# FOUNDATIONS

CONNECT PLANS PRODUCTION PROCESSES USING MICROSTATION

TOPICS

- **Models: Sheet model seeds** - supports creating one-off sketches or plan sheets.
- **Container Files** - supports understanding the structure of design deliverables to project delivery activities.
- **Live Nesting of References** - supports accessing design data from other disciplines and efficiently assembling contract plans.
- **Design Deliverables** - OPNP, XEC_bas, TERR_CF, CORR_CF, GEOM_CF - knowing how these are created should help you better utilize them in your work.

MICROSTATION or ORD?

- MicroStation Drawing Ribbon Workflow

- OpenRoads Designer Drawing Ribbon Workflow
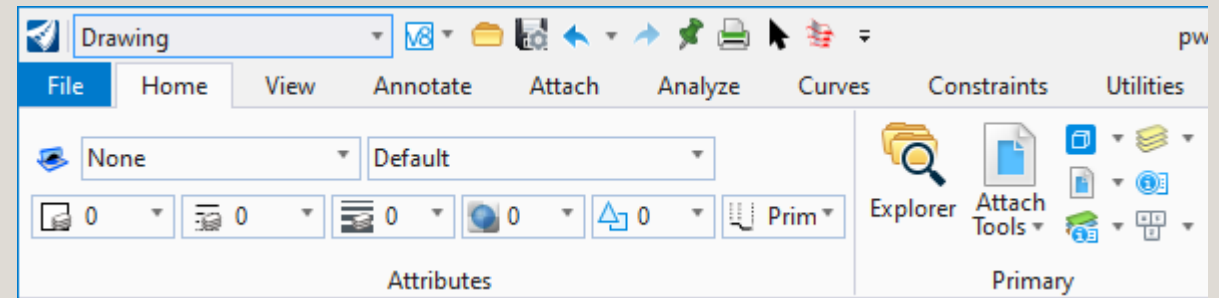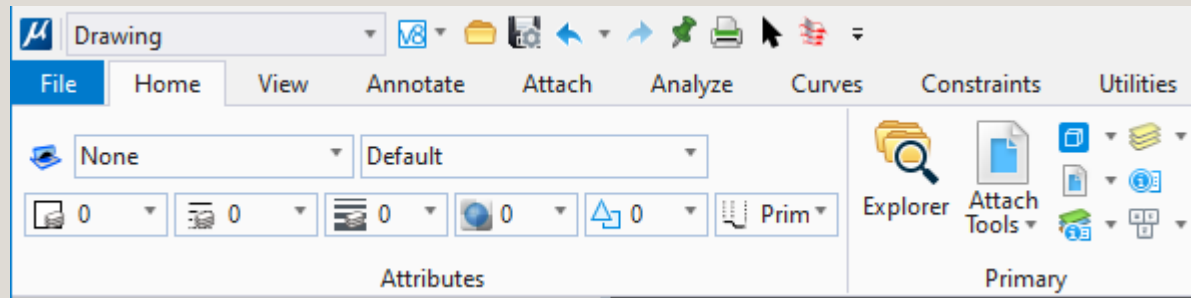
The Drawing ribbon workflow in both MicroStation and OpenRoads Designer is identical - showing the Home tab with Attributes and Primary groups.

SEED FILES

- Design Model Seed Files

| *Software*_Seed2D.dgn	**For Geometry, Corridors, Superelevation, All Container Files, 2D Drafting**
*Software*_Seed3D.dgn	For Terrains and 3D Drafting; NOT for Container Files

- Drawing Model Seed File

- Sheet Model Seed File: Seed2D – Sheet.dgn
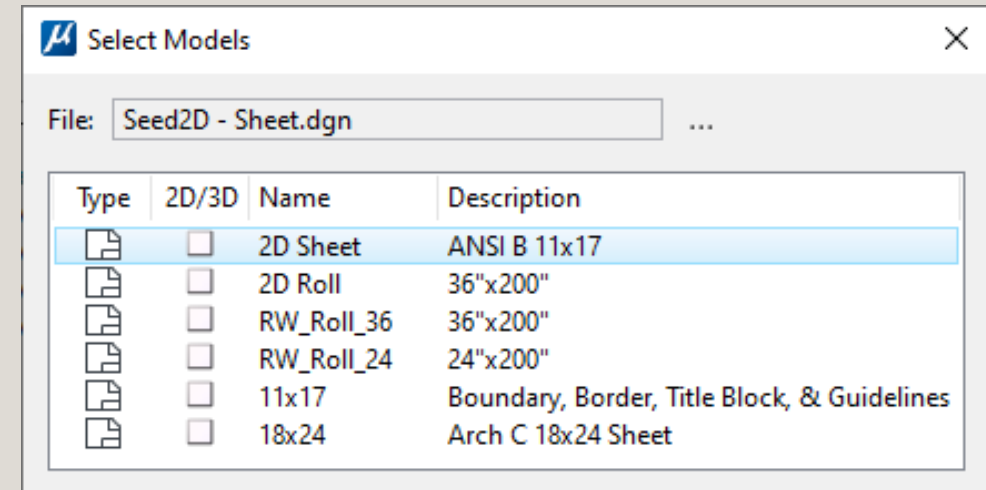
Both MicroStation and OpenRoads Designer use seed files with the software name. The main one used for almost everything in OpenRoads is OpenRoads_Seed2D.dgn. Container Files must be made from OpenRoads_Seed2D.dgn There are six different sheet-type models available for beginning work. Some have boundaries and even titleblocks.

