IaRCS, see Road Design Manual Chapter 21, document **21C-71,** "Geographic Coordinate Systems in MicroStation" located on the Iowa DOT Road Design website.
https://iowadot.gov/design/dmanual/21C-71.pdf

The OpenRoads Designer (ORD) seed files for structure projects are located in ProjectWise with the CONNECT managed workspace at:
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction \Organization-Civil\IowaDOT_Standards\Seed

The OpenBridge Modeler (OBM) seed files for structure projects are located in ProjectWise with the CONNECT managed workspace at:
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction \Organization-Civil\IowaDOT_Standards\Seed\OBM

For 3D rebar modeling with ProStructures and for both 2D & 3D plan development and sheeting, the seed file used is located in ProjectWise with the CONNECT managed workspace at:
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction \Organization-Civil\IowaDOT_Standards\ProStructures\Seed\Imperial3d.dgn

The "Copy Seed" utility can be used to create the files for modeling and detailing. The CONNECT Copy Seed program is located in ProjectWise at:
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\Documentation\Pro jectWiseCustomTools\CopySeed
Design Consultants will need to install the utility with the provided "CopySeedSetup.msi" file on the local hard drive.
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\Documentation\Pro jectWiseCustomTools\CopySeed\CopySeedSetup.msi
Files located in the subfolder **CopyFilesToProjectWiseBinFolder** also need to be copied to **C:\Program Files\Bentley\ProjectWise\bin** and **C:\Program Files (x86)\Bentley\ProjectWise\bin**

To use Copy Seed, right click in the folder and select "Copy Seed" to launch. Once launched, "Choose file type", the correct project IaRCS zone in "Scale of file to create" field and complete the "Name of the file to create" field based on information included in this document. Click "Create File".

Images below are showing the Copy Seed interface.

Images below are showing drop down options for the file type and scale in Copy Seed.

Once a file is created in ProjectWise, in the Description field of the document (using Rename…), add a logical description to aid in the understand of what the file contains.

These files are to be developed and kept in their assigned folders, the same modeling file and TSL Situation Plan file is used at all stages of workflow (not copied). The Preliminary Designer starts the files, and the Final Designer actively uses the same files to complete the work. Include the DOT and/or Consultant Firm designation in the file name, this is to serve as an indicator of designers responsible for the files.

The sheeting workflow has been modified to use the **ORD 2D Seed** file for the Prelim Design process of TSL/Situation Plan sheet development. This file does not contain the Drawing and Sheet Models used for Final plan sheet development. Those are contained in the **Bridge Plan Production Seed (BPPS)** file.
For information on the models contained in the **BPPS** seed file, see the document "CONNECT Models and Naming Convention" located on the Iowa DOT Bridge Bureau website for additional information.
(**https://iowadot.gov/bridge/tools/CONNECT%20Models.pdf**)

Since the Prelim Design TSL may exist for a length of time (maybe 2+/- years) before Final plan sheet development, the current **BPPS** Drawing and Sheet Models will be added by the Final Designer to update the existing file. It is beneficial to have the Final Designer import the up-to-date versions of the **BPPS** Drawing and Sheet Models once the file is taken over for Final plan sheet production.

The choice of the seed file to use and the referencing of the files to each other is shown in the following Workflow flowcharts. Also provided is the location of files created from the seed files, the naming conventions of those files, and the CADD application to use for each file type.
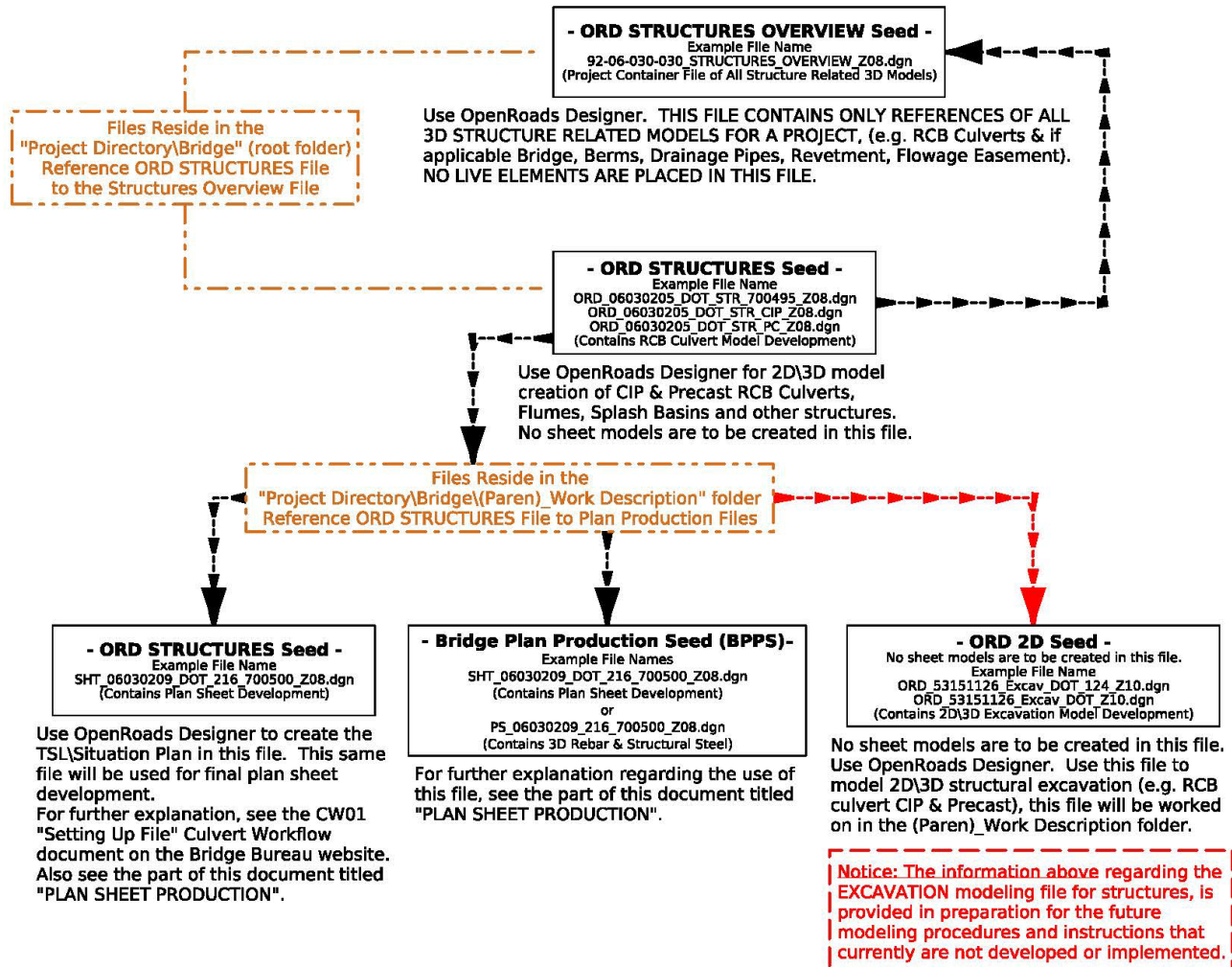
WORKFLOW 1
BRIDGE MODEL WORKFLOW
(File Referencing Flow Chart)

"Project Directory\Bridge" (root folder)
(3D Model Development Location.)
The 3D model files will be created, stored and actively worked on
in this folder at all times during all stages of development.
No sheet models are to be created in this folder.

"Project Directory\Bridge\(Paren)_Work Description" folder
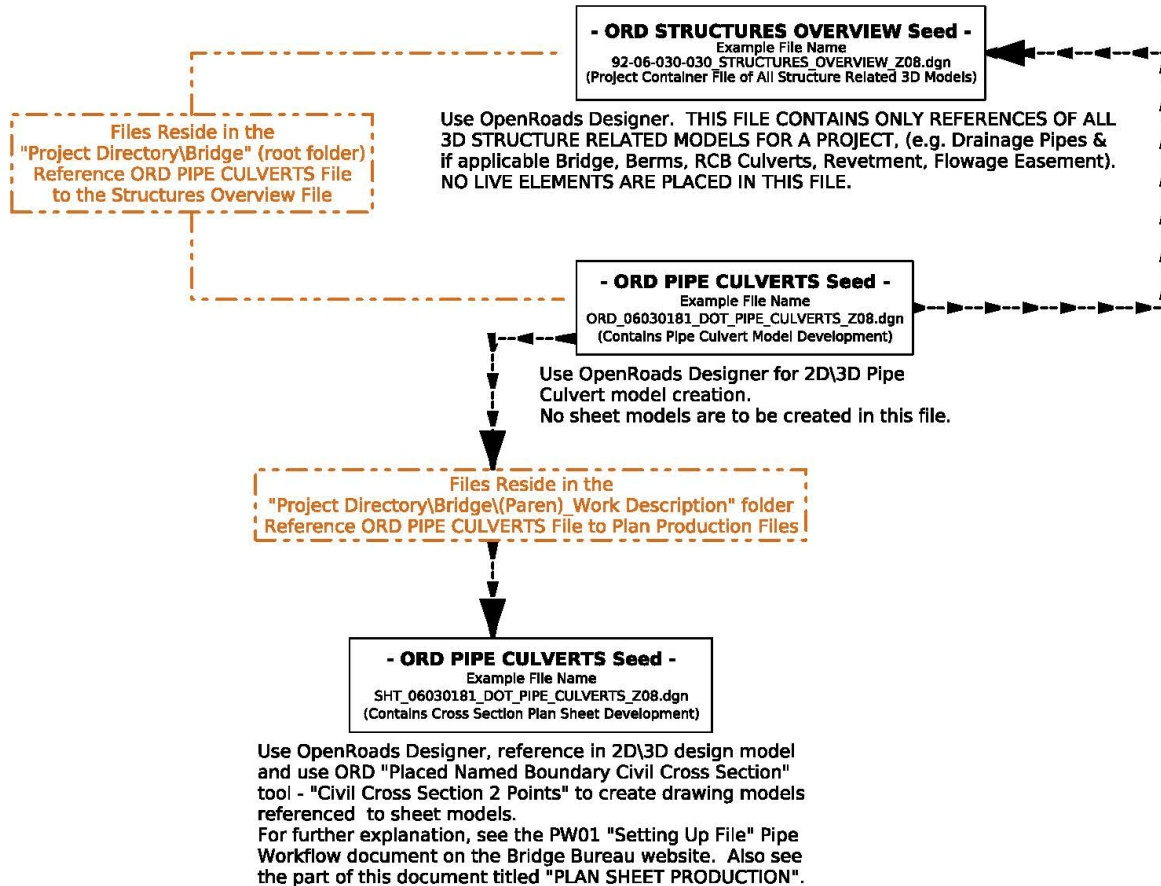(Plan Sheet Development & Rebar, Excavation Modeling Location.)

- ORD STRUCTURES OVERVIEW Seed -
Example File Name
92-06-030-030_STRUCTURES_OVERVIEW_Z08.dgn
(Project Container File of All Structure Related 3D Models)

Files Reside in the
"Project Directory\Bridge" (root folder)
Reference 3D OBM File to the
Structures Overview File

Use OpenRoads Designer. THIS FILE CONTAINS ONLY REFERENCES OF ALL
3D STRUCTURE RELATED MODELS FOR A PROJECT, (e.g. Bridge, Berms & if
applicable RCB Culverts, Drainage Pipes, Revetment, Flowage Easement).
NO LIVE ELEMENTS ARE PLACED IN THIS FILE.

- OBM 3D Seed –
Example File Name
OBM_06030209_DOT_216_700495_Z08.dgn
(Contains Bridge Model Development)

No sheet models are to be created in this file.
Use OpenBridge Modeler for 3D model creation
of bridges.

Files Reside in the
"Project Directory\Bridge\(Paren)_Work Description" folder
Reference 3D OBM File to Appropriate Plan Production Files

-ORD 2D Seed-
Example File Name
SHT_06030209_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)

Use OpenRoads Designer to create the
TSL\Situation Plan in this file. This same
file will be used for final plan sheet
development.
For further explanation, see the part of
this document titled "PLAN SHEET
PRODUCTION".

- Bridge Plan Production Seed (BPPS)–
Example File Names
SHT_06030209_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)
OR
PS_06030209_216_700500_Z08.dgn
(Contains 3D Rebar & Structural Steel Model)

For further explanation regarding the use of
this file, see the part of this document titled
"PLAN SHEET PRODUCTION".

- ORD 2D Seed -
Example File Name
ORD_53151126_Excav_DOT_124_Z10.dgn
ORD_53151126_Excav_DOT_Z10.dgn
(Contains 2D\3D Excavation Model Development)

No sheet models are to be created in this file.
Use OpenRoads Designer. This file may be
used to model 2D\3D structural excavation
(e.g. abutment, substructure components).
OBM has excavation modeling capabilities
available for OBM created components, such
as pier footings. However, there may be a
need to create a separate excavation model
for OBM components, such as a custom
abutment.
If used, this file is to be worked on in the
(Paren)_Work Description folder.

Notice: The information above regarding the
EXCAVATION modeling file for structures, is
provided in preparation for the future
modeling procedures and instructions that
currently are not developed or implemented.

Notice: The information below regarding the REBAR
modeling file for structures, is provided in
preparation for the future modeling procedures and
instructions that currently are not developed or
implemented. The intent is that the 3D rebar file
would be referenced to the OBM 3D file.

- Bridge Plan Production Seed (BPPS)–
Example File Names
PS_06030209_216_700500_Z08.dgn
PS_06030209_Abutments_DOT_216_700495.dgn
PS_06030209_Piers_DOT_216_700495.dgn
PS_06030209_RebarOverview_DOT_216_700495.dgn
(Contains 3D Rebar & Structural Steel Model)

For further explanation regarding the use of this
file, see the part of this document titled "PLAN
SHEET PRODUCTION".

WORKFLOW 2a
BERM & REVETMENT MODEL WORKFLOW
(File Referencing Flow Chart)

"Project Directory\Bridge" (root folder)
(3D Model Development Location.)
The 3D model files will be created, stored and actively worked on
in this folder at all times during all stages of development.
No sheet models are to be created in this folder.

Notice: The information regarding BERM & REVETMENT
modeling for structures is provided for modeling
procedures and instructions that currently are not
documented.

Files Reside in the
"Project Directory\Bridge" (root folder)
Reference ORD 3D File to the
Structures Overview File

- ORD STRUCTURES OVERVIEW Seed -
Example File Name
92-06-030-030_STRUCTURES_OVERVIEW_Z08.dgn
(Project Container File of All Structure Related 3D Models)

Use OpenRoads Designer. THIS FILE CONTAINS ONLY
REFERENCES OF ALL 3D STRUCTURE RELATED MODELS FOR A
PROJECT, (e.g. Berm\Revetment Grading, Flowage Easement
& if applicable Bridges, RCB Culverts, Drainage Pipes).
NO LIVE ELEMENTS ARE PLACED IN THIS FILE.

- ORD 3D Seed -
Example File Name
TRN_78059047_Berm_South_DOT_1026_043341_Z06.dgn
TRN_78059047_Berm_North_DOT_1026_043341_Z06.dgn
(Contains Bridge Berm Terrain\Grading Development)

No sheet models are to be created in this file.
Use OpenRoads Designer for 3D model creation
of bridge terrain or grading surface for berms.

- ORD 2D Seed -
No sheet models are to be created in this file.
Example File Name
COR_78059047_Berm_DOT_1026_043341_Z06.dgn

COR_78059047_Revet_DOT_1026_Z06.dgn
ORD_78059047_FlowageEasement_DOT_1026_Z06.dgn
(Contains 2D\3D Berm\Revetment Grading, Drainage or
Flowage Easement Model Development)

Use OpenRoads Designer. File is used to model
2D\3D Berm and Revetment Grading (Drainage or
Flowage Easement) this file will be worked on in
the Bridge folder.

- ORD 2D Seed -
No sheet models are to be created in this file.
Example File Name
GEO_78059047_Berm_DOT_1026_043341_Z06.dgn

(Contains Horizontal Geometry for 2D\3D Berm\Revetment
Grading, Drainage\Flowage Easement Model Development)

Use OpenRoads Designer. File is used to model
2D\3D Berm and Revetment Grading (Drainage
or Flowage Easement) this file will be worked
on in the Bridge folder.

- OBM 3D Seed -
Example File Name
OBM_78059047_DOT_1026_043341_Z06.dgn
(Contains Bridge Model Development)

If applicable, reference 3D OBM file to aid in
berm grading development. No sheet models
are to be created in this file.
Use OpenBridge Modeler for 3D model
creation of bridges.

WORKFLOW 2b
REVETMENT-STREAMBANK STABILIZATION
MODEL WORKFLOW
(File Referencing Flow Chart)

"Project Directory\Bridge" (root folder)
(3D Model Development Location.)
The 3D model files will be created, stored and actively worked on
in this folder at all times during all stages of development.
No sheet models are to be created in this folder.

Notice: The information regarding REVETMENT
modeling for streambank stabilization is provided
for modeling procedures and instructions that
currently are not documented.

- ORD STRUCTURES OVERVIEW Seed -
Example File Name
92-06-030-030_STRUCTURES_OVERVIEW_Z08.dgn
(Project Container File of All Structure Related 3D Models)

Use OpenRoads Designer. THIS FILE CONTAINS ONLY
REFERENCES OF ALL 3D STRUCTURE RELATED MODELS FOR A
PROJECT, (e.g. Berm\Revetment Grading, Flowage Easement
& if applicable Bridges, RCB Culverts, Drainage Pipes).
NO LIVE ELEMENTS ARE PLACED IN THIS FILE.

Files Reside in the
"Project Directory\Bridge" (root folder)
Reference ORD 3D File to the
Structures Overview File

- ORD 3D Seed –
Example File Name
TRN_78059047_Revet_South_DOT_1026_043341_Z06.dgn
TRN_78059047_Revet_North_DOT_1026_043341_Z06.dgn
(Contains Bridge Berm\Revet Terrain\Grading Development)

No sheet models are to be created in this file.
Use OpenRoads Designer for 3D model creation
of bridge terrain or grading surface for berms or
revetment.

