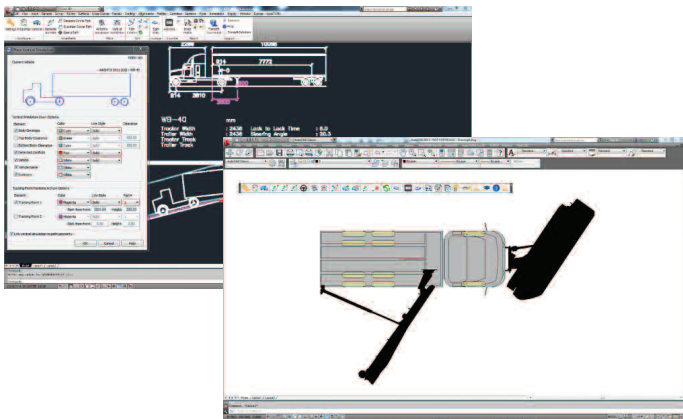


ADVANCED VEHICLE SIMULATIONS

10



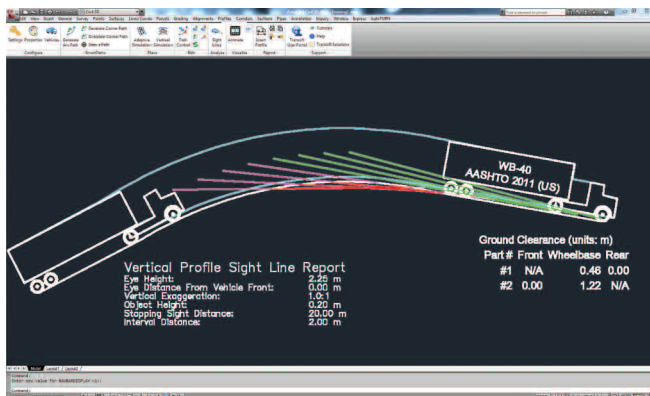
Innovation has been one of the hallmarks of **AutoTURN** since the software first launched over 23 years ago. We have adapted with the changing engineering landscape and incorporated feedback from our users with every release. In the latest version of AutoTURN, we've added the results of our industry field testing and the requests of our customers to what was already a very robust software package.



» AutoTURN empowers users to deliver more detailed and comprehensive designs for all different types of road and site design projects.

» SIGHTLINE ANALYSIS

Establishing a safe stopping sight distance is an important safety aspect for any road design project. AutoTURN provides dynamic feedback when the user changes one of the input parameters like driver eye height or stopping sight distance.



» Safety comes first. Check vertical sightlines using driver eye height, object height, interval and sight line distances

» VERTICAL PROFILE ANALYSIS

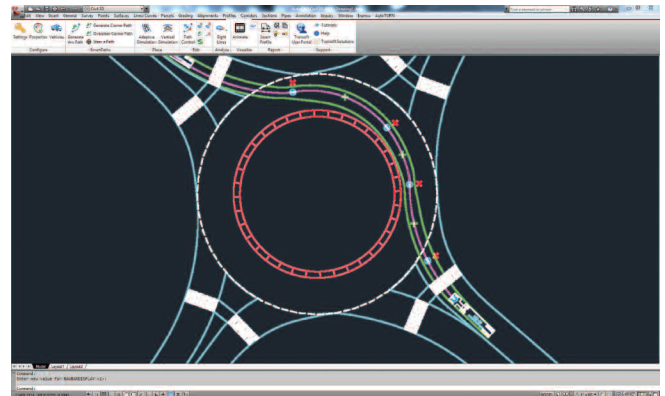
Users can evaluate the vehicle profile along lines, arcs or polylines representing vertical geometry. The tool helps designers account for conflicts between the vehicle profile and ground, bottom and body clearances.

» MODEL CUSTOM 2D LOADS AND SHAPES

With the latest version of AutoTURN, designers can model vehicles with various outlines and shapes along with their swept path envelopes. Vehicles can include those carrying wide or specialized loads, snow plow trucks with front shovel and even fire and construction vehicles with extended ladders and excavator arms.