MODEL ANALOGY

SINGLE PAGE IN A NOTEBOOK
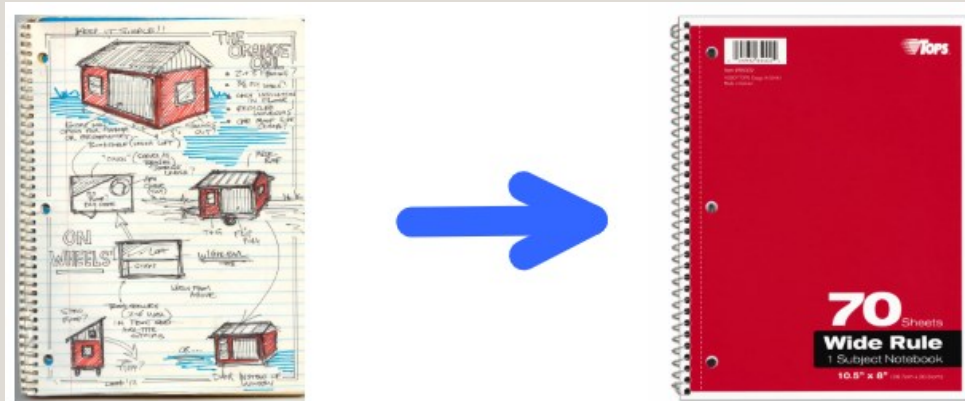
A MODEL IN A DESIGN FILE (DGN)
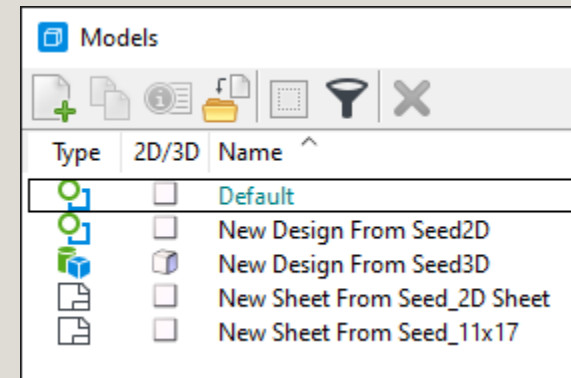
A new model is like a blank page in a notebook - a fresh drawing place.
The new model doesn't have to be empty - it can be a template for standard work.

When we need a fresh place to work in a notebook, we turn the page. When working in a DGN file and we need a fresh place to work, we can create a new model.
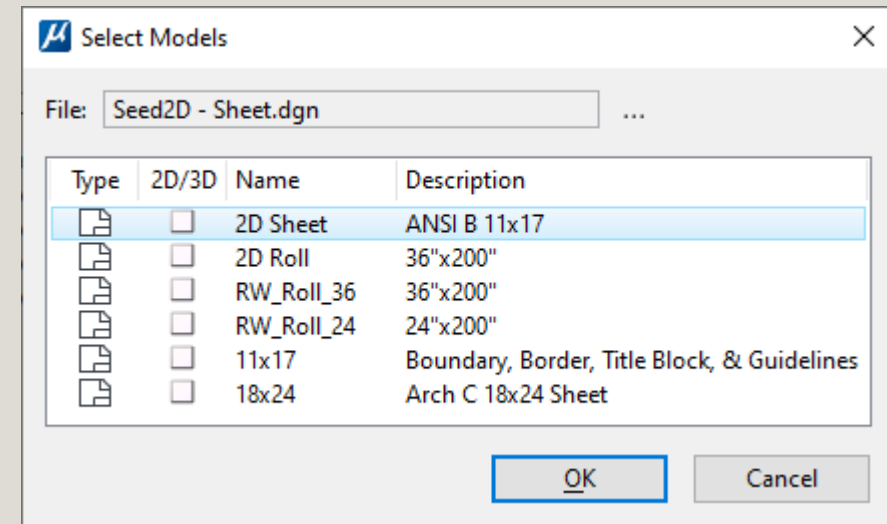
CHOICES WHEN MANUALLY CREATING NEW MODELS

