

DELIVERABLES

SURVEY AND DESIGN CONTAINER FILES

TOPICS

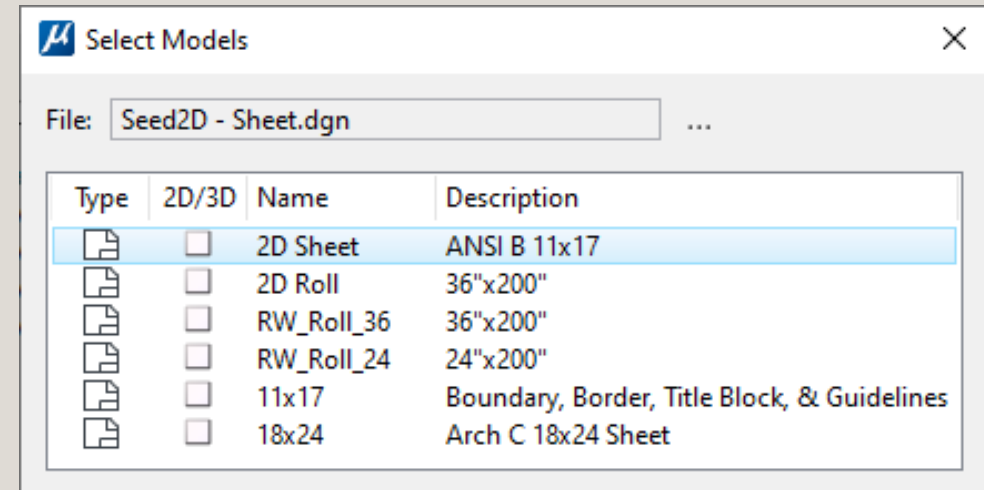
- **Container Files** - supports understanding the structure of design deliverables to project delivery activities.
- **Live Nesting of References** - supports accessing civil data from other disciplines and efficiently assembling contract plans.
- **Survey and Design Deliverables** - OPNP, XEC_bas, TERR_CF, CORR_CF, GEOM_CF - knowing how these are created should help you better utilize them in your work.

SEED FILES

- Design Model Seed Files

<i>Software_Seed2D.dgn</i>	For Geometry, Corridors, Superelevation, All Container Files, 2D Drafting
<i>Software_Seed3D.dgn</i>	For Terrains and 3D Drafting; NOT for Container Files

- Drawing Model Seed File
- Sheet Model Seed File: Seed2D – Sheet.dgn

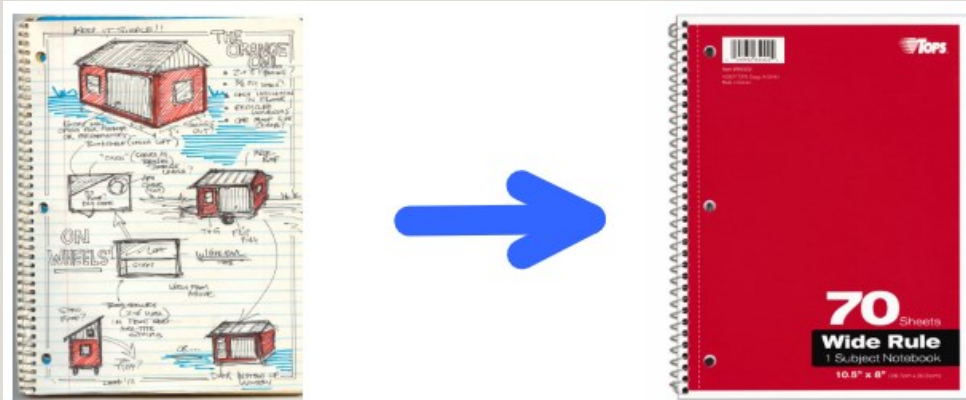


ODOT uses software-specific seed files with the software name. Civil Container Files must be made from OpenRoads_Seed2D.dgn or OpenSite_Seed2D.dgn

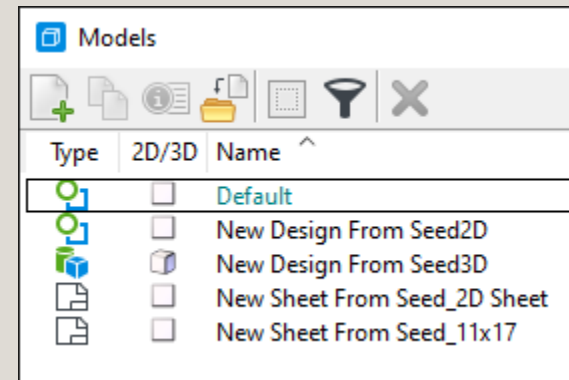
There are six different sheet-type models available for beginning work. Some have boundaries and even title blocks.

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 with MicroStation in a DGN file and we need a fresh place to work, we can create a new model.

