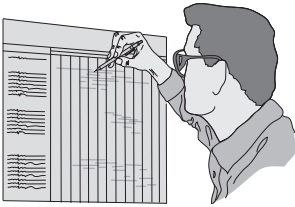


Table of Contents

PART ONE - SURVEYING FIELD PRACTICES

CHAPTER 1

Construction Surveying



Getting Started and Organized	1-2
Field Engineering Responsibilities	1-7
Preparing Reports and Charts	1-14
Qualified Land Surveyor	1-18
Summary	1-20

CHAPTER 2

Communication



The Basics	2-2
Communicating with Signals	2-11
Stakes and Laths	2-17
Marking Line and Grade	2-25
Abbreviations and Symbols	2-30
Summary	2-35

CHAPTER 3

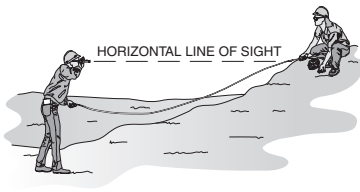
Fieldwork Practices



Safety	3-2
Measurement Principles	3-10
Tolerances for Construction Layout	3-14
Field Notekeeping Practices	3-17
General Instrument Care	3-25
Use and Care of Hand Tools	3-33
Leveling an Instrument	3-43
Instrument Setups	3-51
Summary	3-62

CHAPTER 4

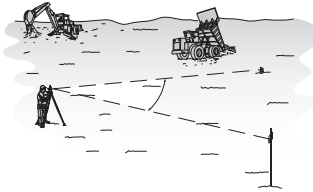
Distance Measurement - Chaining



Introduction	4-2
Chaining a Distance	4-7
Chaining a Traverse	4-15
Analysis of Chaining Errors	4-18
Summary	4-21

CHAPTER 5

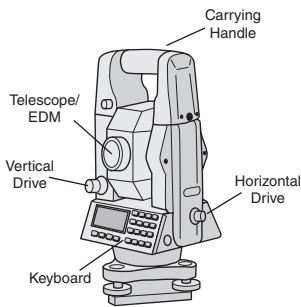
Angle Measurement



Introduction	5-2
Instruments	5-6
Horizontal Angle Measurement	5-14
Horizontal Angle Layout	5-24
Vertical or Zenith Angles	5-28
Summary	5-32

CHAPTER 6

Total Station



Introduction	6-2
Measuring Basics	6-11
Measuring Details	6-16
Layout of a Point	6-24
Trigonometric Elevations	6-33
Electronic Data Collection	6-40
Summary	6-43

CHAPTER 7

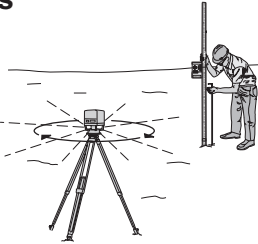
Leveling



Introduction	7-2
Standard Practices	7-11
Field Notes for Leveling	7-17
Differential Leveling	7-22
Profile Leveling	7-28
Cross-Section Leveling	7-33
Grid Leveling	7-39
Transferring Elevations	7-43
Applied Leveling	7-47
Setting Grade	7-53
Summary	7-57

CHAPTER 8

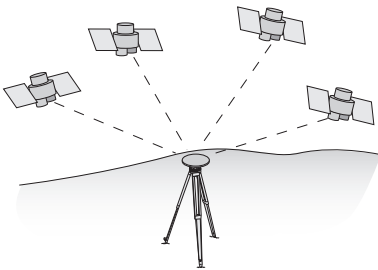
Lasers



Introduction	8-2
Standard Practices	8-7
Applications	8-14
Summary	8-16

CHAPTER 9

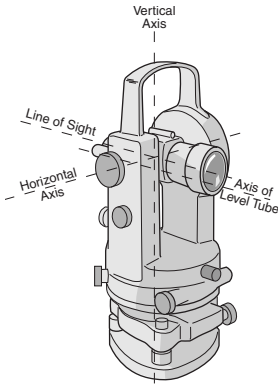
GPS Field Procedures



Introduction	9-2
Standard Practices	9-7
Summary	9-16

CHAPTER 10

Equipment Calibration



Introduction	10-2
Testing of a Chain	10-6
Angle-Measuring Instruments	10-10
Total Station	10-19
Tribrach and Plummets	10-21
Levels	10-24
Laser	10-31
Prism Pole Bubble	10-34
Hand Level	10-40
Summary	10-43

PART TWO - OFFICEWORK AND CALCULATIONS

CHAPTER 11

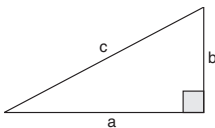
Office Practices



Drafting	11-2
Construction Drawings	11-7
Site Plans	11-11
Contours	11-16
Lift Drawings	11-26
Summary	11-34

CHAPTER 12

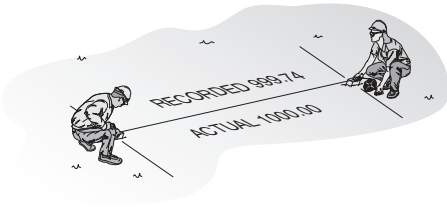
Math Essentials



Review and Formulas	12-2
Units and Conversions	12-11
Summary	12-17

CHAPTER 13

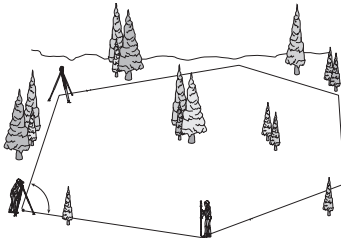
Chain Corrections



Introduction	13-2
Length Correction	13-8
Slope Correction	13-12
Temperature Correction	13-17
Combined Corrections	13-21
Summary	13-27

