

## 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.

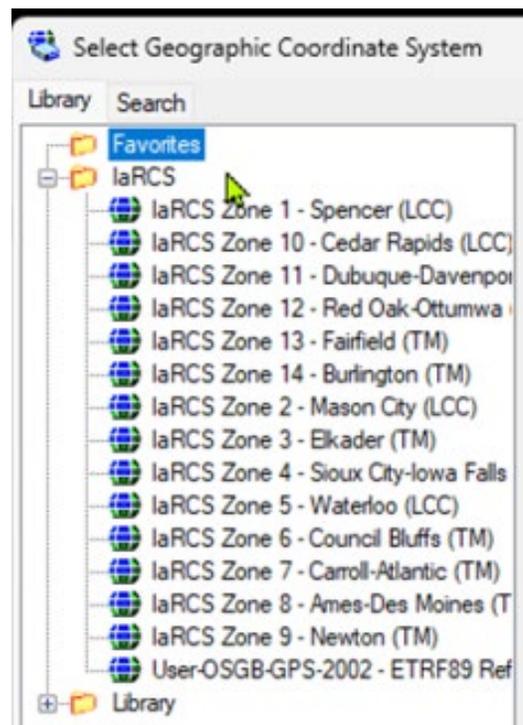
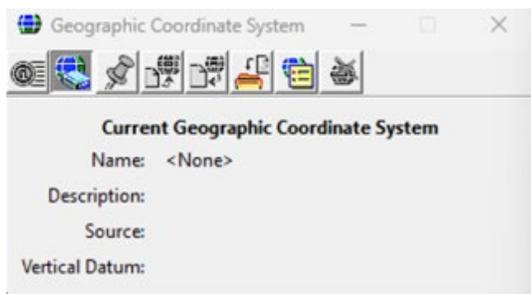
The explanation of the specific name and use of models is provided below.

### Coordinate System

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.

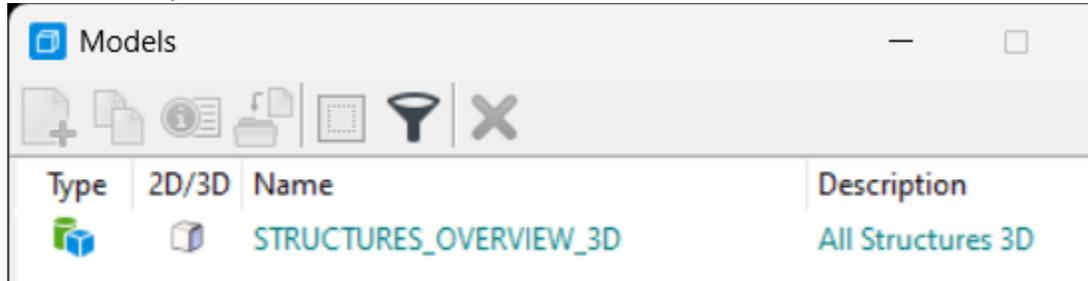
<https://iowadot.gov/design/dmanual/21C-71.pdf>



## **ORD STRUCTURES OVERVIEW Seed**

The STRUCTURES OVERVIEW file contains only references, no live/active elements are placed in this file.

One model is provided.



Type	2D/3D	Name	Description
3D	3D	STRUCTURES_OVERVIEW_3D	All Structures 3D

### **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.

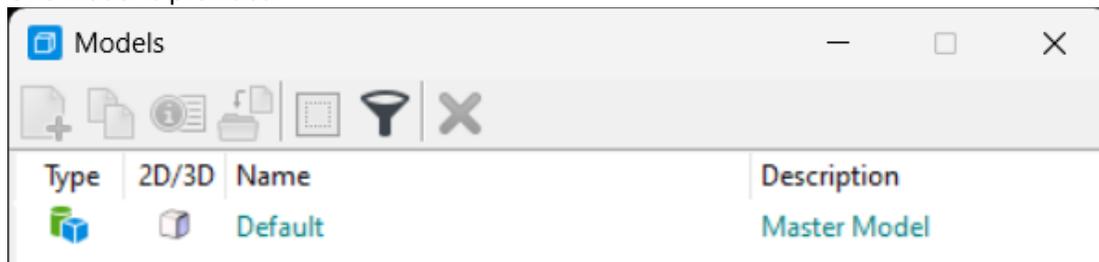
If applicable, other 3D models not listed may also be referenced.