- ORD 2D Seed -
No sheet models are to be created in this file.
Example File Name

COR_78059047_Revet_DOT_1026_Z06.dgn
ORD_78059047_FlowageEasement_DOT_1026_Z06.dgn
(Contains 2D\3D Berm\Revetment Grading, Drainage or
Flowage Easement Model Development)

If applicable, reference 3D structure
file to aid in revetment development.
No sheet models are to be created in
this file.

Use OpenRoads Designer. File is used to model
2D\3D Berm and Revetment Grading (Drainage or
Flowage Easement) this file will be worked on in
the Bridge folder.

Files Reside in the
"Project Directory\Bridge\(Paren)_Work Description" folder
Reference ORD 2D\(3D) File to Plan Production File

-ORD 2D Seed-
Example File Name
SHT_06030209_Revet_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)

Use OpenRoads Designer to create the TSL\Situation Plan
in this file.
For further explanation, see the part of this document
titled "PLAN SHEET PRODUCTION".

WORKFLOW 3
RCB CULVERT MODEL WORKFLOW
(File Referencing Flow Chart)

"Project Directory\Bridge" (root folder)
(3D Model Development Location.)
The 3D model files will be created, stored and actively worked on
in this folder at all times during all stages of development.
No sheet models are to be created in this folder.

"Project Directory\Bridge\(Paren)_Work Description" folder
(Plan Sheet Development & Rebar, Excavation Modeling Location.)

- ORD STRUCTURES OVERVIEW Seed -
Example File Name
92-06-030-030_STRUCTURES_OVERVIEW_Z08.dgn
(Project Container File of All Structure Related 3D Models)

Use OpenRoads Designer. THIS FILE CONTAINS ONLY REFERENCES OF ALL
3D STRUCTURE RELATED MODELS FOR A PROJECT, (e.g. RCB Culverts & if
applicable Bridge, Berms, Drainage Pipes, Revetment, Flowage Easement).
NO LIVE ELEMENTS ARE PLACED IN THIS FILE.

Files Reside in the
"Project Directory\Bridge" (root folder)
Reference ORD STRUCTURES File
to the Structures Overview File

- ORD STRUCTURES Seed -
Example File Name
ORD_06030205_DOT_STR_700495_Z08.dgn
ORD_06030205_DOT_STR_CIP_Z08.dgn
ORD_06030205_DOT_STR_PC_Z08.dgn
(Contains RCB Culvert Model Development)

Use OpenRoads Designer for 2D\3D model
creation of CIP & Precast RCB Culverts,
Flumes, Splash Basins and other structures.
No sheet models are to be created in this file.

Files Reside in the
"Project Directory\Bridge\(Paren)_Work Description" folder
Reference ORD STRUCTURES File to Plan Production Files

- ORD STRUCTURES Seed -
Example File Name
SHT_06030209_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)

Use OpenRoads Designer to create the
TSL\Situation Plan in this file. This same
file will be used for final plan sheet
development.
For further explanation, see the CW01
"Setting Up File" Culvert Workflow
document on the Bridge Bureau website.
Also see the part of this document titled
"PLAN SHEET PRODUCTION".

- Bridge Plan Production Seed (BPPS)-
Example File Names
SHT_06030209_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)
or
PS_06030209_216_700500_Z08.dgn
(Contains 3D Rebar & Structural Steel)

For further explanation regarding the use of
this file, see the part of this document titled
"PLAN SHEET PRODUCTION".

- ORD 2D Seed -
No sheet models are to be created in this file.
Example File Name
ORD_53151126_Excav_DOT_124_Z10.dgn
ORD_53151126_Excav_DOT_Z10.dgn
(Contains 2D\3D Excavation Model Development)

No sheet models are to be created in this file.
Use OpenRoads Designer. Use this file to
model 2D\3D structural excavation (e.g. RCB
culvert CIP & Precast), this file will be worked
on in the (Paren)_Work Description folder.

Notice: The information above regarding the
EXCAVATION modeling file for structures, is
provided in preparation for the future
modeling procedures and instructions that
currently are not developed or implemented.

WORKFLOW 4
DRAINAGE PIPE CULVERT MODEL WORKFLOW
(File Referencing Flow Chart)

"Project Directory\Bridge" (root folder)
(3D Model Development Location.)
The 3D model files will be created, stored and actively worked on
in this folder at all times during all stages of development.
No sheet models are to be created in this folder.

"Project Directory\Bridge\(Paren)_Work Description" folder
(Plan Sheet Development & Rebar, Excavation Modeling Location.)

- ORD STRUCTURES OVERVIEW Seed -
Example File Name
92-06-030-030_STRUCTURES_OVERVIEW_Z08.dgn
(Project Container File of All Structure Related 3D Models)

Files Reside in the
"Project Directory\Bridge" (root folder)
Reference ORD PIPE CULVERTS File
to the Structures Overview File

Use OpenRoads Designer. THIS FILE CONTAINS ONLY REFERENCES OF ALL
3D STRUCTURE RELATED MODELS FOR A PROJECT, (e.g. Drainage Pipes &
if applicable Bridge, Berms, RCB Culverts, Revetment, Flowage Easement).
NO LIVE ELEMENTS ARE PLACED IN THIS FILE.

- ORD PIPE CULVERTS Seed -
Example File Name
ORD_06030181_DOT_PIPE_CULVERTS_Z08.dgn
(Contains Pipe Culvert Model Development)

Use OpenRoads Designer for 2D\3D Pipe
Culvert model creation.
No sheet models are to be created in this file.

Files Reside in the
"Project Directory\Bridge\(Paren)_Work Description" folder
Reference ORD PIPE CULVERTS File to Plan Production Files

- ORD PIPE CULVERTS Seed -
Example File Name
SHT_06030181_DOT_PIPE_CULVERTS_Z08.dgn
(Contains Cross Section Plan Sheet Development)

Use OpenRoads Designer, reference in 2D\3D design model
and use ORD "Placed Named Boundary Civil Cross Section"
tool - "Civil Cross Section 2 Points" to create drawing models
referenced to sheet models.
For further explanation, see the PW01 "Setting Up File" Pipe
Workflow document on the Bridge Bureau website. Also see
the part of this document titled "PLAN SHEET PRODUCTION".

WORKFLOW 5
HYDRAULIC OR GENERAL
PRELIM DESIGN WORKFLOW

Files Reside in the
"Project Directory\Bridge\BRPrelim\DOT" folder
OR
"Project Directory\Bridge\BRPrelim\XYZ-CORP" folder

- ORD 2D Seed -
Example File Names
53151126_Working_ Z10.dgn
GrundyIA14_WorkingFile_Z05.dgn
ORD_8208002022_Working_Z11.dgn
(Contains Non-Deliverable Development Information)

Use OpenRoads Designer. File is used to
detail Hydraulic or General Working
preliminary 2D\3D design\layout, then this
file will be stored in the BRPrelim folder
under the DOT or XYZ-CORP subfolders.

WORKFLOW 6
GENERAL FINAL DESIGN WORKFLOW
-For General Plan Production-

Files Reside in the
"Project Directory\Bridge\(Paren)_Work Description" folder
(Plan Sheet Development & Rebar Modeling Location.)

- Bridge Plan Production Seed (BPPS)–
Example File Names
SHT_06030209_DOT_216_700500_Z08.dgn
(Contains Plan Sheet Development)
OR
PS_06030209_216_700500_Z08.dgn
(Contains 3D Rebar & Structural Steel Model)

For plan production not necessarily based off a referenced 2D\3D
structure model in the Bridge root folder. Work such as repairs or
general working design\layout. It may be ideal\preferred to use ORD
when working in this file.
(ProStrutures may be used working with this file but any of the Civil
tools ORD uses will not be available.)
For further explanation regarding the use of this file, see the part of
this document titled "PLAN SHEET PRODUCTION".

The seed files listed below are organized by application and type of project.

ORD STRUCTURES OVERVIEW Seed

Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction
\Organization-Civil\IowaDOT_Standards\Seed\

ORD Structures Overview Seed files are used to provide the overview of all structures in the project. Only the relevant project specific files of the Bridge Bureau 3D structure models will be referenced to this file. The 3D model files of bridges, RCB culverts (typically the CIP alternate only, unless the Precast is the only option), drainage pipes, berms and revetment, and flowage easement 3D model files).
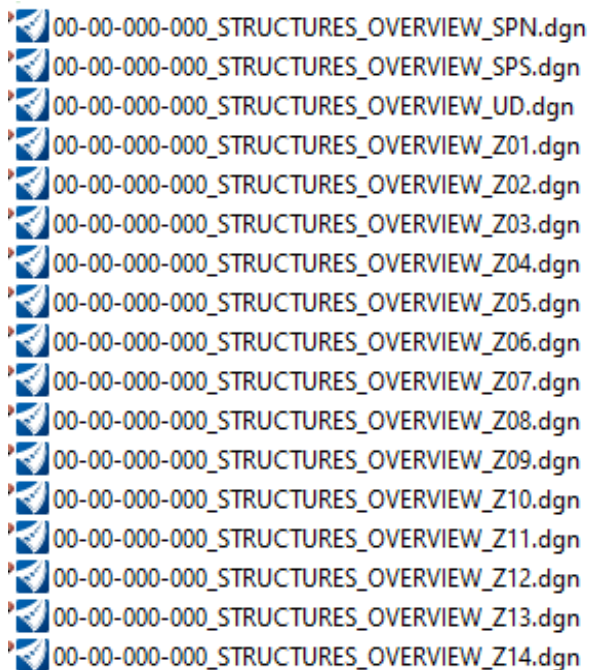
==This file is to be located in the **Bridge** root folder of the project directory.==
No other files from other Bureaus are to be referenced in this file, only Bridge Bureau files.
No live elements should be contained in these files, only use references.

The Copy Seed utility can be used to create the files, choose file type **ORD STRUCTURES OVERVIEW Seed**.

The options provided are for each possible IaRCS survey zone. The correct seed file must be used to appropriately view all structures in the correct locations.

00-00-000-000_STRUCTURES_OVERVIEW_SPN.dgn
00-00-000-000_STRUCTURES_OVERVIEW_SPS.dgn
00-00-000-000_STRUCTURES_OVERVIEW_UD.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z01.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z02.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z03.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z04.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z05.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z06.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z07.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z08.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z09.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z10.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z11.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z12.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z13.dgn
00-00-000-000_STRUCTURES_OVERVIEW_Z14.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- 00-00-000-000 used to identify the Project Code (previously known as the PIN) number for the project.
- Use a logical description of the file.

File Name example
92-06-030-030_STRUCTURES_OVERVIEW_SPN.dgn
15-77-035-040-01_STRUCTURES_OVERVIEW_Z08.dgn

OBM 3D Seed

Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction\Organization-Civil\IowaDOT_Standards\Seed\OBM

OBM 3D Seed files are used to develop the individual bridge models.
==This file is to be located, and worked on, in the **Bridge** root folder of the project directory.==
__No sheet models__ are to be created in this file.

The Copy Seed utility can be used to create the files, choose file type **OBM 3D Seed**.

The options provided are for each possible IaRCS survey zone. The correct seed file must be used to appropriately place the bridge on the alignment in the model.

OBM_CCRRRPPP_DOT_DSN#_FHWANO_SPN.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_SPS.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_UD.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z01.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z02.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z03.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z04.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z05.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z06.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z07.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z08.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z09.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z10.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z11.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z12.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z13.dgn
OBM_CCRRRPPP_DOT_DSN#_FHWANO_Z14.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- OBM signifies an OpenBridge Modeler file.
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number of the model.
- FHWANO (6 digits) used to list the specific FHWA number of the bridge modeled.
- Use a logical description of the file.

File Name example
OBM_06030209_DOT_216_700495_Z04.dgn

File Name example if the DOT starts the prelim work and a Consultant takes over file for final design work
OBM_06030209_DOT_XYZCORP_216_700495_Z04.dgn

File Name example if a Consultant starts the prelim work and the DOT takes over file for final design work
OBM_06030209_XYZCORP_DOT_216_700495_Z04.dgn

File Name example if a Consultant starts the prelim work and a different Consultant takes over file for final design work
OBM_06030209_XYZCORP_XYZCORP_216_700495_Z04.dgn

ORD PIPE CULVERTS Seed
Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction\Organization-Civil\IowaDOT_Standards\Seed

ORD Pipe Culverts Seed files are used to develop the layout and modeling of pipe culvert structures.

This file will be used in two different ways and will be worked on and stored in two different project directory folder locations.
- Location 1; **Bridge** folder, for Modeling 2D/3D. When this seed file is used for 2D/3D modeling, this file is to be located and worked on, in the **Bridge** root folder of the project directory. **No sheet models** are to be created in this file.
- Location 2; **Bridge\(Paren) Work Description** folder, for Plan Sheets. When this seed file is used for creating cross section plan sheets, a separate file is created that references the 2D/3D model file.

The Copy Seed utility can be used to create the files, choose file type **ORD PIPE CULVERTS Seed**.

The options provided are for each possible IaRCS survey zone. The correct seed file must be used to appropriately place the pipe culverts along the alignment.

ORD_CCRRRPPP_DOT_PIPE_CULVERTS_SPN.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_SPS.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_UD.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z01.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z02.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z03.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z04.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z05.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z06.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z07.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z08.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z09.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z10.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z11.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z12.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z13.dgn
ORD_CCRRRPPP_DOT_PIPE_CULVERTS_Z14.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- ORD signifies an OpenRoads Designer file.
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- Use a logical description of the file.

*File Name example when used for 2D/3D Model development in the **Bridge** folder*
ORD_06030181_DOT_PIPE_CULVERTS_SPN.dgn

*File Name example when used for Pipe Cross Section Sheets development in the **Bridge\(Paren)_Work Description** folder*
SHT_06030181_DOT_PIPE_CULVERTS_SPN.dgn

ORD STRUCTURES Seed
Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProduction\Organization-Civil\IowaDOT_Standards\Seed

ORD Structures Seed files are used to develop the layout and modeling of RCB culverts and other structures such as flumes and splash basins.
Separate files will need to be created when alternate structures are modeled at the same alignment and station location.

This file is to be located, and worked on, in the **Bridge** root folder of the project directory.
No sheet models are to be created in this file.

The Copy Seed utility can be used to create the files, choose file type **ORD STRUCTURES Seed**.

The options provided are for each possible IaRCS survey zone. The correct seed file must be used to appropriately place the culverts along the alignment.

ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_SPN.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_SPS.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_UD.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z01.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z02.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z03.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z04.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z05.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z06.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z07.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z08.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z09.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z10.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z11.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z12.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z13.dgn
ORD_CCRRRPPP_DOT_STRUCTURES_FHWANO_Z14.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- ORD signifies an OpenRoads Designer file.
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- FHWANO (6 digits) used to list the specific FHWA number of a bridge size box culvert.
  All other structures and non-bridge sized RCB culverts have an assigned Asset ID (6 digits) that should be used in place of the FHWANO for this portion of the naming convention. **If there are multiple structure models in the same file, it is advised to exclude the FHWA or Asset ID Numbers in the file name to alleviate a lengthy file name.**
- Use a logical description of the file.

File Name example for single structure models
ORD_06030205_DOT_STR_700495_SPN.dgn

File Name example if the DOT starts the prelim work and a Consultant takes over file for final design work
ORD_06030205_DOT_XYZCORP_STR_700495_SPN.dgn

File Name example if a Consultant starts the prelim work and the DOT takes over file for final design work
ORD_06030205_XYZCORP_DOT_STR_700495_SPN.dgn

File Name example if a Consultant starts the prelim work and a different Consultant takes over file for final design work
OBM_06030209_XYZCORP_XYZCORP_216_700495_SPN.dgn

Because RCB culvert models may contain more than one structure, it is advised to exclude **the FHWA No.** (used when the RCB is bridge size)**, Design Numbers or Asset ID Numbers. This will alleviate a lengthy file name. However, if there is a single structure, then it is acceptable to include the FHWA No., Design Number or Asset ID Number in the file name.**

The following file naming conventions are used for CIP and Precast Alternate RCBs when alternate structures are modeled at the same station on the same alignment. **The use of** separate files **for the RCB CIP and the Precast Alternate options is necessary.** This is due to the fact that the two alternate structures would be designed in the same coordinate location and the "Drainage and Utilities Workflow" in ORD does not allow this. A similar naming convention may be used for all alternate structure scenarios.

File Name example	*Description*
ORD_06030205_DOT_STR_CIP_Z12.dgn	RCB CIP Culvert Design ???
ORD_06030205_DOT_STR_PC_Z12.dgn	RCB Precast Culvert Design ???

File Name examples if there is a project that would require RCB models designed by more than one Consultant or the DOT and a Consultant.

File Name example	*Description*
ORD_06030205_DOT_STR_CIP_Z08.dgn	RCB CIP Culvert Design ???
ORD_06030205_DOT_STR_PC_Z08.dgn	RCB Precast Culvert Design ???
ORD_06030205_XYZCORP_STR_CIP_Z08.dgn	RCB CIP Culvert Design ???
ORD_06030205_XYZCORP_STR_PC_Z08.dgn	RCB Precast Culvert Design ???

ORD 2D Seed
Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProductio n\Organization-Civil\IowaDOT_Standards\Seed\dsnOpenRoads2D.dgn

ORD 2D Seed file does not have a Geographic Coordinate System applied. Apply the appropriate IaRCS survey zone. The ORD 2D Seed file is used to develop the layout and modeling of berms, revetments, drainage or flowage easement boundary and possible hydraulic layout, as well as TSL/Situation Plan development and structural excavation modeling (e.g. RCB culverts).

The Copy Seed utility can be used to create the files, choose file type **ORD 2D Seed**.

This file may be considered as a multipurpose seed file and will be worked on and stored in three different project directory folder locations.
- Location 1; **Bridge** folder, for Modeling 2D/3D. This seed file is used for berm, revetment, drainage or flowage easement modeling. Rename accordingly and apply the appropriate IaRCS survey zone, see examples shown below. No sheet models are to be created in this file.
- Location 2; **Bridge\BRPrelim** folder (**DOT** or **XYZ-CORP** subfolders), for General Use. This seed file is used for general preliminary design (not a deliverable) then this file may be kept as a separate file and renamed accordingly. Depending on how this file is used, setting the IaRCS survey zone may not be necessary. See examples shown below.
- Location 3; **Bridge\(Paren) Work Description** folder, for Plan Sheets & Excav. 2D/3D Model, Revetment/Streambank Stabilization Sheets. This seed file is used for TSL/Situation Plan sheet development and 2D/3D structural excavation modeling (e.g. RCB culverts). For further guidance and examples see "**ORD 2D Seed**" under the "**PLAN SHEET PRODUCTION**" part of this document.