OpenSite and OpenRoads users should use the Default model for civil work and allow the software to create new models

CHOICES WHEN MANUALLY CREATING NEW MODELS

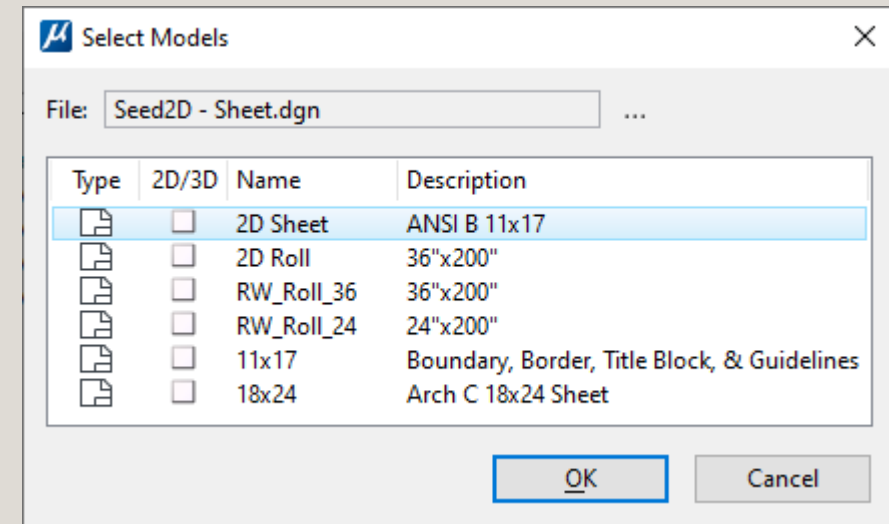
Design From Seed

- 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.

CONTAINER FILES – THERE’S MORE INSIDE



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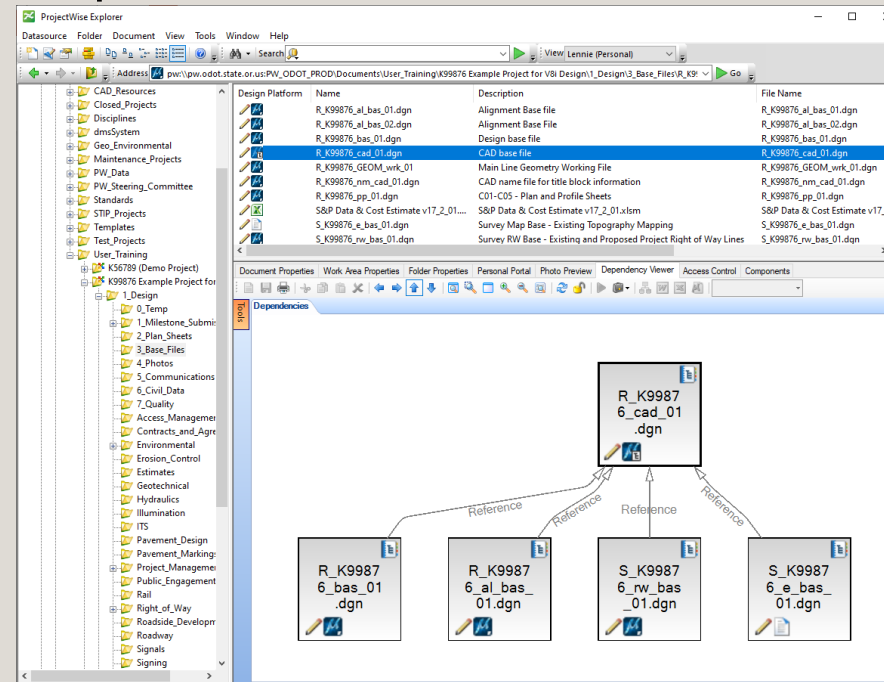


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Pretty sure the term “live nesting” is related to nesting dolls. Each doll nestled inside its parent doll is similar to a reference attachment (child) inside the master DGN file (parent).

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.

CIVIL CONTAINER FILES

ODOT uses the container file concept to allow access to civil data through reference attachments. Container files (CF) are created from a 2D seed file using: MicroStation, OpenSite Designer or OpenRoads Designer.

Examples are R_K#####_CORR_bas_**CF**_###.dgn, R_K#####_GEOM_bas_**CF**_###.dgn, and S_K#####_TERR_e_bas_**CF**_###.dgn

Typical CIVIL container files have:

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

Civil container files have specific requirements and the most important is – it is created from a 2D file seed file.

