

# OpenRoads Files and Naming Conventions

Design Manual

Chapter 20

Project Automation  
Information

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## OpenRoads File Structure Changes

OpenRoads technology changes many things when using Geopak SS4 as compared to Geopak SS2. The biggest difference is OpenRoads uses the DGN file to store nearly all civil information in hidden models and no longer relies on external files like GPK, DAT, TIN, XML, ALG, etc. to provide the necessary information for roadway design. This change to the software has instigated a new workflow of numerous DGN files and no longer uses one master design “DSN” file. This change has an added benefit – multiuser design is enabled in a much more manageable way than previously possible using Geopak SS2 and corridor modeler.

## OpenRoads Files

While developing a project in OpenRoads, there should be one set of each of the files discussed below (Geometry, Corridor, Superelevation, Cross Sections, and Terrain files) for every alignment that will have a plan and profile set of sheets (D, E, F, or K).

### Geometry File

This file is the container for the horizontal and vertical alignments for one corridor alignment and the associated minor geometry elements. The Geometry file will be a 2D seed file. When vertical alignments are created OpenRoads, it will create a 3D model as needed. There will be one geometry file for each major alignment that has a Plan & Profile sheet.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Corridor File

For each geometry file created, there will be a matching corridor file to go along if there is Modeling needed for the alignment. Corridor DGN files will be 2D seed files. OpenRoads will create a 3D model automatically as needed. The Geometry, Plan, Superelevation, and Terrain DGNs will need to be referenced into the Corridor DGN to create the Corridors.

Corridor Design/Linear Stages – define template drops, critical sections, display settings, and output settings. Select the appropriate stage for the level of design intent.

Bridge berms (one DGN for each set of berms) and detention ponds will have their own Corridor file. All corridor controls are drawn in this file, e.g. items that are not printed but control how the corridor is modeled.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Superelevation File

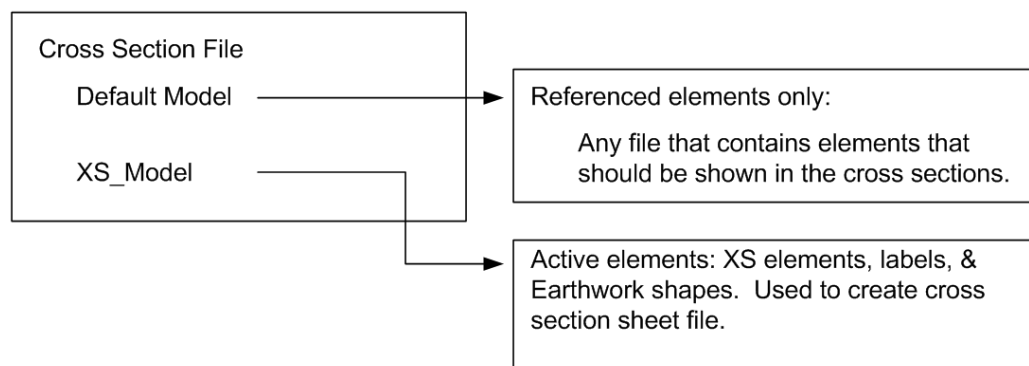
For each Alignment needing superelevation, there will be a DGN file for each alignment. Superelevation files will be 2D seed files. The Superelevation file will be referenced to the appropriate corridor file. Follow Chapter [21B-68](#) for the appropriate SEP file to use.

The associated seed file is: OpenRoads 2D Design file (.DGN)

## Cross Section File

There will be a cross section DGN file for each alignment. This will be a 2D file. Within OpenRoads, any element drawn in 3D can be visualized in the cross sectional view. This can include bridges, culverts, signs, etc. drawn in 3D in other files. The cross sections are created by referencing many files together (corridor files, structures files, signs model, etc.). When creating the cross section file, additional references (for features that should appear on the XS) can or will be needed to get all elements desired to show up in the cross section file. All corridors that should appear in the printed cross sections should be referenced into the Default model prior to creation of the cross sections. Any three dimensional elements referenced into the DGN file can be visualized on the cross sections.

The associated seed file is: OpenRoads 2D Design file (.DGN).



**Figure 1:** Cross section file contents.

## Terrain File

There will be a design Terrain DGN for each corridor. Terrains replace .TIN files for surfaces in OpenRoads. They are directly embedded into a DGN file and are no longer an external file. Terrain Models are needed for creating DTMs, XMLs, Tins, etc. and for creating new Terrain DGNs representing staging areas.

Survey/Photo Terrains – these will be 3D Terrain DGN files that will be referenced to Design projects for using existing features.

Terrains will be created from graphical features (break lines, points, and voids). Graphical filters are set up to capture elements that should be included in proposed terrains. Because of this, care needs to be taken to set feature definitions properly when drafting elements.

The associated seed file is: OpenRoads 3D Design file (TRN\_)

## Text File

The Text files will contain plan view annotation text, as well as scale blocks and north arrows for a single set of plan sheets. Each TXT file will be set up for a single scale of scalable elements (text or cells). This file will also contain the profile cell and profile text for creation of Plan and Profile sheets. The TXT file will replace the Layout file for Geopak Plan & Profile sheeting.

The associated seed file is: OpenRoads 2D Design file (.DGN)

## Sheet Files

These files are used to create the PDF files to create the plan set. They are created by either Geopak through Plan & Profile Sheeting tools ([21B-04](#)) or the CopySeed program ([21C-54](#)).

The associated seed files for sheet files varies by type, but is always 2D.

