Table of Contents

Chapter 8: Cross Sections

Overview

Proposed Cross Sections are used to determine the limits of construction, earthwork, construction staking reports, 3D modeling, and for plan packaging. It is very important that they are drawn consistently and to the standards outlined in this chapter.

In order to use Geopak to generate proposed cross sections, a **.gpk file, existing ground cross sections, pattern lines, shapes and plan view roadway features** are all needed. Cross section "criteria" are files that use these needed components, interpret the information and constructs proposed cross sections.

Creating Proposed Cross Sections

Federal Lands Highway (FLH) has developed a new generation of criteria files know as the X30 criteria files. With the development of the X30 criteria, creating the proposed cross sections no longer requires the traditional input files and exception data files.

FLH .X30 Criteria and the Typical Section Generator

With the X30 criteria files, proposed cross sections are created through the Project Manager using the Typical Section Generator. Proper setup and use of the Project Manager is crucial in using the Typical Section Generator to create the proposed cross sections. Using both the X30 Criteria and the Typical Section Generator automates the generation of proposed cross sections as much as possible, and standardizes the design and construction techniques used to build FLH projects.

There are many capabilities with the Typical Section Generator. One is to search for elements drawn in plan view that were drawn using Design and Computation Manager and Place Influence to act as a "horizontal" reference lines. These elements drawn in plan view may or may not have AdHocs associated with them. Also the placement of these elements may or may not represent the exact offset for the corresponding cell to be placed in the cross section file. Other times, these elements simply act as an "on/off switch" giving instructions to the criteria.

Federal Lands Highway have developed 6 Typical Sections for the use of developing cross sections. The 6 Typical Sections are Divided New Pavement **(DNpavt),** Existing Features **(ExFeat**), Existing and Proposed Right of Way **(ROW),** Rehabilitation Typical Section for 3R projects **(Rehab),** Undivided New Pavement **(Unpavt)** and Cross Section Labeling **(XS_Lab).**

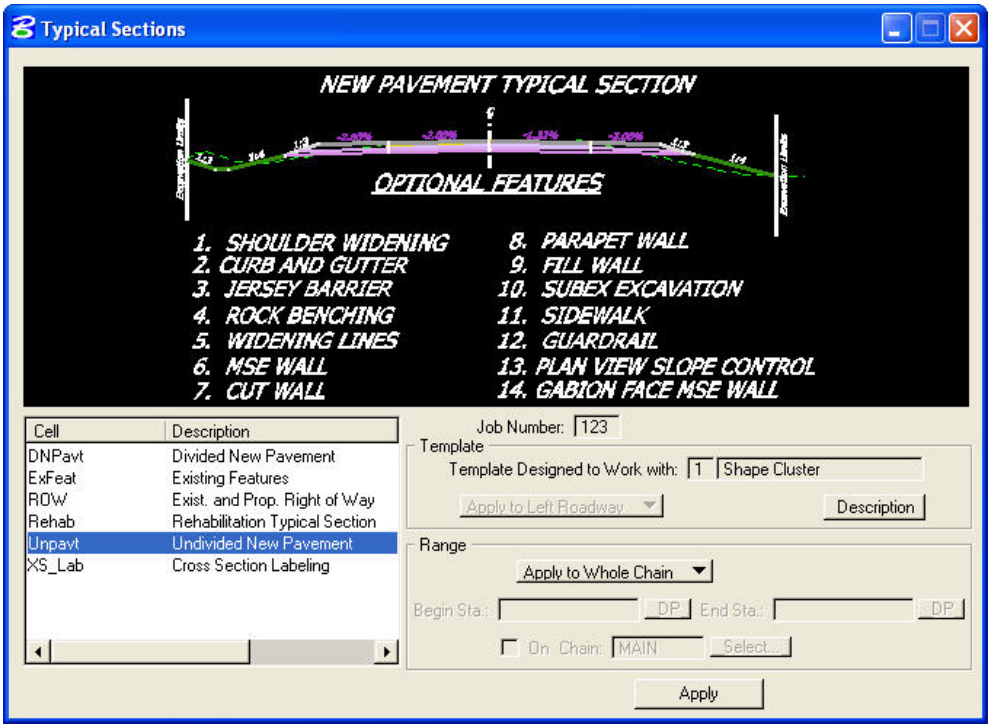

Figure 8-1: FLH Typical Sections

Understanding the new FLH Typical Sections and X30 criteria takes some use. Typical Sections "write" **(.wri)** files are provided in the X30\Typicals\ folders to help users. These files are tutorials and guides for the X30 criteria files.

The Typical Section Generator Process

Prior to running proposed cross sections, the Project Manager needs to be setup as outlined in Chapter 3 of the Geopak 2004 - X30 CADD Standards Manual. Once the Project Manager has been setup and the necessary design components have been developed as mentioned above, the process for generating proposed cross sections is run from the Project Manager.

Both a completed **Working Alignment** and a **Proposed Cross Section "Run"** are needed to generate proposed cross sections. Once the working alignment has been selected and defined, Proposed Cross Sections can be run through the Project Manager Workflow Dialog Box. Follow Workflow 1 below to setup the Working Alignment Definition. An example Working Alignment called MAIN will be used to outline the Workflows in this Chapter.

