AUTOTURN™ PROFESSIONAL 3D
Version 9.1

INDUSTRY LEADING SOFTWARE
Your total solution for simulating vehicle maneuvers

MODEL, ANALYZE, AND VISUALIZE IN 3D

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AutoTURN Pro 3D is state-of-the-art CAD software that simulates 3D vehicle turning maneuvers on surface and mesh object terrains. Incorporating the trusted AutoTURN engine together with the patent pending process of generating a three-dimensional vehicle swept path envelope – engineers can design and analyze in 3D while accounting for the effects of different terrain, obstacles, and vehicle parameters.

» 3D SIGHTLINE ANALYSIS

Establishing a safe stopping sight distance is an important safety aspect for any road design project. AutoTURN Pro 3D incorporates both horizontal and vertical geometry giving engineers the ability to perform 3D sightline analysis and studies to check for potential vehicle conflicts with a terrain on simple 3D faces, mesh and TIN surfaces without the need for costly specialized CAD platforms.
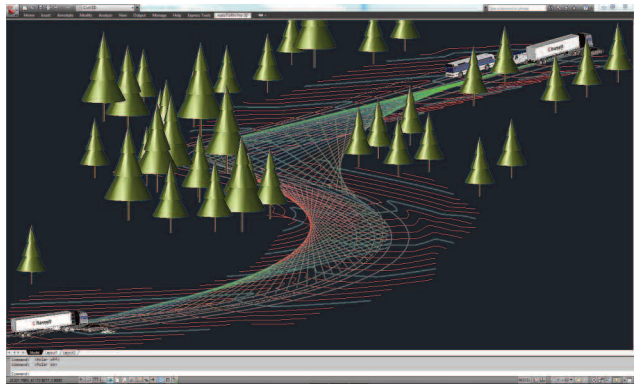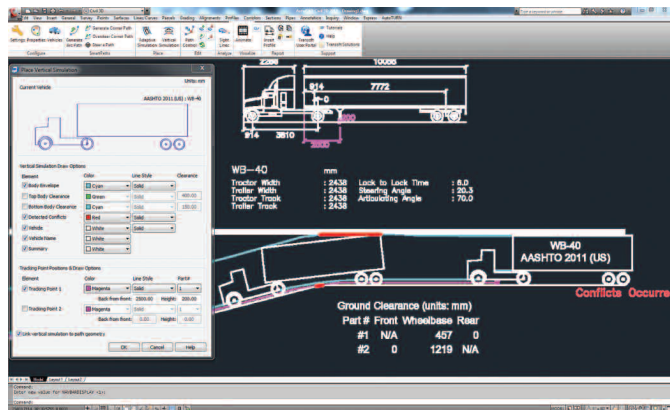

>> AutoTURN Pro 3D gives engineers the ability to respond to changes faster and optimize designs with even better analysis and visualization techniques.

» PREVIEW VEHICLE TURN PATH

Plan S-Curve and alternate directional maneuvers quickly by first previewing the next left or right of a vehicle simulation based on the minimum turning radius and the current speed.

» VERTICAL PROFILE EVALUATION

Engineers 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.

» 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.

>> Safety comes first. Check vertical sightlines using driver eye height, object height, interval and sight line distances.
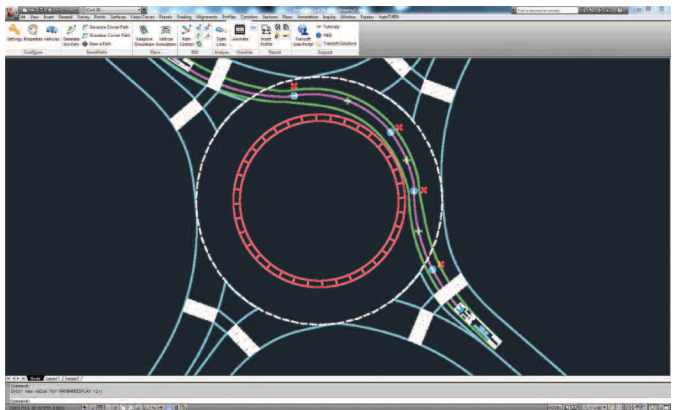
>> Modify end nodes for different positioning and sweep angle for Corner and Oversteer Path.

Transoft solutions

» CREATE REALISTIC SCENARIOS

Generate 3D swept path envelopes with vehicle height and ground clearances to analyze designs in a three-dimensional space. Users also have the options to display the 3D swept path of the vehicle body or body clearance.

Assess the cross-section of the 3D swept path at any instance along a 3D simulation. A punch through report can also be created showing the 3D swept path cross-sectional, the terrain surface, and the punch through line.

›› Use 3D realistic vehicles to model different spatial situations within a design.

