

VDOT GEOPAK Road 1 Training

Table of Contents

Session 1: Introduction	1-1
1.1 File Names	1-1
1.2 Accessing GEOPAK	1-2
1.3 User Preferences	1-3
 Lab 1: User Preferences	 1-5
Review of Steps to Define Design Preferences	1-5
 Session 2: Project Manager	 2-1
2.1 Introduction	2-1
2.2 Accessing Project Manager	2-1
2.3 Project Manager Menu Bar	2-1
2.4 Project Users Dialog Box	2-4
2.5 Road Project Dialog Box	2-5
2.6 Project Manager Process	2-9
2.7 Online Help	2-10
 Lab 2: Project Manager	 2-11
Introduction	2-11
 Session 3: Digital Terrain Model	 3-1
3.1 Introduction	3-1
3.2 Accessing	3-1
3.3 Load DTM Features	3-2
3.4 Analysis Tools	3-3
 Lab 3: Digital Terrain Modeling	 3-4
3.1 Accessing DTM Tool via Project Manager	3-4
3.4 Load DTM Features	3-5
3.5 Analysis Tools	3-7
3.6 Working Alignment	3-11
 Session 4: Coordinate Geometry	 4-1
4.1 Introduction	4-1
4.2 Accessing COGO	4-1
4.3 Coordinate Geometry	4-2
4.4 COGO Navigator	4-13
 LAB 4: Coordinate Geometry	 4-17
4.1 Accessing COGO	4-17
4.2 Store Geometry	4-18
4.3 Working Alignment	4-23

4.4	Store Another Alignment	4-24
Session 5: Horizontal Alignment Tools		5-1
5.1	Introduction.....	5-1
5.2	Lines / Curves Tools.....	5-3
5.3	Curve Combinations Tools	5-4
5.4	Spiral Combinations Tools	5-4
5.5	Complex Transitions Tools	5-5
5.6	Alignment Tools.....	5-5
5.7	Manipulate Tools	5-6
Lab 5: Horizontal Alignment Tools		5-7
5.1	Accessing Horizontal Alignment Tools	5-7
5.2	Preferences	5-8
5.3	Store a Complex Ramp	5-9
Session 6: Graphical COGO		6-1
6.1	Introduction.....	6-1
6.2	Store Elements	6-2
6.3	Modify Elements	6-3
6.4	Manipulate Elements	6-5
6.5	Groups.....	6-6
Lab 6: Store a Chain with Graphical COGO		6-7
Session 7: Design and Computation Manager		7-1
7.1	Introduction.....	7-1
7.2	Accessing the Design and Computation Manager	7-3
7.3	Operational Mode - Design	7-5
7.4	DP Station/Offset.....	7-7
7.5	Draw Transition	7-8
Lab 7: D&C Manager – Plans Production		7-9
7.1	Accessing Design and Computation Manager	7-9
7.2	Drawing Alignments.....	7-9
7.3	Drawing Other Plan View Features	7-11
Session 8: Existing Ground Profiles		8-1
8.1	Introduction.....	8-1
8.2	Invoking the Draw Profile Tool	8-2
8.3	Profile Report.....	8-6
8.4	Drawing Profiles with D&C Manager	8-6
Lab 8: Existing Ground Profiles		8-9
8.1	Draw Existing Ground Centerline Profile.....	8-9
8.2	Store Profiles into COGO Database.....	8-11
8.3	Review Profiles in COGO	8-12
8.4	Drawing & Labeling the Existing Centerline Profile.....	8-13
8.4	Project Manager - Define	8-14

Session 9: Vertical Alignment Generators	9-1
9.1 Introduction	9-1
9.2 Vertical Alignment Generator.....	9-2
9.3 Component Based Vertical Alignment.....	9-5
9.4 Active Chain Control	9-7
LAB 9: Proposed Profiles	9-9
9.1 Generate the Proposed Profile	9-9
9.2 Drawing the Proposed Centerline Profile.....	9-12
9.3 Update the Project Manager.....	9-14
Session 10: Existing Ground Cross Sections	10-1
10.1 Introduction	10-1
10.2 Pattern Lines.....	10-1
10.3 Generating Cross Sections.....	10-3
10.4 Cross Section Navigator	10-5
10.5 Summary - Basic Steps to Creating Existing Ground Cross Sections from a DTM	10-6
LAB 10: Existing Ground Cross Sections	10-7
10.1 Draw Patterns	10-7
10.2 Update Project Manager.....	10-8
10.3 Generate Existing Ground Cross Sections.....	10-9
10.4 Review Cross Sections.....	10-10
10.5 Update Project Manager.....	10-10
Session 11: Superelevation	11-1
11.1 Introduction	11-1
11.2 Automated Superelevation (AutoShape Input File Maker)	11-2
11.3 Draw Shapes into Plan View File.....	11-7
11.4 Shape Analysis Tools	11-8
Lab 11: Superelevation	11-11
11.1 Automated Superelevation – Section 1	11-11
11.2 Automated Superelevation – Section 2	11-14
11.3 Automated Superelevation – Section 3	11-17
11.4 Automated Superelevation – Section 4	11-20
11.5 Automated Superelevation – Section 5	11-23
11.6 Building Manual Shapes	11-26
11.7 Draw Superelevation Diagram.....	11-29
11.8 Update the Project Manager.....	11-31
Session 12: Proposed Cross Sections	12-1
12.1 Overview	12-1
12.2 Files.....	12-10
12.3 Processing	12-10
12.4 Criteria Files.....	12-10