Example file name format; ORD_CCRRRPPP_NSEW_DOT_FHWANO_DSN#_GGG.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- ORD signifies an OpenRoads Designer file.
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- N, S, E, or W (North, South, East, West) used to indicate directional location of berms.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number(s) of the related bridge design(s).
- FHWANO (6 digits) used to list the specific FHWA number of the bridge.
- GGG used to identify the IaRCS survey zone.
- Use a logical description of the file.

NOTICE: The information regarding berm & revetment modeling for structures is provided even though modeling procedures and instructions currently are not documented.

For Location 1, **Bridge** folder files keep each berm, revetment, flowage easement and Design in its own file. The following naming convention is used when the file contains a corridor model, grading or revetment models. The file name includes Berm or Revetment.

GEO naming convention is for the berm and revetment modeling geometry alignments, this file contains managed 2D and 3D models. The GEO prefix is used to mimic how Road Design names the geometry files. **COR** naming convention is for a corridor, this file contains managed 2D and 3D models. The COR prefix is used to mimic how Road Design names the corridor files.

*The image below is showing an example Project Directory with berm modeling files. The example files are using the term "**Grading**" in the name, this is now changed to use "**Berm**" to reflect what the files are used for.*

File Name example for berm grading & revetment
File Name	Description
GEO_78059047_Berm_DOT_1026_043341_Z06.dgn	Alignment for berm grading – Design 1026
GEO_53151126_Berm_DOT_0525_Z10.dgn	Alignment for berm grading – Design 0525
COR_78059047_Berm_DOT_1026_043341_Z10.dgn	Corridor for berm grading - Design 1026
COR_53151126_Berm_DOT_0525_Z10.dgn	Corridor for berm grading - Design 0525
COR_53151126_Revet_DOT_0425_Z10.dgn	Corridor for revetment - Design 0425
COR_53151126_Revet_DOT_0525_Z10.dgn	Corridor for revetment - Design 0525

File Name example for flowage easement
File Name	Description
ORD_53151126_FlowageEasement_DOT_425_Z10.dgn	Flowage Easement Boundary

For Location 2, **Bridge\BRPrelim** folder (**DOT** or **XYZ-CORP** subfolders) files use a logical file name and include the IaRCS Zone if applicable. Use a logical description of the file.

File Name example
File Name	Description
53151126_Working_ Z10.dgn	Preliminary Layout
ORD_8208002022_Working_Z11.dgn	Site Investigation
ORD_53151126_Support_Z10.dgn	Support File

ORD 3D Seed

ORD 3D Seed file does not have a Geographic Coordinate System applied. Apply the appropriate IaRCS survey zone.

This file is to be located, and worked on, in the **Bridge** root folder of the project directory.

The Copy Seed utility can be used to create the files, choose file type **ORD 3D Seed**.

The following naming convention is used when the file contains only a terrain or grading surface.

Example file name format; TRN_CCRRRPPP_NSEW_DOT_DSN#_FHWANO_GGG.dgn

The file name contains TRN and follows what is shown in the listed portions of the name and file name examples.
- **TRN** prefix is for a terrain surface, this file contains one 3D modeled terrain.
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- N, S, E, or W (North, South, East, West) used to indicate directional location of berms.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number(s) of the related bridge design(s).
- FHWANO (6 digits) used to list the specific FHWA number of the bridge.
- GGG used to identify the IaRCS survey zone.
- Use a logical description of the file.

File Name example for berm grading	*Description*
TRN_78059047_Berm_South_DOT_1026_0043341_Z10.dgn	Terrain - South Berm NB Bridge Des 1026
TRN_78059047_Berm_North_DOT_1026_0043341_Z10.dgn	Terrain - North Berm NB Bridge Des 1026
TRN_78059047_Berms_DOT_1026_0043341_Z10.dgn	Terrain - Both Berms NB Bridge Des 1026
TRN_53151126_Berm_E_DOT_0525_Z10.dgn	Terrain - East Berm WB Bridge Des 525
TRN_53151126_Berm_W_DOT_0525_Z10.dgn	Terrain - West Berm WB Bridge Des 525

PLAN SHEET PRODUCTION

The Following Includes Plan Sheet Production Guidance and Examples of Multiple Structures Files, Rebar Modeling, and Excavation Modeling Files for Structures.

Sheet file names with multiple Design, FHWA/Asset ID number format is no longer preferred. All plan sheet files will contain only a single Design, FHWA/Asset ID number. Although this will create more files overall, it allows a more flexible workflow and may be more ideal for all Users that are working with those files. This process keeps the SHT files fairly "clean" with regards to limiting the named boundaries and saved views, minimizing any confusion to the User.

ORD 2D Seed

Located in ProjectWise
pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Resources\ClientWorkspaces\IowaDOT\IowaDOTProductio n\Organization-Civil\IowaDOT_Standards\Seed\dsnOpenRoads2D.dgn

ORD 2D Seed file does not have a Geographic Coordinate System applied. Use this seed file for TSL/Situation Plan development and 2D/3D excavation modeling. Rename accordingly and apply the appropriate IaRCS survey zone, see examples shown below.

Structure Type, Size, Location (TSL)/Situation Plan Sheet
This file is to be located, and worked on, in the **Bridge\(Paren)_Work Description** folder of the project directory. The ORD 2D Seed file is the preferred seed file to be used to develop the Prelim Type, Size, Location (TSL)/Situation Plan sheet creation. The same file will then continue to be used for Final plan sheet development.

This file does not contain the Drawing and Sheet Models used for Final plan sheet development that are provided in the **Bridge Plan Production Seed** (**BPPS**) file. The perspective is that the TSL file created in the Prelim Design process may exist for a length of time, maybe 2+/- years. The **BPPS** Drawing and Sheet Models format of the file may change, requiring the Final Designer to update the existing file (check for changes in the original seed file vs the current one). Therefore, instead of having the Final Designer update the existing, possibly 2-year-old Drawing and Sheet Models, it may be ideal to have the Final Designer import the up-to-date versions once the file is taken over for Final plan sheet production.

The Copy Seed utility can be used to create the files, choose file type **ORD 2D Seed.**

Example file name format; SHT_CCRRRPPP_DOT_DSN#_FHWANO_GGG.dgn

The naming convention is to follow what is shown in the listed portions of the name and file name examples.
- **SHT** prefix signifies the file is used for plan sheet creation. **ORD use is required if MicroStation Civil tools/capabilities are to be utilized.**
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number of the structure details.

- FHWANO (6 digits) used to list the specific FHWA number of a bridge or bridge size box culvert. All other structures and non-bridge sized box culverts have an assigned Asset ID (6 digits) that should be used instead for this portion of the naming convention.
- GGG used to identify the IaRCS survey zone.
- Use a logical description of the file.

File Name example	*Description*
SHT_06030209_DOT_226_700500_SPN.dgn	PPCB Design 226
SHT_06030209_XYZCORP_726_001425_CIP_SPN.dgn	Twin 10x10 CIP RCB Culvert Design 726
SHT_06030209_XYZCORP_726_001425_PC_SPN.dgn	Twin 10x10 Precast RCB Culvert Design 726
SHT_06030209_Revetment_DOT_216_700500_Z08.dgn	Situation Plan Stream Bank Stabilization

<u>NOTICE:</u> **The following information regarding the excavation file for structures, is provided in preparation for the future modeling procedures and instructions that currently are not developed or implemented.**

<u>**Excavation File for Structures**</u>
This file is to be located, and worked on, in the **Bridge\(Paren)_Work Description** folder of the project directory. The ORD 2D Seed file is the preferred seed file to be used for 2D/3D structural excavation modeling (e.g. RCB culverts), it does not have a Geographic Coordinate System applied. Rename accordingly and apply the appropriate IaRCS survey zone, see examples shown below. This file should contain managed 2D/3D models. <u>No sheet models</u> are to be created in this file.

Because excavation models may contain more than one structure, it is advised to exclude the FHWA No. (used when the RCB culvert is bridge size)**, Design Numbers or Asset ID Numbers. This will alleviate a lengthy file name. However, if there is a single structure, then it is acceptable to include the FHWA No., Design Number or Asset ID Number in the file name. The same recommendations are to be followed if the file is used for bridge structural excavation modeling. Use a logical description of the file.**

File options to consider.
Option 1 - For RCB culvert excavation modeling, one file could be used that contains both the CIP and Precast alternate (having both CIP 2D/3D design models and Precast 2D/3D design models).
Option 2 – For RCB culvert excavation modeling, separate files for each culvert type, one file for CIP 2D/3D design models and one file for Precast 2D/3D design models.
Option 3 – For other/general structural excavation modeling. When using OBM, it has excavation modeling capabilities available for OBM created components, such as pier footings. However, there may be a need to create a separate excavation model outside of OBM for components, such as a custom abutment or Generative Component (GC) abutment.

File Name example	*Description*
ORD_06030209_Excav_DOT_XYZCORP_SPN.dgn	Excavation for RCB Culverts
ORD_06030209_Excav_DOT_XYZCORP_CIP_SPN.dgn	Excavation CIP RCB Culverts
ORD_06030209_Excav_DOT_XYZCORP_PC_SPN.dgn	Excavation Precast RCB Culverts
ORD_06030209_Excav_DOT_XYZCORP_726_001425_CIP_SPN.dgn	Excavation CIP RCB Culvert Design 726
ORD_06030209_Excav_DOT_XYZCORP_726_001425_PC_SPN.dgn	Excavation Precast RCB Culvert Design 726
ORD_06030209_Excav_DOT_XYZCORP_216_700495_Z04.dgn	Excavation for Design 216 abutments

Bridge Plan Production Seed (BPPS)

The Bridge Plan Production Seed file is a ProStructures seed file, Imperial3d.dgn, and is used to develop rebar/steel modeling and complete structural details. This file is also used for both 2D & 3D plan development and sheeting.

This file is to be located, and worked on, in the **Bridge\(Paren)_Work Description** folder of the project directory.

The Copy Seed utility can be used to create the files for ProStructures. Choose file type **Bridge Plan Production Seed**.

This seed file will be used for two workflows and named differently depending on its use.
- **Workflow 1**, modeling structural concrete, rebar, and steel shapes. File name prefix with **PS_.**
- **Workflow 2**, Prelim/Final Design plan sheet development. File name prefix with **SHT_.**

For **Workflow 1;** When ProStructures tools for 3D concrete, rebar or steel modeling is part of the design and plan development, then use the naming convention as described below.

Example file name format; PS_CCRRRPPP_DOT_DSN#_GGG.dgn

The file name contains PS and follows what is shown in the listed portions of the name and file name examples.
- **PS** prefix signifies a ProStructures file and indicates the file contains modeled concrete, rebar or steel components. **Use of ProStructures is required to maintain digital integrity of structural elements.**
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number of the structure details.
- FHWANO (6 digits) used to list the specific FHWA number of a bridge or bridge size box culvert. All other structures and non-bridge sized box culverts have an assigned Asset ID (6 digits) that should be used instead for this portion of the naming convention.
- GGG used to identify the IaRCS survey zone.
- Use a logical description of the file.

Example file name format
PS_CCRRRPPP_BridgeComponent_DSN#_FHWANO.dgn (Individual Component Files)
PS_CCRRRPPP_RebarOverview_DSN#_FHWANO.dgn (Federated Component Container File)

File Name	*Description*
PS_06030209_DOT_216_700495_SPN.dgn	PPCB Bridge Design 216
PS_06030209_Abutments_DOT_216_700495.dgn	PS Design 216 Abutments
PS_06030209_Piers_DOT_216_700495.dgn	PS Design 216 Piers
PS_06030209_RebarOverview_DOT_216_700495.dgn	PS Design 216 Rebar Container File

For **Workflow 2;** When the design and plan development <u>does not</u> make use of ProStructures modeled rebar or steel components, then use the naming convention as described below.

-*Example file name format;* SHT_CCRRRPPP_DOT_DSN#_FHWANO_GGG.dgn

The file name contains SHT and follows what is shown in the listed portions of the name and file name examples.

- **SHT** prefix signifies the file is used for plan sheet creation. **Use of ORD is required if MicroStation Civil tools/capabilities are to be utilized.**
- CCRRRPPP used to identify County (CC), Route (RRR) and Paren (PPP) number of the specific project.
- DOT or Consultant Firm designation.
- DSN# used to list the specific design number of the structure details.
- FHWANO (6 digits) used to list the specific FHWA number of a bridge or bridge size box culvert. All other structures and non-bridge sized box culverts have an assigned Asset ID (6 digits) that should be used instead for this portion of the naming convention.
- GGG used to identify the IaRCS survey zone.
- Use a logical description of the file.

File Name	*Description*
SHT_06030209_DOT_226_700500_SPN.dgn	PPCB Design 226
SHT_06030209_DOT_726_001425_CIP_SPN.dgn	Twin 10x10 CIP RCB Culvert Design 726
SHT_06030209_DOT_726_001425_PC_SPN.dgn	Twin 10x10 Precast RCB Culvert Design 726

Use of a single file for plan sheet development.
==The following shows an example if a TSL file was created and kept as a single file to complete the rest of the plan set. Use a logical description of the file.==

File Name	*Description*
SHT_36002118_XYZCORP_DOT_524_025361_Z06.dgn	Plan Set PPCB
SHT_36002118_DOT_524_025361_Z06.dgn	Plan Set PPCB

Use of multiple files for plan sheet development.
==The following shows examples if a TSL was created and kept as a separate file from the rest of the plan set due to an active workflow between multiple Users. This may occur frequently and is acceptable. The use of the Sheet Index, "IaDOT_WS.dgnws" file will combine the sheet models from separate files into a single pdf output. Use a logical description of the file.==

File Name	*Description*
SHT_36002118_XYZCORP_DOT_524_025361_Z06.dgn	Situation Plan TSL PPCB
SHT_36002118_TSL_DOT_524_025361_Z06.dgn	Situation Plan TSL PPCB
SHT_36002118_DOT_524_025361_Z06.dgn	Plan Set Title Sheet and details
SHT_36002118_Abutments_DOT_524_025361_Z06.dgn	Plan Set Abutment details
SHT_36002118_Piers_DOT_524_025361_Z06.dgn	Plan Set Pier details

SHT_36002118_XYZCORP_DOT_524_025361_Z06.dgn   Complete Plan Set PPCB

The following naming convention is used if the IaRCS is unknown. For repair projects the IaRCS may not be known or needed, in this case, then use Undefined Zone **UD**.

File Name   *Description*

SHT_06030209_DOT_1328_700500_UD.dgn   Design 1328 Steel Girder Repair

CONNECT Models and Naming Convention

OpenBridge Modeler (OBM) seed files will be used to develop new and replacement bridge projects using OpenBridge Designer (OBD).

OpenRoads Designer (ORD) seed files will be used to develop culvert designs using the Drainage and Utilities workflow tools. As well as berm, revetment, drainage or flowage easement and general plan sheet development.

ProStructures (PS) seed file will be used for structural concrete, rebar, and steel modeling as well as general plan sheet development.

For guidance on naming these seed files and additional information, refer to the CONNECT Seed Files and Naming Convention document.

The explanation of the specific name and use of models is provided below.

<mark>Coordinate System</mark>

For specific coordinate related modeling, then the appropriate Iowa Regional Coordinate System (IaRCS) will need applied. When working on Iowa DOT ProjectWise, the workspace will have the IaRCS library to select the proper zone from.

For guidance on setting the IaRCS, see Road Design Manual Chapter 21, document **21C-71,** "Geographic Coordinate Systems in MicroStation" located on the Iowa DOT Road Design website.

https://iowadot.gov/design/dmanual/21C-71.pdf
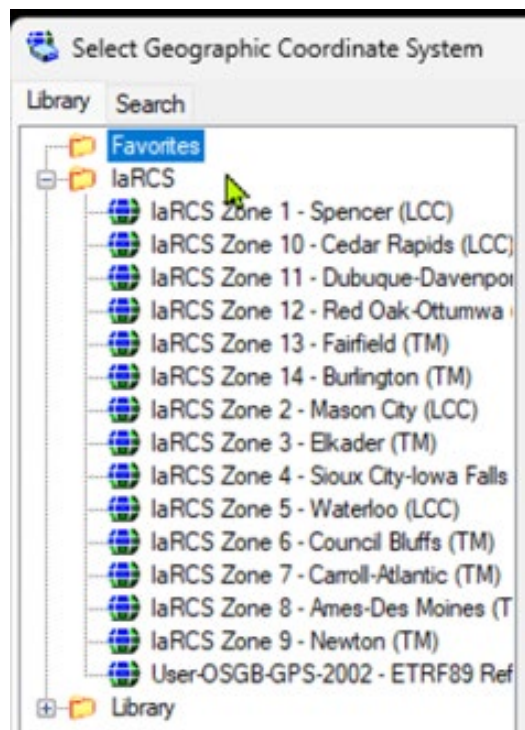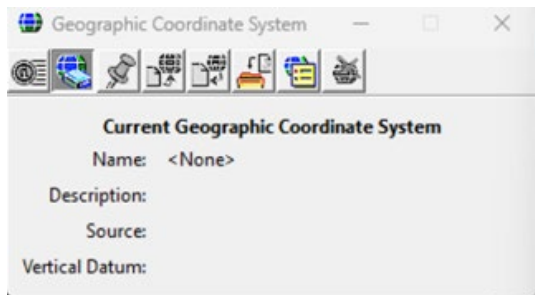
ORD STRUCTURES OVERVIEW Seed
The STRUCTURES OVERVIEW file contains only references, no live/active elements are placed in this file.