### **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.



Type	2D/3D	Name	Description
3D	3D	Default	Master Model

### **Default**

- 3D design model.

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

Design Model Name example  
FHWA 700630 Polk Design 125

Description  
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.

Type	2D/3D	Name	Description
	<input type="checkbox"/>	PIPES	Road Pipes
	<input type="checkbox"/>	STR info	Pipe and Culvert info 3D

## **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.

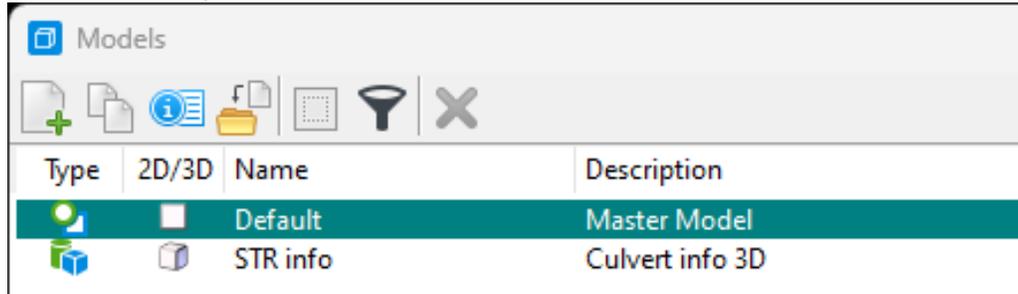
<u>Model Name example</u>	<u>Description</u>
STA 1317+50.00 Longitudinal Section	72” RCP

## **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.



Type	2D/3D	Name	Description
	<input type="checkbox"/>	Default	Master Model
	<input type="checkbox"/>	STR info	Culvert info 3D

### **Default**

- 2D design model.

Rename this model following the guidelines below.

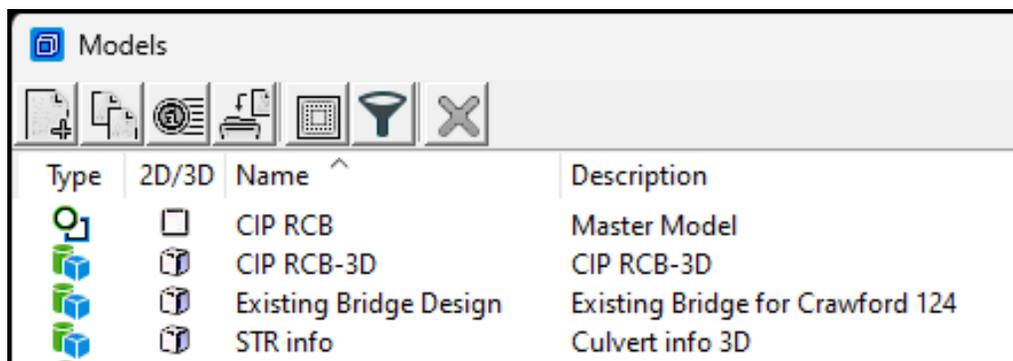
Use for layout of the RCB culvert.

### **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.

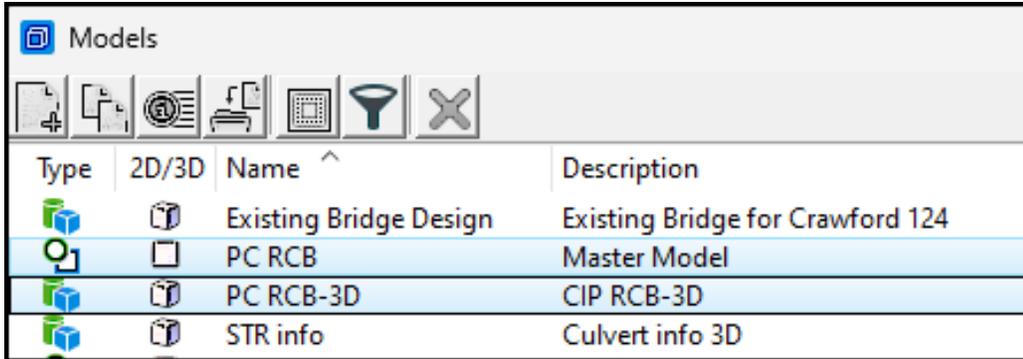


Type	2D/3D	Name ^	Description
	<input type="checkbox"/>	CIP RCB	Master Model
	<input type="checkbox"/>	CIP RCB-3D	CIP RCB-3D
	<input type="checkbox"/>	Existing Bridge Design	Existing Bridge for Crawford 124
	<input type="checkbox"/>	STR info	Culvert info 3D

-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.***



Type	2D/3D	Name	Description
		Existing Bridge Design	Existing Bridge for Crawford 124
		PC RCB	Master Model
		PC RCB-3D	CIP RCB-3D
		STR info	Culvert info 3D

-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.