Design From Seed

- 2D

- 3D

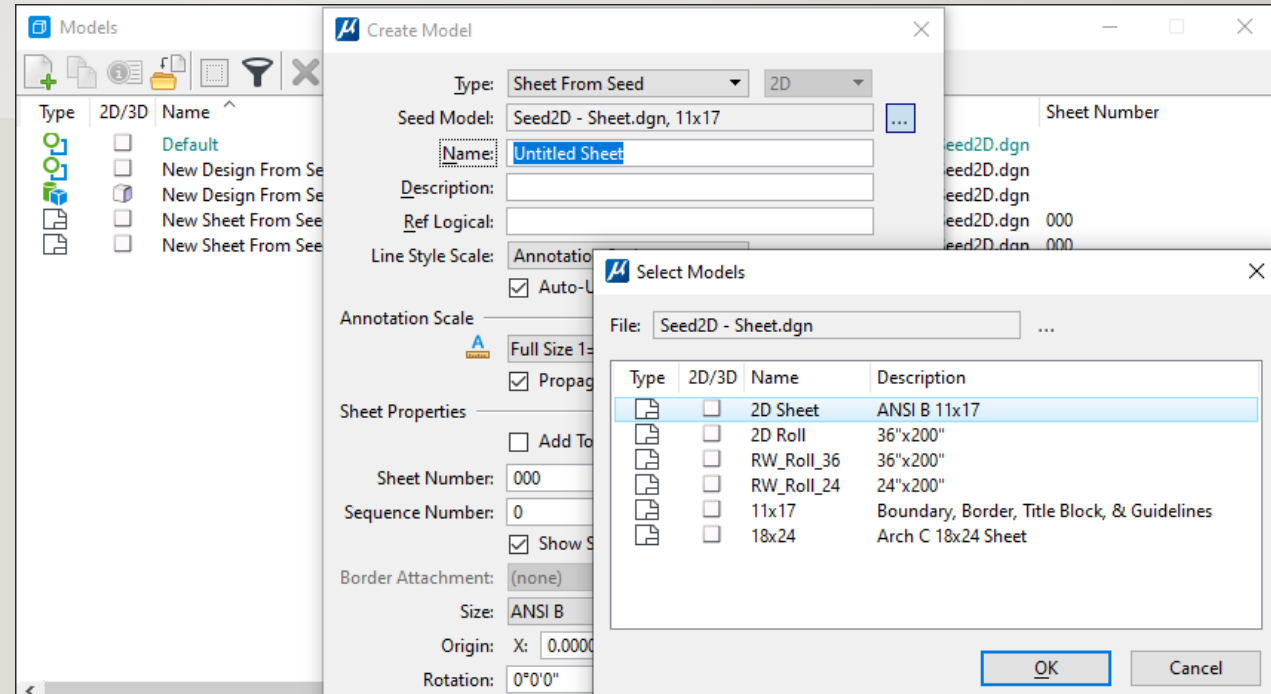**Sheet From Seed**

- Sheet size

- Graphics

The icons that show the differences between models are also shown in the Models dialog. There are Type icons: Design, Drawing, and Sheet – and there are 2D/3D icons.

DEMO

MicroStation

Create New Sheet Models

CONTAINER FILES – THERE'S MORE INSIDE

Pretty sure the term "live nesting" is related to nesting dolls. Each doll nestled inside its parent doll is similar to a reference attachment (child) inside the master DGN file (parent).

CONTAINER FILES

- MicroStation – CAD technicians have been using container files for referencing and assembling plan sets for quite some time – a CAD Base File is a type of container file.
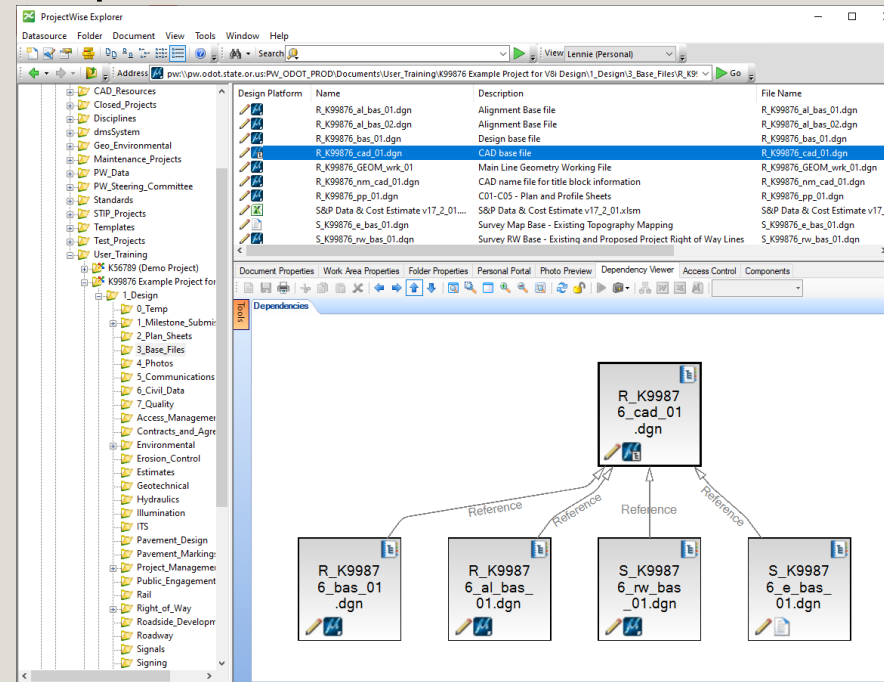
The Dependency Viewer in ProjectWise Explorer shows a CAD Base File with four reference attachments. A CAD Base File is a type of container file.

OPENROADS DESIGNER CONTAINER FILES

OpenRoads Designer uses the container file concept to allow access to civil data through reference attachments. Container files are created from OpenRoads_Seed2D.dgn.

Examples are R_K#####_CORR_bas_CF_##.dgn, R_K#####_GEOM_bas_CF_##.dgn, and S_K#####_TERR_e_bas_CF_##.dgn

Typical ORD container files have:

