

Full Contents

Section 1: Overview Essentials

1.1 Introduction	3
Learning InRoads Survey	3
Basic Rules	3
How to Use This Guide	4
Section Breakdown	5
<i>Section 1: Overview Essentials</i>	5
<i>Section 2: Production Essentials</i>	5
<i>Appendices and Glossary</i>	5
<i>Index</i>	5
What's in a Chapter?	5
Font Conventions	6
<i>Italic</i>	6
<i>Bold</i>	7
<i>Bold and Italic</i>	7
<i>Small Caps</i>	7
<i>Underlined Small Caps</i>	7
How to Use the CD	7
Files on CD-ROM	7
<i>Training Folders</i>	8
<i>Training Files</i>	8
<i>Chapter Files</i>	9
Other CD Content	9
Software Information	9
AutoCAD versus MicroStation	9
Version Compatibility	10
Software File Paths	10
1.2 Orientation to InRoads Survey	11
Chapter Prerequisites	12
The Bigger Picture	12
InRoads Survey vs. InRoads	12
<i>The Purpose of InRoads Survey</i>	12
InRoads Survey versus CAD	13
<i>The CAD Platform</i>	14
<i>File Types</i>	14
<i>InRoads and CAD</i>	15
Toolbars	16
The Fieldbook	17
The Style Manager	18
The Surface Model	18
Surface Origins	19
Intelligent Models	20
Surface Display	21

Geometry	22
COGO Points	23
Horizontal Alignments	23
Vertical Alignments	24
Event Points	24
Profiles	25
Volumes	26
Grid Volume	26
Reporting	27
XML Reporting	27
Preferences	28
Tools> Options	29
Tools> Survey Options	30
The Managers	30
Symbology Manager	30
Style Manager - Surfaces	32
Style Manager - Geometry	33
Preference Manager	33
The Locks	34
The Locks and InRoads Survey	34
<i>Pen and Pencil</i>	34
<i>Report Lock</i>	35
InRoads Survey Support	35
InRoads Help File	36
Training	36
Bentley	37
Consultants	37
Chapter Challenge	37
Quiz Questions	38
Chapter As-Built	39
Quick Review	39
1.3 Sample Project Defined	41
Preliminary Design Statement	41
Project Design Criteria	41
Scope of Work Details	42
<i>Concept Sketches</i>	43
<i>Project Vicinity Map</i>	45
1.4 Getting an Overall Picture	47
Chapter Prerequisites	47
Knowledge Prerequisites	47
Data Prerequisites	48
Files Needed	48
Hands On—Getting an Overall Picture	48
Loading the Training Files	49
Preparing and Opening InRoads Survey	49
<i>The SelectCAD Platform</i>	49
<i>Starting InRoads Survey</i>	50
Preparing to Run InRoads Survey	51
<i>Project Defaults</i>	51
<i>Creating a New Project Default Configuration</i>	53
The InRoads Survey Interface	54
<i>The Menu Bar</i>	54
<i>The Workspace Bar</i>	54

<i>The Feedback Pane</i>	55
<i>Status Bar</i>	55
New InRoads Survey Fieldbook	56
Raw Data	57
<i>Sample raw data</i>	57
<i>Loading a raw data file</i>	57
<i>Target Height Alert</i>	58
Viewing the Collected Data	59
<i>Toolbar</i>	59
<i>CAD Viewing</i>	59
<i>InRoads Survey Viewing</i>	60
The InRoads Survey Fieldbook	61
<i>Stations</i>	62
<i>Observations</i>	63
Importing Additional Raw Data	64
<i>Viewing Imported RAW data</i>	66
Multiple InRoads Survey Fieldbooks	67
<i>Deleting an InRoads Survey Fieldbook</i>	68
The Fieldbook Revisited	69
<i>Importing Additional Raw Data</i>	70
<i>More Fieldbook Work</i>	71
Survey Code Styles	71
<i>Fieldbook Point Select</i>	72
<i>Style Entries</i>	73
<i>Feature Codes</i>	74
<i>Feature Symbology</i>	75
Saving the InRoads Survey Fieldbook	78
The Purposes of InRoads Survey	79
Exporting a Surface Model	79
<i>Surface Coding</i>	79
<i>Survey Data to Surface</i>	81
<i>Triangulating the Surface Data</i>	82
<i>Viewing the Exported Surface</i>	83
<i>Saving the Surface</i>	85
Exporting the Geometry Project	86
<i>Survey Data to Geometry</i>	87
<i>Reviewing the Geometry</i>	87
<i>Saving the Geometry Project</i>	89
Ending off	90
Chapter Challenge	91
Additional Exercises	91
<i>The Fieldbook Data</i>	91
<i>The Surface Data</i>	91
<i>The Geometry Data</i>	91
Quiz Questions	92
Chapter As-Built	93
Quick Review	93