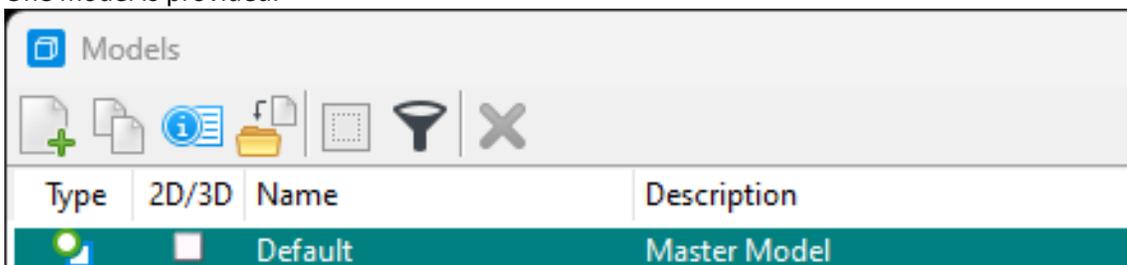
### ORD 2D Seed

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.



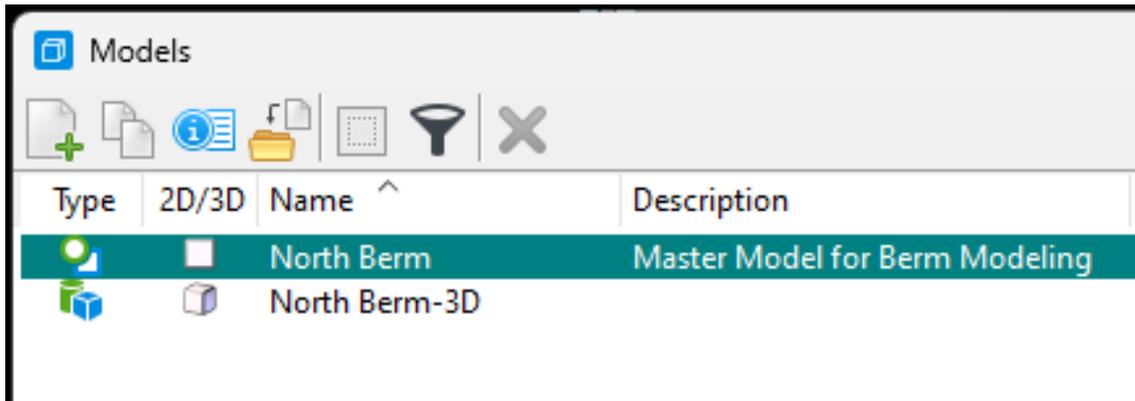
Type	2D/3D	Name	Description
		Default	Master Model

**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**

East Berm Grading Design 125  
East Berm Grading Design 125-3D

**Description**

East Berm 134' x 40' PPCB 2 Span Bridge  
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.

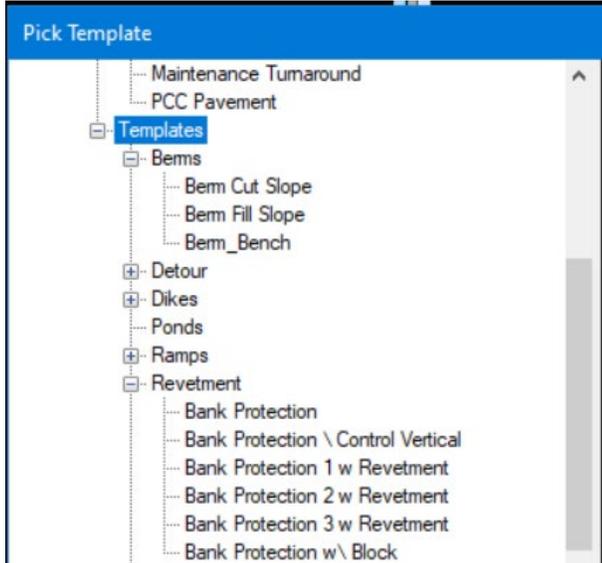
**Design Model Name example**

Revetment Design 125  
Revetment Design 125-3D

**Description**

Revetment 134' x 40' PPCB 2 Span Bridge  
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**

Hydraulics Design 125  
Hydraulics Design 125-3D

**Description**

Hydraulics 134' x 40' PPCB 2 Span Bridge  
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.