- only one visible model - Default
- Default model is 2D
- Few graphics in the Default model
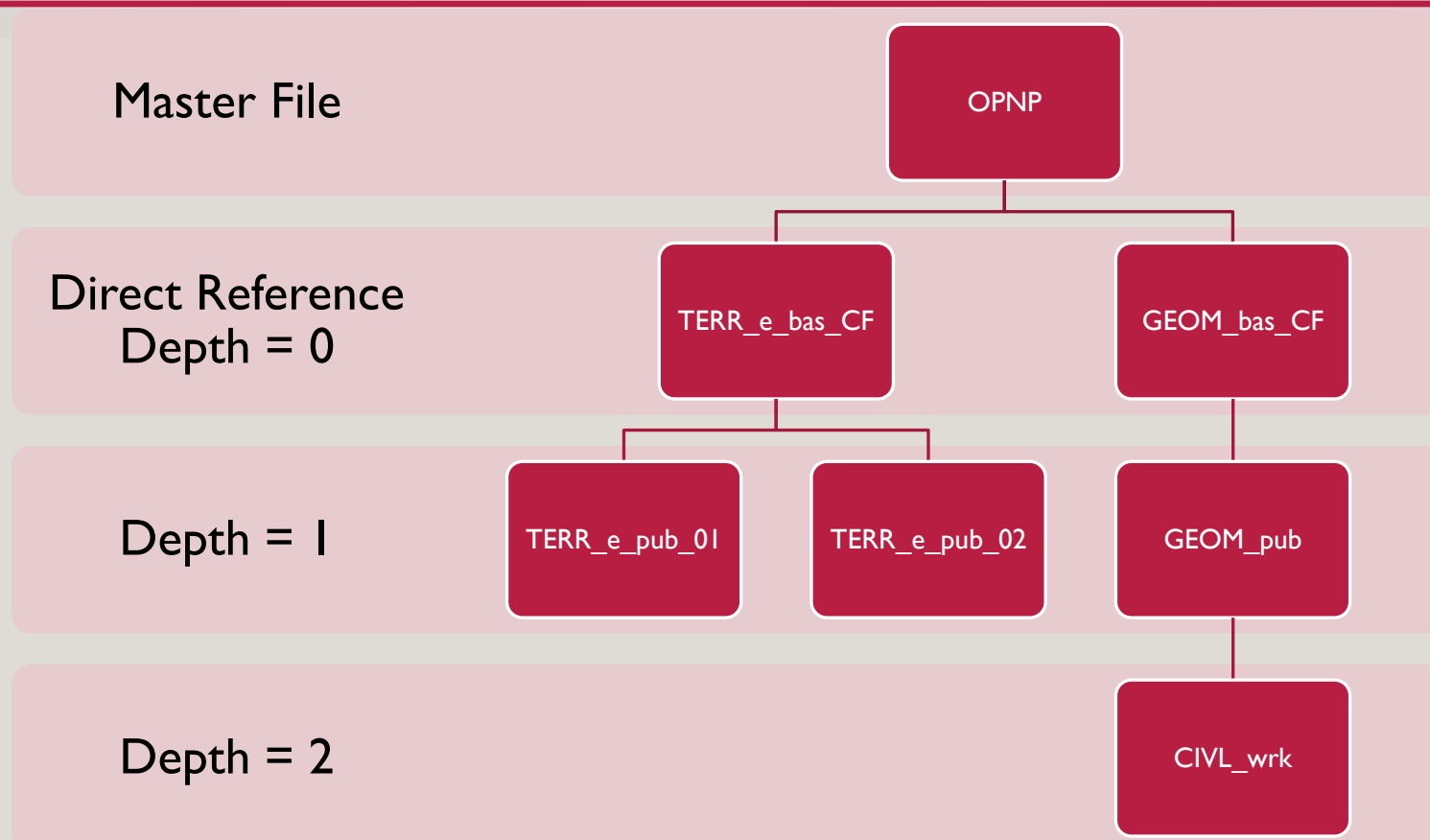- One or many reference attachments
- May use nested referencing

ORD container files have specific requirements and the most important is – it is created from a 2D file – use OpenRoads_Seed2D.dgn for creating all ORD container files.

OPENROADS DESIGNER CONTAINER FILES
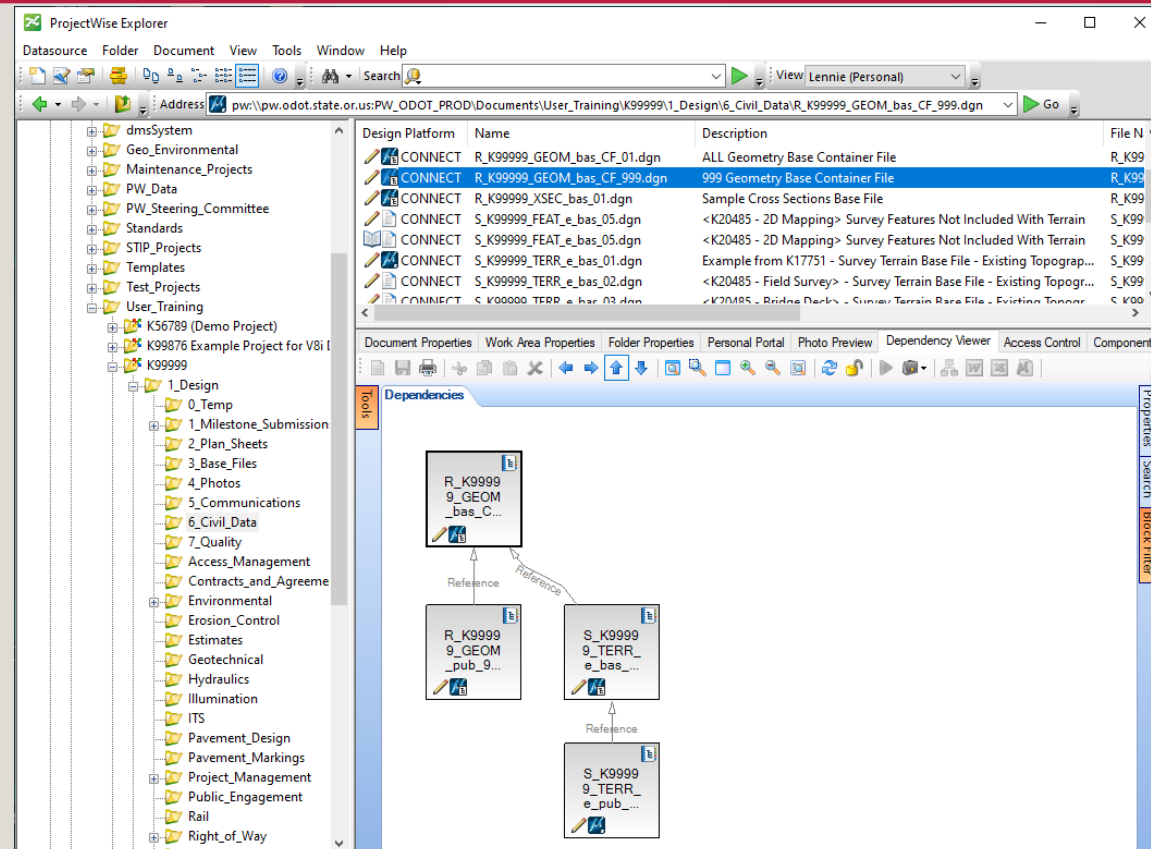
The Dependency Viewer in ProjectWise Explorer shows a Geometry Base Container File with four reference attachments – at different levels. Live nesting will need to be toggled on for the Terrain Container File attachment in order to see the published terrain graphics nested inside.
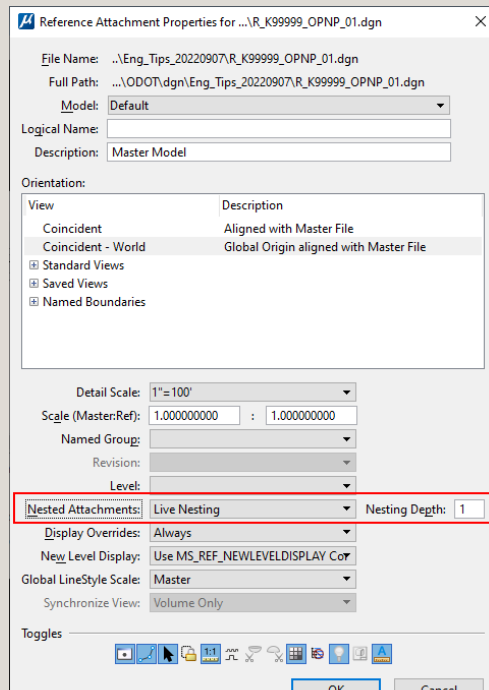
LIVE NESTING DEPTHS

