

Table of Contents

Dedication	iii
Preface	xiii

Chapter 1: Introduction to AutoCAD Plant 3D

Introduction to AutoCAD Plant 3D 2015	1-2
Starting AutoCAD Plant 3D	1-2
New Tab	1-2
Working on a Project	1-3
AutoCAD Plant 3D User Interface	1-4
Drawing Area	1-5
Command Window	1-5
PROJECT MANAGER	1-5
DATA MANAGER	1-6
Navigation Bar	1-6
ViewCube	1-7
In-canvas Viewport Controls	1-7
Status Bar	1-7
PROPERTIES Palette	1-8
Different Workspaces in AutoCAD Plant 3D	1-9
Grips	1-10
Invoking Commands in AutoCAD Plant 3D	1-11
Invoking Commands using Command Prompt	1-11
Invoking Commands Using Ribbon	1-12
Tool Palettes	1-13
Application Menu	1-14
Menu Bar	1-15
Shortcut Menu	1-15
AutoCAD Plant 3D dialog boxes	1-17
Creating Backup Files	1-17
Changing Automatic Timed Saved and Backup Files into AutoCAD Format	1-18
Using the Drawing Recovery Manager to Recover Files	1-18
Closing a Drawing	1-19
Opening a Project Drawing	1-19
Opening a Drawing that is Not in the Project	1-20
Opening an Existing Drawing Using the Select File Dialog Box	1-20
Quitting AutoCAD Plant 3D	1-22
AutoCAD Plant 3D Help	1-23
Autodesk Exchange Apps	1-24
Additional Help Resources	1-24
Self-Evaluation Test	1-25
Review Questions	1-26

Chapter 2: Creating a Project and P&IDs

Introduction	2-2
PROJECT MANAGER	2-2
Creating a New Project in AutoCAD Plant 3D	2-2
Creating a New Drawing	2-6
Grouping Project Files	2-6
Designing a P&ID	2-7
Adding Equipment to a P&ID	2-9
Adding Pipe Lines	2-9
Assigning Tags to a line	2-10
Adding Valves	2-11
Adding Instruments and Instrumentation Lines	2-11
Adding Fittings	2-13
Adding the Off Page Connectors	2-14
Connecting the Off Page Connectors	2-14
Validating the Drawing	2-15
Checking for Errors	2-16
Editing the Drawing	2-18
Moving an Equipment	2-18
Moving a Valve	2-18
Moving a Line	2-19
Editing a Line	2-19
Grouping Lines	2-21
Editing a P&ID Symbol	2-21
Substituting Components	2-21
Converting AutoCAD Components into P&ID Symbols	2-22
Tutorial 1	2-23
Self-Evaluation Test	2-40
Review Questions	2-41
Exercise 1	2-41

Chapter 3: Creating Structures

Introduction	3-2
Creating a Grid	3-2
Editing Grids	3-3
Setting the Representation of a Structural Member	3-3
Adding Members	3-4
Creating Stairs	3-6
Editing Stairs	3-7
Creating Railings	3-7
Creating Ladders	3-9
Ladder Tab	3-10
Cage Tab	3-10
Creating a Plate/Grate	3-11
Creating Footings	3-12
Editing the Structural Members	3-12

Changing the Length of a Member	3-13
Restoring the Member to its Original Length	3-13
Cutting Member at Intersections	3-13
Creating Miter Joints	3-14
Trimming/Extending a Member	3-14
Exploding a Structure	3-16
Visibility Options	3-16
Hiding and Displaying Components	3-16
Exchanging Data with other Applications	3-16
Tutorial 1	3-17
Tutorial 2	3-22
Self-Evaluation Test	3-29
Review Questions	3-30
Exercise 1	3-31

Chapter 4: Creating Equipment

Introduction	4-2
Creating Equipment	4-2
Placing Equipment in the Drawing	4-3
Adding a Vessel	4-3
Adding a Heat Exchanger	4-4
Adding a Pump	4-5
Adding a Heater	4-5
Creating a Customized Equipment	4-6
Modifying Equipment	4-7
Converting Solid Models into Equipment	4-8
Attaching Objects to an Equipment	4-9
Detaching Objects from an Equipment	4-9
Adding Nozzles to a Customized Equipment	4-10
Adding Nozzles to a Converted Equipment	4-13
Modifying Nozzles	4-13
Tutorial 1	4-14
Tutorial 2	4-23
Self-Evaluation Test	4-29
Review Questions	4-29

Chapter 5: Editing Specifications and Catalogs

Introduction	5-2
Getting Started with AutoCAD Plant 3D Spec Editor	5-2
Working with Spec Files	5-2
Creating a New Spec File from an Existing Spec	5-3
Adding Parts to the Spec Sheet	5-4
Editing the Parts Added to a Spec	5-5
Setting the Part Use Priority	5-7
Adding Notes to a Group	5-7
Editing the Long Description Styles	5-8

Assigning a Long Description Style to Multiple Specs	5-10
Assigning Operators (Actuators) to Valves	5-11
Working with the Catalog Editor	5-13
Creating a New Catalog from an Existing Catalog	5-14
Adding a New Part to a Catalog	5-15
Creating a New Component using Parametric Graphics	5-15
Creating a New Component using Block Based Graphics	5-16
Modifying the Branch Table	5-18
Creating Branch Table Legends	5-19
Assigning Legends to a Branch Table	5-20
Tutorial 1	5-21
Tutorial 2	5-26
Tutorial 3	5-30
Self-Evaluation Test	5-38
Review Questions	5-38