One model is provided.
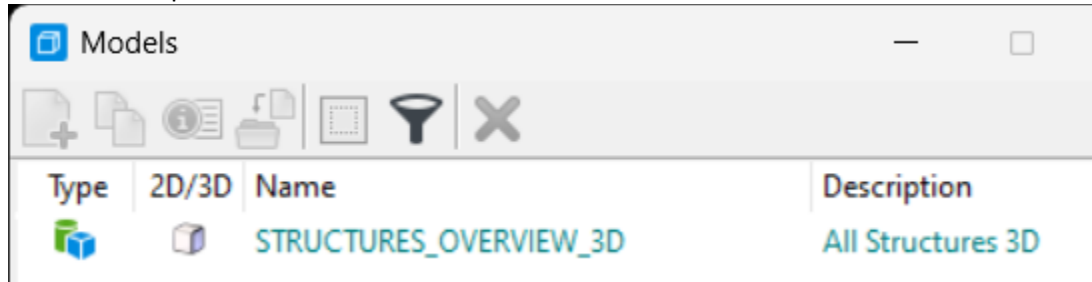
STRUCTURES_OVERVIEW_3D model
- 3D design model.

Reference 3D models from the appropriate files for projects related to the specific Project Code (previously known as the PIN).

Potential referenced 3D models for the Overview file may include the following:
- OpenBridge Model.
- Pipe & Reinforced Concrete Box (RCB) culverts, flumes & basins.
- Berm/grading (revetment when applicable).
- Drainage/flowage easement preliminary boundary.

If applicable, other 3D models not listed may also be referenced.

OBM 3D Seed
The **OBM 3D Seed** file is used for the modeling of the bridge.
An OBM file should be created for each new bridge or bridge replacement in a project.

One model is provided.
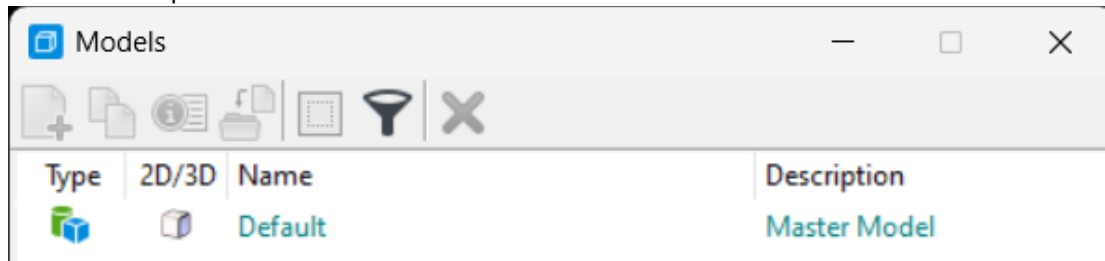
Default
- 3D design model.

Rename this model with the FHWA number and Structure Design Number and provide a logical description.

Design Model Name example   *Description*
FHWA 700630 Polk Design 125   134' x 40' PPCB 2 Span Bridge

ORD PIPE CULVERTS Seed

The **ORD PIPE CULVERTS Seed** file is used for pipe culvert layout and modeling. This seed file will be used in two different ways and will be worked on and stored in two different locations. One file to model the pipes 2D/3D managed models and a separate file for plan sheet development.

Two models are provided.
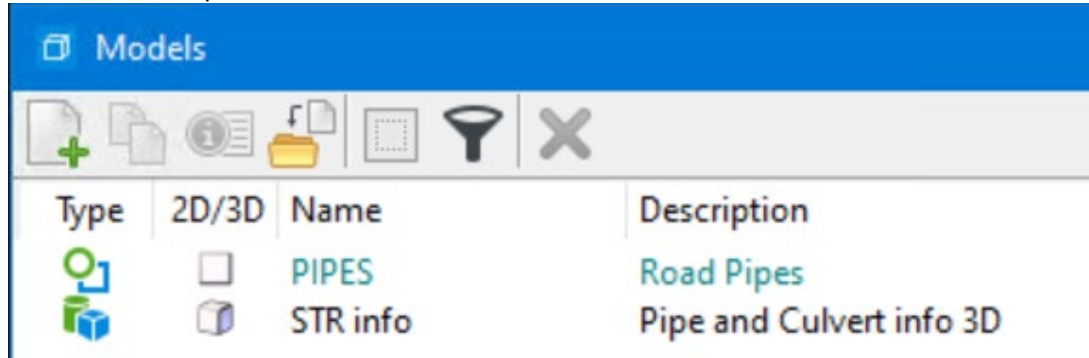
Pipe Model Development 2D/3D Workflow

PIPES
- 2D design model.

Use for the layout of the road pipe locations. A **PIPES-3D** model will be created when the STR info model is referenced into the 2D model. OpenRoads Designer will automatically create a managed 3D model. The ORD created 3D managed model will use the same name as the 2D model but will have **-3D** appended to it. *This model should not be deleted.*

STR info
- 3D design model.

Use for the creation of the 3D graphics of each pipe culvert.

The **STR info** model is typically used to import the ASCII graphics input file used to map the invert coordinates (points and lines) of the pipes. Refer to the "Pipe Workflow" section of the CONNECT Applications webpage for documentation of the complete process.

Pipe Plan Sheet Development

For pipe longitudinal cross section sheet development, create a separate file in the **(Paren)_Work Descriptions** folder using the **ORD PIPE CULVERTS Seed** file.

Cross section drawing models (longitudinal) will be added for each road pipe location using ORD **Place Named Boundary Civil Cross Section** tools, typically using the **Civil Cross Section 2 Point** boundary tool. Each longitudinal model will be named with STA prefix to designate location, the specific station and longitudinal section.

Model Name example   *Description*
STA 1317+50.00 Longitudinal Section   72" RCP
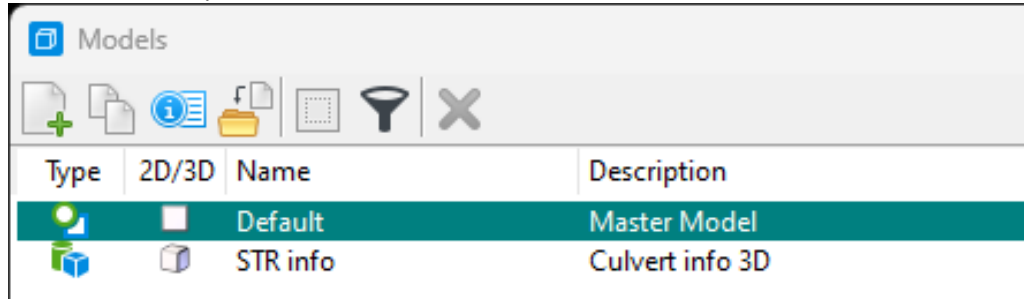
ORD STRUCTURES Seed

The **ORD STRUCTURES Seed** file is used for Reinforced Concrete Box (RCB) culvert and other related structure designs (e.g. flumes).

For RCB modeling, there will need to be separate files. One file for the Cast-In-Place (CIP) RCB models and a separate file for the Precast (PC) RCB models.

Two models are provided.

Default

- 2D design model.

Rename this model following the guidelines below.
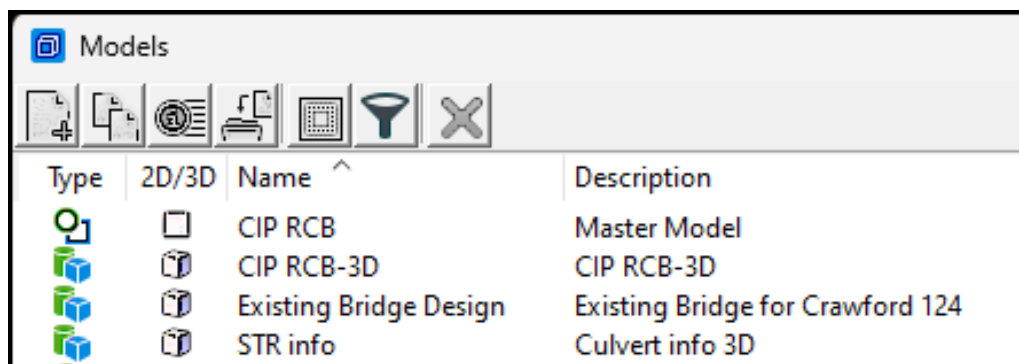
Use for layout of the RCB culvert.

STR info

- 3D design model.

Use for entry of the 3D graphics of each RCB culvert.

The **STR info** model is typically used to import the ASCII graphics input file used to map the invert coordinates (points and lines) of the box culvert. Refer to the "Culvert Workflow" section of the CONNECT Applications webpage for documentation of the complete process.

-Use for layout of the Cast-In-Place RCB culvert.

CIP RCB –The **Default** model is to be renamed and used for layout of the box culvert. Rename the model before using ORD tools to dynamically create the 3D managed model.

A **CIP RCB-3D** model will be created when the STR info 3D model is referenced into the 2D model. OpenRoads Designer will automatically create a managed 3D model. The ORD created 3D managed model will use the same name as the 2D model but will have **-3D** appended to it. *This model should not be deleted.*

-Use for layout of the Precast RCB culvert.
PC RCB –The **Default** model is to be renamed and used for layout of the box culvert. Rename the model before using ORD tools to dynamically create the 3D managed model.

A **PC RCB-3D** model will be created when the STR info 3D model is referenced into the 2D model. OpenRoads Designer will automatically create a managed 3D model. *This model should not be deleted.*

-Use for layout of flumes and splash basin type of structures related to the RCB culverts.
Other Structures – Create this model as needed.

ORD 2D Seed
The **ORD 2D Seed** file is used for layout and modeling of various project components.

This file may be considered as a multipurpose seed file and will be worked on and stored in three different locations.
- **Location 1; Bridge** folder, when this seed file is to be used for berm, revetment, drainage or flowage easement modeling. Rename accordingly.
- **Location 2; BRPrelim** folder (**DOT** or **XYZ-CORP** subfolders), when this seed file is to be used for general preliminary design (not a deliverable) then this file may be kept as a separate file and renamed accordingly.
- **Location 3; (Paren)_Work Description** folder, when this seed file is used for TSL/Situation Plan sheet development and 2D/3D structural excavation modeling (e.g. RCB culverts). Rename accordingly.

One model is provided.

Default
- 2D design model.

Use this model and rename as applicable.

NOTICE: The information regarding berm & revetment modeling for structures is provided for modeling procedures and instructions that currently are not documented.
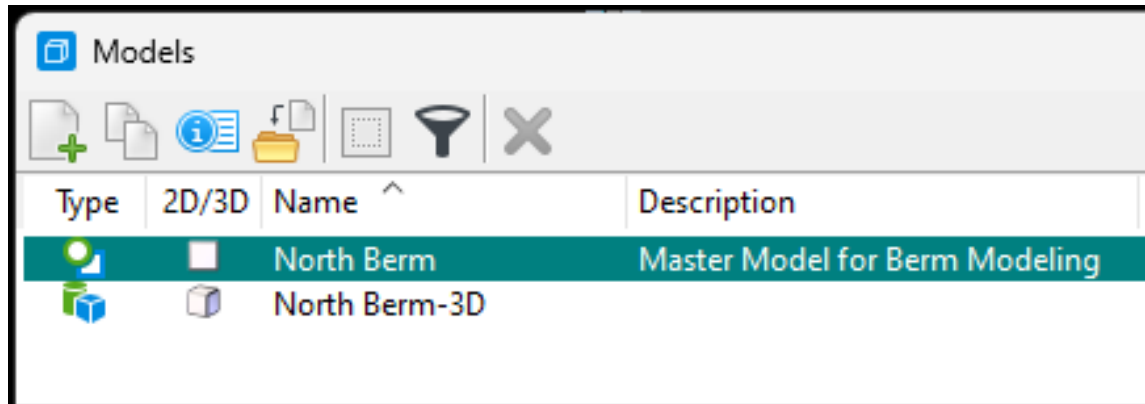
Berm (model renamed from Default)
- Berm (2D design model.)
- Berm-3D (3D design model.)

Use for the layout of the berm for the project site. A **Berm-3D**, renamed managed 3D model, is created when the ORD template tools are used to generate the berm or revetment. *This model should not be deleted.*

The 2D design model can be copied and renamed as needed to indicate which berm is being designed. A model for each end, or quadrant of the bridge, is recommended with the location indicated in the model name.

Design Model Name example   *Description*
East Berm Grading Design 125   East Berm 134' x 40' PPCB 2 Span Bridge
East Berm Grading Design 125-3D   East Berm 134' x 40' PPCB 2 Span Bridge

Revetment (model renamed from Default)
- Revetment (2D design model.)
- Revetment-3D (3D design model.)

Use for layout of the revetment for the project site. A **Revetment-3D**, renamed managed 3D model, is created when the ORD template tools are used to generate the berm or revetment. *This model should not be deleted.*

The 2D design model can be copied and renamed as needed to indicate locations revetment is being designed.

Design Model Name example   *Description*
Revetment Design 125   Revetment 134' x 40' PPCB 2 Span Bridge
Revetment Design 125-3D   Revetment Berm 134' x 40' PPCB 2 Span Bridge

The list of available linear templates for Berm and Revetment modeling is shown below.
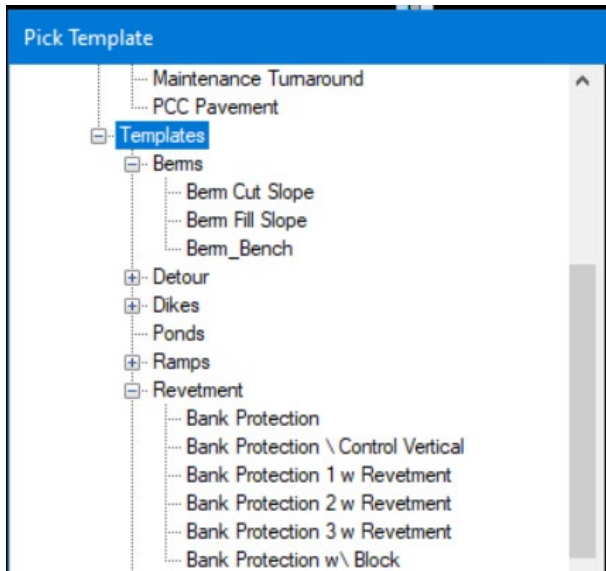
Flowage Easement (model renamed from Default)
- 2D design model.

Use for layout of the flowage easement. Right of Way (ROW) or Location and Environment Bureau (LEB) will use this information. **This is a deliverable.**

Hydraulics (model renamed from Default)
- Hydraulics (2D design model.)
- Hydraulics-3D (3D design model.)

Use for layout of the hydraulics. This could be used to import shape files from hydraulic modeling software. **This is a support file.**

Depending on how this model is used, this may be used to create a model that could be used as a deliverable. This may also be used as a design file (not a deliverable) and kept as a separate file in the **BRPrelim** folder (**DOT** or **XYZ-CORP** subfolders) and renamed accordingly.

Design Model Name example	*Description*
Hydraulics Design 125	Hydraulics 134' x 40' PPCB 2 Span Bridge
Hydraulics Design 125-3D	Hydraulics 134' x 40' PPCB 2 Span Bridge

NOTICE: The following information regarding the excavation modeling file for structures, is provided in preparation for the future modeling procedures and instructions that currently are not developed or implemented.

Structural Excavation - e.g. CIP RCB & Precast RCB (model renamed from Default)
- 2D design model.
- 3D design managed model.

Use for the layout of structural excavation modeling (e.g. CIP & Precast RCB culvert) for the project site. A **Structural Excavation-3D**, renamed managed 3D model, is created when the ORD template tools are used to generate the excavation. ***This model should not be deleted.***

The 2D design model can be copied and renamed as needed to indicate CIP or Precast excavation is being designed.

Design Model Name example	*Description*
CIP RCB Excavation Design 125	CIP RCB Excavation
CIP RCB Excavation Design 125-3D	CIP RCB Excavation
PC RCB Excavation Design 125	Precast RCB Excavation
PC RCB Excavation Design 125-3D	Precast RCB Excavation

The list of available linear templates for RCB Culvert Excavation (Trenching) modeling in ORD is shown below.
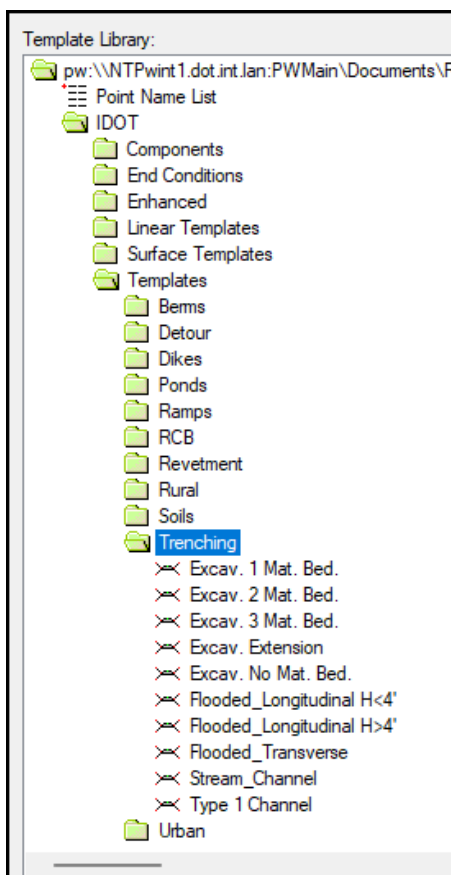
The list of available linear templates for RCB Culvert Excavation (Trenching) modeling in ORD is shown below.
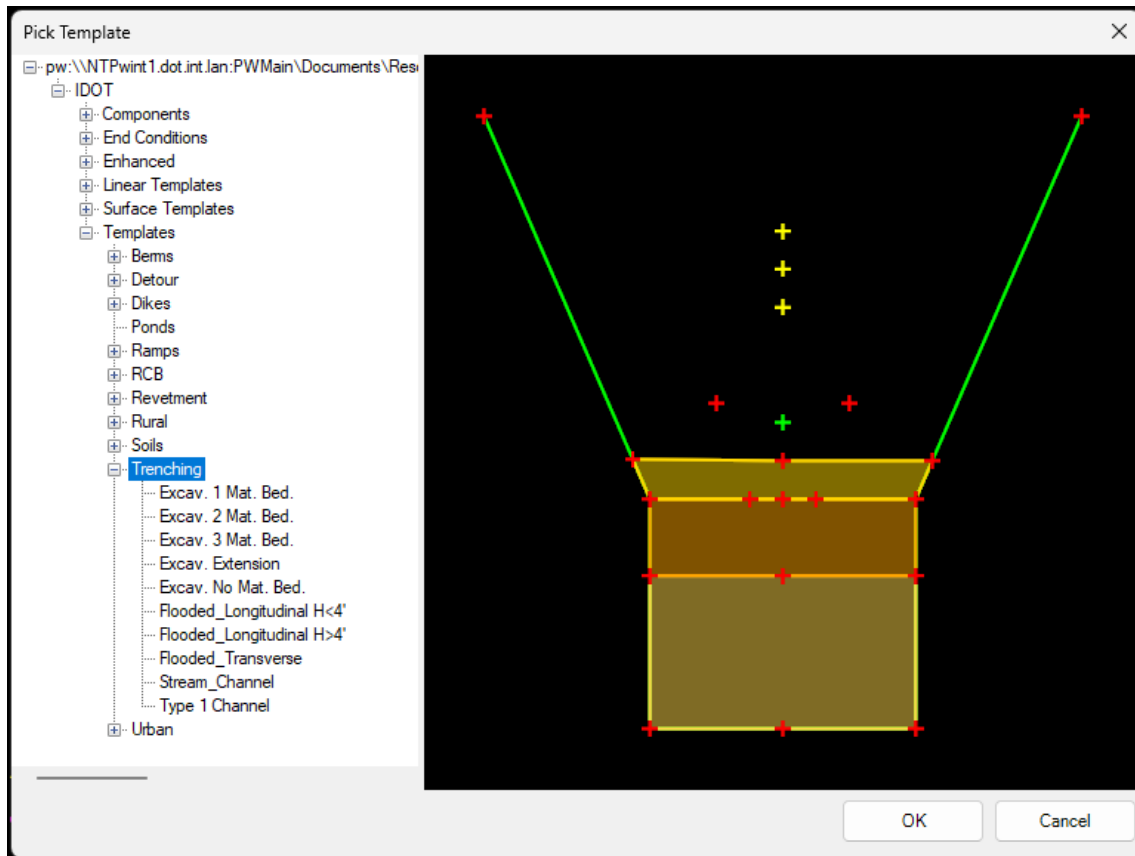
PLAN SHEET PRODUCTION
The following seed files may be used for plan sheet production.