CIVIL CONTAINER FILES

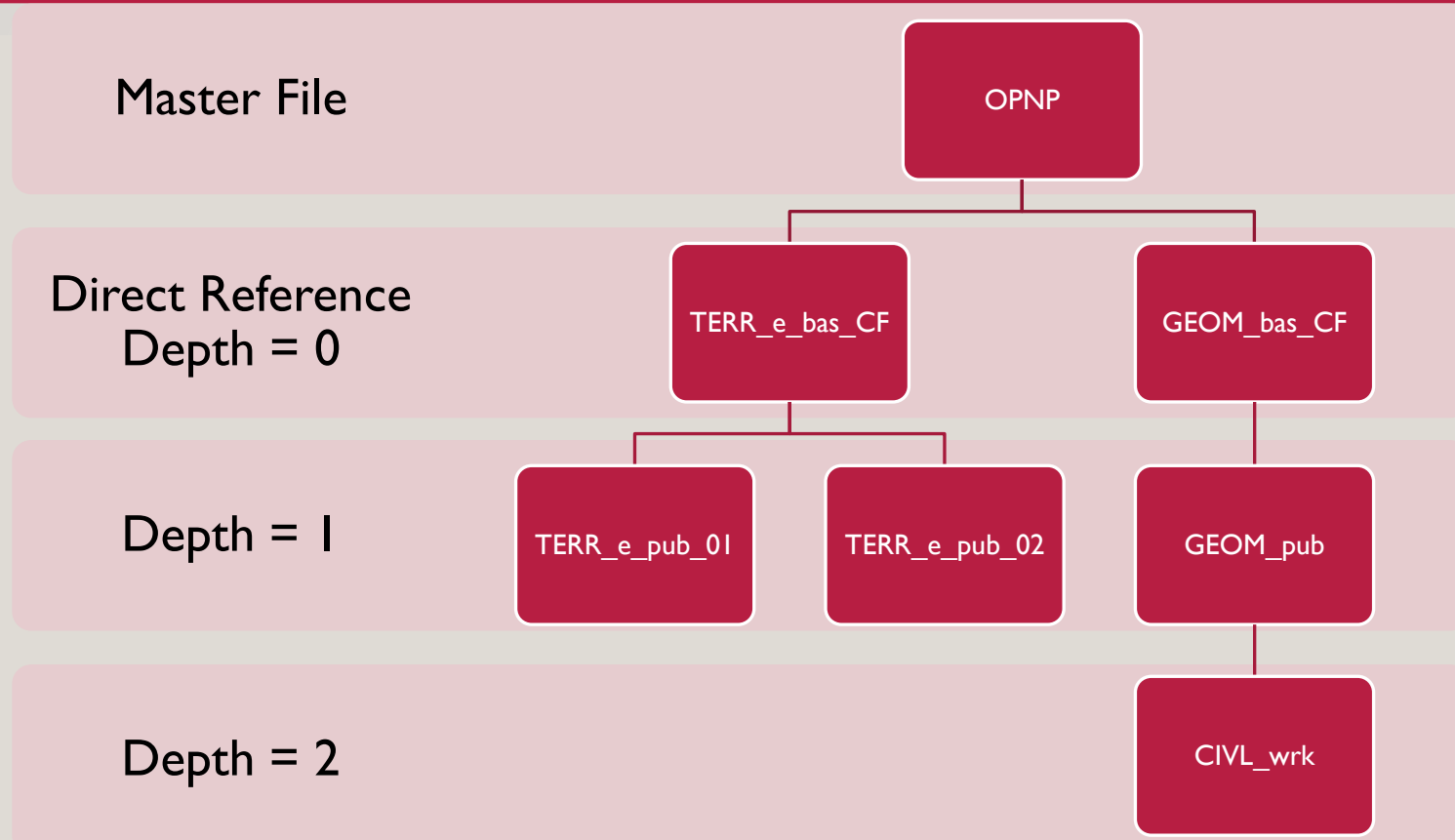
The screenshot displays the ProjectWise Explorer interface. On the left, a file tree shows a project structure under 'User_Training', including folders like '1_Design' and '6_Civil_Data'. The main pane shows a table of design platform files:

Design Platform	Name	Description	File N
CONNECT	R_K99999_GEOM_bas_CF_01.dgn	ALL Geometry Base Container File	R_K99
CONNECT	R_K99999_GEOM_bas_CF_999.dgn	999 Geometry Base Container File	R_K99
CONNECT	R_K99999_XSEC_bas_01.dgn	Sample Cross Sections Base File	R_K99
CONNECT	S_K99999_FEAT_e_bas_05.dgn	<K20485 - 2D Mapping> Survey Features Not Included With Terrain	S_K99
CONNECT	S_K99999_FEAT_e_bas_05.dgn	<K20485 - 2D Mapping> Survey Features Not Included With Terrain	S_K99
CONNECT	S_K99999_TERR_e_bas_01.dgn	Example from K17751 - Survey Terrain Base File - Existing Topograp...	S_K99
CONNECT	S_K99999_TERR_e_bas_02.dgn	<K20485 - Field Survey> - Survey Terrain Base File - Existing Topogr...	S_K99
CONNECT	S_K00000_TERR_e_bas_03.dgn	<K20485 - Bridge Deck> - Survey Terrain Base File - Existing Topogr...	S_K00

Below the table, the 'Dependency Viewer' shows a graphical dependency diagram. It features four boxes representing files: 'R_K99999_9_GEOM_bas_C...' at the top, 'R_K99999_9_GEOM_pub_9...' at the bottom left, 'S_K99999_9_TERR_e_bas_...' at the bottom right, and 'S_K99999_9_TERR_e_pub_...' at the bottom center. Arrows labeled 'Reference' indicate dependencies: from the bottom left box to the top box, from the bottom right box to the top box, and from the bottom center box to the bottom right box.