Master File

OPNP

**Direct Reference
Depth = 0**

TERR_e_bas_CF

GEOM_bas_CF

Depth = 1

TERR_e_pub_01

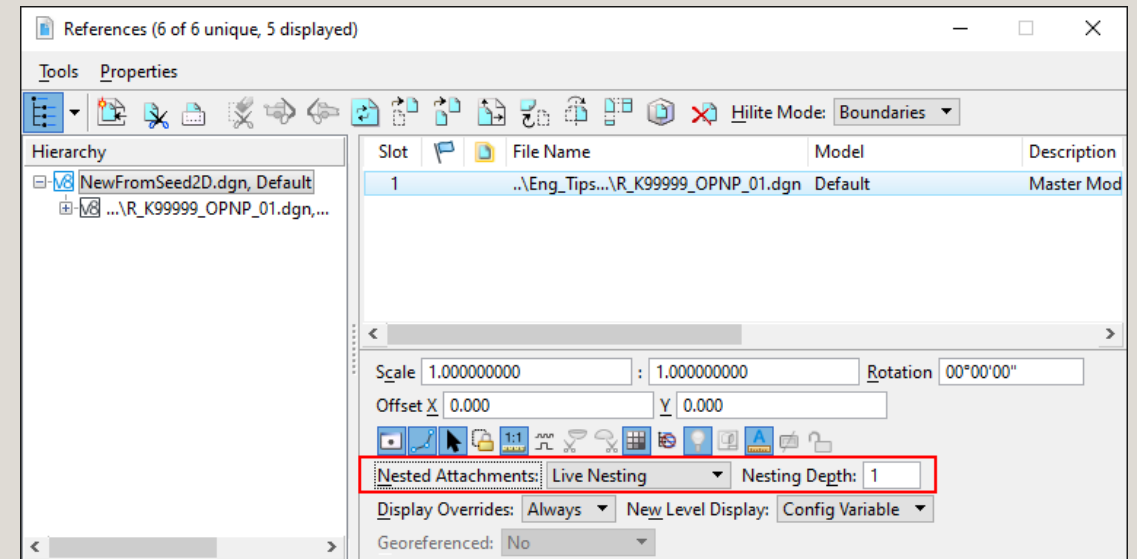TERR_e_pub_02

GEOM_pub

Depth = 2

CIVL_wrk

Good practice when attaching references with Live Nesting is to begin with Depth = 1. If you don't see the graphics, increase the depth by one until the graphics are seen.