The preferred seed file used in the Prelim Design process for TSL Situation Plan sheet development is the **ORD 2D Seed** file. This file does not contain the Drawing and Sheet Models used for Final plan sheet development that are in the **Bridge Plan Production Seed** (**BPPS**) file.
Since the Prelim Design TSL may exist for some time before Final plan sheet development, the current BPPS Drawing and Sheet Models will be added by the Final Designer to update the existing file. It is beneficial to have the Final Designer import the up-to-date versions once the file is taken over for Final plan sheet production.

Once the Final Designer takes ownership of this file for plan development, they will need to import the necessary Sheet and Drawing Models from the BPPS file. Please refer to the **Bridge Plan Production Seed** section for more information.

ORD 2D Seed
The **ORD 2D Seed** file is used for Prelim Type, Size, Location (TSL)/Situation Plan sheet development.

One model is provided.

Default
- 2D design model.

Rename this model following the guidelines below.

Rename the model for 2D detailing and views of the 3D model. This model will reference the Structure model (bridge, culvert, flume, etc.) from the Bridge root folder. This referenced 2D model will be used to create the plan view of the structure model using the **Named Boundary** tool for plan production. See the "Culvert Workflow document CW06" showing the use of the Named Boundary for TSL Sheets. This workflow can be used for all structures TSL/Situation Plan sheet creation, not just culverts. The working units in this model are set to US Survey Feet and US Survey Inches for appropriate use with ORD civil based tools. This seed file does not have a Geographic Coordinate System applied. If necessary, apply the appropriate Iowa Regional Coordinate System, see **Coordinate System** section below.

Rename the ORD Design model to the Structure Design Number and provide a logical description. **Add CIP or PC to the name of the model to signify a cast in place RCB or Precast RCB culvert.**

Design Model Name example	Description
Plan Design 125 CIP	CIP Triple 12'x 8' RCB
Plan Design 125 PC	Precast Triple 12'x 8' RCB
Plan Design 125	134' x 40' PPCB 2 Span Bridge

Drawing and sheet models for plan sheet development are contained in this file for preliminary and final design. Each saved view for the drawing model will be named to designate the view or bridge section created.

Sheet models for the Type, Size and Location (TSL)/Situation Plan of the structure will be created using the **Place Named Boundary** tool following the process shown in the "Culvert Workflow document CW06". When the sheet model is created in the Prelim Design workflow, name it using the format shown above. When the file is

used in the Final Design workflow then the sheet model will be renamed accordingly as shown in the following section.

Bridge Plan Production Seed

The **Bridge Plan Production Seed** file is used to develop rebar/steel modeling and complete structural details. This file is also used for both 2D & 3D plan development and Sheeting.

The file is named differently depending on its use.
- **Workflow 1**, modeling structural concrete, rebar, and steel shapes.
- **Workflow 2**, Prelim/Final Design plan sheet development.

There may be a scenario that will require the Final Designer to create a TSL/Situation Plan. This can be done in the BPPS file, and ORD may be the preferred application.

The models in the seed file are provided based on anticipated work needs. If needed, additional models of any type may be added using the **Create a new model** tool and select the types as necessary.
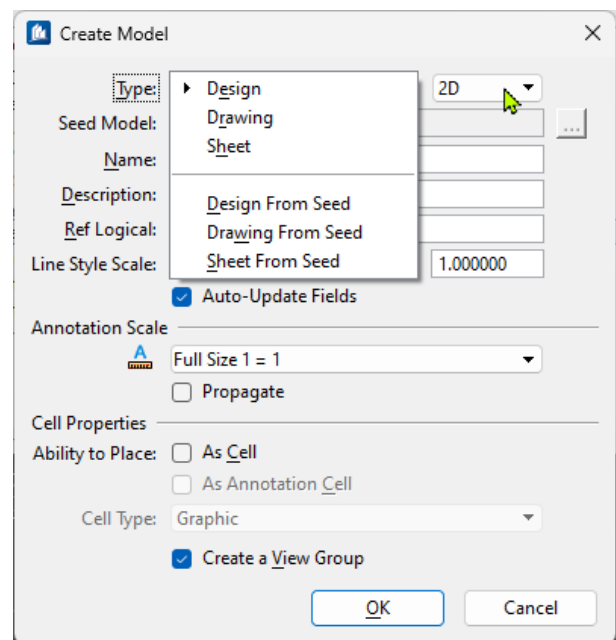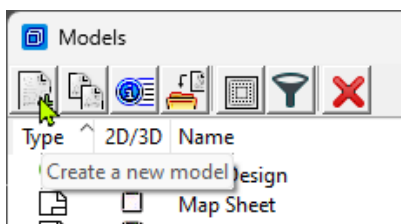
All models in this seed file except ORD Design are set to Imperial units of Feet/Inches since most are used for general detailing.

Eleven models are provided.

ORD Design
- 2D design model.

Use for 2D detailing and views of the 3D model. If used, this model will reference the Structure model (bridge, culvert, flume, etc.) from the Bridge root folder. This referenced 2D model will be used to create the plan view of the structure model using the **Named Boundary** tool for plan production. See the Culvert Workflow document showing the use of the Named Boundary for TSL Sheets. This workflow can be used for all structures TSL sheet creation, not just culverts. The working units in this model are set to US Survey Feet and US Survey Inches for appropriate use with ORD civil based tools. If necessary, the appropriate Coordinate System will need to be applied, see **Coordinate System** section below.

Rename the ORD Design model to the Structure Design Number and provide a logical description. **Add CIP or PC to the name of the model to signify a cast in place RCB or Precast RCB culvert.**

Design Model Name example	Description
Plan Design 125 CIP	CIP Triple 12'x 8' RCB
Plan Design 125 PC	Precast Triple 12'x 8' RCB
Plan Design 125	134' x 40' PPCB 2 Span Bridge

Drawing and sheet models for plan sheet development are contained in this file for preliminary and final design.

Each saved view for the drawing model will be named to designate the view or bridge section created.
Sheet models for the Type, Size and Location (TSL)/Situation Plan of the structure will be created using the **Place Named Boundary** tool following the process shown in the Culvert Workflow document. When the sheet model is created in the Prelim Design workflow, name it using the format shown below. When the file is used in the Final Design workflow then the sheet model will be renamed accordingly as shown below.

The description is used in a field and will display in plan sheet Title Block. For long bridges that may require multiple plan sheets append the name with a sequence number as shown below.
Types of sheet designations and examples are as follows using the naming convention of County(CC) and

Design(DDDD) Number (CCDDDDs000):

Prelim Sheet Model Name example	Description
440125 Situation CIP	Situation Plan - CIP
440125 Situation PC	Situation Plan – Precast
440125 Situation Plan 1	Situation Plan
440125 Situation Plan 2	Situation Plan
440125 Site Plan	Situation Plan - Site
440125 SituationPlanMisc	Situation Plan – Misc.

The Final Designer renames the Prelim Sheet Model Name when completing the plan set.

Final Sheet Model Name example	Description
440125sc004 Situation CIP	Situation Plan - CIP
440125sp004 Situation Precast	Situation Plan - Precast
440125s004 Situation	Situation Plan
440125s005 Situation	Situation Plan
440125s006 Site	Situation Plan - Site
440125s007 SitPlanMisc	Situation Plan – Misc.

Name the Sheet Models the proper naming convention of County(CC) and Design(DDDD) Number. The Description column of the models is used to populate the sheet description text field of the Title Block on the plan sheet. Therefore, name the description accordingly. For multiple county projects, use the county the structure is located in for the sheet model naming convention.

Sheet Model Name example	Description
420125s004 Notes	General Notes & Quantities
420125s008 Pier 1	Pier 1 Footing Details

Name the Drawing Models logical to what the drawing detail is. The intended workflow is to create and annotate plan details in the drawing models and reference the drawing models to the sheet models. There may be a considerable number of models developed. The importance of using a logical name for these drawing models is key to keeping the file contents and use of these drawing models clear.

Drawing Model Name example	Description
Barrier Rail End Sect Dtls	Barrier Rail End Section Details
Plan View West Abut Dtls	West Abutment Details

Drawing
- 2D drawing model.

Use for potential 2D views of section cuts of the 3D model. Working units set to feet and inches for appropriate use with ProStructures.

Map Sheet
- 2D sheet model.

Use for the sheeting of the Map in a plan set.

Map Sheet Text
- 2D drawing model.

Contains details referenced to the Map Sheet model in a plan set.

New Sheet Bridge
- 2D sheet model.

Use for the sheeting of a bridge plan set. It may be ideal to keep this as a "sheet model template" and copy this for subsequent plan sheets, as needed.

New Sheet Culvert
- 2D sheet model.

Use for the sheeting of a culvert plan set. It may be ideal to keep this as a "sheet model template" and copy this for subsequent plan sheets as needed.

New Sheet Revision RA
- 2D sheet model.

Use for the sheeting of a plan revision.

Summary Sheet
- 2D sheet model.

Use for the sheeting of the Summary Quantities Sheet in a plan set.

Summary Sheet Text
- 2D drawing model.

Contains details referenced to the Summary Quantities Sheet model in a plan set.

Title Sheet
- 2D sheet model.

Use for the sheeting of the Bridge Bureau Title Sheet in a plan set.

Title Sheet Text
- 2D drawing model.

Contains details referenced to the Title Sheet model in a plan set.

Types of sheet designations and examples are as follows using the naming convention of County(CC) and Design(DDDD) Number (CCDDDDs000):

The description is used in the sheet description text field and will display in plan sheet Title Block.

Sheet Model Name example	Description
420125s000 Title	Title Sheet
420125s000 Title Map	Map Sheet
420125s000 RA	Revision Sheet
420125s001 EstQty	Estimate Quantities
420125s002 Notes	General Notes
420125s003 SumQty	Summary Quantities
420125s004 Situation	Situation Plan

420125s005 Situation Views   Situation Plan - Section Views (*this sheet is used to display the additional elevation section views taken from the OBM model for TSL sheeting*)

420125s006 Site	Situation Plan - Site
420125s007 Staking	Staking Diagram
420125s008 Pier 1	Pier 1 Details
420125s009 Pier 1Reinf	Pier 1 Reinforcing
420125s010 Pier 1Ftg&Qty	Pier 1 Footing & Quantities
420125s011 AbutFtg	Abutment Footing Details
420125s012 Abut	Abutment Details

The naming convention for alternate RCB culvert plan sets is shown below.

For RCB Culvert - Cast-in-Place Alternate example

420225sc001 EstQty CIP	Estimate Quantities - Cast in Place
420225sc002 Notes CIP	General Notes - Cast in Place
420225sc003 Situation CIP	Situation Plan - Cast in Place

For RCB Culvert - Precast Alternate example

420225sp001 EstQty PC	Estimate Quantities - Precast
420225sp002 Notes PC	General Notes - Precast
420225sp003 Situation PC	Situation Plan - Precast

Typically, the Estimate sheet and General Notes are on separate sheets. Occasionally more than one of these sheets is needed. Numbering in the model name would just increase by one.

The Summary Sheet is included for new structures and would have the next sequential number in the model name.

The file will contain the models necessary to provide the complete details of the structure as well as the drawing and sheet models for the project. The need for separate files for the drawing and sheet models is being considered.

CONNECT Project Font

The TrueType Font EngineeringVert is intended to be used for CONNECT projects.

The Engineering Vert font files are located in the managed workspace at:
pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Fonts\

EngineeringVertMonoHeavy.ttf
EngineeringVertMonoBold.ttf
EngineeringVertMono.ttf
EngineeringVertHeavy.ttf
EngineeringVertBold.ttf
EngineeringVert.ttf

The text and dimension style library IowaDOT_Text Favorites_Text Styles_Dimension Styles.dgnlib in the managed workspace uses the EngineeringVert and EngineeringVertBold font.

The dgnlib is located in the managed workspace at:
pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\IowaDOTStandardsConnect\Configuration\Organization-Civil\IowaDOT_Standards\Dgnlib\Feature Definitions\

True type fonts are unable to apply a weight. If a bolder text is desired use the EngineeringVertBold or EngineeringVertHeavy fonts.

The managed workspace provides access to these fonts in the Bentley applications. The user would need to export the font files from the workspace and copy to C:\Windows\Fonts to use these fonts in Microsoft applications.

Four Annotation Plan element templates are included in the workspace to easily provide the EngineeringVert text outside of the use of dimensions. These have been configured in IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib
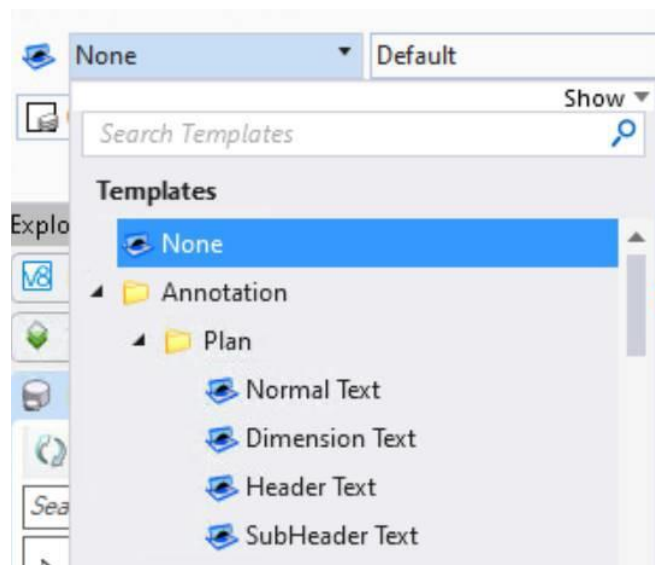
The use of the Dimension Text element template is intended for text elements in tables so that the text fits appropriately. All dimensions and table text elements should use the Dimension Text element template resulting in the same text style and level being used.

The other templates are for use as the name of the element template suggests, placement of normal text, subheader text and header text. All text in notes should use the Normal Text element template with sentence case style.

Notes:

- The use of the new TrueType Font EngineeringVert is applied to new releases of design standards. Additional standards series will be updated as other modifications are required for those standards. A mix of fonts on the plan sheets with the standards having the MicroStation font is acceptable.

CONNECT Levels

The levels used for CONNECT workspace projects are provided in various level libraries. The main library for Bridge projects is IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib.

Placement of elements on levels is controlled by selection of features in several instances. For additional information refer to CONNECT Feature Definitions.

The levels are shown below through views of Level Manager organized by application and use. The name, color, style, and weight of the levels are provided.

OpenBridge Modeler levels for decorations for placement or information for the bridge model features. The text levels have the plot attribute turned off.

Name	Color	Style	Weight
OBD_D_ApproachRefLine_text	0	0	0
OBD_D_ApproachSlab_Outline	51	0	6
OBD_D_Barrier_Outline	131	0	6
OBD_D_Beam_End	233	0	2
OBD_D_Beam_Layout	233	7	1
OBD_D_Beam_Layout_Text	233	0	0
OBD_D_Beam_PL_Offset	64	2	0
OBD_D_Bearing_Group	89	7	4
OBD_D_Bridge_Decorations	0	0	0
OBD_D_Cap	13	0	8
OBD_D_Column	13	0	8
OBD_D_CrossFrames	57	0	4
OBD_D_Deck_Outline	3	0	8
OBD_D_Diaphragm_Concrete	51	0	8
OBD_D_Field_splice	60	0	0
OBD_D_Footing	13	0	8
OBD_D_Piles	57	0	4
OBD_D_Piles_Arrow_Markers	21	0	0
OBD_D_Reports_Lines	36	0	0
OBD_D_Segmental_Deck_Outline	51	0	8
OBD_D_Segmental_Lines_Text	0	0	0
OBD_D_Shear_studs	20	0	4
OBD_D_SleeperSlab	59	0	6
OBD_D_Stiffeners	57	0	2
OBD_D_Sub	99	0	8
OBD_D_Sub_Text	146	0	0
OBD_D_Super	83	0	8
OBD_D_Super_Text	135	0	0
OBD_D_SupportLines_Text	182	0	0
OBD_D_Unit_Label	224	0	0
OBD_D_WingWall	13	2	0
OBD_D_WingWall_Footing	13	0	8
OBD_D_WingWall_Piles	57	0	8

OpenBridge Modeler levels for modeling bridge features. These levels have the plot attribute turned on except level OBD_Construction_Line.