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

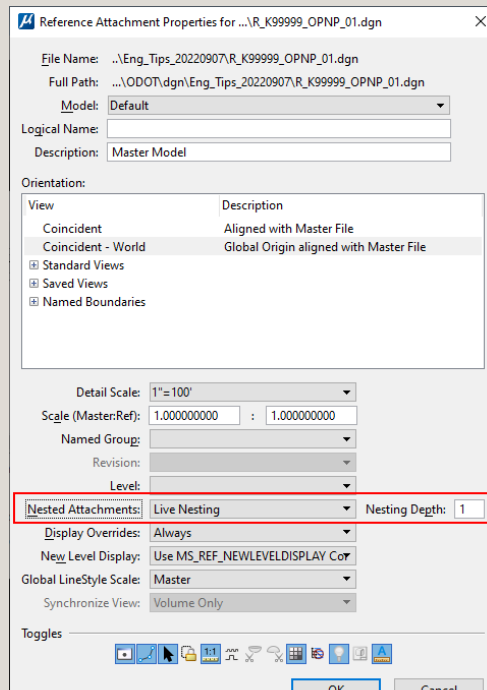


Good practice when attaching references with Live Nesting is to begin with Depth = 1. If you don't see the graphics, increase the depth by one until the graphics are seen.

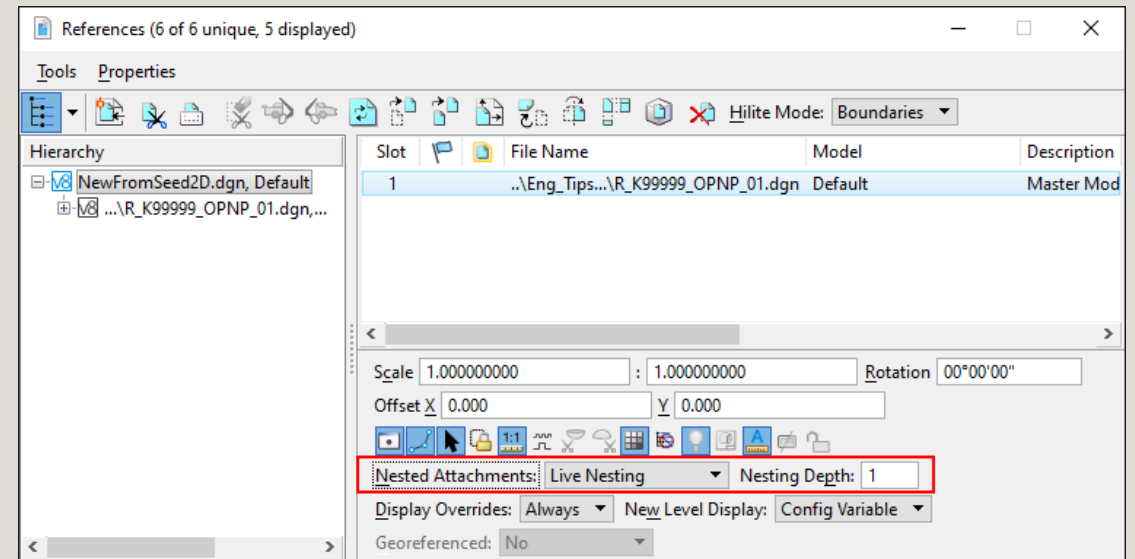
OPNP: O = ORD/OSD-generated; PNP = Plan and Profile