CHAPTER 14

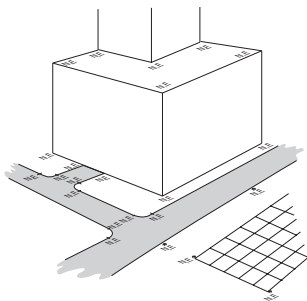
Traverse Computations



Introduction	14-2
Angle Adjustment	14-9
Direction Calculations	14-13
Latitudes and Departures	14-19
Closure and Precision	14-22
Adjustments	14-26
Adjusted Distances and Directions	14-30
Coordinates	14-32
Examples	14-36
Summary	14-41

CHAPTER 15

Coordinate Geometry



Introduction	15-2
Inversing	15-7
Intersections	15-13
Re-Section	15-19
Layout Data	15-24
Areas	15-30
Summary	15-34

CHAPTER 16

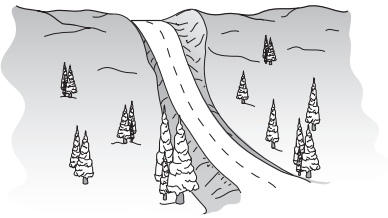
Horizontal Curves



Introduction	16-2
Formulas	16-7
Deflections and Chords	16-14
Layout by Deflections	16-21
Layout by Coordinates	16-30
Moving Up	16-35
Offset Curves	16-43
Summary	16-49

CHAPTER 17

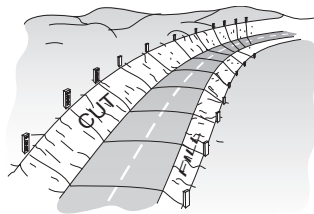
Vertical Curves



Introduction	17-2
Gradient Elevations	17-4
Elements and Properties	17-9
Curve Elevations	17-12
Unequal Length Curves	17-16
High and Low Points	17-20
Layout	17-23
Summary	17-26

CHAPTER 18

Quantities

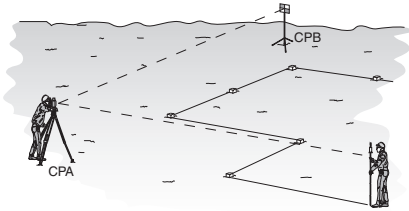


Introduction	18-2
Area	18-4
Average End-Area Method	18-8
Grids and Contours Method	18-11
Summary	18-15

PART THREE - APPLICATIONS

CHAPTER 19

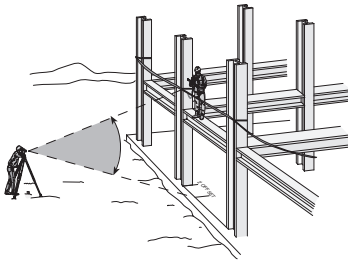
Layout Techniques



Introduction	19-2
Control	19-9
Methods	19-21
Line	19-36
Grade	19-46
Vertical Alignment	19-56
Sticks and Strings	19-61
Summary	19-69

CHAPTER 20

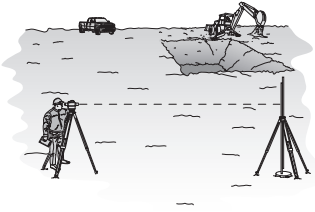
Construction Control



Introduction	20-2
Sitework	20-4
Retaining Systems	20-8
Caissons	20-11
Footings and Foundation	20-14
Anchor Bolts	20-17
Structural Steel	20-20
Concrete and Metal Decks	20-23
Block-Outs and Embeds	20-26
Concrete Columns	20-29
Elevator and Stair Cores	20-33
Sidewalks, Curbs, and Gutters	20-38
Summary	20-41

CHAPTER 21

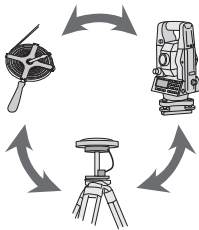
One-Person Surveying



Introduction 21-2
 Distances 21-6
 Line 21-10
 Elevations 21-16
 Layout 21-18
 Summary 21-23

CHAPTER 22

Field Observations



Introduction 22-2
 Tech Tips 22-7
 Rules of Thumb 22-11
 Common Mistakes 22-14

APPENDICES

Appendix A - Glossary 1
 Appendix B - Bibliography 7
 Appendix C - Additional Problems 10

 Index 15

HOW TO OBTAIN ONLINE UPDATES ON THIS BOOK

Unfortunately, no book is perfect. Even after eight years of use by thousands of persons, there are still mistakes or typographic errors pointed out about the second edition of this book. I'm sure that even though the best efforts have been made to eliminate mistakes in this new third edition, there will be some that go to print. I'm inviting you to go to Creative Construction's website at www.creativeconstruction.com to view an up-to-date listing of the known errata for this book. On the home web-page, click on "ERRATA." The latest list of significant corrections will be displayed.