ASCENT
CENTER FOR TECHNICAL KNOWLEDGE

Autodesk® Vehicle Tracking 2022 Fundamentals

Learning Guide

Imperial Units - 1st Edition

AUTODESK
Authorized Publisher

ASCENT - Center for Technical Knowledge®
Autodesk® Vehicle Tracking 2022
Fundamentals

Imperial Units - 1st Edition

Prepared and produced by:

ASCENT Center for Technical Knowledge
630 Peter Jefferson Parkway, Suite 175
Charlottesville, VA 22911

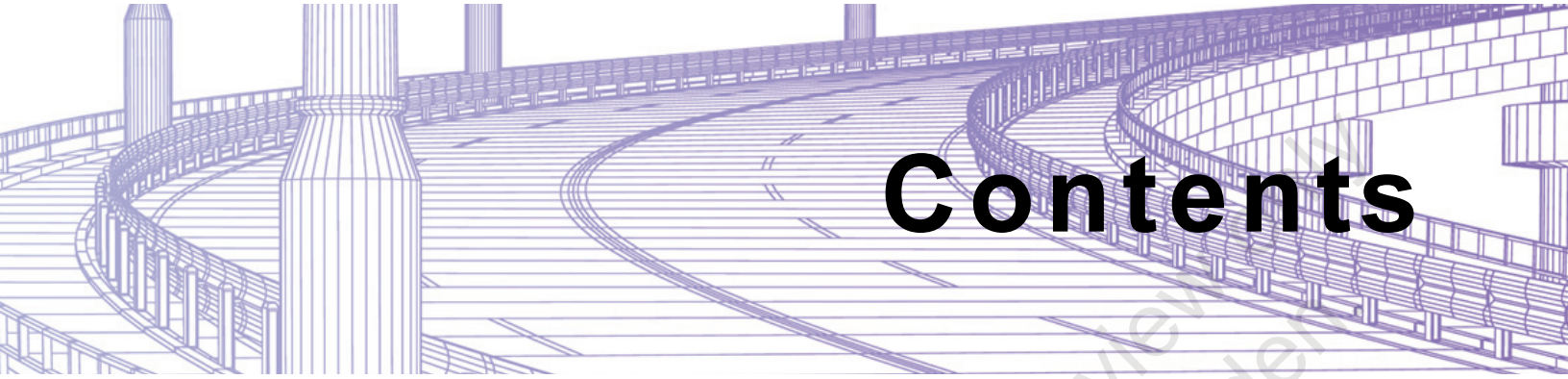
866-527-2368
www.ASCENTed.com

Lead Contributors: Jeff Morris and Heather Adams

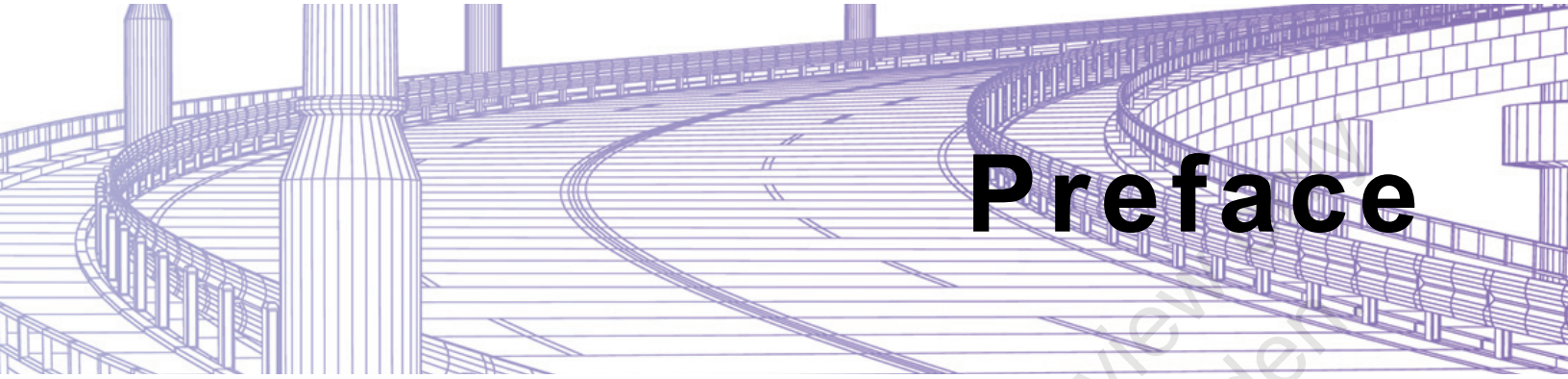
ASCENT - Center for Technical Knowledge (a division of Rand Worldwide Inc.) is a leading developer of professional learning materials and knowledge products for engineering software applications. ASCENT specializes in designing targeted content that facilitates application-based learning with hands-on software experience. For over 25 years, ASCENT has helped users become more productive through tailored custom learning solutions.