ADDING LIVE NESTING

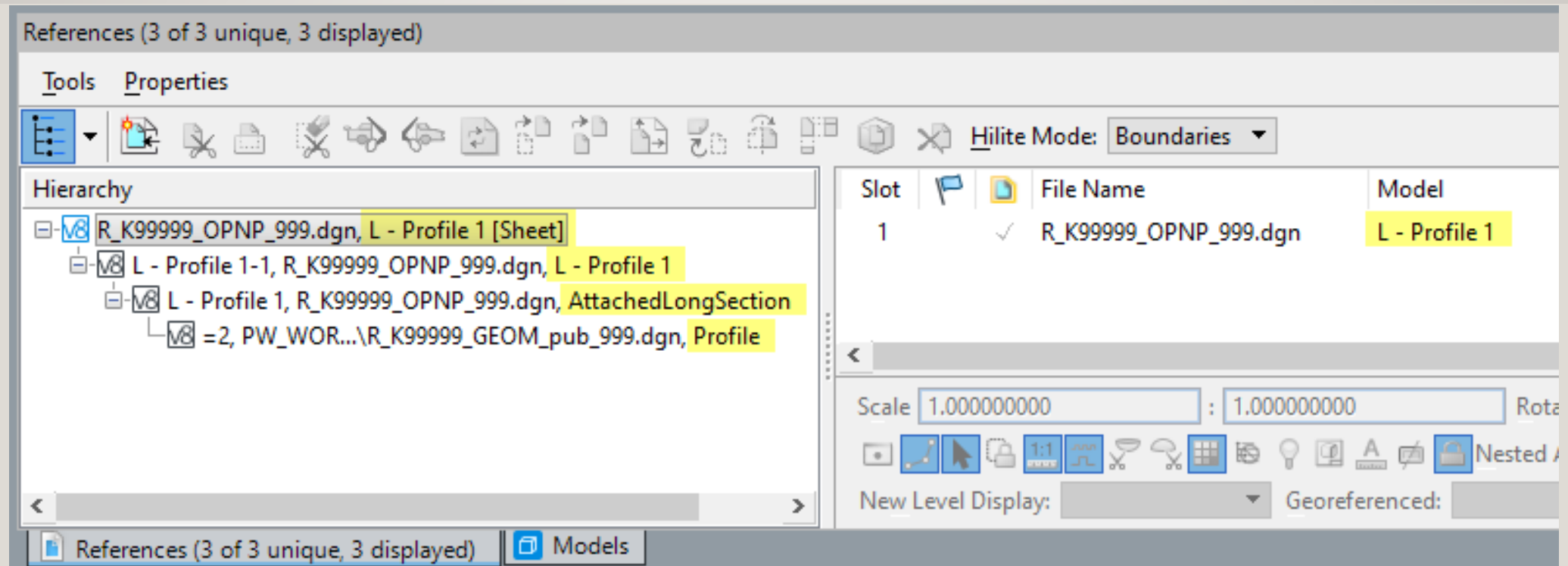## WHILE ATTACHING REFERENCE

ON REFERENCE DIALOG

Live Nesting can be toggled on at the time the reference attachment is made and also toggled on later using the References dialog.

# REFERENCE DIALOG SHOWS THE MODEL NAME

When Live Nesting is used to attach a sheet model that was created by ORD, you can see the nested model names (highlighted yellow). Note that "AttachedLongSection" and "Profile" are dynamic models that cannot be directly attached – they do not appear in the Models pick list when attaching references.

DEMO

Explore the Structure of a CAD Base File (top)

and an ORD Container File (bottom)
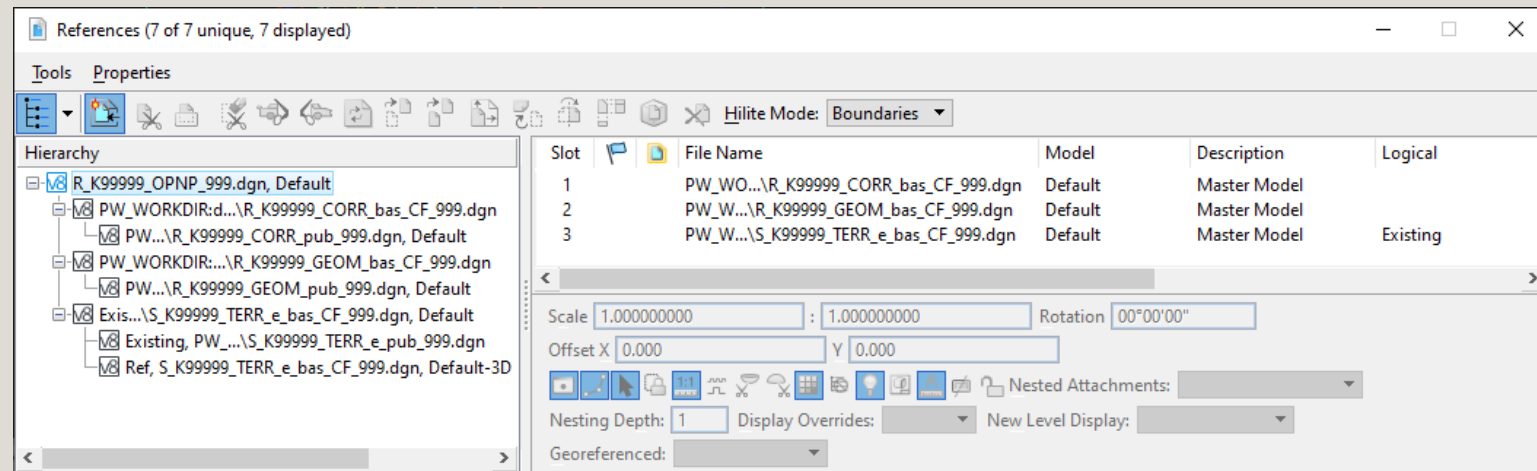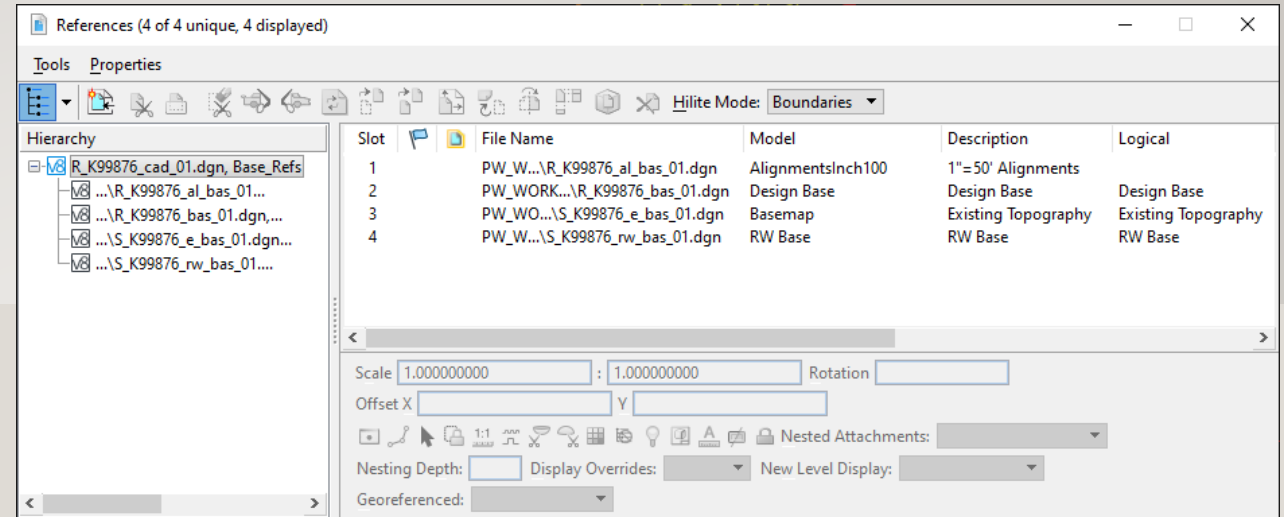
References dialogs with the hierarchy open and expanded on the left side – the demo will open two different container files – one created using MicroStation, the other created using OpenRoads Designer.