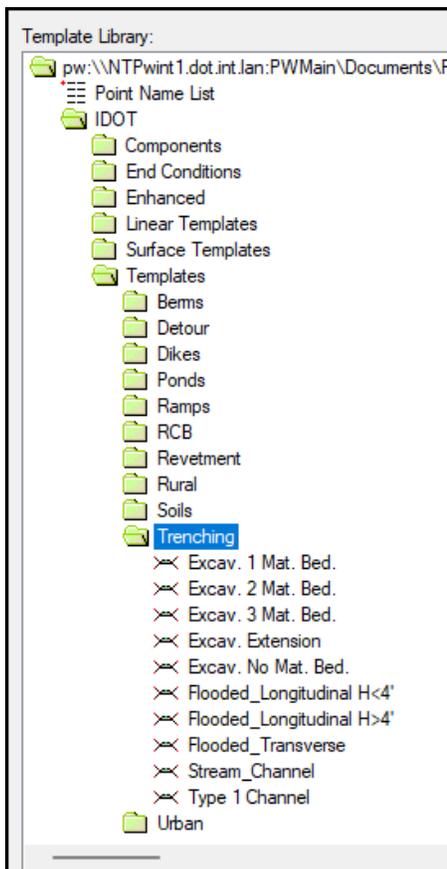
**Design Model Name example**

CIP RCB Excavation Design 125  
 CIP RCB Excavation Design 125-3D  
 PC RCB Excavation Design 125  
 PC RCB Excavation Design 125-3D

