

AutoCAD® Civil 3D® 2014 for Surveyors



Visit the following websites to learn more about this book:



Table of Contents

Preface	vii
Class Files	ix
Chapter 1 The AutoCAD Civil 3D Interface	1-1
1.1 Product Overview	1-3
1.2 AutoCAD Civil 3D Workspaces	1-5
1.3 AutoCAD Civil 3D User Interface	1-7
Practice 1a Overview of AutoCAD Civil 3D and its User Interface	1-12
1.4 AutoCAD Civil 3D Toolspace	1-16
Prospector Tab	1-18
Settings Tab	1-20
Survey Tab.....	1-21
Toolbox Tab	1-22
1.5 AutoCAD Civil 3D Panorama	1-24
Practice 1b AutoCAD Civil 3D Toolspace	1-26
1.6 AutoCAD Civil 3D Templates, Settings, and Styles ..	1-32
Drawing Settings in Detail.....	1-33
Styles	1-43
Templates	1-50
Practice 1c AutoCAD Civil 3D Styles	1-53
Chapter 2 Connecting to Geospatial Data	2-1
2.1 Introduction to the Planning and Analysis Workspace	2-3
Map Workflow	2-3
2.2 Coordinate Systems	2-5
Practice 2a Start a New Project	2-8
2.3 Geospatial Data Connection	2-10
Connect to GIS Data.....	2-10
Stylize GIS Data.....	2-14
Draw Order	2-15
Practice 2b Connect to GIS Data.....	2-17
2.4 Create a Surface from GIS Data	2-22
Contour Issues.....	2-25
Minimizing Flat Triangle Strategies.....	2-26
Draping Images On a Surface	2-27
Practice 2c Create a Surface from a Shape File.....	2-28

Chapter 3 Survey I.....	3-1
3.1 Survey Workflow Overview	3-3
3.2 Introduction to the Survey Toolspace.....	3-7
3.3 Survey Figures	3-8
Drawing Settings.....	3-9
Figure Styles.....	3-9
Figure Prefix Database	3-11
Practice 3a Creating Figure Prefixes	3-12
3.4 The Survey Database	3-13
3.5 Survey Networks	3-16
3.6 Importing a Field Book	3-18
Practice 3b Importing a Field Book.....	3-21
3.7 Working with Figures.....	3-27
Practice 3c Field Book Edits, Styles, and Figure Prefixes.....	3-29
3.8 Filtering a Survey Database	3-34
Practice 3d Filter a Survey Database	3-38
3.9 Points Overview	3-40
Practice 3e Point Marker Styles	3-47
3.10 Point Label Styles	3-52
Information Tab.....	3-53
General Tab.....	3-53
Layout Tab.....	3-55
Dragged State Tab	3-57
Practice 3f Point Label Styles	3-59
3.11 Point Settings	3-64
3.12 Creating Points.....	3-66
3.13 Transparent Command.....	3-67
Practice 3g Creating AutoCAD Civil 3D Points.....	3-68
3.14 Description Key Sets	3-70
Practice 3h Creating a Description Key Set.....	3-74
3.15 Importing and Exporting Points	3-79
To Import Points	3-79
Duplicate Point Numbers.....	3-81
Transforming Points on Import or Export.....	3-82
Practice 3i Importing and Exporting Points Part I	3-84
Practice 3j Importing and Exporting Points Part II	3-88
3.16 Point Groups	3-90
Practice 3k Creating Point Groups	3-96

3.17 Reviewing and Editing Points	3-99
Practice 3l Manipulating Points	3-102
3.18 Locking/Unlocking Points	3-104
Practice 3m Point Locking and Editing	3-106
3.19 Point Reports	3-109
Practice 3n Point Reports	3-111
Chapter 4 Survey II.....	4-1
4.1 Overview.....	4-3
4.2 Survey Equipment.....	4-6
Trimble	4-6
Leica	4-6
Tripod Data Systems (TDS).....	4-7
Carlson.....	4-7
Other Resources.....	4-7
4.3 Import Field Data	4-8
4.4 Figure Prefix Database.....	4-10
Practice 4a Setup Survey Figure Database Path	4-13
4.5 Field Codes	4-16
4.6 Survey Data - Figures.....	4-20
Practice 4b Importing Data - Figures	4-21
4.7 Survey Data - Line Code	4-27
Practice 4c Line Code.....	4-31
4.8 Translating a Survey Database	4-34
Practice 4d Translating Survey Database.....	4-35
4.9 Least Squares	4-43
Practice 4e Creating a Least Square Survey	4-45
4.10 Creating a Least Squares Input File	4-48
Adjustment Analysis.....	4-49
Blunder Detection Analysis	4-50
Updating the Survey	4-51
Practice 4f Creating a Least Square Input File and Adjustment.....	4-52
4.11 Traverse Basics	4-56
Open Traverse	4-56
Closed Traverse.....	4-56
Closed Connected Traverse	4-56
Traverse Data in a Field Book	4-57

4.12 Defining a Traverse	4-58
Traverse Editor	4-58
Least Squares Traverse	4-59
Adjustment Reports	4-59
Practice 4g Creating a Network Traverse	4-60
4.13 Multiple Network Surveys	4-67
Survey Points.....	4-67
Closed Connected Traverse	4-68
Field Book Edits.....	4-68
Practice 4h Closed Connect Traverse	4-70
Chapter 5 Surfaces	5-1
5.1 Surface Process	5-3
5.2 Surface Properties	5-9
5.3 Surface Data	5-12
Contours	5-12
DEM Files	5-14
Drawing Objects	5-14
Point Files.....	5-14
Point Groups.....	5-14
Point Survey Queries.....	5-14
Figure Survey Queries.....	5-15
Practice 5a Creating an Existing Ground Surface	5-16
5.4 Breaklines and Boundaries	5-19
Breaklines	5-20
Practice 5b Add Additional Data to an Existing Ground Surface	5-25
5.5 Surface Editing	5-34
Line Edits	5-35
Point Edits.....	5-36
Simplify Surface.....	5-36
Smooth Contours.....	5-37
Smooth Surface	5-38
Copy Surface	5-39
Surface Paste	5-40
Raise/Lower Surface	5-40
5.6 Adjusting Surfaces through Surface Properties	5-41
5.7 Viewing Surfaces in 3D	5-42
Viewing a Surface in 3D	5-42
Quick Profile	5-43
Practice 5c Surface Edits.....	5-44

5.8 Surface Labels	5-55
Contour Labels.....	5-56
Spot and Slope Labels.....	5-56
5.9 Surface Volume Calculations	5-57
Volumes Dashboard	5-57
Bounded Volumes.....	5-57
Volume Reports	5-58
Grid Volume or TIN Volume Surface	5-58
5.10 Surface Analysis Display.....	5-59
Analysis Settings.....	5-61
Analysis Data Display	5-62
Practice 5d Surface Labeling and Analysis.....	5-63
Appendix A Opening a Survey Database.....	A-1
A.1 Opening a Survey Database	A-3
Appendix B AutoCAD Civil 2014 Certified Professional Exam Objectives	B-1
Index.....	Index-1