MONTANA
Department of Transportation

RIGHT-OF-WAY CROSS-SECTION (ROXSF) DRAWING PROCEDURE

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Overview

This process outlines the standardized procedures for incorporating Right-of-Way linework into road design workflows. The integration of R/W data into cross-section files is a critical component in ensuring the accuracy and efficiency of road design processes. Specifically, R/W linework is used to generate marker points within cross-section files, representing both existing and proposed R/W boundaries.

To maintain data integrity and streamline updates, it has been established that the R/W team will be responsible for supplying all relevant R/W data to the design team. Any modifications to R/W limits must be made by the R/W team to ensure that updates are accurately reflected in Road Design files.

All R/W limits, whether existing or proposed, must be created as alignments. This includes but is not limited to: Existing R/W, Railroad R/W, Proposed R/W, Construction Permits, Highway and Non-Highway Easements, Licenses, Permits.

In return for the creation and maintenance of this R/W drawing file and associated processes, the Road Design team will provide the R/W team with a Road Design Corridor File. This file will include Approach limits, Pipe Networks, and Construction Limits.

These elements will be delivered with the appropriate code displays required for R/W plan production, ensuring consistency and clarity across disciplines.

This procedural framework is intended to promote consistency, reduce errors, and support effective collaboration between R/W and design teams throughout the project lifecycle.

Process Provenance

- Date of development: 11/12/2025
- Revision date: *N/A*
- Application/Tool(s): *AutoCAD / Civil 3D*
- Version(s): *Civil 3D 2024*
- Environment(s): *MDT Civil 3D State Kit r2024 v2.21*
- Contact: *Open a Case*

References

Right-of-Way Standard Naming Conventions Procedure

Creating the R/W ROXSF Drawing File

Section I. Checking the ROMAP File

Before creating a new drawing for R/W alignments, verify that the existing R/W, and any proposed R/W lines are polylines. There may be more than one polyline for each continuous segment of the drawing. Directions for making polylines are in *Right-of-Way Placing Existing R/W and PLSS Linework*.

Make sure to save the ROMAP file prior to any further steps in the XSF File Creation.

Section II. Create the Drawing File

Create .dwg File

Create a new drawing from the design-start.dwt template in C3D.

Save the drawing in the RO folder of the Autodesk Docs Project Files following the standard naming convention.

Attach the ROMAP File

Attach the ROMAP file as an xref using the external references manager. Verify that the scale and insertion point are unchecked. Attach as an overlay.

Associate Project Data Shortcuts

Associate the drawing to the BIM 360 data shortcuts folder using the toolspace/prospector tab.

Add Surface to Drawing from Data Shortcut

Create a reference to the DIDTM00X/CSDTM00X surface in the data shortcuts into the drawing, it shall not be promoted.

Section III. Creating Alignments from the XREF ROMAP

Using Civil Objects: Create Alignments

Using the Create Alignments from Objects tool located in the home tab of the ribbon in the Create Design Section Alignment Dropdown [CREATEALINGMENTENTITIES], selext [Xref] or press 'X' to use linework from an xref.

The direction of the alignment shall follow the RD alignment direction. On Conversion Options, unselect 'Add curves between tangents'. No Alignment label sets shall be used. The _MDT-No-Labels shall be the label set.

When choosing linework to be added to an alignment, select only from one side of a project, ex. Only LT EXRW linework and linework that is continuous. If there are breaks in linework such as an intersection or break in existing public R/W, multiple alignment segments shall be used. Match the alignment segments from lower stationing to higher stationing along the project. Table 1 shall be used to name the alignments using the dialog box. The stationing of the created alignment does not need to be equated to the stationing of the design centerline, nor will it correspond.

(Note) If there is a project going through 3 city blocks, corresponding to 3 breaks in Ex. R/W Left, there will be a total of 4 segments of EXR/W. The naming convention of the segments will be as follows: XXXXX00X_RO_EXRW-0-LT, XXXXX00X_RO_EXRW-1-LT, XXXXX00X_RO_EXRW-2-LT, XXXXX00X_RO_EXRW-3-LT.

Section IV. Creating Surface Profiles of the Created Alignments

Using Civil Objects: Create Surface Profiles

Each alignment segment will need a surface profile created for every segment. It is best practice to create the alignment then the surface profile before creating a new alignment. To create the profile on the home tab in the ribbon, under the Create Design Section, Profile dropdown, select 'Create Surface Profile'.

Choose the alignment newly created from objects, select the appropriate surface to make a surface profile, then select 'Add'. At the bottom of the Create Profile from Surface window, select 'Ok'.

Rename the Surface Profile to Standard Convention

Each surface profile must be renamed to match the naming conventions in the Table 1. The name is essentially the alignment name plus 'EP' between the RO and the line representation name. Road design functionally has hundreds of profiles in their drawings, and to manage the profiles, R/W must follow these standards to work within the workflows of other preconstruction bureaus.

To change the surface profile name, in the Toolspace/Prospector expand Alignments, Centerline Alignments, Profiles, right click on the Surface and open Properties, rename the Surface. The Convention should then allow R/W and RD to reflect changes in any alignments and surfaces as the naming convention of the alignment and the surface profile remain consistent.

(NOTE: Best Practice is to complete creating one Alignment/Surface Profile pair and renaming the Surface Profile before creating the next Alignment/Surface Profile)

Section V. Create Data Shortcuts for the Alignments and Surface Profiles

Create Data Shortcuts

When finished with all Existing R/W Surface Profiles and Alignments, create Data Shortcuts. Using the Toolspace/Prospector, right click on Data Shortcuts and select 'Create Data Shortcuts'. Select all the Profiles, which will then select all the alignments as well, then select 'Ok'. Profiles and Alignments can be grouped once created to reduce clutter, and allow for easier addition into RD workflows.

Create a new folder in the data shortcuts/alignments/centerline alignments group named ROXSF. Create two more folders inside the ROXSF folder for the (Existing) and (Proposed) Data Shortcuts.

Move shortcuts inside dedicated folders.

NOTE: All Naming conventions are shown on ***Right-of-Way Standard Naming Conventions Procedure.***