» ENHANCED PATH CONTROL

This intuitive feature allows designers to modify a vehicle swept path and make small adjustments while maintaining the safety and accuracy of a turning maneuver. Users can add or adjust sections of the turning simulations for increased flexibility.



» Modify end nodes for different positioning and sweep angle for Corner and Oversteer Path.

THE WORLD'S MOST WIDELY USED VEHICLE TURN SIMULATION SOFTWARE

AutoTURN is the latest technology for vehicle swept path analysis and modeling. Simulating forward and reverse vehicle turn maneuvers is now quick and easy due to the **four SmartPath Tools interactive drive modes** that incorporate speed, superelevation, lateral friction, and turn radius algorithms.



» GENERATE ARC PATH

Quickly and easily create turn simulations, such as through roundabouts, by dragging your mouse and clicking from point to point.



» GENERATE CORNER PATH

Produce simulations using an entrance and exit tangent with the option of setting a vehicle's speed and radius – ideal for designing intersections.



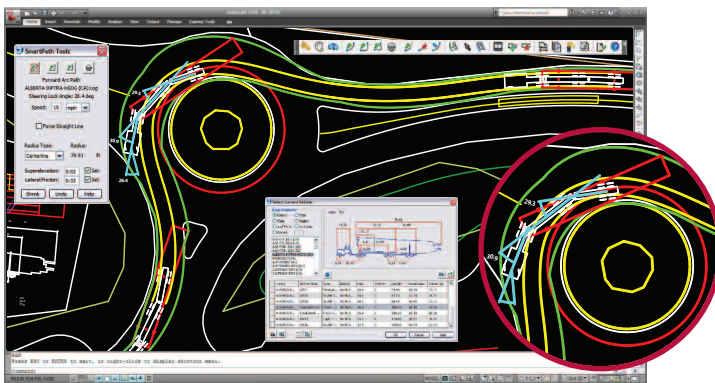
» GENERATE OVERSTEER CORNER

Offers a realistic representation of how a vehicle negotiates tight turning conditions; particularly useful for multi-part, articulated vehicles.



» STEER A PATH

For areas with limited maneuvering space, you can freely drive a vehicle at speed by moving the mouse in the desired direction.



ASSESS VEHICLE MANEUVERS EASILY

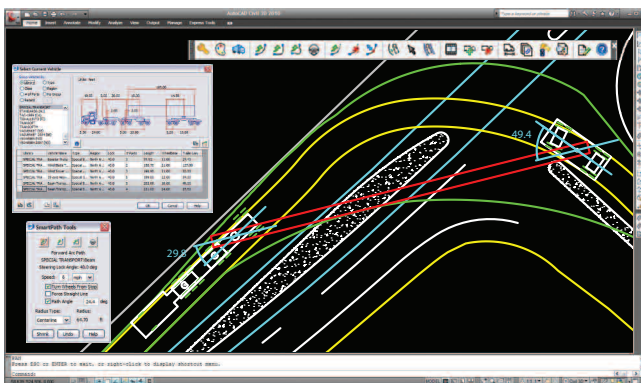
Carry out multiple turning simulations using different vehicles and configurations to see if they can be accommodated by your designs. Even complex turning situations (roundabouts) are quickly and easily evaluated using powerful features like the **Generate Oversteer Corner** tool.

Other advanced options, like the ability to set steering linkage ratios between the front and rear axle groups of multi-part vehicles, provide a more realistic representation of how a vehicle would handle tight turning situations - very useful when generating articulated bus and lorry movements.

« Evaluate different vehicle turning scenarios for complex roadway geometry.