## OpenRoads Single Files

While developing a project in OpenRoads, several files (Drainage, Plan Drafting, Shading, Staging, Public Information, and Project Overview) will not be tied to a single alignment, but will be used for the entire project limits. There should be only one each of these file types unless it is necessary to do complex staging, where some of these file types may have a file for each stage. Some of these files will be for plan production solely and some will be for plan production and engineering.

### Drainage File

This file is the location of the subsurface utility drainage and analysis (SUDA) model. This file will be used for calculations of drainage features and the plan elements for creation of M sheets. Iowa DOT SUE/SUDA settings will be finalized at a later time. Geopak Drainage is to be used for calculations until SUE/SUDA settings are complete.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Plan Drafting File

A single DGN file is recommended for drafting elements such as Edges of Pavement, Shoulders, etc. These elements will be based off of the geometry file(s) by referencing the geometry file(s) to the plan drafting file and creating the needed elements.

Return Geometry will reside in the Plan Drafting DGN.

This file represents the 2D information for printed plan sheets. Only features that are to be printed should be included in this file. It does not include text or shading and it should be a single file for each project. If there is a need for multiple designers to work on this type file at the same time, there may be multiple versions of the Plan Drafting file. However, care should be taken not to duplicate line work in the files.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Shading File

The Shading file will contain plan view shading (pavement shapes), pavement markings, and other elements that do not depend on scale (clearing and grubbing areas, restricted areas, etc.).

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Staging File

The Staging file is for creating J sheets. It will be plan view graphics and shading for creating staging detail sheets.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Public Information File

The Public Information file is used to create public information scrolls.

The associated seed file is: OpenRoads 2D Design file (.DGN)

### Project Overview File

The Project Overview file is a file to be used by other offices to see the entire project's files all referenced into the default model. There are to be no active elements in the default model, only references. This file will also contain the CPN data model, see [21A-01](#).

The associated seed file is: OpenRoads 2D Design file (.DGN)

## OpenRoads Naming Conventions

### File Names

Office of Design OpenRoads files will not use custom file extensions, as previous workflows did, to designate the type of file. Files will be named in the following manner:

*FileTypePrefix\_AlignmentName\_CCRRRPPPGGG.dgn* for alignment files and *FileTypePrefix\_CCRRRPPPGGG.dgn* for single files. See Section [20B-45](#) for the CCRRRPPPGGG naming convention. The file type prefix will be used to identify the type of file. See Table 1 for file type prefixes. The Alignment name is the name of the alignment/corridor to which the file relates. An example of a Geometry file for Interstate 35 would be: **GEO\_ML035\_85035999Z08.dgn**.

**Table 1: Design Groups File Type Prefixes.**

file type	file type prefix	2D/3D seed file
Alignment/Geometry	GEO_	2D
Plan Drafting	PLN_	2D
Corridor File	COR_	2D
Superelevation File	SUP_	2D
Drainage File	DRN_	2D
Cross Section file	XS_	2D
Staging File	STG_	2D
Text File	TXT_	2D
Shading File	SHD_	2D
Sheet Files	SHT_	2D
Public Hearing File	PUB_	2D
Project Overview File	PO_	2D
Terrain File	TRN_	3D

## Photo/Survey Files

Photo and Survey files will also be going to .DGN file extension, see Table 2. The CCRRRPPP designation on Photo/Survey files will represent the two digit County number, three digit route number, and three digit Paren number of the project's initial project number (usually the Preliminary Engineering project number).

**Table 2: Existing Information Files.**

folder location	naming convention	contents	2D/3D
Photo	PHO_CCRRRPPPGGG.dgn	Photogrammetric topographic information and text all in one model. SUR_###.dgn file will be referenced if field survey exists.	3D
PrelimSurvey	SUR_CCRRRPPPGGG.dgn	Field survey topographic information and text.	3D
PrelimSurvey	TRN_EX_CCRRRPPPGGG.dgn	Existing ground surface for project if there is no photogrammetric information (full field survey).	3D
Photo	TRN_EX_CCRRRPPPGGG.dgn	Existing ground surface for project if photogrammetric information is added to the surface.	3D
PrelimSurvey	GEO_SUR_CCRRRPPPGGG.dgn	Surveyed existing alignments as Civil elements.	2D
PrelimSurvey/Photo	SHT_CCRRRPPP_G01.dgn	G Sheets detailing survey information	2D

When photo and survey both contribute to the topographic information for the project, the Photo “PHO” file should be referenced with live nesting set. The PHO file will reference the SUR file so that designers only need to reference one file, either the SUR or PHO file.

There will be only one existing ground terrain model supplied by the photo or survey groups. There will only be a geometry file when field survey creates existing alignment chain(s). Photogrammetry will not create this file.

## Other Design Groups' Files

Other files within the office also previously used custom file extensions for their design files. All OpenRoads files will have the .dgn file extension. Table 3 below shows the prefixes to be used for those files.

**Table 3: Other Design Groups' File Type Prefixes.**

file type	file type prefix	2D/3D seed file
Soils Design File	SOL	2D
Soils Cross Sections	SOLXS	2D
Roadside Development Design File	RSD	2D

## Chronology of Changes to Design Manual Section:

### 020D-101 OpenRoads Files and Naming Conventions

2/9/2017	Revised TXT file information updated to require multiple TXT files for each set of plan sheets. Project overview file updated to include CPN data model. Added reference to design manual chapters for creating sheet files.
9/2/2016	NEW New