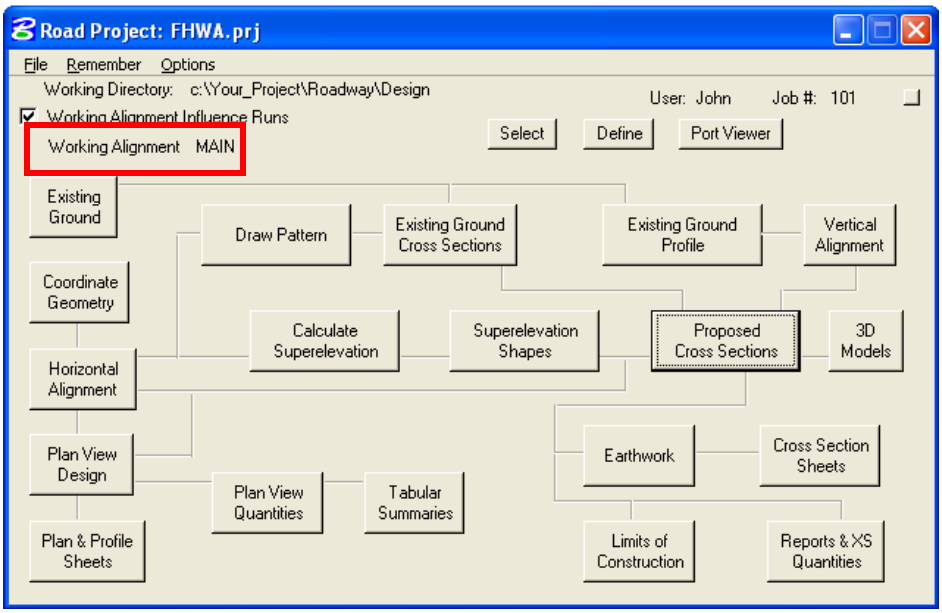

Figure 8-2: Project Manager Workflow Dialog

Workflow 1: Working Alignment Definition

To access this workflow, follow this link:

http://www.cflhd.gov/cadd/_documents/Working Alignment Definition - (Workflow_8.1).pdf

Once the working alignment definitions are set for a working alignment, Proposed Cross Sections can be selected from the Project Manager Dialog Box. Workflow 2 will outline the steps required to create and process a "Run" for the Proposed Cross Sections.

Workflow 2: Generating Proposed Cross Sections

To access this workflow, follow this link:

http://www.cflhd.gov/cadd/_documents/Generating Proposed CrossSections - (Workflow_8.2).pdf

Viewing Cross Sections

Now that you have completed the proposed cross section run, you will want to view them. The cross section navigator is a tool that makes the viewing of cross sections much easier. Two types of Cross Section Navigators are available to review the cross sections; the Cross Section Navigator and the Super Cross Section Navigator. Workflow 3 and Workflow 4 will outline the two Cross Section Navigators.

Cross Section Navigator

The Super Cross Section Navigator prevents drifting of the cross sections and provides speed controlled cross section movie navigation.

Workflow 3: Cross Section Navigator

To access this workflow, follow this link:

http://www.cflhd.gov/cadd/_documents/CrossSection Navigator - (Workflow_8.3).pdf

Super Cross Section Navigator

The Super Cross Section Navigator is a MicroStation Visual Basic Application (MVBA) which prevents drifting of the cross sections and provides speed controlled cross section movie navigation.

Workflow 4: Super Cross Section Navigator

To access this workflow, follow this link:

http://www.cflhd.gov/cadd/_documents/Super Cross Section Navigator - (Workflow_8.4).pdf

Related links: Setting up the Proposed Cross Section run for 5 typical sections using Knucklehead's Guide for GEOPAK Road 2004 Edition.

Existing Features

Right of Way

Rehabilitation (3R)

Undivided New Construction

Automated Cross Section Labeling

Cross Section Sheet Composition

This section will describe the method used to create cross section sheets. The following workflow will show the user how to set up sheets using GEOPAK Cross Section Sheet Composition tool. This application supports the following scales and layout options.

US Customary

Sheet Name	Sheet Description
10 Scale, Single Stack, Landscape	Max. XS Width 145'
20 Scale, Single Stack, Landscape	Max. XS Width 290'
30 Scale, Single Stack, Landscape	Max. XS Width 425'
10 Scale, Single Stack, Portrait	Max. XS Width 80'
20 Scale, Single Stack, Portrait	Max. XS Width 160'
30 Scale, Single Stack, Portrait	Max. XS Width 270'
10 Scale, Double Stack, Landscape	Max. XS Width 60'
20 Scale, Double Stack, Landscape	Max. XS Width 120'
10 Scale, Double Stack, Portrait	Max. XS Width 40'
20 Scale, Double Stack, Portrait	Max. XS Width 80'

Metric

Sheet Name	Sheet Description
100 Scale, Single Stack, Landscape	100:1 Metric
200 Scale, Single Stack, Landscape	200:1 Metric
300 Scale, Single Stack, Landscape	300:1 Metric
100 Scale, Single Stack, Portrait	100:1 Metric
200 Scale, Single Stack, Portrait	200:1 Metric
300 Scale, Single Stack, Portrait	300:1 Metric
100 Scale, Double Stack, Landscape	100:1 Metric
200 Scale, Double Stack, Landscape	200:1 Metric
100 Scale, Double Stack, Portrait	100:1 Metric
200 Scale, Double Stack, Portrait	200:1 Metric

Workflow 5: Cross Section Sheet Composition

To access this workflow, follow this link:

http://www.cflhd.gov/cadd/_documents/CrossSection Sheet Composition - (Workflow_8.5).pdf