Section 2: Production Essentials

2.1 Getting Started	97
Chapter Prerequisites	97
Knowledge Prerequisites	97

Data Prerequisites	97
Files Needed	97
Hands On—Getting Started	98
Loading the Training Files	98
Starting Foundations	98
Selecting a CAD Platform	98
Starting InRoads	99
<i>InRoads Survey Versus CAD</i>	100
Preparing to Run InRoads Survey	101
Project Defaults	102
<i>Creating a New Configuration</i>	103
The InRoads Survey Interface	105
<i>The Menu Bar</i>	105
<i>The Workspace Bar</i>	107
Opening InRoads Survey Files	108
<i>Workspace Bar Shortcuts</i>	109
<i>Active Data</i>	111
<i>Repositioning</i>	111
<i>The Feedback Pane</i>	113
Toolbars	114
<i>Standard Issue Toolbars</i>	114
<i>Modifying a Toolbar</i>	116
<i>Restoring Toolbar Defaults</i>	117
<i>Building a Custom Toolbar</i>	117
<i>Exporting and Importing Toolbars</i>	119
Application Add-ins	120
Saving InRoads Data	121
Bentley Embedded Help	122
Survey Options	124
InRoads Options	125
Exiting InRoads	126
Chapter Challenge	127
Additional Exercises	127
Quiz Questions	128
Chapter As-Built	129
Quick Review	129
2.2 The Style Manager	131
Chapter Prerequisites	131
Knowledge Prerequisites	131
Data Prerequisites	131
Files Needed	131
Hands On—The Feature Table	132
Starting InRoads Survey	132
Opening Previously Created Data	132
The Style Manager	133
Feature Codes	133
<i>Feature Description</i>	133
<i>Feature Codes</i>	135
<i>Code Symbology</i>	136
<i>Coding Options</i>	137
Feature Coding - Attributes	138
<i>Looking at the Raw Data</i>	138
<i>Looking at the Fieldbook</i>	139

<i>Feature Code Attributes</i>	140
<i>Adding Fieldbook Attribute Values</i>	141
Custom Operations	143
<i>Survey Options</i>	144
<i>Style Manager</i>	145
Control Codes	149
Importing Survey Data	151
<i>Resolving Field Coding Errors</i>	151
<i>Creating a New Fieldbook</i>	151
<i>Importing Field Data</i>	152
<i>Resolving Code Errors</i>	153
<i>Logging Code Errors</i>	156
Continuing to Resolve Code Errors	158
<i>Copying a Style</i>	159
Deleting a Fieldbook	163
Ending Off	164
Chapter Challenge	164
Additional Exercises	164
<i>Reviewing Feature Codes</i>	164
<i>Attribute Creation</i>	164
<i>Custom Operations</i>	164
<i>Fieldbook Work</i>	165
Quiz Questions	165
Chapter As-Built	166
Quick Review	166
2.3 The Fieldbook	167
Chapter Prerequisites	167
Knowledge Prerequisites	167
Data Prerequisites	167
Files Needed	167
Hands On—The Fieldbook	168
Starting InRoads Survey	168
Opening Previously Created Data	168
The InRoads Survey Fieldbook	169
<i>The Fieldbook Interface</i>	169
<i>Fieldbook Editing Overview</i>	171
Importing Multiple Raw Data Files	172
Fieldbook Editing	176
<i>Moving Code Info to Notes</i>	176
<i>Deleting Extraneous Coding Entries</i>	180
<i>Additional Fieldbook Editing</i>	180
Control Code Edits	181
<i>View Settings</i>	181
<i>Editing Start Codes</i>	183
<i>Adding a Start Code</i>	186
<i>NT Coding</i>	189
<i>JPT Coding - Type 1</i>	192
<i>JPT Coding - Type 2</i>	193
V8.02 Versus V8.05 Versus V8.09 Editing	196
Chapter Challenge	196
Additional Exercises	196
Quiz Questions	198

