

# 7.0 Chapter Seven - InRoads Standards

This chapter covers directory locations, descriptions, and naming conventions for the data files used by the InRoads design software. These binary files contain all engineering design data created during a project, and instruction on the format that data is output from InRoads, whether to a MicroStation graphic format or to a text report format.

InRoads requires multiple file types to perform various functions for the creation of an engineering design project. These files can be generally segregated into two categories. The first group controls the graphic display, text reporting, and precision of data out of InRoads. The second group contains the data files created in the process of designing a roadway project.

## 7.1 InRoads Display Files

The following four file types control the export of data from InRoads into graphic or text format. Each of these files are standard in the CDOT Workspace and CDOT policy does not allow independent user modifications to these files. If adjustments or additions are required, users are encouraged to submit a change request to [CADDManager@dot.state.co.us](mailto:CADDManager@dot.state.co.us). The request will be reviewed and incorporated into future configuration releases upon approval.

### 7.1.1 Preferences (CDOT-Preferences.ini)

The CDOT InRoads Preference file contains information necessary for InRoads to display design data accurately as MicroStation graphics. All named symbologies, feature style information, and preference symbology is contained within the preference files, configured to exactly match the CDOT Workspace and is consistent with the CDOT by-level symbology. This file also controls the precision readout, command settings, grid spacing, and a multitude of other settings required for InRoads to perform correctly.

### 7.1.2 Styles (CDOT-Styles.ini)

The CDOT InRoads Style file controls symbology for the display of horizontal and vertical geometry data into the MicroStation Model file. Points, Lines, Arcs, and Spirals from the InRoads alignment file are displayed consistent with CDOT by-level symbology.

### 7.1.3 Drafting Notes CDOT-Notes.dft

This file contains InRoads intelligent drafting notes that access engineering data from the geometry file and digital terrain model files. The drafting notes file sets the graphic parameters for displaying notes that contain data such as station, offset, or elevation from the data files.

#### **7.1.4 Styles Sheets (\*.xsl)**

This file specifies what information is used from the XML Data files and how the information will be displayed to create a report. The standard CDOT Style Sheets are located under C:\Program Files\Workspace-CDOT\Standards-Global\InRoads\XML Style Sheets\ folder.

## **7.2 InRoads Data Files**

InRoads data files contain all pertinent engineering-generated data assembled during the project. These files are user-created, progressed during the evolution of a project and saved in the Project Specific/Specialty Group specific/InRoads folder.

### **7.2.1 Digital Terrain Models (\*.dtm)**

Digital Terrain Models are mathematical representations of the surface of the earth. InRoads uses DTM data to produce contours, display the existing and proposed groundlines in profile and cross section grids, and in the calculation of cut and fill quantities. DTM are created with a combination of surface points identified as spot points, breaklines, contour lines or other point types used to define the surface.

#### **7.2.1.1 Existing Ground Surface**

Existing CDOT Digital Terrain Models represent existing ground conditions at the time that surveying data was collected. Existing DTMs may be assembled from traditional survey, terrestrial LiDAR, aerial LiDAR, aerial orthophotography, or a combination of those methods. The standard existing ground surface naming convention is JPC#SURVSurface##.dtm and it is stored in the \\Projects\JPC#\ROW\_Survey\InRoads\DTM\ folder. For example: 00000SURVSurface01.dtm.

#### **7.2.1.2 Proposed Ground Surface**

Proposed CDOT Digital Terrain Models represent the project design as generated by InRoads using the horizontal alignments, vertical alignments, templates and roadway definitions. Proposed DTM's can also be generated and/or modified manually. The proposed ground surface is stored under the Specialty Group's folder structure under InRoads. For example

\\Projects\JPC#\Design\InRoads\. Proposed DTMs are named with the Job Project Code (JPC). Most projects will contain multiple DTMs that define various portions of the projects, such as the mainline, ramps and detours. Where multiple DTMs are required, additional descriptors can be used in the file name, such as 14942C470Mainline.dtm or 14942C470Detour.dtm to distinguish the surfaces stored there.