ADDING LIVE NESTING

WHILE ATTACHING REFERENCE

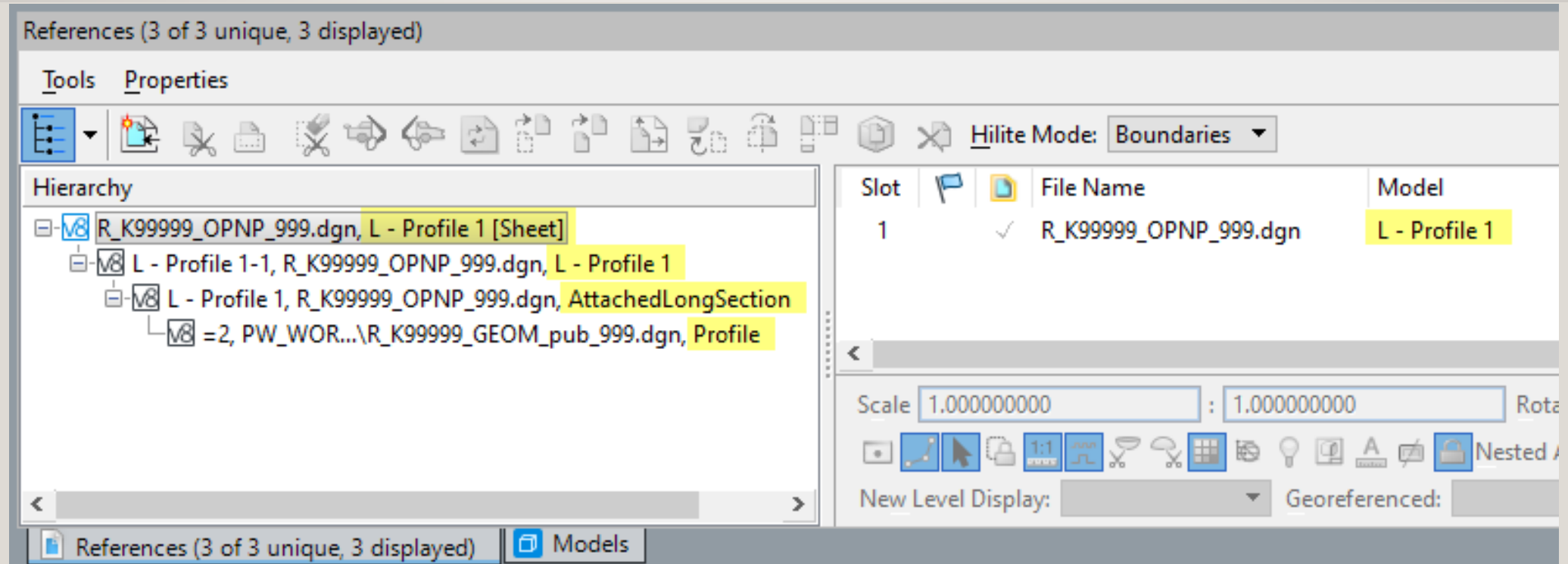


ON REFERENCE DIALOG



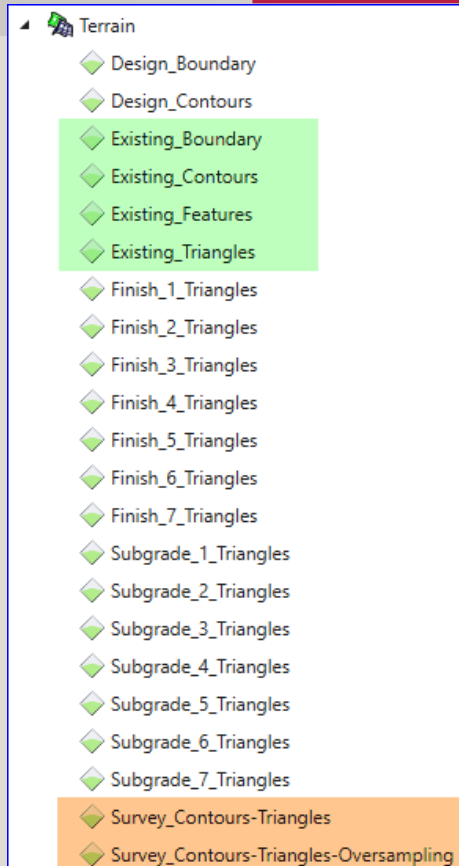
Live Nesting can be toggled on at the time the reference attachment is made and also toggled on later using the References dialog.

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 as a reference – they do not appear in the Models pick list when attaching references.

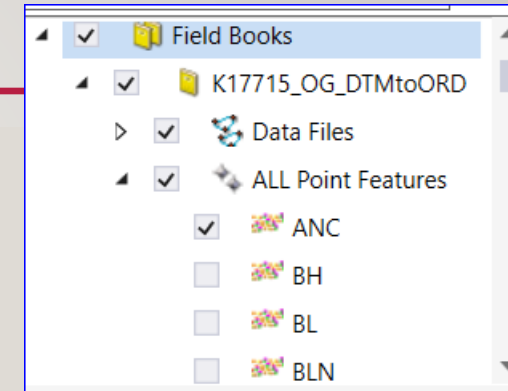
SURVEY DELIVERABLES – S_K#####_TERR_E_bas_CF_## and S_K#####_TERR_e_pub_##



Terrain deliverables from Survey will use "Existing" feature definitions.

Before attaching “pub” to “CF” – perform the following on “pub” file:

- Toggle off display of survey field book point features related to linear features
- Toggle off levels for RandomPt, BrkLines, ExtLine, and PT_Locator



Name	Used
E_TRAF_ROAD_Striping	•
E_TERR_DTM_RandomPt	•
E_TERR_DTM_BrkLines	•
E_TERR_DSPLAY_Triangles	•
E_TERR_DSPLAY_MinContour	•
E_TERR_DSPLAY_MajContour	•
E_TERR_DSPLAY_Ground	•
E_TERR_DSPLAY_General	•
E_TERR_BNDRY_Perimeter	•
E_TERR_BNDRY_ExtLine	•
E_SURV_PT_Locator	•
E_RDWY_ROAD_Mailbox	•

The “Survey” terrain feature definitions use different symbology that what is expected on plans. Terrains that are in process of survey work will use the "Survey" terrain feature definitions.

