

Autodesk Official Training Guide

# Intermediate

AutoCAD®

Civil 3D® 2010

## Interchange Design

Engineers and designers will learn how to perform common interchange design tasks faster and with improved accuracy.

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Published by:  
Autodesk, Inc.  
111 McInnis Parkway  
San Rafael, CA 94903, USA

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## Acknowledgements

The Autodesk Official Training Guide team wishes to thank everyone who participated in the development of this project, with special acknowledgement to the authoring contributions and subject matter expertise of Robert Vincent P.E. and Michael Cotreau P.E. of Langan Engineering and Environmental Services, Inc., and to Janice Lim Anderson, of Two Stroke Lead Inc., for instructional design services.

Langan Engineering and Environmental Services, Inc. is a full service civil, geotechnical, and environmental engineering firm with over 600 professionals in 10 offices in the US, with international offices in Greece and the United Arab Emirates. In addition to these core services, Langan supports its clients with surveying, landscape architecture and planning, as well as natural and cultural resources.

Robert Vincent P.E. is a senior staff engineer specializing in highway design for the Transportation group at Langan. Mr. Vincent has a B.S. in Civil Engineering from Norwich University and nearly 8 years of design experience working on numerous highway and roadway projects throughout the New York/New Jersey area.

Michael Cotreau P.E. is a senior associate at Langan and is the manager of their Cadd and GIS department with over 23 years of civil engineering experience. Mr. Cotreau graduated from the New Jersey Institute of Technology and has B.Sc. and M.Sc. degrees in civil engineering.

Special thanks to Aurelio Escalona, the lead engineer of Santa Maria, Panama, the project that this content is based upon.

Two Stroke Lead Inc. provides performance improvement services to businesses of all sizes through business analysis consulting, instructional design, courseware development, and performance measurement. Two Stroke Lead Inc. team members have provided instructional design services for several Autodesk Official Training Guide, EDU, and Tech Camp guides.



# Introduction

Welcome to the *AutoCAD Civil 3D 2010 Interchange Design* Autodesk Official Training Guide, a training guide for use in Authorized Training Center (ATC®) locations, corporate training settings, and other classroom settings.

Although this guide is designed for instructor-led courses, you can also use it for self-paced learning. The guide encourages self-learning through the use of the AutoCAD® Civil 3D® Help system.

This introduction covers the following topics:

- Course objectives
- The civil engineering processes in this courseware.
- Prerequisites
- Using this guide
- CD contents
- Installing the exercise data files from the CD
- Feedback

This guide is complementary to the software documentation. For detailed explanations of features and functionality, refer to the Help in the software.

## Objectives

After completing this guide, you will be able to:

- Model and evaluate existing ground conditions.
- Design two new ramps for an existing project where a partial interchange system already existed.
- Create and analyze corridor models.

## About AutoCAD Civil 3D in This Guide

In Civil 3D, as with most AutoCAD® applications, several possible methods exist to accomplish the same task. This guide is not intended to teach the essential features of Civil 3D, but rather how to apply software processes to particular drafting tasks. The intent is to demonstrate Civil 3D primarily as a design tool. You do not set up styles, manually edit text or labels, or perform general drafting tasks. Also, a number of design and drafting tasks would have to be completed before a final plan set would be ready for submittal.

## About the Civil Engineering Processes in This Guide

This book guides you through a possible process for interchange design. The primary focus of this guide is to teach a qualified engineer or designer how Civil 3D can be used as a tool in the design solution to perform common drafting tasks more accurately and in less time.

This guide is not intended to teach civil engineering principles or to recommend one engineering

procedure over another. It is understood that design procedures can and do vary by region, organization, and even individual engineer. Also, due to time constraints, it is not possible to show all steps required to refine the design or to create many of the drafting components that are required for a final plan set. The features of Civil 3D used in the exercises can be applied to these tasks, enabling you to generate a plan-ready final design.

## Prerequisites

This guide is for experienced civil engineers and designers with a firm grasp of the fundamental features of Civil 3D and civil engineering principles.

It is recommended that you have:

- In-depth knowledge of essential Civil 3D features and functionality.
- Experience with civil engineering processes and terminology.
- Civil 3D 2010 installed on your computer.

## Using This Guide

The lessons are independent of each other. However, it is recommended that you complete these lessons in the order that they are presented unless you are familiar with the concepts and functionality described in them.

Each chapter contains:

### Lessons

Usually two or more lessons are included.

### Exercises

Practical, real-world examples for you to practice using the functionality you have just learned. Each exercise contains step-by-step procedures and graphics to help you complete it successfully.

## CD Contents

The CD attached to the back cover of this book contains all the data and drawings you need to complete the exercises in this guide.

## Installing the Exercise Data Files from the CD

To install the data files for the exercises:

1. Insert the courseware CD.
2. Double-click the self-extracting archive *setup.exe*.

Unless you specify a different folder, the exercise files are installed in the following folder:

*C:\Autodesk Learning\AutoCAD Civil 3D 2010\Interchange Design.*

After you install the data from the CD, this folder contains all the files necessary to complete each exercise in this guide.

## Imperial and Metric Datasets

In exercises that specify units of measurement, alternative files are provided as shown in the following example:

Open *i\_stair\_settings.dwg* (imperial) or *m\_stair\_settings.dwg* (metric).

In the exercise steps, the imperial value is followed by the metric value in parentheses as shown in the following example:

For Length, enter **13'2"** (**4038 mm**).

For exercises with no specific units of measurement, files are provided as shown in the following example:

Open *c\_stair\_settings.dwg* (common).

In the exercise steps, the unitless value is specified as shown in the following example:

For Length, enter **400**.

## Feedback

We always welcome feedback on Autodesk Official Training Guides. After completing this class, if you have suggestions for improvements or if you want to report an error in the book or on the CD, please send your comments to [learningtools@autodesk.com](mailto:learningtools@autodesk.com).