## **7.2.2 Geometry Project Files (\*.alg)**

CDOT Geometry Project files contain horizontal alignment, vertical alignment, and superelevation information. The file(s) are saved under the Specialty Group's project folder under InRoads. The naming convention for Geometry Project files consists of the Job Project Code (JPC) with the .alg file extension.

### **7.2.2.1 Existing Geometry Project**

The Existing Geometry Project contains the centerline of survey as acquired by the Survey department. The standard existing Geometry Project file naming convention is JPC#SURVGeometry##.alg and it is stored in \\Projects\JPC#\ROW\_Survey\InRoads\Geometry\ folder. For example; 14942SURVGeometry01.alg.

### **7.2.2.2 Proposed Geometry Project**

The Proposed Geometry Project contains geometry relating to proposed horizontal, vertical, and superelevation data added. The proposed geometry file will contain all alignments for the roadway design including ramps, detours, cross streets and the associated vertical profiles. Also included in the geometry file are the superelevation assignments that control how the templates and roadway library control superelevation.

Important note: There are a number of settings in the alignment file that must be evaluated by the design engineer. Many of the settings have been addressed in the CDOT configuration; however care must be taken to assign proper values for the modeling of the design surface as required by the project.

One example of these settings is the Rounding Linear Transitions variable for superelevation which is on by default in the CDOT configuration. With the setting to on, superelevation transitions will be rounded to the nearest 30 feet. With the setting off, InRoads will calculate the transitions exactly.

The standard Proposed Geometry Project file naming convention is JPC###.alg and it is stored under the Specialties Group folder structure under InRoads. For example;  
\\Projects\JPC#\Design\InRoads\14942.alg.

### **7.2.3 Typical Section Library (\*.tml)**

The Typical Section Library contains templates, decision tables, cut and fill tables, material tables, and transition control names used to model the proposed roadway surface. The standard CDOT Typical Section Library file contains standard templates and tables that can be copied and modified for each specific project requirement, and is located under C:\Program Files\Workspace-CDOT\Standards-Global\InRoads\Templates\CDOT-Typical Sections.tml. A copy of this file should be placed under the Specialty Group's project folder under InRoads. The naming convention for the Typical Section Library consists of the Job Project Code (JPC) with the .tml file extension. For example;  
\\Projects\JPC#\Design\InRoads\14942.tml.

### **7.2.4 Roadway Library (\*.rwl)**

The Roadway Library contains roadway definitions and independent template controls. CDOT Roadway Library files are saved under the Specialty Group's project folder under InRoads. The naming convention for the Roadway Library consists of the Job Project Code (JPC) with the .rwl file extension. For example;  
\\Projects\JPC#\Design\InRoads\14942.rwl.

### **7.2.5 Project File (\*.rwk)**

The Project File contains the directory location of all the InRoads data files used for a particular project and is used to load all necessary files for an InRoads session. This file is an ASCII file that can be edited using Notepad or Wordpad. Each individual running InRoads will need a personal copy of the .rwk file because the drive letter changes when computers are mapped across the network. The naming convention for the Project file consists of the Job Project Code (JPC) with the .rwk file extension. For example; \\Projects\JPC#\Design\InRoads\14942.rwk.

### **7.2.6 XML Data (\*.xml)**

This file contains the geometry project, cogo points and surface data that is used to create XML reports. The naming convention for the XML Data file consists of the Job Project Code (JPC) with the .xml file extension. For example; \\Projects\JPC#\Design\InRoads\14942.xml.

## 7.3 Survey Files

InRoads Survey requires similar files to InRoads for the control of the assembly and display of survey data.

### 7.3.1 Survey Feature Table (CDOT-Survey Feature.fwf)

This file specifies survey field coding, survey control codes, and code properties for planimetrics, DTMs, and geometry symbology. This file is standard in the CDOT Workspace and CDOT policy does not allow independent user modifications to this file. If adjustments or additions are required, users are encouraged to submit a change request to [CADDManager@dot.state.co.us](mailto:CADDManager@dot.state.co.us). The request will be reviewed and incorporated into future configuration releases upon approval.

### 7.3.2 Survey Preference (CDOT-Survey Preference.fxp)

This file contains information unique to the InRoads Survey application such as unit information, text symbology, file options, view options, and planimetrics settings.

For more information concerning Survey Standards see the Survey Manual Web Page