We welcome any comments you may have regarding this guide, or any of our products. To contact us please email: feedback@ASCENTed.com.

AS-AVT2201-FND1IM-SG // IS-AVT2201-FND1IM-SG



Contents



Preface

This guide will provide an introduction to the Autodesk® Vehicle Tracking module that can be added to Autodesk® Civil 3D®, as well as to the AutoCAD® and AutoCAD® Architecture software. The Vehicle Tracking module is an extensive transportation analysis and design solution for vehicles of all sorts. This software also features specialized tools for parking lot layout and roundabout design.

Topics Covered

- Navigate through the Vehicle Tracking user interface.
- Use the Vehicle Library.
- Create and edit paths using options such as Arc mode, Bearing mode, or Guided Paths.
- Run Vertical Clearance to check for clash locations.
- Use Design Checks to further analyze the design.
- Create animations of navigating through a chosen path.
- Create and edit parking lots using various row options.
- Create and edit roundabouts with and without corridor functionality.

Prerequisites

- Access to the 2022.0 version of the software, to ensure compatibility with this guide. Future software updates that are released by Autodesk may include changes that are not reflected in this guide. The practices and files included with this guide might not be compatible with prior versions (e.g., 2021).

Note on Software Setup

This guide assumes a standard installation of the software using the default preferences during installation. Lectures and practices use the standard software templates and default options for the Content Libraries.

Students and Educators Can Access Free Autodesk Software and Resources

Autodesk challenges you to get started with free educational licenses for professional software and creativity apps used by millions of architects, engineers, designers, and hobbyists today. Bring Autodesk software into your classroom, studio, or workshop to learn, teach, and explore real-world design challenges the way professionals do.

Get started today - register at the Autodesk Education Community and download one of the many Autodesk software applications available.

Visit www.autodesk.com/education/home/

Note: Free products are subject to the terms and conditions of the end-user license and services agreement that accompanies the software. The software is for personal use for education purposes and is not intended for classroom or lab use.

Lead Contributor: Jeff Morris

Specializing in the civil engineering industry, Jeff authors training guides and provides instruction, support, and implementation on all Autodesk infrastructure solutions.

Jeff brings to bear over 20 years of diverse work experience in the civil engineering industry. He has played multiple roles, including Sales, Trainer, Application Specialist, Implementation and Customization Consultant, CAD Coordinator, and CAD/BIM Manager, in civil engineering and architecture firms, and Autodesk reseller organizations. He has worked for government organizations and private firms, small companies and large multinational corporations and in multiple geographies across the globe. Through his extensive experience in Building and Infrastructure design, Jeff has acquired a thorough understanding of CAD Standards and Procedures and an in-depth knowledge of CAD and BIM.

Jeff studied Architecture and a diploma in Systems Analysis and Programming. He is an Autodesk Certified Instructor (ACI) and holds the Autodesk Certified Professional certification for Civil 3D and Revit.

Jeff Morris has been a Lead Contributor for *Autodesk Vehicle Tracking: Fundamentals* since 2020.

Lead Contributor: Heather Adams

Heather is an Education Specialist Manager with more than 15 years of technical experience in software installation, customization, training, and template development. As part of her role, she helps to enhance training content and class delivery, in addition to training students in the Infrastructure division.