Chapter As-Built	199
Quick Review	199
2.4 Exporting the Fieldbook	201
Chapter Prerequisites	201
Knowledge Prerequisites	201
Data Prerequisites	201
Files Needed	201
Hands On—Exporting the Fieldbook	202
Starting InRoads Survey	202
Opening Previously Created Data	202
Exporting Geometry	203
<i>Survey Data to Geometry</i>	203
<i>Reviewing the Geometry</i>	204
<i>Saving the Geometry Project</i>	206
Selectively Exporting Geometry	207
<i>The Survey Style Filter</i>	208
<i>Activating a Survey Style Filter</i>	209
<i>Exporting Geometry with a Filter</i>	210
Exporting a Surface Model	211
<i>Surface Point Type Coding</i>	211
<i>Survey Data to Surface</i>	213
<i>Triangulating the Surface Data</i>	215
<i>Surface Exporting Discussion</i>	216
<i>Viewing the Exported Surface</i>	217
Locating Problem Areas	218
Potential Problem #1	218
Potential Problem #2	219
<i>Redisplaying the Surface Triangles</i>	221
<i>Viewing Surface Contours</i>	221
Potential Problem #3	222
<i>Exporting the Surface</i>	225
<i>Viewing the Surface</i>	225
Potential Problem #4	226
View Crossing Segments	228
Saving the Surface	230
Fieldbook to Graphics	231
<i>View Settings</i>	231
<i>Writing the Graphics to CAD</i>	233
Chapter Challenge	234
Additional Exercises	234
<i>Exporting Geometry</i>	234
<i>Exporting the Surface</i>	234
<i>Survey Data to Graphics</i>	234
Quiz Questions	235
Chapter As-Built	236
Quick Review	236

Appendices

A: Exterior Boundary Creation	239
Chapter Prerequisites	239
Knowledge Prerequisites	239
Data Prerequisites	239

Files Needed	239
Hands On—Creating an Exterior Boundary	240
Starting InRoads Survey	240
Opening Previously Created Data	240
CAD File Preparation	241
DTM Review	241
Reviewing Surface Triangles	243
The Surface Perimeter	248
CAD Clean-up	249
Working with the Delete Triangle Tool	250
<i>Basic Procedure</i>	250
<i>Deleting Triangles - Setup</i>	251
<i>Deleting Triangles</i>	252
View Perimeter	255
Re-Triangulation	256
Deleting Triangles	258
Viewing the Final Perimeter	259
Import Surface From Graphics	260
Surface Properties	262
Triangulate the Surface	263
Save the Surface	264
B: The InRoads Locks	265
Introduction	265
The Toolbar	265
Activation Timing	266
Lock Types	266
Lock Categories	267
<i>Viewing and CAD-Related</i>	267
<i>Accessibility and InRoads-Related</i>	267
Lock Presentation	267
InRoads Tagging	268
<i>Ignoring</i>	268
<i>Removing</i>	269
The Locks	270
Pen/Pencil Overview	270
The Pencil Setting	271
<i>Usage Notes</i>	271
The Pen Setting	272
<i>Usage Notes</i>	272
Delete Ink Lock	273
<i>Usage Notes</i>	273
Style Lock	274
<i>Usage Notes</i>	275
Locate Lock	276
<i>Usage Notes</i>	277
Snap Lock	278
<i>Usage Notes</i>	279
Station Lock	279
<i>Usage Notes</i>	280
Report Lock	280
<i>Usage Notes</i>	280
Feature Filter	281
<i>Usage Notes</i>	284

Top Ten Rules of the Locks 285
Glossary 287