DESIGN DELIVERABLES – OPNP & XSEC_bas

The Plans Production Process and Design Deliverables



The CONNECT Processes group along with the ORD and CAD Standards Committees have been working on efficient methods for using both MicroStation CONNECT and OpenRoads Designer to produce contract plans. The following documents explain methods to create the files that display the design using OpenRoads Designer and methods of assembling that data into sheets using MicroStation CONNECT.

- [Design Deliverables for Plans Production](#)
- [Plans Production Process](#)
- [Using OpenRoads Designer and the ODOT Drawing Boundary Seeds](#)
- [Civil Drawing Boundary Sizes](#)
- [ORD and MSCE for Plan and Profile Sheets](#)

Steps to Create an OPNP or XSEC_bas Design Deliverable

[OPNP File Creation](#)

[XSEC_bas File Creation](#)

3D Design Deliverables

The documents below explain methods to create 3D Design Deliverables for eBids and construction handoff packages using OpenRoads Designer.

[Presentation at TRAM conference Nov. 9, 2022](#)

[Creating 3D Design Deliverables from ORD](#)

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.

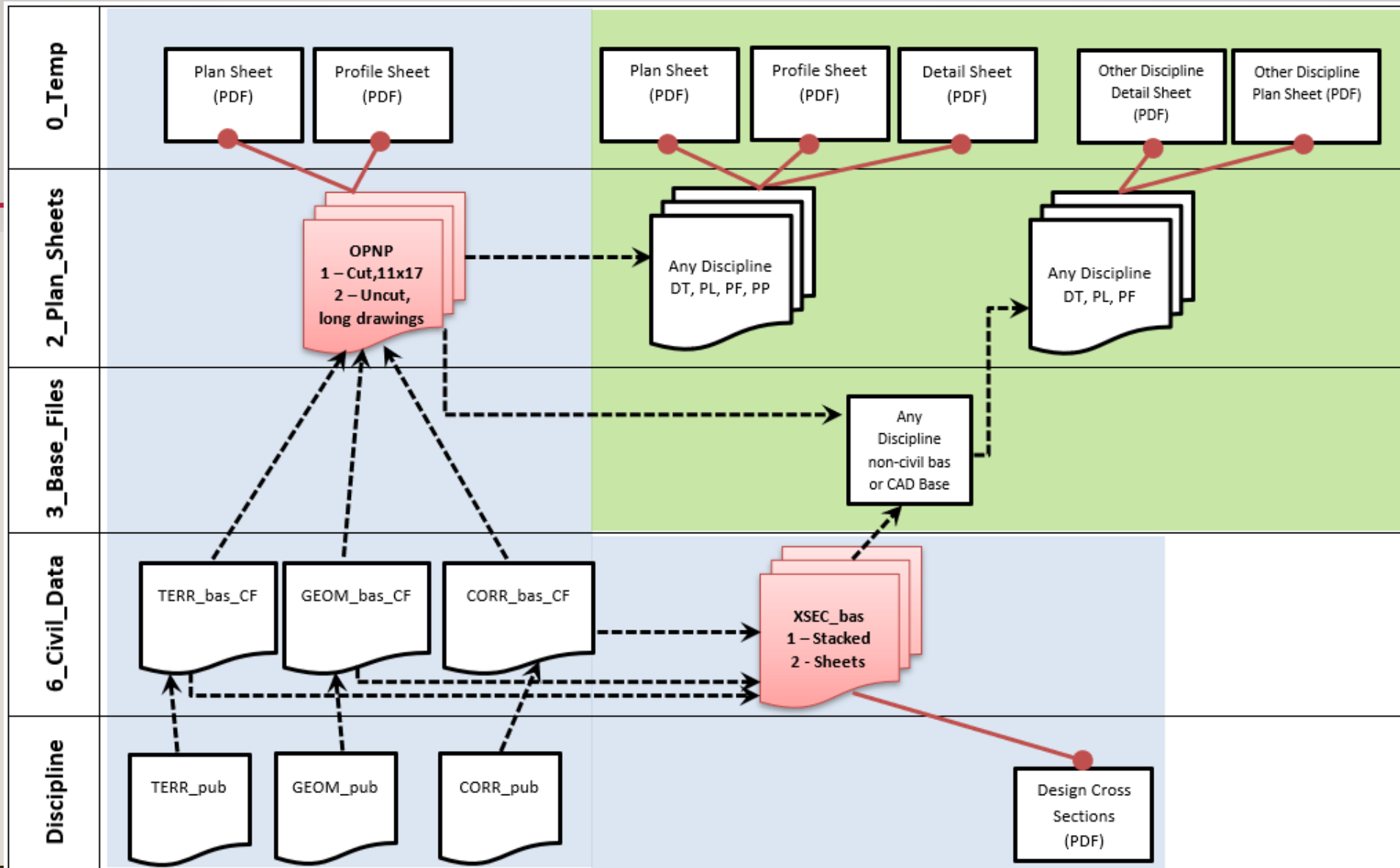
WHY DO WE HAVE TO USE DESIGN DELIVERABLES?