Name			
Auxiliary	2	0	2
BridgeExistingStructure	233	0	1
BridgeSubstructure	1	0	8
BridgeSuperStructure	3	0	8
ConcreteRustication	3	0	1
Dirt	4	0	4
FlowableMortar	217	0	4
FlowageEasement	5	0	1
Neoprene	7	0	3
OBD_Abutment	15	0	8
OBD_Approach_Ref_Line	0	0	0
OBD_Approach_Slab	174	0	0
OBD_Barrier	206	0	6
OBD_Beam	3	0	8
OBD_Bearing_Seats	64	0	6
OBD_Bearings	1	0	4
OBD_Bridge_Piling	1	0	4
OBD_CheekWall	15	0	6
OBD_Construction_Line	**0**	**0**	**1**
OBD_CrossFrames	1	0	4
OBD_Deck	3	0	8
OBD_Diaphragm_Concrete	174	0	8
OBD_Excavation	231	3	4
OBD_FC_ConstructionLines	1	0	0
OBD_Field_Splice	7	0	4
OBD_Filler_Plate	1	0	4
OBD_Footings	15	0	8
OBD_Girder	1	0	4
OBD_GroutPad	206	0	6
OBD_Haunch	206	0	8
OBD_Pier_Cap	15	0	8
OBD_Pier_Column	15	0	8
OBD_Point	4	0	0
OBD_Shear_Stud	1	0	4
OBD_Sleeper_Slab	174	0	6
OBD_Stiffeners	1	0	4
OBD_Struts	1	0	4
OBD_Support_Line	5	4	0
OBD_Tendon	209	0	3
OBD_Tendon_Centerline	0	3	1
OBD_Tub girder	3	0	0
OBD_Tubs	3	0	0
OBD_Wet Joint	48	0	0
OBD_Wingwalls	15	0	8
PVC	1	0	3

ProStructures levels for elements modeled in ProStructures and rebar placement.
Multiple rebar placement guideline levels are provided for each type of component rebar.

Name			
PC_ABUT	13	0	8
PC_APPROACH	35	0	8
PC_BARRIER	131	0	6
PC_BEAM	19	0	8
PC_BEARING	89	0	2
PC_COLUMN	13	0	8
PC_CONCRETE	3	0	8
PC_CONCRETE_MISC	3	0	8
PC_COVER	32	0	0
PC_CULVERT_CIP	35	0	8
PC_CULVERT_PC	46	0	8
PC_DECK	3	0	8
PC_DIAPHRAGM_CONC	51	0	8
PC_FTG	13	0	8
PC_MARKER	6	0	0
PC_OBJECT	2	0	0
PC_PADFOOTING	13	0	8
PC_PIER_CAP	13	0	8
PC_PIER_COLUMN	13	0	8
PC_REBAR	12	0	3
PC_REBAR GL	16	4	0
PC_REBAR GL 1	16	4	0
PC_REBAR GL 2	16	4	0
PC_REBAR GL 3	16	4	0
PC_REBAR GL 4	16	4	0
PC_REBAR GL 5	16	4	0
PC_REBAR_ABUT	28	0	3
PC_REBAR_ABUT GL	16	4	0
PC_REBAR_ABUT GL 1	16	4	0
PC_REBAR_ABUT GL 2	16	4	0
PC_REBAR_ABUT GL 3	16	4	0
PC_REBAR_ABUT GL 4	16	4	0
PC_REBAR_ABUT GL 5	16	4	0
PC_REBAR_APPROACH	82	0	3
PC_REBAR_APPROACH GL	16	4	0
PC_REBAR_APPROACH GL 1	16	4	0
PC_REBAR_APPROACH GL 2	16	4	0
PC_REBAR_APPROACH GL 3	16	4	0
PC_REBAR_APPROACH GL 4	16	4	0
PC_REBAR_APPROACH GL 5	16	4	0

Name			
PC_REBAR_BARRIER	34	0	3
PC_REBAR_BARRIER GL	16	4	0
PC_REBAR_BARRIER GL 1	16	4	0
PC_REBAR_BARRIER GL 2	16	4	0
PC_REBAR_BARRIER GL 3	16	4	0
PC_REBAR_BARRIER GL 4	16	4	0
PC_REBAR_BARRIER GL 5	16	4	0
PC_REBAR_BEAM	60	0	3
PC_REBAR_BEAM GL	16	4	0
PC_REBAR_BEAM GL 1	16	4	0
PC_REBAR_BEAM GL 2	16	4	0
PC_REBAR_BEAM GL 3	16	4	0
PC_REBAR_BEAM GL 4	16	4	0
PC_REBAR_BEAM GL 5	16	4	0
PC_REBAR_CULVERT_CIP	12	0	3
PC_REBAR_CULVERT_CIP GL	16	4	0
PC_REBAR_CULVERT_CIP GL 1	16	4	0
PC_REBAR_CULVERT_CIP GL 2	16	4	0
PC_REBAR_CULVERT_CIP GL 3	16	4	0
PC_REBAR_CULVERT_CIP GL 4	16	4	0
PC_REBAR_CULVERT_CIP GL 5	16	4	0
PC_REBAR_CULVERT_PC	12	0	3
PC_REBAR_CULVERT_PC GL	16	4	0
PC_REBAR_CULVERT_PC GL 1	16	4	0
PC_REBAR_CULVERT_PC GL 2	16	4	0
PC_REBAR_CULVERT_PC GL 3	16	4	0
PC_REBAR_CULVERT_PC GL 4	16	4	0
PC_REBAR_CULVERT_PC GL 5	16	4	0
PC_REBAR_DECK	18	0	3
PC_REBAR_DECK GL	16	4	0
PC_REBAR_DECK GL 1	16	4	0
PC_REBAR_DECK GL 2	16	4	0
PC_REBAR_DECK GL 3	16	4	0
PC_REBAR_DECK GL 4	16	4	0
PC_REBAR_DECK GL 5	16	4	0
PC_REBAR_DIAPHRAGM	12	0	3
PC_REBAR_DIAPHRAGM GL	16	4	0
PC_REBAR_DIAPHRAGM GL 1	16	4	0
PC_REBAR_DIAPHRAGM GL 2	16	4	0
PC_REBAR_DIAPHRAGM GL 3	16	4	0
PC_REBAR_DIAPHRAGM GL 4	16	4	0
PC_REBAR_DIAPHRAGM GL 5	16	4	0
PC_REBAR_DOWELS	10	0	3
PC_REBAR_DOWELS GL	16	4	0
PC_REBAR_EPOXY	18	0	3
PC_REBAR_EPOXY GL	16	4	0

Name			
PC_REBAR_FOOTING	42	0	3
PC_REBAR_FOOTING GL	16	4	0
PC_REBAR_FOOTING GL 1	16	4	0
PC_REBAR_FOOTING GL 2	16	4	0
PC_REBAR_FOOTING GL 3	16	4	0
PC_REBAR_FOOTING GL 4	16	4	0
PC_REBAR_FOOTING GL 5	16	4	0
PC_REBAR_MISC	12	0	3
PC_REBAR_MISC GL	16	4	0
PC_REBAR_MISC GL 1	16	4	0
PC_REBAR_MISC GL 2	16	4	0
PC_REBAR_MISC GL 3	16	4	0
PC_REBAR_MISC GL 4	16	4	0
PC_REBAR_MISC GL 5	16	4	0
PC_REBAR_PIER_CAP	10	0	3
PC_REBAR_PIER_CAP GL	16	4	0
PC_REBAR_PIER_CAP GL 1	16	4	0
PC_REBAR_PIER_CAP GL 2	16	4	0
PC_REBAR_PIER_CAP GL 3	16	4	0
PC_REBAR_PIER_CAP GL 4	16	4	0
PC_REBAR_PIER_CAP GL 5	16	4	0
PC_REBAR_PIER_COL	26	0	3
PC_REBAR_PIER_COL GL	16	4	0
PC_REBAR_PIER_COL GL 1	16	4	0
PC_REBAR_PIER_COL GL 2	16	4	0
PC_REBAR_PIER_COL GL 3	16	4	0
PC_REBAR_PIER_COL GL 4	16	4	0
PC_REBAR_PIER_COL GL 5	16	4	0
PC_REBAR_PILE	12	0	3
PC_REBAR_PILE GL	16	4	0
PC_REBAR_PILE GL 1	16	4	0
PC_REBAR_PILE GL 2	16	4	0
PC_REBAR_PILE GL 3	16	4	0
PC_REBAR_PILE GL 4	16	4	0
PC_REBAR_PILE GL 5	16	4	0
PC_REBAR_STAINLESS	41	0	3
PC_REBAR_STAINLESS GL	16	4	0
PC_REBAR_STAINLESS GL 1	16	4	0
PC_REBAR_STAINLESS GL 2	16	4	0
PC_REBAR_STAINLESS GL 3	16	4	0
PC_REBAR_STAINLESS GL 4	16	4	0
PC_REBAR_STAINLESS GL 5	16	4	0
PC_REBAR_WALL	10	0	3
PC_REBAR_WALL GL	16	4	0
PC_REBAR_WALL GL 1	16	4	0
PC_REBAR_WALL GL 2	16	4	0
PC_REBAR_WALL GL 3	16	4	0
PC_REBAR_WALL GL 4	16	4	0
PC_REBAR_WALL GL 5	16	4	0

PC_REBAR_WINGWAL GL	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWAL GL 1	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWAL GL 2	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWAL GL 3	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWAL GL 4	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWAL GL 5	□	16	— · — · — ·	4	———	0
PC_REBAR_WINGWALL	■	28	———	0	———	3
PC_REPAIR_EXISTING	■	230	———	0	———	1
PC_REPAIR_REMOVAL	■	228	———	0	———	2
PC_REVISION_ANNOTATION	■	5	———	0	———	5
PC_SHADING	■	233	———	0	———	0
PC_SLAB	■	99	———	0	———	8
PC_STRIPFOOTING	■	115	———	0	———	8
PC_STRUCT_WALL	■	19	———	0	———	8
PC_WALL	■	13	———	0	———	8
PS_BOLT	■	57	———	0	———	2
PS_CONST	□	0	———	0	———	0
PS_DAWA	■	5	———	0	———	0
PS_DIM	□	0	———	0	———	0
PS_Elev_flag	□	0	———	0	———	0
PS_GIRDER	■	57	———	0	———	4
PS_HANDRAIL	■	62	———	0	———	4
PS_HATCH	■	3	———	0	———	0
PS_HIDDEN	■	2	— — —	3	———	0
PS_KOTE	■	4	———	0	———	0
PS_MID	■	5	— — — —	7	———	0
PS_OBJECT	■	2	———	0	———	0
PS_PLATE	■	1	———	0	———	4
PS_POS	■	1	———	0	———	0
PS_RoofWall	■	5	———	0	———	0
PS_SHAPE	■	7	———	0	———	4
PS_SOLID	■	7	———	0	———	0
PS_TEXT	□	0	———	0	———	0
PS_WELD	■	1	———	0	———	4
PS_WORKFRAME	■	6	———	0	———	0

Additional levels used for CONNECT workspace projects are provided in
IowaDOT_FeatureDefinitions_ElementTemplates_Annotation_Levels.dgnlib
These are primarily for use with OpenRoad Designer processes.

These levels may be used for modeling or detailing structures also. Those listed below
are levels more typically used for structure projects. This is not intended to be an all-
inclusive list. Levels available that are logical for placement of various elements can be
used. These levels have the plot attribute turned on.

Name			
Aluminum	194	0	4
BentoniteSlurry	197	0	4
BridgeSubstructureExisting	234	0	0
BridgeSubstructureProposed	3	0	0
BridgeSuperStructureExisting	234	0	0
BridgeSuperStructureProposed	3	0	0
BridgeTemporaryStructure	15	0	3
CulvertExisting	234	0	0
CulvertProposed	3	0	0
Joints	31	0	3
Removals	228	2	3
Revetment	206	0	1
Revisions	0	0	0
Steel	57	0	4
Timbers	6	0	4
WireMesh	71	0	3

CONNECT Feature Definitions

The feature definitions used for CONNECT workspace projects are provided in various features and element templates libraries. The main library used for Bridge projects is IowaDOT_Bridge_Features_Levels_Elem Temp Imperial.dgnlib.
The main library used for pipe and culvert projects is IowaDOT_SU_Utility_FeatureDefinitions_ElementTemplates.dgnlib

The feature definitions are shown below through expanded views of the Feature Definitions in Explorer organized by library.

OpenBridge Modeler features for placement of the bridge components are listed below.

▲ ✛ Point	▲ 🪣 Auxiliary
◆ Point	◆ Auxiliary
▲ ⬈ SupportLine	▲ 🎨 Extras
◆ Supportline	◆ Bridge_decorations
▲ 🚧 Supports	▲ 🗔 Abutment Wingwall
▲ 📁 Abutment	◆ Wingwall_concrete_piles
◆ Abutment_concrete_piles	◆ Wingwall_steel_piles
◆ Abutment_steel_piles	▲ ✖ Stiffener
▲ 📁 Pier	◆ Stiffener
◆ Pier_concrete_piles	▲ 🅽 Cross-Frame
◆ Pier_steel_piles	◆ Cross-Frame
▲ ⬡ Deck	▲ ◆ Excavation
◆ Deck	◆ Earthworks
▲ ⬦ Beam	▲ 📐 Concrete Diaphragm
◆ Girder	◆ Diaphragm_Concrete
▲ ⊗ Bearing	▲ 🗼 Shear Stud
◆ Bearing	◆ Shear stud
▲ ⬭ Barrier	▲ 🔩 Field Splice
◆ Barrier	◆ Field splice
▲ ▽ Segment	
◆ Segment	
▲ ✎ Tendon	
◆ Tendon	

The feature symbology provided through the element templates and levels used are provided in the same dgnlib file.

Feature Symbology Default Element Template, Plan Element Template, and 3D Element Template are currently all the same element template for each feature.

Refer to CONNECT Levels for additional information on the levels used for the features in OpenBridge Modeler.

The feature symbology name, default element template, and associated level are provided in the tables below.

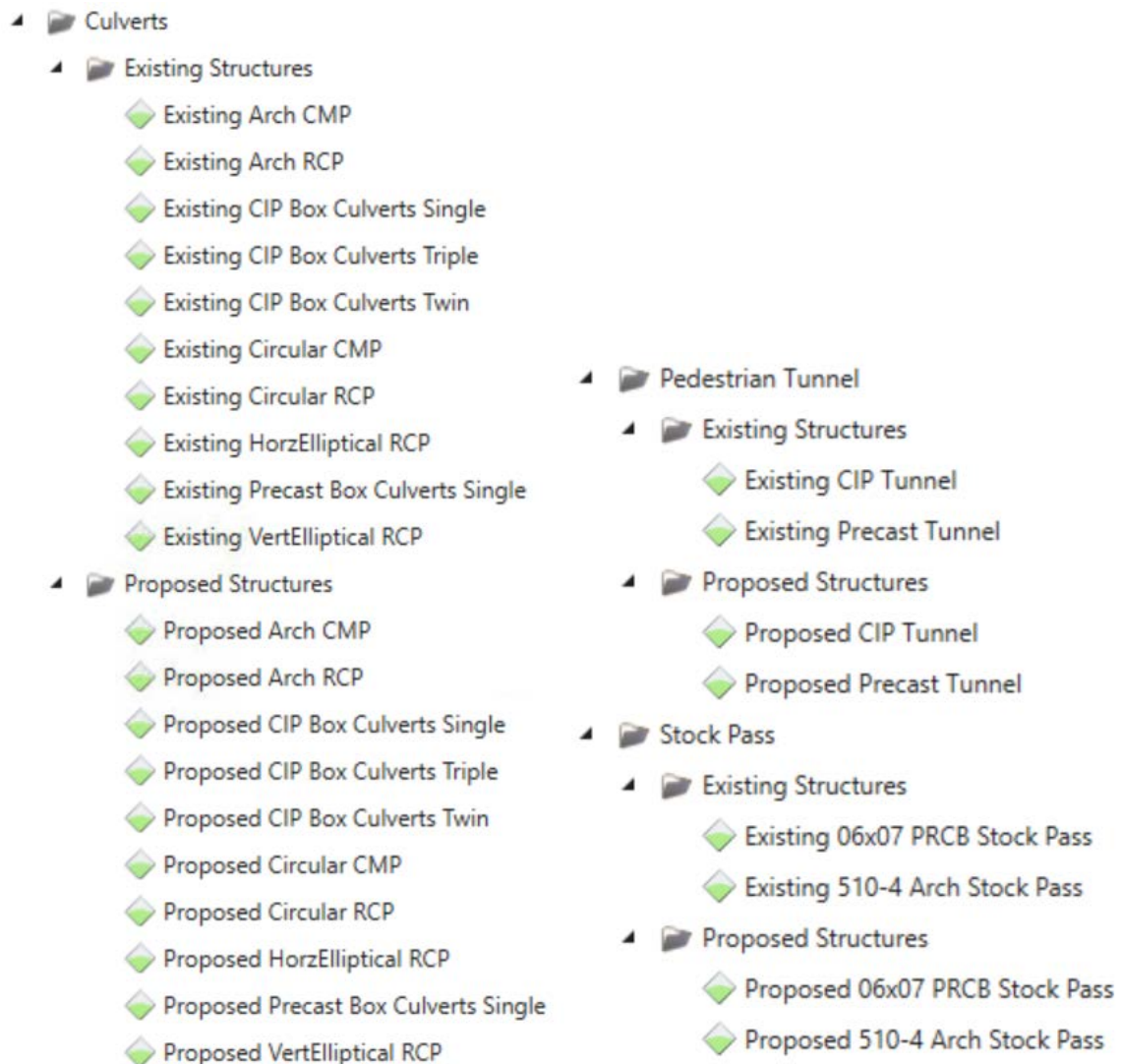| Feature Symbology Name	Solid Feature Symbology Default Element Template	Base Element Symbology - Level
Abutments	Abutments\Abutments	BridgeSubstructure
Caps	Abutments\Caps	BridgeSubstructure
Columns	Abutments\Columns	BridgeSubstructure
Footings	Abutments\Footings	BridgeSubstructure
Piles_concrete	Abutments\Piles_concrete	OBD_Bridge_Piling
Piles_steel	Abutments\Piles_steel	OBD_Bridge_Piling
Barrier	Auxiliary\Barriers\Barrier	OBD_Barrier
Bearings	Bearings\Bearings	BridgeSubstructure
GroutPad	Bearings\GroutPad	BridgeSubstructure
Seat	Bearings\Seat	BridgeSubstructure
CrossFrames	CrossFrames\CrossFrames	BridgeSuperStructure
Deck	Deck\Deck	BridgeSuperStructure
Diaphragm_Concrete	Diaphragms\Diaphragm_Concrete	BridgeSuperStructure
Bolt	Field splice\Bolt	OBD_Field_Splice
Field splice	Field splice\Field splice	OBD_Field_Splice
Filler plate	Field splice\Filler plate	OBD_Field_Splice
Plate	Field splice\Plate	OBD_Field_Splice
Concrete	Girder\Concrete	BridgeSuperStructure
Girder	Girder\Girder	BridgeSuperStructure
Haunch	Girder\Haunch	BridgeSuperStructure
Steel	Girder\Steel	BridgeSuperStructure
Wet Joint	Girder\Wet Joint	BridgeSuperStructure
Caps	Piers\Caps	BridgeSubstructure
Columns	Piers\Columns	BridgeSubstructure
Footings	Piers\Footings	BridgeSubstructure
Piers	Piers\Piers	BridgeSubstructure
Piles_concrete	Piers\Piles_concrete	OBD_Bridge_Piling
Piles_steel	Piers\Piles_steel	OBD_Bridge_Piling
Closure	Segments\Closure	BridgeSuperStructure
Expansion	Segments\Expansion	BridgeSuperStructure
PierSegment	Segments\PierSegment	BridgeSuperStructure
Segment	Segments\Segment	BridgeSuperStructure
Typical	Segments\Typical	BridgeSuperStructure
Shear stud	Shear stud\Shear stud	BridgeSuperStructure
Stiffeners	Stiffeners\Stiffeners	BridgeSuperStructure
Tendon	Tendons\Tendon	OBD_Tendon
Tendon_centerline	Tendons\Tendon_centerline	OBD_Tendon_Centerline
AbutmentWingwall	Wingwalls\AbutmentWingwall	BridgeSubstructure