Heather is an Authorized Certified Instructor (ACI) and has achieved the Autodesk Certified Professional certification for both Civil 3D and AutoCAD. Before entering the Autodesk business, she worked for consulting firms.

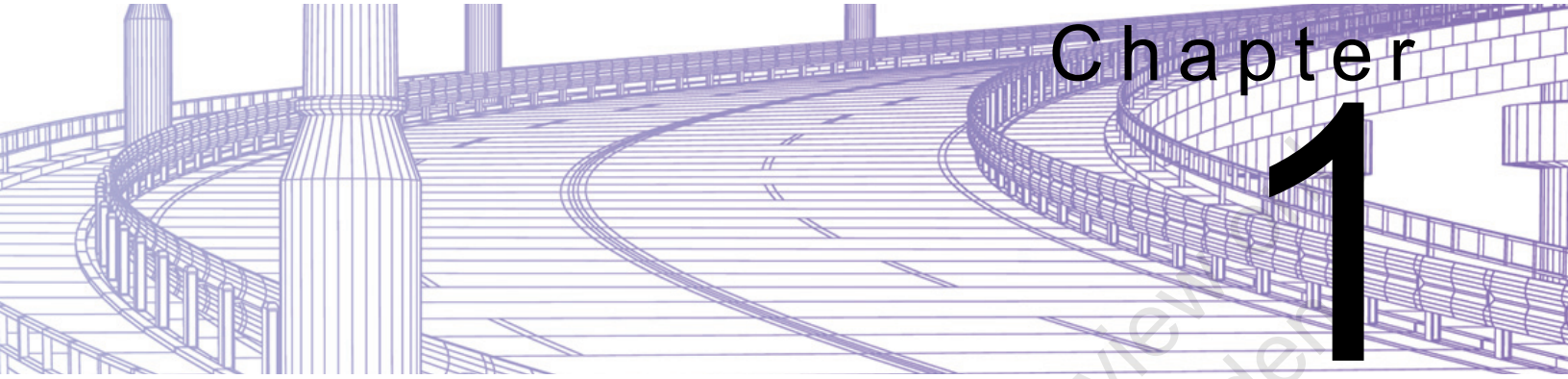
Heather received her Bachelor of Science in Civil Engineering from the University of Tennessee. She later earned her PE in Water Resources.

Heather Adams has been a Lead Contributor for *Autodesk Vehicle Tracking: Fundamentals* since 2020.

In This Guide

The following highlights the key features of this guide.

Feature	Description
Practice Files	The Practice Files page includes a link to the practice files and instructions on how to download and install them. The practice files are required to complete the practices in this guide.
Chapters	A chapter consists of the following - Learning Objectives, Instructional Content, Practices, Chapter Review Questions, and Command Summary. • **Learning Objectives** define the skills you can acquire by learning the content provided in the chapter. • **Instructional Content**, which begins right after Learning Objectives, refers to the descriptive and procedural information related to various topics. Each main topic introduces a product feature, discusses various aspects of that feature, and provides step-by-step procedures on how to use that feature. Where relevant, examples, figures, helpful hints, and notes are provided. • **Practice** for a topic follows the instructional content. Practices enable you to use the software to perform a hands-on review of a topic. It is required that you download the practice files (using the link found on the Practice Files page) prior to starting the first practice. • **Chapter Review Questions**, located close to the end of a chapter, enable you to test your knowledge of the key concepts discussed in the chapter.



Chapter 1

Getting Started

In this chapter, you will learn what Autodesk® Vehicle Tracking is and its software compatibility. This chapter will also cover the Vehicle Tracking user interface and settings.

Learning Objectives in This Chapter

- Comprehend the use and purpose of Vehicle Tracking.
- Navigate through the Vehicle Tracking user interface.
- Set appropriate settings for design use.

1.1 Introduction to Vehicle Tracking

Autodesk® Vehicle Tracking software is an extensive transportation analysis and design solution for vehicle swept path analysis, parking lot layouts, and roundabout design. The software enables engineers, designers, and planners to:

- accurately predict the movements of steered vehicles, including cars, trucks, service vehicles, streetcars, and airplanes, throughout the design process;
- optimize road layout and quickly evaluate design alternatives;
- perform real-time analysis to efficiently get information or feedback; and
- monitor adherence to design standards.