SPECIALIZED TRANSPORTATION SYSTEMS

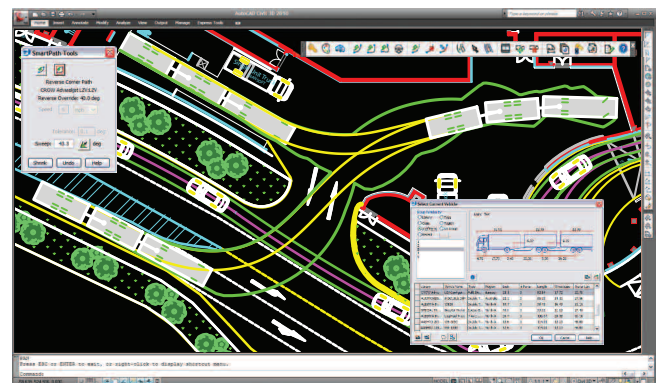
Large scaled construction and sustainability (e.g. wind farms) projects are increasing meaning a growing number of oversized and more complex vehicles navigating roadways. AutoTURN now supports these specialized transportation systems with new vehicle types including wind tower trailer, wind blade trailer, beam transporters, booster trailer, and 19-axle heavy haul.



» Check the drive path of large, complex vehicles carrying cargo to prevent damage to the load or surrounding structures.

MODEL REAL WORLD SITUATIONS

You're in the driver's seat when managing design challenges. Use the combined functionality of the **SmartPath** tools in a single simulation to model vehicle movements for site planning. Negotiate tight turns for entrances and aisle ways. Use the **Select Sweep** tool to set vehicle alignment to existing CAD geometry for carrying reverse maneuvers for vehicles to a **maximum of 3 parts**.



» Powerful features make vehicle reverse maneuvers easier than ever. Hatch vehicle body envelopes and swept paths to check for clearances.

DESIGNS AHEAD OF THE CURVE

AUTOTURN™

» TURN SIMULATIONS AND SWEEPED PATH ANALYSIS

- Place adaptive vehicle simulations on either centered or offset left/right with a smooth transitions option on user-drawn paths made from lines, arcs, polylines, complex chains and even AutoCAD® Civil 3D® alignments
- Conflict analysis feature provides feedback on vehicle path obstructions
- Use the Regenerate Simulation feature on simulations to account for conflicts that occur after obstacles have been added, removed, or modified
- **SmartPath** tools for forward and reverse vehicle turn simulations in one continuous motion
- Perform 3-part vehicle reverse maneuvers to any vector
- Generate arc, oversteer, offset, and reverse corner simulations
- Generate vehicle swept path envelopes from user-defined vehicle shapes with chamfered corners or filleted radii
- Define and hatch either the vehicle body or the vehicle's outer swept path envelope during a turn simulation
- Evaluate a vehicle simulation on a vertical profile accounting for tracking points, clearances and overhead ceiling line or obstacles
- Perform horizontal sightline analysis based on a polyline, interval and the user specified sight line distance

» SPECIALIZED TRANSPORTATION SYSTEMS

- Override Angle for Special Transport is now independent of directional change in the articulating point for the trailer
- Create and simulate vehicles with independent rear steering systems (including crab steering for supported types)
- Ability to numerically input or use the mouse wheel to dynamically control the independent rear steering angle for specialized vehicles
- Create and simulate vehicles with telescoping trailers
- Draw cargo for a vehicle simulation and combine the cargo envelope with the vehicle body envelope
- Define cargo size and set limiting factors for vehicle configuration

» PRESENTATION CAPABILITIES

- Control simulation playback (play, pause, high-speed scrubbing) through the Run Animation Dialog Box
- Use realistic vehicles plan profiles for simulations and animations
- Manage vehicle animations with Transoft Solutions' presentation software, **InVision**, to create timed and sequenced events. Export files to video formats for PC viewing

» VEHICLE CUSTOMIZATION

- Apply user-defined vehicle dimensions and profiles
- Create vehicles or types for specialized transportation (e.g. rear steering)
- Commonly-used types include: fire trucks, fire engine pumpers, ambulances, garbage collection, semi-trailers, buses (articulated and double articulated), sport utility, pickup, and forklifts
- Add user-defined vehicles and types to the library database
- Work with **AutoTURN Extended Vehicle Libraries** add-on content