Footing	Wingwalls\Footing	BridgeSubstructure
Piles_concrete	Wingwalls\Piles_concrete	OBD_Bridge_Piling
Piles_steel	Wingwalls\Piles_steel	OBD_Bridge_Piling
Wingwall	Wingwalls\Wingwall	BridgeSubstructure

Linear		
Feature Symbology Name	**Feature Symbology Default Element Template**	**Base Element Symbology - Level**
Barrier_outline	Decorations\Barrier_outline	OBD_D_Barrier_Outline
Beam_end	Decorations\Beam_end	OBD_D_Beam_End
Beam_layout	Decorations\Beam_layout	OBD_D_Beam_Layout
Beam_layout_text	Decorations\Beam_layout_text	OBD_D_Beam_Layout_Text
Beam_PL_offset	Decorations\Beam_PL_offset	OBD_D_Beam_PL_Offset
Bearing_Group	Decorations\Bearing_group	OBD_D_Sub
Bridge_decorations	Decorations\Bridge_decorations	OBD_D_Bridge_Decorations
CrossFrames	Decorations\CrossFrames	OBD_D_CrossFrames
Deck_outline	Decorations\Deck_outline	OBD_D_Super
Diaphragm_Concrete	Decorations\Diaphragm_Concrete	OBD_D_Super
Field splice	Decorations\Field splice	OBD_D_Field_splice
Reports_lines	Decorations\Reports_lines	OBD_D_Reports_Lines
Segmental_deck_outline	Decorations\Segmental_deck_outline	OBD_D_Segmental_Deck_Outline
Segmental_lines_text	Decorations\Segmental_lines_text	OBD_D_Segmental_Lines_Text
Shear studs	Decorations\Shear studs	OBD_D_Shear_studs
Stiffeners	Decorations\Stiffeners	OBD_D_Stiffeners
SupportLine_text	Decorations\SupportLine_text	OBD_D_Sub_Text
Unit_label	Decorations\Unit_label	OBD_D_Unit_Label
SupportLine	SupportLines\SupportLines	OBD_Support_Line
Surface		
Feature Symbology Name	**Feature Symbology Default Element Template**	**Base Element Symbology - Level**
Earthworks_Cut	Earthworks \Excavation	OBD_Excavation
Point		
Feature Symbology Name	**Feature Symbology Default Element Template**	**Base Element Symbology - Level**
Auxiliary	Auxiliary	Auxiliary
Point	Point	OBD_Point

OpenRoad Designer features used for pipe and culvert placement are provided under Conduit, StormWater feature definitions in IowaDOT_SU_Utility_FeatureDefinitions_ElementTemplates.dgnlib.
Various types of culverts are provided as existing and proposed structures features.

Refer to the Culvert Workflow documentation or additional information on the use of the features in OpenRoad Designer.

- Culverts
  - Existing Structures
    - Existing Arch CMP
    - Existing Arch RCP
    - Existing CIP Box Culverts Single
    - Existing CIP Box Culverts Triple
    - Existing CIP Box Culverts Twin
    - Existing Circular CMP
    - Existing Circular RCP
    - Existing HorzElliptical RCP
    - Existing Precast Box Culverts Single
    - Existing VertElliptical RCP
  - Proposed Structures
    - Proposed Arch CMP
    - Proposed Arch RCP
    - Proposed CIP Box Culverts Single
    - Proposed CIP Box Culverts Triple
    - Proposed CIP Box Culverts Twin
    - Proposed Circular CMP
    - Proposed Circular RCP
    - Proposed HorzElliptical RCP
    - Proposed Precast Box Culverts Single
    - Proposed VertElliptical RCP

- Pedestrian Tunnel
  - Existing Structures
    - Existing CIP Tunnel
    - Existing Precast Tunnel
  - Proposed Structures
    - Proposed CIP Tunnel
    - Proposed Precast Tunnel
- Stock Pass
  - Existing Structures
    - Existing 06x07 PRCB Stock Pass
    - Existing 510-4 Arch Stock Pass
  - Proposed Structures
    - Proposed 06x07 PRCB Stock Pass
    - Proposed 510-4 Arch Stock Pass

Additional OpenRoad Designer features used for pipe and culvert placement are provided under Node, StormWater Node feature definitions. Various types of pipe aprons and culvert headwalls are provided as existing and proposed features.

Apron options include no apron. The pipe aprons are organized and named by type, shape, size, and standard.

- ◢ 📁 Pipe Aprons
  - ◢ 📁 Aprons None
    - ◢ 📁 Exsting Aprons None
      - 🔹 E-Aprons None
      - 🔹 E-Aprons None 30A
      - 🔹 E-Aprons None 30B
      - 🔹 E-Aprons None 45A
      - 🔹 E-Aprons None 45B
    - ◢ 📁 Proposed Aprons None
      - 🔹 P-Aprons None
      - 🔹 P-Aprons None 30A
      - 🔹 P-Aprons None 30B
      - 🔹 P-Aprons None 45A
      - 🔹 P-Aprons None 45B

- ◢ 📁 CMP Aprons
  - ◢ 📁 Arched Steel

◢ 📁 Existing Steel Arched	◢ 📁 Proposed DR-204 Steel Arched
🔹 E-(15")17x13Steel Arch	🔹 P-(15")DR-204(17"x13")Steel Arch
🔹 E-(18")21x15Steel Arch	🔹 P-(18")DR-204(21"x15")Steel Arch
🔹 E-(21")24x18Steel Arch	🔹 P-(21")DR-204(24"x18")Steel Arch
🔹 E-(24")28x20Steel Arch	🔹 P-(24")DR-204(28"x20")Steel Arch
🔹 E-(30")35x24Steel Arch	🔹 P-(30")DR-204(35"x24")Steel Arch
🔹 E-(36")42x29Steel Arch	🔹 P-(36")DR-204(42"x29")Steel Arch
🔹 E-(42")49x33Steel Arch	🔹 P-(42")DR-204(49"x33")Steel Arch
🔹 E-(48")57x38Steel Arch	🔹 P-(48")DR-204(57"x38")Steel Arch
🔹 E-(54")64x43Steel Arch	🔹 P-(54")DR-204(64"x43")Steel Arch
🔹 E-(60")71x47Steel Arch	🔹 P-(60")DR-204(71"x47")Steel Arch
🔹 E-(66")77x52Steel Arch	🔹 P-(66")DR-204(77"x52")Steel Arch
🔹 E-(72")83x57Steel Arch	🔹 P-(72")DR-204(83"x57")Steel Arch

- ▲ 📁 Beveled Pipe Guard
  - ▲ 📁 Existing Pipe Guard
    - ◇ E-(12")DR-212 Pipe Guard
    - ◇ E-(15")DR-212 Pipe Guard
    - ◇ E-(18")DR-212 Pipe Guard
    - ◇ E-(21")DR-212 Pipe Guard
    - ◇ E-(24")DR-212 Pipe Guard
  - ▲ 📁 Proposed DR-212 Pipe Guard
    - ◇ P-(12")DR-212 Pipe Guard
    - ◇ P-(15")DR-212 Pipe Guard
    - ◇ P-(18")DR-212 Pipe Guard
    - ◇ P-(21")DR-212 Pipe Guard
    - ◇ P-(24")DR-212 Pipe Guard
- ▲ 📁 Circular Steel
  - ▲ 📁 Existing Steel Circular
    - ◇ E-(06")Steel Circular
    - ◇ E-(08")Steel Circular
    - ◇ E-(10")Steel Circular
    - ◇ E-(12")Steel Circular
    - ◇ E-(15")Steel Circular
    - ◇ E-(18")Steel Circular
    - ◇ E-(21")Steel Circular
    - ◇ E-(24")Steel Circular
    - ◇ E-(30")Steel Circular
    - ◇ E-(36")Steel Circular
    - ◇ E-(42")Steel Circular
    - ◇ E-(48")Steel Circular
    - ◇ E-(54")Steel Circular
    - ◇ E-(60")Steel Circular
    - ◇ E-(66")Steel Circular
    - ◇ E-(72")Steel Circular
    - ◇ E-(78")Steel Circular
    - ◇ E-(84")Steel Circular
    - ◇ E-(90")Steel Circular
    - ◇ E-(96")Steel Circular
  - ▲ 📁 Proposed DR-203 Steel Circular
    - ◇ P-(06")DR-203 Steel Circular
    - ◇ P-(08")DR-203 Steel Circular
    - ◇ P-(10")DR-203 Steel Circular
    - ◇ P-(12")DR-203 Steel Circular
    - ◇ P-(15")DR-203 Steel Circular
    - ◇ P-(18")DR-203 Steel Circular
    - ◇ P-(21")DR-203 Steel Circular
    - ◇ P-(24")DR-203 Steel Circular
    - ◇ P-(30")DR-203 Steel Circular
    - ◇ P-(36")DR-203 Steel Circular
    - ◇ P-(42")DR-203 Steel Circular
    - ◇ P-(48")DR-203 Steel Circular
    - ◇ P-(54")DR-203 Steel Circular
    - ◇ P-(60")DR-203 Steel Circular
    - ◇ P-(66")DR-203 Steel Circular
    - ◇ P-(72")DR-203 Steel Circular
    - ◇ P-(78")DR-203 Steel Circular
    - ◇ P-(84")DR-203 Steel Circular
    - ◇ P-(90")DR-203 Steel Circular
    - ◇ P-(96")DR-203 Steel Circular

The additional apron node features listed are not expanded for specific named features.

▲ 📁 RCP Aprons
   ▲ 📁 Arched
      ▲ 📁 Existing
         ▷ 📁 Arched
         ▷ 📁 Arched with end wall
         ▷ 📁 Arched with guard
      ▲ 📁 Proposed
         ▷ 📁 Arched DR-202
         ▷ 📁 Arched DR-202 with DR-213 guard
         ▷ 📁 Arched DR-206 with end wall
▲ 📁 Circular
   ▲ 📁 Existing
      ▷ 📁 Circular Type1
      ▷ 📁 Circular Type1 with end wall
      ▷ 📁 Circular Type1 with guard
      ▷ 📁 Circular Type2
      ▷ 📁 Circular Type2 with end wall
      ▷ 📁 Circular Type2 with guard
   ▲ 📁 Proposed
      ▷ 📁 Circular DR-201 Type1
      ▷ 📁 Circular DR-201 Type1 with DR-213 guard
      ▷ 📁 Circular DR-201 Type2
      ▷ 📁 Circular DR-201 Type2 with DR-213 guard
      ▷ 📁 Circular DR-205 Type1 with end wall
      ▷ 📁 Circular DR-205 Type2 with end wall
▲ 📁 Ellipse
   ▲ 📁 Existing
      ▷ 📁 Ellipse
      ▷ 📁 Ellipse with end wall
      ▷ 📁 Ellipse with guard
   ▲ 📁 Proposed
      ▷ 📁 Ellipse DR-202
      ▷ 📁 Ellipse DR-202 with DR-213 guard
      ▷ 📁 Ellipse DR-206 with end wall

7

The reinforced concrete box headwalls are organized and named by number of barrels, type of wings, skew, and size. These features are not expanded for specific named features.

- ▲ 📁 RCB head walls
  - ▲ 📁 CIP
    - ▲ 📁 Single
      - ▲ 📁 Parallel Wing
        - ▲ 📁 0 Skew
          - ▷ 📁 Existing
          - ▷ 📁 Proposed PWH 0
        - ▷ 📁 15 Skew
        - ▷ 📁 30 Skew
        - ▷ 📁 45 Skew
    - ▲ 📁 Triple
      - ▲ 📁 Flared Wing
        - ▲ 📁 0 Skew
          - ▷ 📁 Existing
          - ▷ 📁 Proposed
        - ▷ 📁 15 Skew
        - ▷ 📁 30 Skew
    - ▲ 📁 Twin
      - ▲ 📁 Flared Wing
        - ▲ 📁 0 Skew
          - ▷ 📁 Existing
          - ▷ 📁 Proposed TWH 0
        - ▷ 📁 15 Skew
        - ▷ 📁 30 Skew

These features are expanded for specific named features.

- ▲ 📁 Pedestrian Tunnel head walls
  - ▲ 📁 CIP
    - ▲ 📁 Flared Wing
      - ▲ 📁 0 Skew
        - ▲ 📁 Existing
          - 🔶 E_CIP12x 10-4 Pedestrian Tunnel
        - ▲ 📁 Proposed
          - 🔶 P_CIP12 x 10-4 Pedestrian Tunnel
- ▲ 📁 Stock Pass head walls
  - ▲ 📁 Precast
    - ▲ 📁 Parallel Wing
      - ▲ 📁 Existing
        - 🔶 E-(4'x6')510-4 48"x72"Conc Arch Stock Pass
        - 🔶 E-(5'x7')510-4 60"x84"Conc Arch Stock Pass
        - 🔶 E_06x07_PRCB_SGL_PW_0_Stock Pass
      - ▲ 📁 Proposed 510-4
        - 🔶 P-(4'x6')510-4 48"x72"Conc Arch Stock Pass
        - 🔶 P-(5'x7')510-4 60"x84"Conc Arch Stock Pass
        - 🔶 P_06x07_PRCB_SGL_PW_0_Stock Pass

These are not intended to be an all-inclusive lists of possible existing or proposed nodes. Several categories have been populated only as needed for active projects. Work continues to create features for what exists in our structure inventory and what we have for culvert standards.

The feature symbology provided through the element templates and levels used are provided in the same dgnlib file.

Refer to CONNECT Levels for additional information on the levels used for the features in OpenRoad Designer.

The feature symbology is organized by four main categories.
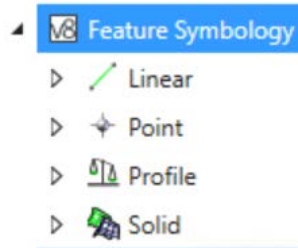
The pipe and culvert feature symbology for the main structure are provided under Linear, Conduit, StormWater and are named the same as the features. Each symbology specifies an element template for the Plan and the 3D model.

An example of properties settings is shown below.

The pipe and culvert feature symbology for types of pipe aprons and culvert headwalls are provided under Point, Node, StormWaterNode and are named the same as the features.

These are organized by existing and proposed and then categorized by type of node.

- StormWaterNode
  - Existing
    - Aprons
    - CIP
    - Conc Arch
    - Conc Ellipse
    - Pipe Guard
    - Steel Arch
    - Steel Circular
    - Type1
    - Type2
  - Proposed
    - 201
    - 202
    - 203
    - 204
    - 205
    - 206
    - 212
    - Aprons
    - CIP
    - Conc Arch
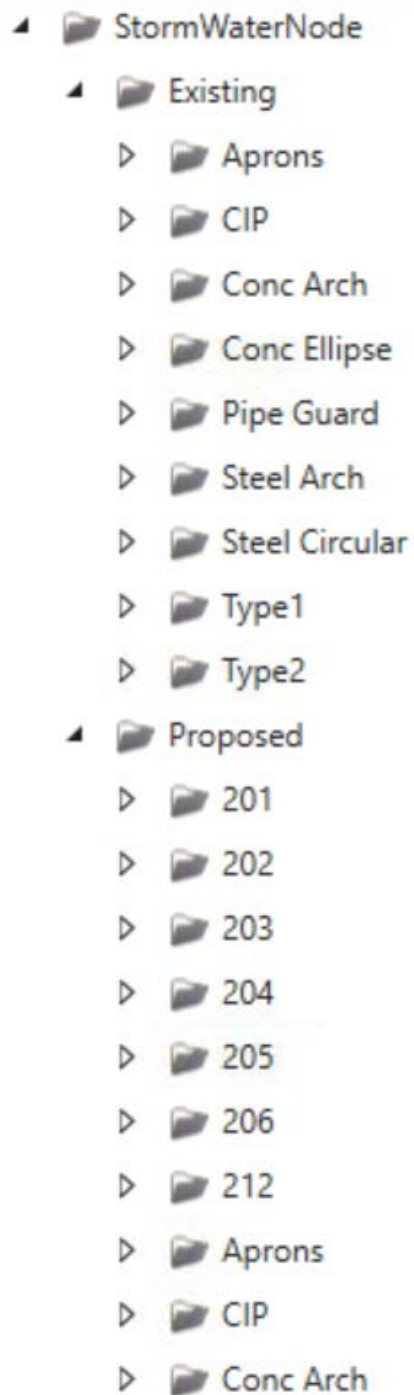
Each symbology specifies an element template for the Plan and Profile.