Vehicle Tracking Software Compatibility

Vehicle Tracking can be used directly within your CAD system and is compatible with the following software:

- Autodesk® AutoCAD®
- Autodesk® Civil 3D®
- Autodesk® AutoCAD® Architecture
- Autodesk® AutoCAD® Plant 3D
- Autodesk® AutoCAD® Map 3D

Why Use Vehicle Tracking?

There are over 500 types of vehicles in the standard Vehicle Library included in the software, crossing multiple industries and national and international standards. For example, you can use Vehicle Tracking to check if a garbage truck or utility truck can safely navigate through the proposed parking lots in a newly developed subdivision, or if there is sufficient room for fire trucks or emergency vehicles to access a building in a cul-de-sac.

The table below lists many of the vehicle types included in the software.

Transportation	Architecture	Plant and MFG
• Cars • Trucks • Articulated Vehicles • Buses • Refuse Trucks • Oversize and Overweight • Lowboys and Low Loaders • Heavy Haulers • Emergency Vehicles • Construction Equipment • Trams, LRT, and Street Cars • Airplanes and Helicopters • Airside Support Vehicles • Autonomous Guided Vehicles	• Private and Public Cars • Disabled Vehicle Access • Delivery Trucks • Wheelchairs • Mobility Scooters • School Buses • Hospital Beds • Electric Carts • Construction Equipment • Refuse Trucks • Fire Appliances	• Forklifts • Trolleys • Carts • Cart Trains • Multiple Trailers • Autonomous Guided Vehicles • Abnormal Loads • Large Loads • Delivery Trucks

1.2 User Interface

The Vehicle Tracking software is loaded into the Autodesk application you are using. A new ribbon tab will appear once the install is complete, as shown in Figure 1–1.

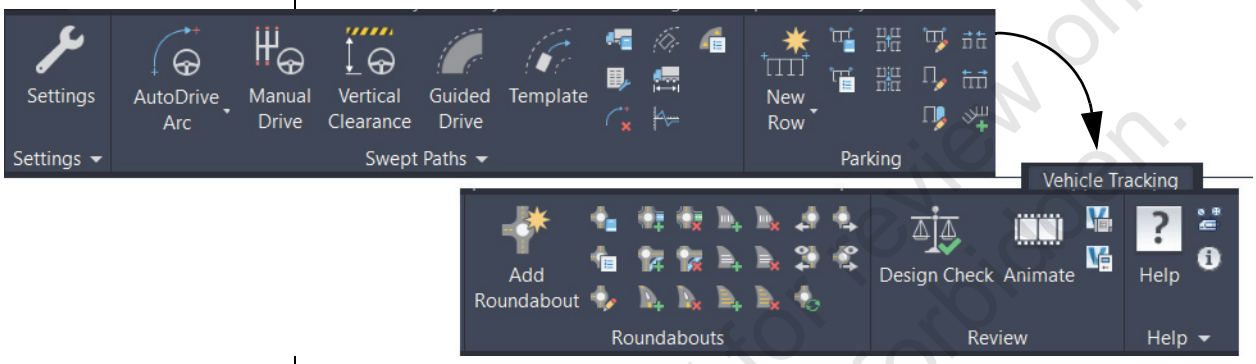


Figure 1–1

The Settings panel, shown in Figure 1–2, includes:

- System and drawing settings
- Import and export options
- Purge and repair data commands

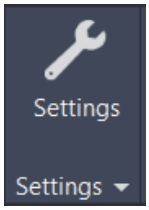


Figure 1–2

The Swept Paths panel, shown in Figure 1–3, includes:

- Access to the Vehicle Library
- Various commands to create paths
- Analysis and report options

Figure 1–3

The Parking panel, shown in Figure 1–4, includes:

- Access to parking lot settings
- Commands to create and edit parking lots
- Report options

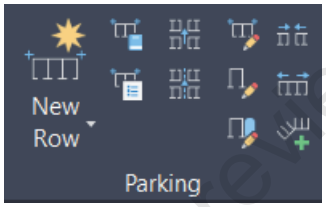


Figure 1–4

The Roundabouts panel, shown in Figure 1–5, includes:

