

Course Notes – 3D-Dig Roads & Associated Structures

Course

In this course, you will learn the 3D-Dig roads and earthworks basics, make acquaintance with roads functionality and work with cut-fill balance.

Road Design Module

This module introduces you to the 3D-Dig Roads & Other Earthworks basics. You will see how 3D-Dig can perform even the most complicated earthworks, based on an advanced calculation of cut-fill balance.

Horizontal Alignment

Introduction to the 3D-Dig *Roads basic functionality*.

Two purposes of the *Roads* functionality are explained briefly: the creation of roads (with further imposing on topography via the process of *Cut & Fill*), and the use of the *Roads* in simulations for the 3D-Dig Module *Truck & Shovel*. This lesson concentrates on the first of these two options.

Explanations of how to set up the *Terrain Appearance* and *Terrain Heights and Color* windows for creating a road.

Demonstration of how to use the mouse cursor during the process of setting up a road, joining two points, located on different heights. Explanation of the options in the *Create Roads* window.

At the end of the lesson, the set-up of cross-sectional parameters and the *horizontal alignment* is executed.

Vertical Alignment

The concept of *vertical alignment* is explained in this lesson, and excavation for road creation is performed.

The process of editing the *horizontal alignment* to achieve the reasonable *Cut - Fill balance* is explained.

The *vertical alignment* adjustment in the *Cross Section* window is demonstrated.

Cut-Fill Balance

In this lesson, you will learn how to work with *Cut-Fill balance* for the creation of roads and other earthworks.

The balance between *Cumulative Cut* and *Cumulative Fill* is shown in the *Logged Material* window with respect to the road previously created.

The importance of the further process of editing the *horizontal alignment* to achieve the reasonable *Cut-Fill balance* is explained.

The set-up of the *Spoil Layer* is demonstrated to investigate which case exactly you are facing: *Excessive Cut - Insufficient Fill* or *Insufficient Cut - Excessive Fill*, and to solve this problem.

Short reminders of the terms *Spoil Layer* and *Rehandle Material* are given.

The explanation of the difference between the *Undo* option and the use of *Restore Points* for the modifying of the created road, or finding the reasonable *Cut - Fill balance*.

An important note is given at the end of the lesson: that the described functionality is not only suitable for the creation of the linear standard roads, but also for more complex earthwork structures, including access ramps, dams, and drainage channels.