Ancillary Data – Utilities on XS

OVERVIEW

Linear utilities can be placed on Cross Sections quickly and easily using the GEOPAK Draw Ancillary Features tool. This tool places a cell and a label on the cross sections where it crosses a corresponding element in the utility dgn file.

SET-UP

1. Copy the standard Ancillary File Data (mndotutil.afd) file to your ProjectWise project folder (XS folder).

   The mndotutil.afd is located in ProjectWise at the following location:

   pw:\\PW8i.ad.dot.state.mn.us:cadp\Documents\CADDStandards\MnDOTStandards\ DOT_GEOPAK\preference\mndotutil.afd

2. Rename this file to indicate which cross section file this application is run on (Example: 23eb.afd).

3. Open the Cross Section file that you want the Utilities plotted in.

4. Select **Applications > GEOPAK > ROAD > Cross Sections > Draw Ancillary Features**.

5. Load the copied .afd file into the Draw Ancillary Features dialog. **File > Load.**
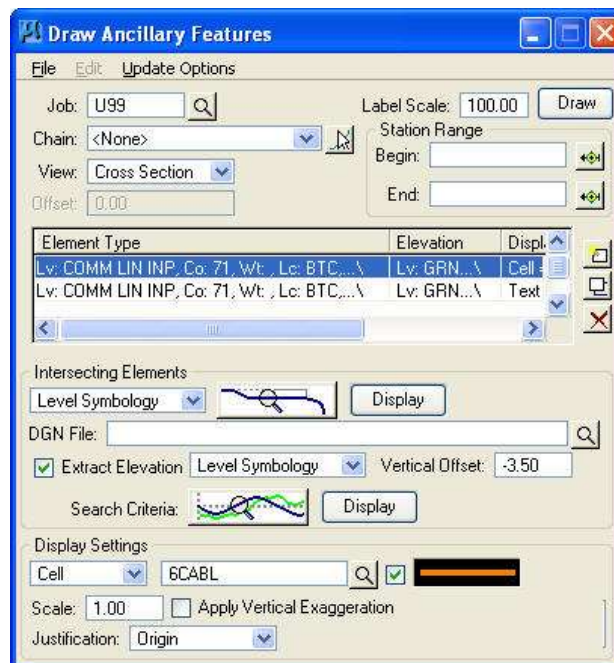
6. Populate the top part of the dialog with the following information:

- Job No: (browse to your GPK)

- Chain: (select the chain that was used for your cross sections)

- View: (Cross Section)

- Label Scale: (100)

- Station Range: (Auto populated with Begin and End Stations). This can be modified if all sections are not going to be used.

MODIFYING THE ELEMENT SET

The Intersecting Element Types and Display Settings have been pre-populated base on GEOPAK SMD/DDB symbology. There are two Element Sets for each utility type. The first one places the cell and the second one places the label. Each Element Set must be modified to point to the DGN file where the Intersecting Elements can be found.

1. Highlight the Element Set to be modified.
2. Click the Browse button to the Right of the DGN File field.
3. Browse to the location of the utility file.
4. Select **Open**.
5. Click the **Modify Element Set** icon.
6. Repeat this process for each of the Element Sets that you will be locating for this project. Remember to do the matching Element Set for the text label.

Hint: Using the Copy/Paste functions may speed up this process. Remember to click Modify Element Set each time.

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7. Save the settings of the Draw Ancillary Features dialog for future use. **File > Save** or **File > Save As**.
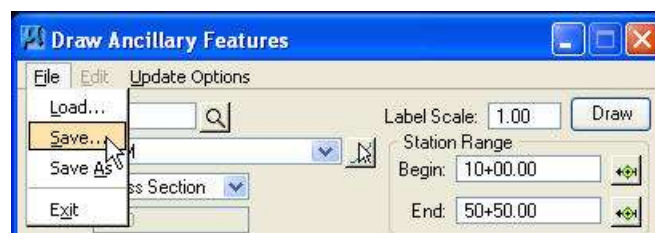
INTERSECTING ELEMENTS AND DISPLAY SETTINGS

The pre-populated Intersecting Elements are based on level, color, and linestyle of elements placed in a surveys .apl or .fip file. These elements all have unique symbology that indicates different types of linear utilities. These linear utilities may include communication (Telephone, TV, Fiber Optic, and Telegraph lines), electrical, gas, petroleum, sanitary sewer and water.

CELLS

The cells used to indicate these utilities on the cross sections are:

- Cables (6CABL, 12CABL, etc) – used for communication and power

- Pipes (6P, 12PIPE, etc) – used for gas, petroleum, sanitary and water

The size of the cell placed is based on a visual representation of the utility to be placed on the cross section. Cells may be replaced with larger or smaller ones for your particular project.

VERTICAL OFFSET

Vertical offsets for below ground utilities are figured based on the standard minimum depth of cover, plus the height of the cell. Above Ground linear utilities are placed at a minimum of 18' above existing ground. The following recommendations were taken from the Utility Manual.

- **Telecommunications:** 3.0 feet below the surface.
- **Gas:** 2.5 feet below the surface.
- **Electric:** 3.5 feet below the surface.
- **Water:** 7.5 feet below the surface.
- **Above Ground linear utilities:** 18 feet above the existing ground surface.

These offsets are to be used if the actual elevations are unknown. If the elevations are known, vertical offsets may be adjusted. If a profile exists for the utility, those may be used as well.

> **NOTE:** To have utilities set at a **profile** elevation, set the Intersecting Elements option to Chain, and turn off the Extract Elevation toggle. This action allows the setting of the COGO Profile.
>
> - THE CHAIN AND PROFILE STATIONING MUST BE COINCIDENTAL.

DRAW UTILITIES ON THE CROSS SECTIONS

Once the Intersecting Elements and Display Settings have been sufficiently modified, it is time to draw the utility information to the cross section file.

1. Click **Draw** from the upper right corner of the Draw Ancillary Features dialog.

2. Select one of the following Update Options:

   - **Delete Existing Elements and Redraw** – Deletes previously drawn ancillary data and redraws new.

   - **Delete Non-Modified Elements and Redraw** - Deletes previously drawn ancillary data and redraws new, unless the data has been modified (moved, edited, etc).

   - **Draw on Top of Existing Elements** – Ignores previously drawn elements and draws new elements. **WARNING - This could produce duplicate elements in the xs file.**

   The process will begin. This may take a few minutes, depending on the amount of utilities being drawn.

3. Use the Cross Section Navigator to verify that the utilities have been correctly located on the cross sections.

4. Manual adjustments of the labels may be necessary to avoid overlapping text. Keep in mind that if you modify the labels, they may need to be moved again if you rerun this process.