Lab 12: Proposed Cross Sections	12-11
12.1 Existing Pavement.....	12-11
12.2 Right of Way and Easements.....	12-17
12.3 Proposed Cross Sections (Sta. 200+00 to Sta. 204+25).....	12-23
12.4 Proposed Cross Sections (Sta. 204+25 to Sta. 220+00).....	12-28
12.5 Variables.....	12-32
12.6 Rootmat.....	12-38
12.7 Working Alignment.....	12-41
Session 13: Port Viewer	13-1
13.1 Introduction.....	13-1
13.2 Accessing the Port Viewer.....	13-2
13.3 Port Viewer Dialog Box Settings.....	13-2
13.4 Port Viewer Menu Options.....	13-4
Lab 13: Port Viewer	13-6
Session 14: Earthwork	14-1
14.1 Introduction.....	14-1
14.2 Accessing.....	14-1
14.3 Earthwork Dialog Box.....	14-2
Lab 14: Earthwork	14-7
14.1 Basic Earthwork Computations.....	14-7
14.2 Modify The Earthwork Text File.....	14-10
Session 15: Cross Section Sheets	15-1
15.1 Introduction.....	15-1
15.2 Cross Section Sheets Dialog Box.....	15-1
15.3 Generating Sheets.....	15-8
Lab 15: Cross Section Sheets	15-9
15.1 Cross Section Sheet Layout.....	15-9
15.2 Cross Section Sheet Numbering.....	15-14
Session 16: XS Reports & Limits of Construction	16-1
16.1 XS Reports.....	16-1
16.2 Limits of Construction.....	16-5
Lab 16: Cross Section Reports, Driveway Profiles, and Limits of Construction	16-7
16.1 Cross Section Reports.....	16-7
16.2 Driveway Profiles.....	16-10
16.3 Plan View Limits of Construction.....	16-16
Session 17: Labeling	17-1
17.1 Introduction.....	17-1
17.2 Plan View Labeling.....	17-1
17.3 Cross Section Labeling.....	17-7
17.4 Profile Labeling.....	17-7

Lab 17: Labeling	17-9
17.1 Accessing the Labeler.....	17-9
17.2 Using Predefined Label Styles.....	17-9
Session 18: Plan and Profile Sheets	18-1
18.1 Overview of Features.....	1
18.2 Invoking 2001 Plus Main Dialog Box	2
18.3 Primary Work Flow.....	9
18.4 Ports.....	10
18.5 Sheet View Attributes.....	10
18.6 Sheet Composition.....	13
Lab 18: Plan and Profile Sheets	21
18.1 Getting Started.....	21
18.2 Plan Sheet Layout Process.....	21
18.3 Profile Sheet Layout Process.....	24
18.3 Motif File Setup	31
18.4 Move The Profile Clipping Shape	31
18.5 Renumber Sheets	33
18.6 Clip Plan Sheets	35
18.7 Clip Profile Sheets	36
Session 19: D&C Manager - Quantities	19-1
19.1 Introduction	19-1
19.2 Operational Modes.....	19-1
Lab 19: Quantities with D&C Manager	19-11
19.1 Accessing Plans Production Tools	19-11
19.2 Compute Quantities	19-12
Session 20: 3D Modeling	20-1
20.1 Introduction	20-1
20.2 Prerequisites	20-1
20.3 3D Modeling Tools	20-2
20.4 3D Modeling Process.....	20-2
20.5 Generate 3D Cross Sections	20-3
20.6 Interpolation Between XS	20-3
20.7 GEOPAK Drive Through.....	20-4
20.8 Pavement Markings	20-5
Lab 20: 3D Modeling	20-6
20.1 3D Alignments.....	20-6
20.2 Generate 3D Model.....	20-7
20.3 Drive Through	20-11