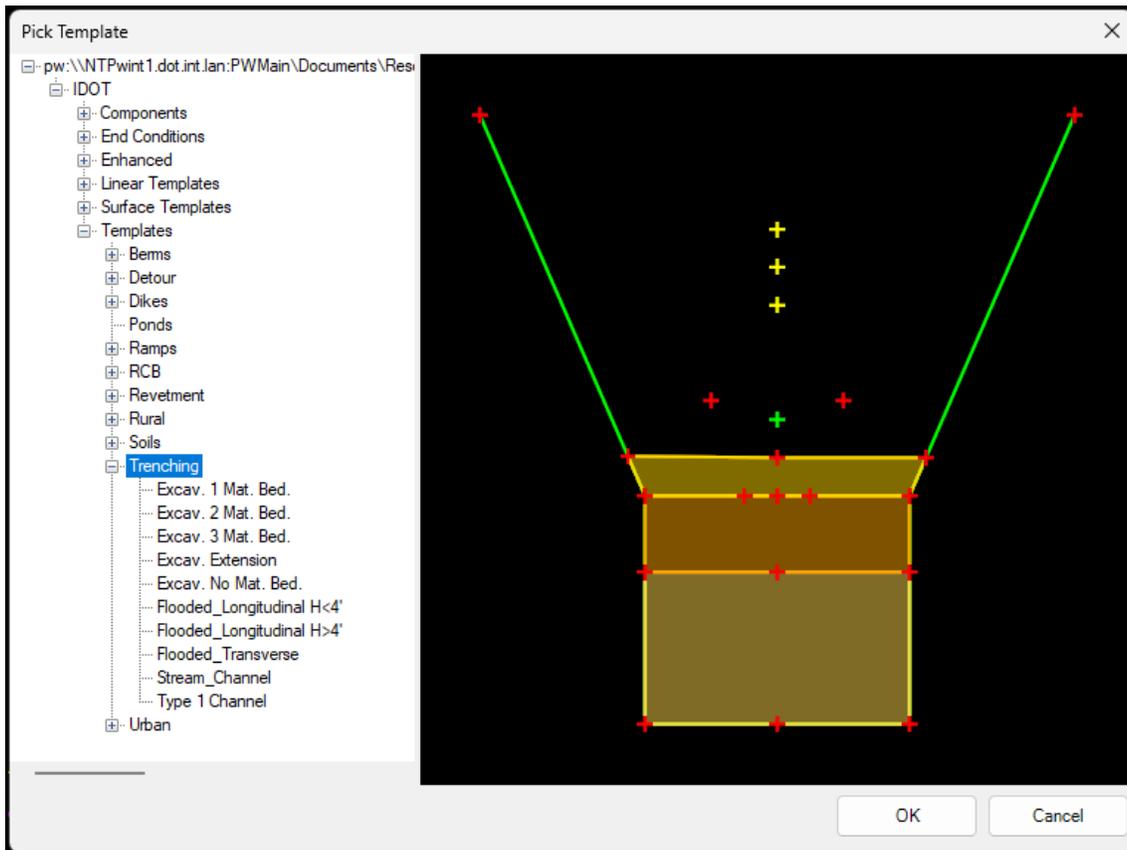
**Description**

CIP RCB Excavation  
 CIP RCB Excavation  
 Precast RCB Excavation  
 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

Plan Design 125 CIP

Plan Design 125 PC

Plan Design 125

#### Description

CIP Triple 12'x 8' RCB

Precast Triple 12'x 8' RCB

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**

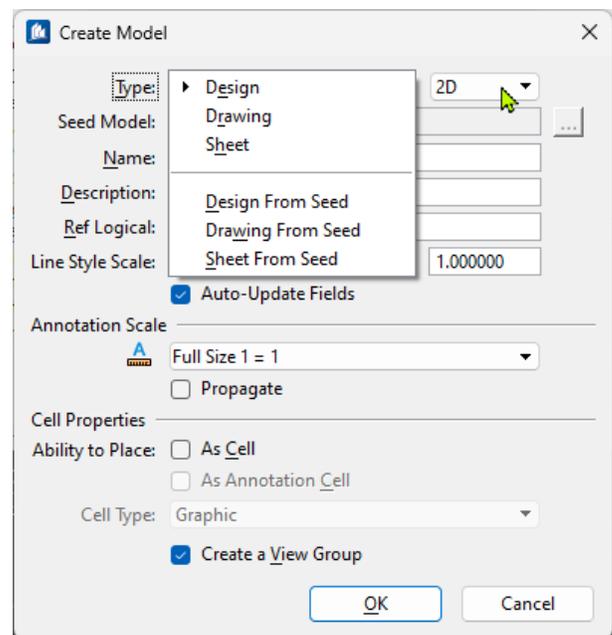
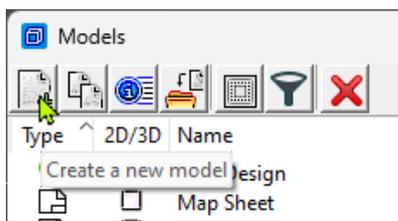
The **Bridge Plan Production Seed** file is used to develop rebar/steel modeling and complete structural details. This file is also used for both 2D & 3D plan development and Sheeting.

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.

Type	2D/3D	Name	Description	Sheet Number	Cell Type
	<input type="checkbox"/>	ORD Design	ORD 2D Design Model		
	<input type="checkbox"/>	New Sheet Bridge	Bridge Plan Sheet Description/Title	000	
	<input type="checkbox"/>	New Sheet Culvert	Culvert Plan Sheet Description/Title	000	
	<input type="checkbox"/>	Map Sheet	Title Sheet Map	000	
	<input type="checkbox"/>	Title Sheet	Title Sheet	000	
	<input type="checkbox"/>	New Sheet Revision RA	Revision Sheet Design No. ????	000	
	<input type="checkbox"/>	Summary Sheet	Summary Quantities Sheet	000	
	<input type="checkbox"/>	Drawing	2D Drawing Model		✓ Graphic
	<input type="checkbox"/>	Map Sheet Text	Edit This for Map Sheet Data		✓ Graphic
	<input type="checkbox"/>	Title Sheet Text	Edit This for Title Sheet Data		✓ Graphic
	<input type="checkbox"/>	Summary Sheet Text	Edit This for Summary Sheet Data		✓ Graphic

### **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

Plan Design 125 CIP

Plan Design 125 PC

Plan Design 125

#### Description

CIP Triple 12'x 8' RCB

Precast Triple 12'x 8' RCB

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

	<u>Description</u>
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

	<u>Description</u>
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

	<u>Description</u>
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

	<u>Description</u>
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.**

<u>Sheet Model Name example</u>	<u>Description</u>
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.