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

- The dynamic profile and cross section models used by designers with OpenRoads/OpenSite 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, AND OTHER CONTAINER FILES



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, being fed information from other Container Files in the 6_Civil_Data folder.

LEVEL DISPLAY CONTROL – CIVIL DRAWING BOUNDARY SEEDS

Plan Long Inch 100


Used for unbounded plan view sheet along alignment stationing.
Detail and annotation scale is 1"=100'.
Creates drawing-type and sheet-type models.
Used as reference attachment into CAD base files.
Level control in sheet-type models

Profile Long Inch 100

Used for unbounded profile view sheet along alignment stationing.
Detail and annotation scale is 1"=100'.
Creates drawing-type and sheet-type models.
Used as reference attachment into CAD base files.
Level control in sheet-type models

The “Long” civil drawing boundary seeds put the level display control in the hands of the person creating sheets. Other drawing boundary seeds put the level display control in the design model where the data is attached as references.

LEVEL DISPLAY CONTROL CHOICES – FROM DRAWING BOUNDARY SEEDS

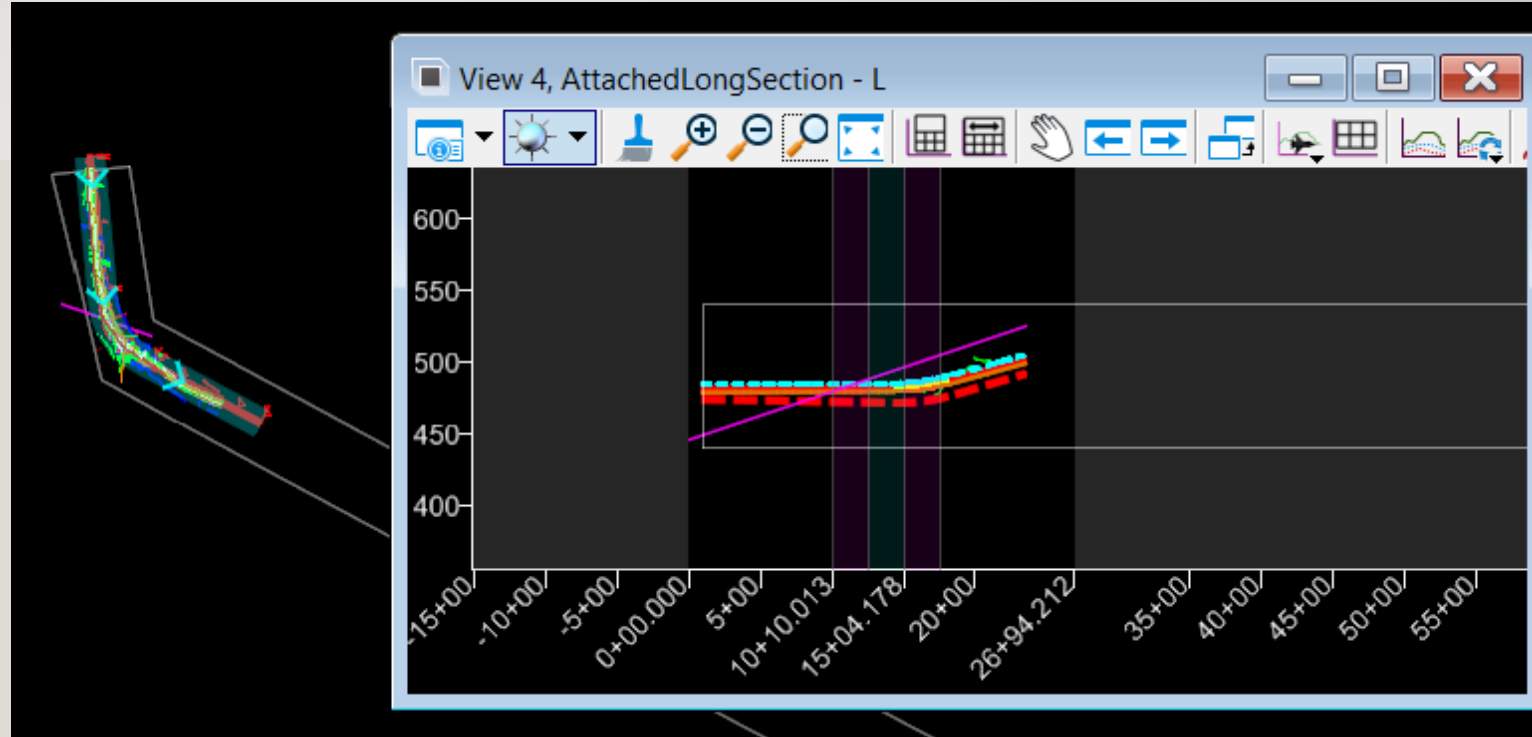
Table 1. From Drawing Boundary (Non-Civil) 