Chapter 6: Routing Pipes

Introduction	6-2
Selecting a Spec	6-2
Working with the Spec Viewer	6-2
Routing a Pipe	6-4
Routing a Pipe with a New Line Number	6-4
Setting the Route Line	6-5
Routing a Pipe from a Line	6-6
Routing a Pipe using a P&ID	6-6
Routing a Pipe from an Equipment	6-7
Working with the Compass	6-8
Connecting two Open Ports of Pipes	6-9
Changing the Pipe Size while Routing	6-11
Changing the Orientation Plane while Routing a Pipe	6-11
Creating a Cutback Elbow	6-12
Creating a Roll Elbow	6-13
Creating Bends	6-14
Changing the Elevation while Routing a Pipe	6-14
Routing Pipe at an Offset	6-15
Routing a Pipe at a Slope	6-16
Creating Branches	6-18
Creating a Tee Branch	6-18
Creating an O-let Branch	6-19
Creating a Stub-In Branch	6-20
Creating a Stub-In Branch at an Offset from the Center of the Header Pipe	6-20
Creating a Branch from an Elbow	6-21
Creating a Stub-In Branch at a Precise Location	6-21
Adding a Reinforced Pad to a Stub-In Branch	6-22
Creating a Weld Connection	6-22
Creating Autodesk Connection Point	6-23

Editing an Autodesk Connection Point	6-23
Routing a Pipe from an Autodesk Connection Point	6-24
Tutorial 1	6-24
Self-Evaluation Test	6-40
Review Questions	6-41

Chapter 7: Adding Valves, Fittings, and Pipe Supports

Introduction	7-2
Adding Valves and Fittings	7-2
Adding Valves and Fittings to a Pipe using the Spec Sheet	7-2
Adding Valves and Fittings using a P&ID	7-3
Placing Valves and Fittings while Routing a Pipe	7-4
Placing Custom Parts	7-5
Mapping a P&ID Object to a Plant 3D Object	7-6
Adding Pipe Supports	7-8
Adding a Dummy Leg	7-10
Adding a Hanger and Connecting it to a Structural Member	7-10
Modifying the Pipe Supports	7-10
Copying and Moving a Pipe Support	7-12
Connecting Two Pipe Supports	7-13
Converting Solids into Pipe Supports	7-13
Attaching Objects to a Pipe Support	7-13
Detaching Objects from a Pipe Support	7-13
Insulating a Pipe	7-14
Modifying the Pipe Components using Grips	7-14
Substituting a Pipe Component	7-14
Rotating a Pipe Component	7-14
Flipping a Pipe Component	7-14
Flipping a Component Inline with the Pipe	7-14
Changing the Elevation of the Pipe	7-15
Changing the Valve Operator	7-15
Validating a 3D Model	7-17
Tutorial 1	7-18
Self-Evaluation Test	7-25
Review Questions	7-26

Chapter 8: Creating Isometric Drawings

Introduction	8-2
Isometric Drawing Types	8-2
Creating a Quick Isometric Drawing	8-2
Creating a Production Isometric Drawing	8-5
Viewing Isometric Results	8-5
Placing Iso Messages and Annotations	8-6
Exporting a Pipe Component File	8-7
Creating an Iso from a Pipe Component File	8-8
Locking a Line Number	8-8

Configuring Isometric Drawing Settings	8-8
Configuring Iso Style Settings	8-9
Configuring Annotation Settings	8-9
Configuring Dimensional Settings	8-10
Configuring Sloped and Offset Piping Settings	8-11
Setting the Title Block and Display Properties	8-12
Tutorial 1	8-14
Tutorial 2	8-18
Tutorial 3	8-22
Self-Evaluation Test	8-29
Review Questions	8-30

Chapter 9: Creating Orthographic Drawings

Introduction	9-2
Creating Orthographic Drawings	9-2
Generating the First View	9-2
Creating the Adjacent View	9-6
Adding Annotations to the Drawing	9-7
Adding Dimensions to the Drawing	9-8
Locating a Component in the 3D Model	9-8
Editing a Drawing View	9-8
Updating a View	9-9
Adding Gaps to Pipes	9-9
Tutorial 1	9-9
Self-Evaluation Test	9-16
Review Questions	9-16

Chapter 10: Managing Data and Creating Reports

Introduction	10-2
DATA MANAGER	10-2
Viewing data in the DATA MANAGER	10-3
Modifying the Display of Data	10-3
Displaying the Data by Object Type and Area	10-3
Zooming to Plant Objects	10-4
Locating an Object in a Drawing Area	10-4
Scrolling through the Data in the DATA MANAGER	10-5
Editing Data in the DATA MANAGER	10-5
Placing Annotations in a P&ID using the DATA MANAGER	10-5
Filtering the Information in the Data Table	10-6
Viewing only the Selected Record in the Data Table	10-6
Viewing all the records in the Data Table except the Selected One	10-6
Viewing the Data of the Objects Selected in the Drawing Area	10-6
Exporting Data from the DATA MANAGER	10-7
Importing Data to the DATA MANAGER	10-7
Accepting or Rejecting Changes in the Imported Data	10-8
Viewing Reports in the DATA MANAGER	10-8

Exporting the Project Reports	10-8
Importing the Project Reports	10-9
Working with the Report Creator	10-9
Generating Reports using the AutoCAD Plant Report Creator	10-10
Tutorial 1	10-12
Tutorial 2	10-15
Self-Evaluation Test	10-17
Review Questions	10-18
Index	I-1