- Access to roundabout settings
- Commands to create and edit roundabouts
- Report options

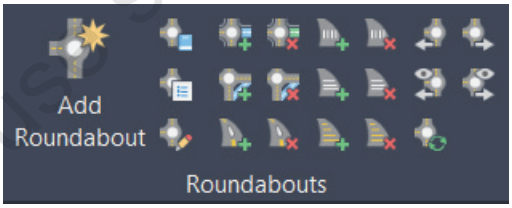


Figure 1–5

The Review panel, shown in Figure 1–6, includes:

- Animation tools
- Design Check options

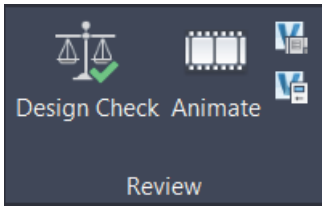


Figure 1–6

1.3 Vehicle Tracking Settings

Before using the Vehicle Tracking software, make sure to set all the appropriate settings. There are many default settings already defined that can be used. To verify the Vehicle Tracking settings, use the **Settings** button in the *Vehicle Tracking* tab (shown in Figure 1–7).

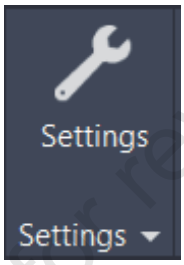


Figure 1–7

When you click directly on the **Settings** button, a wizard is launched. The wizard includes the following tabs:

- *Scale:* Verify the drawing units match your drawing scale so that vehicles come in at the right size.
  - This will normally have a setting of 1 per unit.
- *Vehicle Editing Units:* Verify the distance, speed, and preferred angular units.
- *Layers:* Set up layer name conventions and create new layers as new objects are created.
- *Turn Spirals:* Set forward and reverse turn rates.
- *Design Speeds:* Set forward and reverse design speeds.
- *Steering Limits:* Limit the steering in three ways: percentage, angle, and radius.
- *Articulation Limits:* Limit articulation in two ways: percentage and angle.
- *Dynamic Effects:* Set dynamic effects.

A drop-down list is also available in the Settings panel to access more settings options. This includes the System Settings and Drawing Settings, as shown in Figure 1–8. Some of these settings are also available within the wizard.

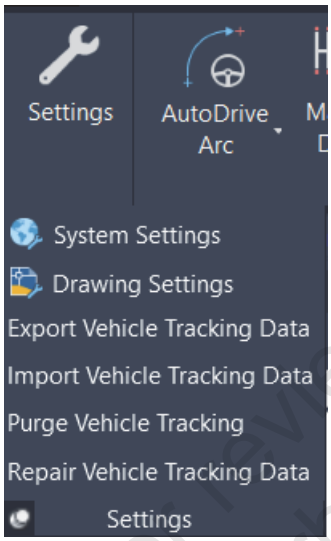


Figure 1–8

The System Settings include:

- Start Up
- Directories
- AutoLoad
- Language
- Skill Language
- View
- Paths
- ARCADY Link (ARCADY is an analysis tool used for traffic flow behavior at roundabouts)

The ARCADY analysis tools are not covered in this guide.

Drawing Settings include:

- Units
- Scale
- Surfaces
- Styles
- Paths
- Roundabouts

Hint: Settings

By default, all settings are stored in the Settings subdirectory of the application data directory.

In the System Settings and Drawing Settings dialog boxes, adjust colors, views, layering, and more within the View, Paths, and Roundabouts panels.

Chapter Review Questions

1. What software does Autodesk Vehicle Tracking run on? (Select all that apply.)
   a. Autodesk Civil 3D
   b. Revit Architecture
   c. AutoCAD Architecture
   d. Navisworks Manage
2. The Vehicle Library is limited to North American standard vehicles.
   a. True
   b. False
3. Which of the following is not part of Autodesk Vehicle Tracking?
   a. Parking Layout
   b. Roundabout Design
   c. Intersection Design
   d. Vehicle Path Analysis