DESIGN DELIVERABLES – OPNP & XSEC_bas

The Plans Production Process and Design Deliverables   ✕

The OpenX and CAD Standards Committees have been working on efficient methods for using both MicroStation and the Bentley civil CAD software to produce contract plans. The following documents explain methods to create the files that display the design using OpenRoads/OpenSite Designer and methods of assembling that data into sheets using MicroStation.

- Design Deliverables for Plans Production
- Plans Production Process
- Using OpenRoads Designer and the ODOT Drawing Boundary Seeds
- Civil Drawing Boundary Sizes
- ORD and MS for Plan and Profile Sheets

https://www.oregon.gov/odot/EAST/Pages/MS_UserGuide.aspx

Information about Design Deliverables and the Plans Production Process can be found on the EAST website in either User Guide: MicroStation or OpenRoads/OpenSite Designer.

WHY DO WE HAVE TO USE DESIGN DELIVERABLES?

Displaying a design in drawing and sheet models is the only method that OpenRoads Designer provides for expressing the horizontal and vertical design with permanent graphics.

- The dynamic profile and cross section models used by designers with OpenRoads Designer cannot be attached as references!

- The dynamic profile and cross section models are not available for other discipline designers to use in their design!

- The dynamic profile and cross section models are not available for CAD technicians to use in plans production!