An example of properties settings is shown below.

The pipe and culvert feature symbology for the structure profiles are provided under Profile, Conduit, StormWater and Profile, Node, StormWaterNode. These are named the same as the features. Each symbology specifies an element template for the Profile.

Examples of properties settings are shown below.

E_10x04_CIP_TRH_FW_15_LA

Annotation Group	
Annotation Group	None

Defaults	
Default Element Template	None

Profile Intersection	
Element Template	None

Profile Projection	
Element Template	None

Profile	
Element Template	Storm Sewer Nodes\Drainage Node Profile
Curve Element Template	None

The pipe and culvert feature symbology for the solid category are provided under Solid, Conduit, StormWater and Solid, Node, StormWaterNode. These are named similar to the features. Each symbology specifies an element template for 3D modeling.

Proposed CIP Box Culverts Triple

Defaults	
Default Element Template	None

3D	
Top Template	Culverts Conduits\CIP Box Culverts RCB\Proposed\P_CIP_RCB_3D Concrete
Bottom Template	None

P_10x04_CIP_TRH_FW_15_LA

Defaults	
Default Element Template	None

3D	
Top Template	None
Bottom Template	Headwalls RCB\CIP\Triple\Flared Wing\15 Skew\Proposed\10X04\P_10x04_CIP_TRH_FW_LA_15_ 3D

The existing and proposed culvert features use the CulvertExisting and CulvertProposed levels for al features.

ProStructures is not a feature-based application.

CONNECT Standard Libraries

For CONNECT projects OpenBridge Modeler contains standard libraries for decks, barriers, beams, columns, piers, abutments, wingwall, material, stiffeners, cross frames, connection, shear studs, and splices.

For information on the libraries for decks, barriers, beams, and piers refer to Iowa DOT CONNECT Edition Standard Templates. These libraries contain Iowa specific options stored as templates.

There are no Iowa specific customizations for the columns, abutments, wingwall, stiffeners, cross frames, connection, shear studs, and splices libraries at this time.

For the materials library Iowa specific options are provided. The items are shown below organized by category tab.

Concrete

Name	Description	Unit Wt (PCF)	Unit Price	Poisson	f'c (ksi)	f'ci (ksi)	MR (ksi)	E (ksi)	CTE (1/F)
Click here to add new item									
14 IN. P10L Prestressed Concrete Piles	Piles – Concrete (P10L TYPE 2)	150	1	0.2	5	5	0.59	4592.232476	6E-06
16 IN. P10A Prestressed Concrete Piles	Piles – Concrete (P10A TYPE 2)	150	1	0.2	5	5	0.59	4592.232476	6E-06
16 IN. P10L Prestressed Concrete Piles	Piles – Concrete (P10L TYPE 2)	150	1	0.2	5	5	0.59	4592.232476	6E-06
A30-A42, B34-B50, C30-C67 BEAMS	PPCB	150	1	0.2	5	5	0.54	4592	6E-06
A46-A55, B55-B67, BTC80-BTC90, BTD100-BTD105, BTB80 Beams	PPCB	150	1	0.2	7	6	0.63	5131.521081	6E-06
BTB70 Beams	PPCB	150	1	0.2	5.5	5	0.56	4738.96446	6E-06
BTC100, BTD115-BTD120, BTE135 Beams	PPCB	150	1	0.2	8	7	0.68	5362.699475	6E-06
BTC105, BTD125, BTB90, BTE140-BTE145 Beams	PPCB	150	1	0.2	8.5	7.5	0.7	5471.066702	6E-06
BTC110-BTC115, BTC120, BTD130-BTD135, BTB95-BTB105, BTE150-BTE155 Beams	PPCB	150	1	0.2	9	8	0.72	5575.242887	6E-06
BTC30-BTC60, BTD50-BTD70, BTB30-BTB65, BTE60-BTE75 Beams	PPCB	150	1	0.2	5	4.5	0.54	4592	6E-06
BTD90-BTD95, BTB75 Beams	PPCB	150	1	0.2	6.5	5.5	0.61	5007.548587	6E-06
BTE115-BTE120 Beams	PPCB	150	1	0.2	6	5.5	0.59	4877.010345	6E-06
C71-C80, BTC65-BTC75, BTD75-BTD85, BTE80-BTE110 Beams	PPCB	150	1	0.2	6	5	0.59	4877.010345	6E-06
D100-D105 Beams	PPCB	150	1	0.2	7.5	6	0.66	5249.693898	6E-06
D110, BTC95, BTD110, BTB85, BTE125-BTE130 Beams	PPCB	150	1	0.2	7.5	6.5	0.66	5249.693898	6E-06
D35-D95 Beams	PPCB	150	1	0.2	5	5	0.54	4592	6E-06
Deck Concrete - CCS & PPCB Bridges	CIP Superstructure	150	1	0.2	3.5	3.5	0.45	4082.312237	6E-06
Deck Concrete - RS Bridges	CIP Superstructure	150	1	0.2	4	4	0.48	4266	6E-06

Name	Description	Unit Wt (PCF)	Unit Price	Poisson	Fy (ksi)	Fu (ksi)	G (ksi)	E (ksi)	CTE (1/F)
High Performance Structural Concrete	High Performance	150	1	0.2	5	0	0.54	4592	6E-06
Precast Abutment Backwall	Precast Backwall	150	1	0.2	5	0	0.54	4592	6E-06
Precast Footing Abutment	Precast Footing	150	1	0.2	5	0	0.54	4592	6E-06
Prestressed Concrete Deck Units	Precast Decks	150	1	0.2	6	0	0.59	4877	6E-06
Pretensioned Prestressed Concrete, Box Beams	BOX BEAMS	150	1	0.2	5	4.5	0.54	4592.232476	6E-06
Reinforced Concrete, Box Beams	CIP BOX BEAMS	150	1	0.2	4	4	0.48	4266.223084	6E-06
Self-consolidating concrete	Self-concolidating	150	1	0.2	5	0	0.54	4592	6E-06
Structural Concrete	Structural Concrete	150	1	0.2	4	0	0.48	4266	6E-06
Structural Concrete (Bridge) - CCS & PPCB Bridges	Typical Bridge Concrete	150	1	0.2	3.5	0	0.45	4082.312237	6E-06
Structural Concrete (Bridge) - RS Bridges	Typical Bridge Concrete	150	1	0.2	4	0	0.48	4266	6E-06
Structural Concrete (Miscellaneous) - CCS & PPCB Bridges	Repairs	150	1	0.2	3.5	0	0.45	4082.312237	6E-06
Structural Concrete (Miscellaneous) - RS Bridges	Repairs	150	1	0.2	4	0	0.48	4266	6E-06
Structural Concrete, Class X	Seal Courses	150	1	0.2	3.5	0	0.45	4082.312237	6E-06
Substructure Concrete - Drilled shafts	Generic Substructure	150	1	0.2	4	0	0	0	0
Substructure Concrete - PPCB Bridges	Generic Substructure	150	1	0.2	3.5	3.5	0.45	4082.312237	6E-06
Substructure concrete (other)	Substructure concrete	150	1	0.2	4	0	0.48	4266	6E-06
UHPC - Heat Treated	UHPC Joint for County Box Bea	150	1	0.2	25	0	0	0	0
UHPC - Not Heat Treated at 28 days	UHPC Joint for County Box Bea	150	1	0.2	21	0	0	0	0
UHPC - Not Heat Treated at 4 Days	UHPC Joint for County Box Bea	150	1	0.2	12	0	0	0	0
Ultra High Performance Concrete Joint	UHPC Joint	150	1	0.2	10	0	0.76	5772	6E-06

Steel

Name	Description	Unit Wt (PCF)	Unit Price	Poisson	Fy (ksi)	Fu (ksi)	G (ksi)	E (ksi)	CTE (1/F)
Click here to add new item									
CrossFrames Gr. 36	Grade 36	490	1	0.295	36	58	11500	29000	6.5E-06
Curved box girders	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06
Curved plate girders	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel Pipe, 14 IN. (P10A TYPE 1)	Steel Piles	490	1	0.295	42	58	11500	29000	6.5E-06
Piles, Steel Pipe, 14 IN. (P10L TYPE 1)	Steel Piles	490	1	0.295	42	58	11500	29000	6.5E-06
Piles, Steel Pipe, 16 IN. (P10A TYPE 1)	Steel Piles	490	1	0.295	42	58	11500	29000	6.5E-06
Piles, Steel Pipe, 16 IN. (P10L TYPE 1)	Steel Piles	490	1	0.295	42	58	11500	29000	6.5E-06
Piles, Steel, HP 10 X 42	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 10 X 42 (CONCRETE ENCASEMENT P10A TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 10 X 42 (CONCRETE ENCASEMENT P10L TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 10 X 57	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 10 X 57 (CONCRETE ENCASEMENT P10A TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 10 X 57 (CONCRETE ENCASEMENT P10L TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 53	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 53 (CONCRETE ENCASEMENT P10A TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 53 (CONCRETE ENCASEMENT P10L TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 63	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 74	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 12 X 84	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 102	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 117	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 73	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 73 (CONCRETE ENCASEMENT P10L TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 89	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 14 X 89 (CONCRETE ENCASEMENT P10L TYPE 3)	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Piles, Steel, HP 8 X 36	Steel Piles	490	1	0.295	50	65	11500	29000	6.5E-06
Rolled wide flange sections	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06
Straight box girders	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06
Straight plate girders	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06
Structural Steel Gr. 36	Grade 36	490	1	0.295	36	65	11500	29000	6.5E-06
Structural Steel Gr. 50	Grade 50	490	1	0.295	50	65	11500	29000	6.5E-06
Structural Steel Gr. 50W	Grade 50W	490	1	0.295	50	65	11500	29000	6.5E-06

Miscellaneous

Name	Description	Unit Price
Click here to add new item		
Concrete Barrier Railing	Traffic Barrier	1
Concrete Barrier Railing, Aesthetic	Traffic Barrier	1
Concrete Barrier, Reinforced, Separation	Traffic Barrier	1
Concrete Open Railing	Traffic Barrier	1
Concrete Open Railing, TL-4	Traffic Barrier	1
Disc Bearing	Disc Bearing	1
Excavation	Earthwork	1
Neoprene Bearing Pads	Neoprene Pad	1
Rocker bearing	Rocker Bearing	1

Iowa chose not to include unit price values for materials.

CONNECT Standard Templates

For CONNECT projects OpenBridge Modeler Iowa specific templates are available for the placement and modification of decks, barriers, beams, and pier components of a bridge.

The templates are shown below organized by component.

Deck templates are available for various types of superstructure and configurations of the deck and is indicated in the name.

```
Iowa DOT
    BT Deck
    BT Deck- 60'
    BT Deck- PGL LT
    BT Deck- PGL LT Median CL
    BT Deck- PGL RT
    BT Deck- PGL RT Median CL
    BT Deck- SW Option
    BTB Deck
    Continuous Concrete Slab Deck
    Continuous Concrete Slab Deck- PGL LT
    Continuous Concrete Slab Deck- PGL LT Median CL
    Continuous Concrete Slab Deck- PGL RT
    Continuous Concrete Slab Deck- PGL RT Median CL
    Steel Girder Deck
    Steel Girder Deck- PGL LT
    Steel Girder Deck- PGL LT Median CL
    Steel Girder Deck- PGL RT
    Steel Girder Deck- PGL RT Median CL
```

Abbreviations included in names are:

BT - bulb tee
PGL – profile grade line
LT – left
RT – right
SW – sidewalk
CL – centerline

Barrier templates are available for each type of barrier Iowa DOT allows with left and right variations and is indicated in the name. The directional options allow for correct orientation of the placed barrier.
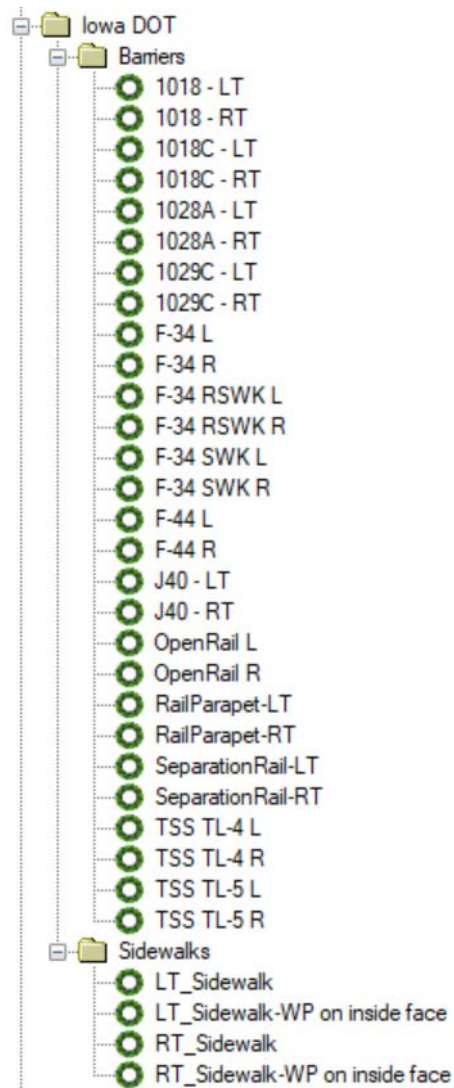
Sidewalk options are provided to be placed separately and are included with the F-34 barrier rails.

- Iowa DOT
  - Barriers
    - 1018 - LT
    - 1018 - RT
    - 1018C - LT
    - 1018C - RT
    - 1028A - LT
    - 1028A - RT
    - 1029C - LT
    - 1029C - RT
    - F-34 L
    - F-34 R
    - F-34 RSWK L
    - F-34 RSWK R
    - F-34 SWK L
    - F-34 SWK R
    - F-44 L
    - F-44 R
    - J40 - LT
    - J40 - RT
    - OpenRail L
    - OpenRail R
    - RailParapet-LT
    - RailParapet-RT
    - SeparationRail-LT
    - SeparationRail-RT
    - TSS TL-4 L
    - TSS TL-4 R
    - TSS TL-5 L
    - TSS TL-5 R
  - Sidewalks
    - LT_Sidewalk
    - LT_Sidewalk-WP on inside face
    - RT_Sidewalk
    - RT_Sidewalk-WP on inside face

Additional abbreviations included in names are:

L – left
R – right
RSWK – raised sidewalk
SWK – sidewalk
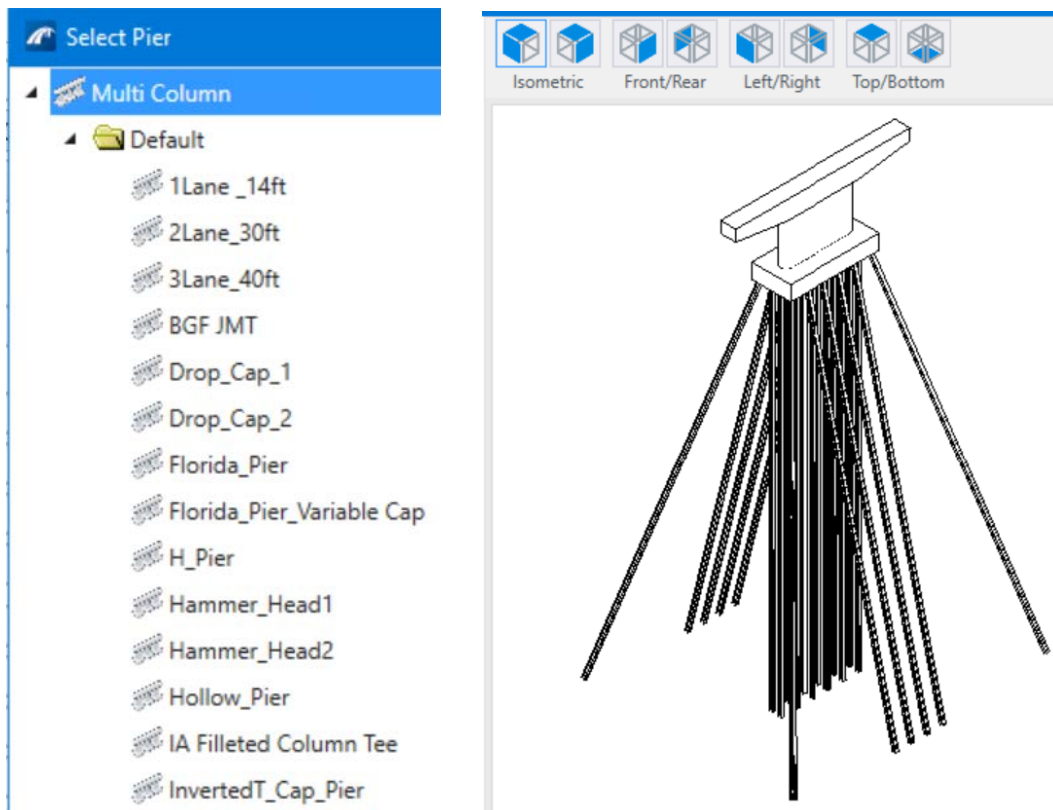TSS – Texas single slope
WP – working point

Beam templates available for each type of prestressed precast beam Iowa DOT allows.
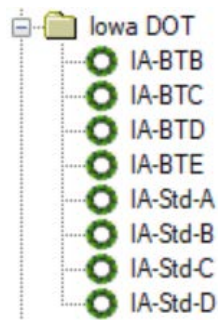
Additional abbreviations included in names are:

Std – Standard

Pier templates include one custom Multi Column Iowa DOT option, IA Filleted Column Tee.

Templates may be modified or new ones added as additional bridge projects are completed in OpenBridge Modeler or new standards are issued. The documentation will be updated as needed.