Name	Purpose	Level Display Control
_DetailFull_SheetOnly	Used for 11" x 17" plans; creates only sheet-type models. Uses full width of sheet. Use for intersection details and general construction plans with less than 10 overlapping sheets.	In the sheet-type model
_DetailNotes_SheetOnly	Used for 11" x 17" plans; creates only sheet-type models. Uses less than full width of sheet leaving right margin area for notes. Use for intersection details and general construction plans with less than 10 overlapping sheets.	In the sheet-type model
_PlanFull	Used for 11" x 17" plans; creates drawing-type and sheet-type models. Uses full width of sheet. Use for general construction plans with more than 10 overlapping sheets to easily set identical level displays in all sheets.	In the design-type model that contains the named boundary
_PlanNotes	Used for 11" x 17" plans; creates drawing-type and sheet-type models. Uses less than full width of sheet leaving right margin area for notes. Use for general construction plans with more than 10 overlapping sheets to easily set identical level displays in all sheets.	In the design-type model that contains the named boundary

DEMO

OpenRoads Designer

Create long drawings – both plan and profile – as a Roadway deliverable.

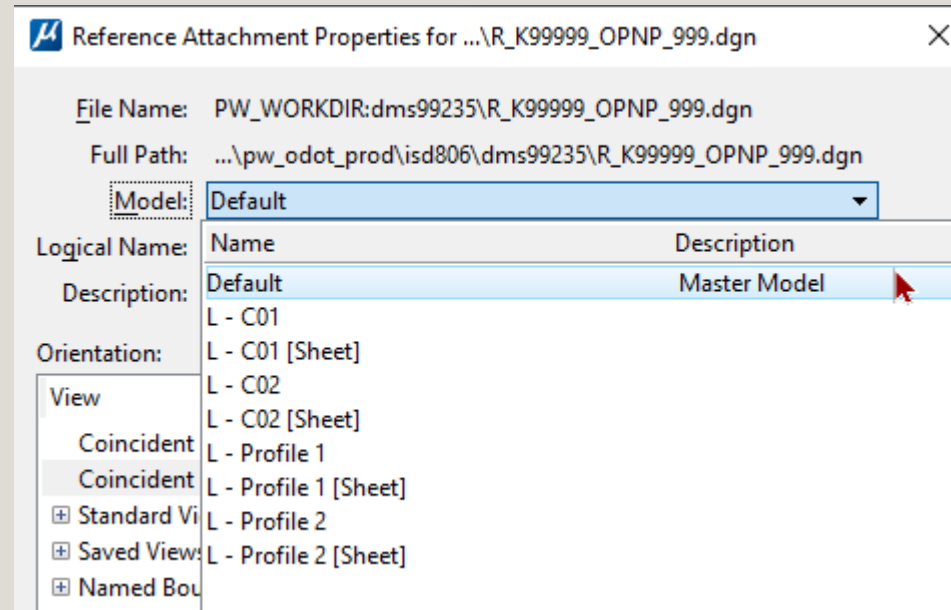
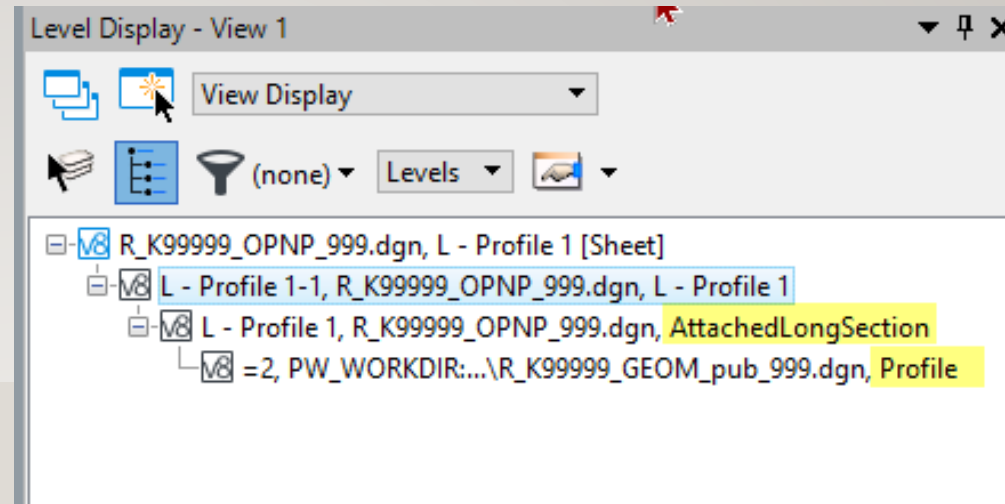


A project may benefit from more than one OPNP file; certainly, different disciplines that have need of different initial level display settings should create a discipline-specific OPNP file to feed plan sheets.

DEMO

MicroStation CONNECT

Cut profile sheets in a PF file that references the OPNP long profile drawing model.



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.