This question always comes up…
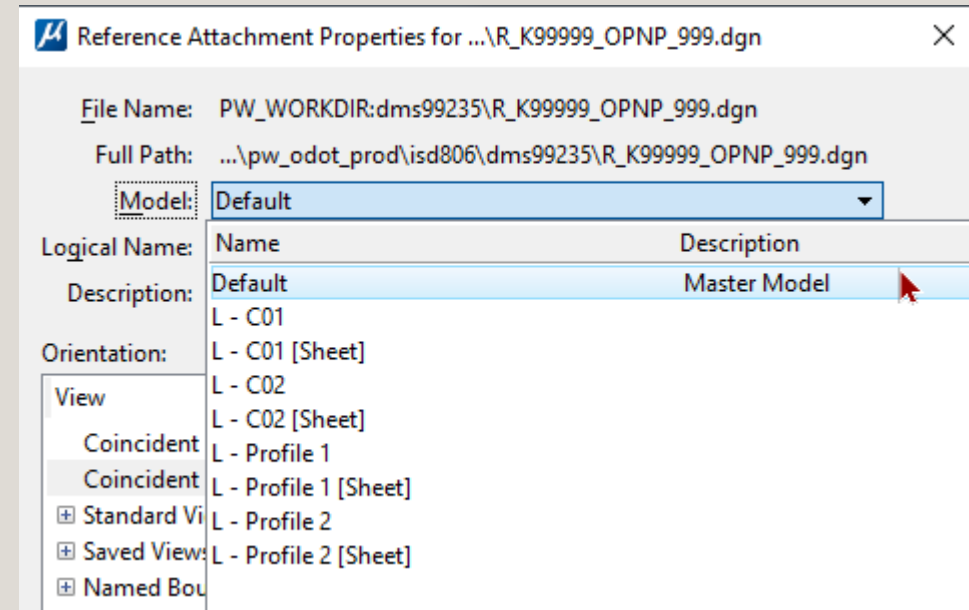
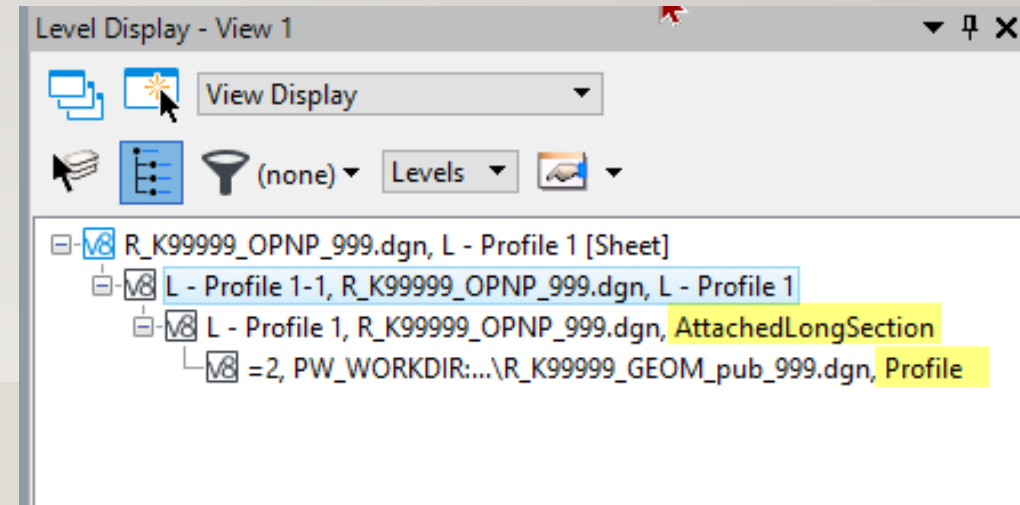# OPNP & XSEC_BAS DESIGN DELIVERABLES
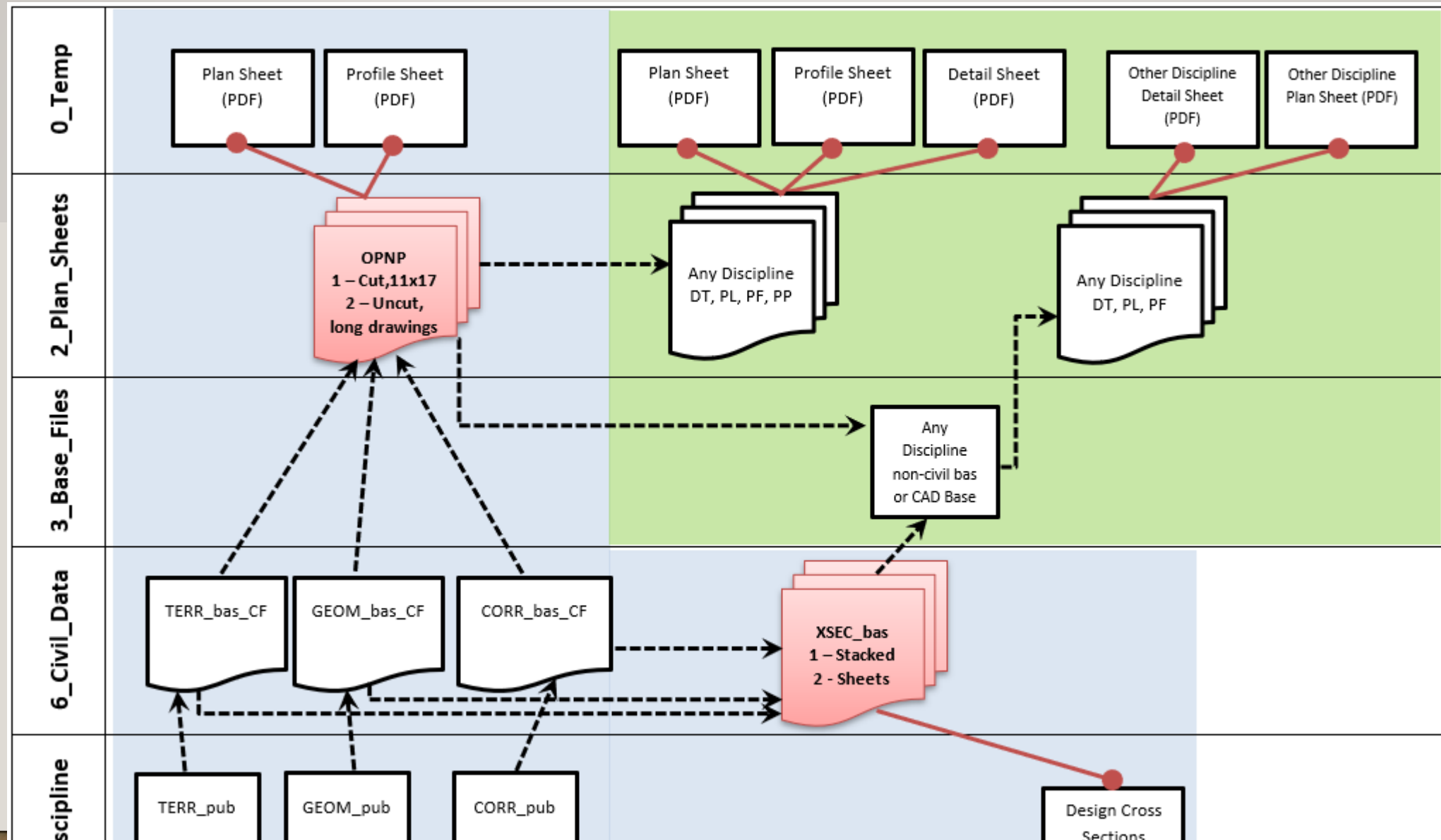
This swim lane schematic of the ProjectWise folder usage shows the OPNP and XSEC_bas Design Deliverables at the heart of the plans production process.

DEMO

MicroStation

Compare models in an OPNP file to those available for reference attachment.

The Directory Tree of the Level Display dialog (top) and the Reference Attachment Properties dialog with the Models pick list expanded (bottom) illustrates that the dynamic models that ORD creates and manages are not available for direct reference attachment. This is exactly the reason that the OPNP and XSEC_bas files are required for project delivery.

QUESTIONS?
A LOOK AHEAD

November 2 - Civil Drawing Boundaries and Non-civil Drawing Boundaries

- Differences Between Civil Drawing Boundaries and Non-civil Drawing Boundaries: Difference between civil plan and "along path"
- How to access and control the drawing boundaries
- Editing Drawing Boundary Names and Descriptions
- What happens when a civil drawing boundary is moved or the shape changed
- Civil Plan and Detail (Full and Notes)
- When to use Civil Plan versus From Drawing Boundary