» POWERFUL DESIGN ABILITIES

- Set steering linkage ratios for ranges of steering angles between front and back wheels for multi-axle semi-trailers, trucks and articulated buses
- Specify tire sizing (width and diameter) and space between the tires on the same axle for a vehicle
- Choose track width for axle groups independently within a given part
- Place, remove, or recall vehicles, active simulations, and active pathways
- Modify and edit drawn simulations using **Path Control**
- Add conical lines of sight to check mirror views, blind spots and headlight paths
- Create standard or custom turning templates using template generator
- Real-time display for vehicle turn radius at the current speed during design or editing
- Manually adjust the path offsets by dragging and moving grip points with graphically display of the radius

» VEHICLE LIBRARIES

- Includes national design vehicle standard libraries for: US (AASHTO, NACTO, Caltrans) | Canada (TAC) | Australia (Austroads) | New Zealand UK | France | German | Russia | Italy | Austria | Netherlands | Czech Republic Poland | Sweden | Switzerland | Finland | Norway | Denmark | Iceland Mexico | Brazil | Peru | Korea | India | UAE | South Africa | Israel
- Use specialized vehicle types including: Wind Tower Trailer; Wind Blade Trailer; Beam Transporter I and II; Booster Trailer; 19-axle Heavy Hauler
- Other vehicle libraries: Architectural and Transoft Solutions' Realistic Type
- View and sort library to show by region, type, number of parts, class, and vehicle characteristics

» REPORTING FEATURES

- Generate turn simulation reports showing vehicle speed, path lengths, and start conditions at each section of the simulation
- View graph report of a vehicle's steering angle and multi-part vehicle's articulation angles when generating or placing a simulation
- Data can be exported to spreadsheets and standard document formats
- **Speed Profile Report** - Generate report of vehicle speed based on the scanned geometry with elements including Vmax and Vmin, Acceleration and Deceleration and lateral friction per report

» COMPATIBILITY

- Autodesk® AutoCAD® 2010 – 2017 (except AutoCAD LT)
- Autodesk® AutoCAD® Civil 3D® 2010 – 2017 alignments
- Bentley® MicroStation® V8i
- Bentley® PowerDraft (V8i), PowerCivil (V8i)
- Bentley® Power GEOPAK (V8i), Power InRoads (V8i)
- Bricsys® BricsCAD® (Pro and Platinum) V15 – V16
- Full support for 32 and 64-bit operating systems
- System requirements:
Workstation: Windows® 7, Windows® 8/8.1, Windows® 10
Network: Windows® Server 2008, 2012

TRUSTED IN OVER 120 COUNTRIES AROUND THE WORLD

"Every time that I design a road and when it requires having the best design possible, AutoTURN is always one of my tools."

John Kocan, SNC-Lavalin, Canada

"I was impressed with the new features and asked several people to watch me demonstrate some commands on their sites. Everyone was impressed."

Kimley Horn, USA

"AutoTURN is the best model we are aware of to determine the off tracking characteristics of vehicles on turns of various radii and central angles."

CALTRANS, California, USA

"The ability to construct paths by moving the vehicle (SmartPath "Generate Path" Tool) was most useful to me and it worked well. This tool is intuitive in use and I believe will allow me to do the same work faster."

Louisiana DOT, USA

"We have successfully demonstrated design validity using AutoTURN on more than a dozen recent projects. Clients have consistently commented that they can understand our design solutions quickly and they have approved designs in shorter time frames."

Gary Finley, UTI Inc, USA

WHY USE AUTOTURN?

SAVE TIME. SAVE MONEY.

AutoTURN lets you evaluate vehicle accessibility options in minutes. And less time spent = lower project costs.

MORE TIME FOR DESIGN

AutoTURN's 'heads up' design method together with its intuitive features means you're working much more efficiently.

KEEP PRODUCTIVITY SPINNING

One-click vehicle placement and path editing capabilities make updating changes to a simulation much faster.

GET YOUR POINT ACROSS

Demonstrate visually how your designs will meet project requirements for quicker client approvals.



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Please note that some products are only available in specific regions and languages.