Data Transfer Recommendations for Utilities by Others Designers By NCDOT UTILITIES / CADD SERVICES May 2025

NCDOT design plans, including Utility Construction (UC) plans for work to be included in highway contracts, are designed using Bentley OpenRoads Designer (ORD) or Bentley MicroStation. Utility relocation work that is not included in highway contracts is considered Utilities by Others (UO). The Department understands that utility companies who prepare relocation designs for UO work may not have access to Bentley products. The NCDOT Utilities Unit and CADD Integration Team have developed recommendations for how to incorporate Bentley design data into non-Bentley CADD platforms, herein referred to as data transfer.

Means and methods for data transfer expressed in this recommendation are not "gospel" and may or may not be re-creatable depending on many variables. NCDOT requirements prevent NCDOT user file conversion. CADD Integration has instructed NCDOT Utilities personnel to refrain from file conversion at this time so data transfer methods must operate within these guidelines. The NCDOT Utilities Unit intends to continue cross-platform exploration.

The recommendations described are based on testing the following platforms:

- OpenRoads Designer versions 10.12 & 2023
- MicroStation SS4
- AutoCAD 2025

OpenRoads Designer(.dgn) to MicroStation(.dgn)



Civil Data Removal

OpenRoads Designer (ORD) operates on a Civil Data schema. Civil Data is contained within all files native to ORD and is needed to produce 3D models. Civil Data should be removed by the ORD user if one is experiencing problems opening ORD files in MicroStation.

Steps to remove Civil Data

- 1. Manually Open ORD and select the file of your choice.
- 2. Select file > Civil Tools > Civil File Manager
- Select Action > Downgrade Civil Model > Select a singular source file or folder > Remove Civil Model under Target Version

Downgrade Civil Model	
Source	
Version Target Version	~
Cancel	OK

4. Now select a save destination (this cannot be placed within the same folder as existing un-modified file. This process will not remove the current file, rather it produces a duplicate file in a separate location).

5. End user(s) must verify file integrity.

OpenRoads Designer(.dgn) to AutoCAD(.dwg)



Conversion via AutoCAD

MicroStation / OpenRoads Designer files must be modified to be digested by AutoCAD. To remain within our guidelines, NCDOT requires the AutoCAD user to convert the delivered files.

Steps to convert DGN to DWG

- 1. Manually open AutoCAD software and open a blank file.
- 2. Search "DGNIMPORT" within the search bar and select the DGNIMPORT tool
- 3. Select a DGN file within the Import DGN File window
- 4. Select "OK" and leave settings default within the Import DGN settings window
- 5. End user(s) must verify file integrity.

Import into current drawing Orafiv dependent definitions	Translate DGN properties to DWG properties Select mapping setup: Mapping preview for setup: Standard		
O Ignore duplicate names	Standard	Layer Linetype Lineweight Color	
elect a design model from the DGN file:		DGN DWG	
Default		COGO Dyfault Chain COGO Default	Chain
		COGO Default Curve COGO Default	Curve
		COGO Default Point N COGO Default	Point N
		CTL North Arrow CELL CTL North Arro	W CELL
External DGN references	Setup description:	CTL North Arrow NAD CTL North Arro	W NAD
Translate references to blocks or xrefs	Standard mapping setup.	CTL Primary Horizonta CTL Primary Ho	rizontal
Prompt to overwrite		CTL Primary Horizonta CTL Primary Ho	rizontal
Tonore all external references		CTL Primary Horizonta CTL Primary Ho	rizontal
	Mapping Setups	CTL Primary Horizonta CTL Primary Ho	rizontal
Attach as Dan underlay	Select a mapping setup to change the mapping preview for the file you selected.	CTL Primary Horizonta CTL Primary Ho	rizontal
Conversion units		CTL Secondary Horizo CTL Secondary	Horizo
Specify DGN units to convert to DWG units		CTL Secondary Horizo CTL Secondary	Horizo
Master units Custom		CTL Secondary Horizo CTL Secondary	Horizo
0		CTI Secondary Horizo CTI Secondary	Horizo

AutoCAD(.dwg) to OpenRoads Designer(.dgn)



Conversion via AutoCAD

The steps below are geared toward the AutoCAD user.

Steps to convert DWG to DGN

- 1. Select file (AutoCAD symbol) in upper left-hand corner
- 2. Export > DGN
- 3. Save
- 4. End user(s) must verify file integrity.



AutoCAD 2025 was used for testing; other versions may have different workflow.