» GENERATE 3D VEHICLE ARC PATHS

Analyze, and visualize in three dimensions by generating a 3D arc path directly on a selected terrain (Civil 3D® surface, polygon and polyface mesh in AutoCAD® and MicroStation®). You can also convert a 2D simulation into 3D by selecting a terrain. Boost your efficiency by completing a conceptual design in a 2D plan view while allowing for further analysis in a 3D mode.
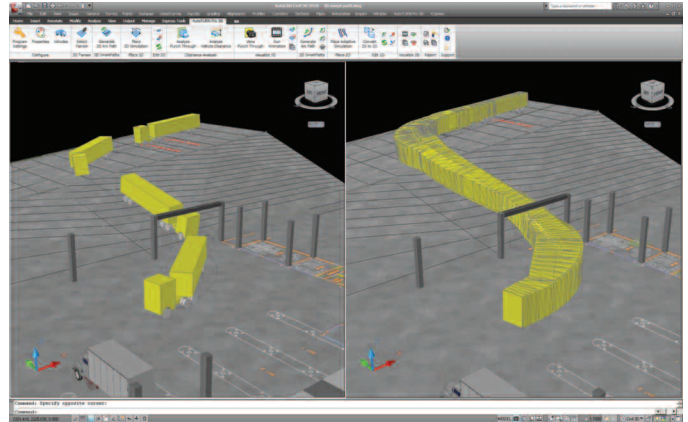
›› Hatch the 3D vehicle swept path to check clearances issues during a vehicle simulation.

## » DYNAMIC 3D VEHICLE CONFLICT ANALYSIS

Carry out a conflict analysis to detect where geometric objects in a design drawing can interfere with the vehicle's 3D swept path. The section of a 3D swept path will display in a different color indicating collisions with objects or terrain.
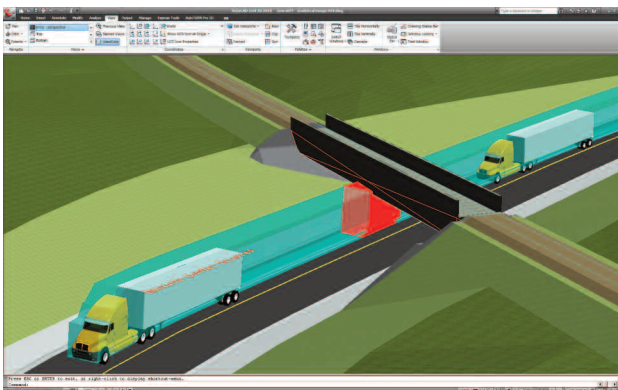
›› Create a 3D vehicle using custom roofline and ground clearance values for the front, rear, and wheelbase of a vehicle.

» EVALUATE VERTICAL AND GROUND CLEARANCES

Create multiple cross sections at once to better assess your designs and quickly check for conflicts between a vehicle's undercarriage and terrain. Take full advantage of the 3D vehicle swept path envelope by generating multiple cross sections from a reference line at the section of interest.
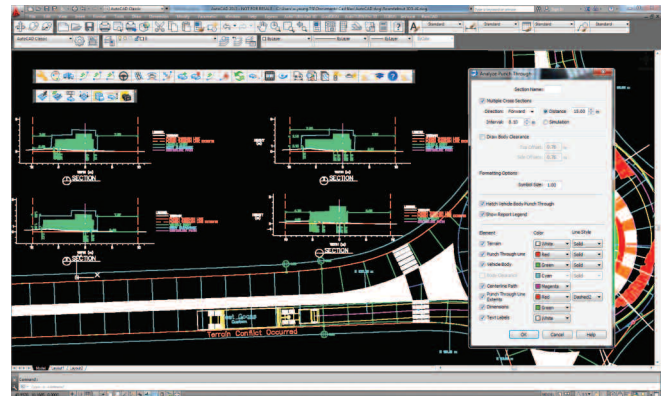
›› Save time by producing multiple cross sections when checking for potential conflict between terrain elevation and a vehicle's 3D swept path.

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.

» 3D VEHICLE PATH SIMULATIONS

- Place a 3D vehicle simulation on a terrain using geometry for lines, arcs, polylines, and alignments (simulations are reactive and are updated when changes are made to the source geometry)
- Ability to generate a 3D vehicle simulation based on a pre-defined path
- Ability to delete the last section of a 3D simulation for minor editing purposes
- Input the 3D vehicle's starting angle and speed associated with the simulation
- Ability to display radius type and radius value for a 3D vehicle path movement

» 3D DESIGN AND ANALYSIS ABILITIES

- Perform 3D analysis and checks on a terrain (3D faces, mesh and TIN surfaces) based on a 3D simulation or alignment
- Generate a 3D arc path directly on a selected terrain
- Convert 2D turn simulations created with the 2D SmartPath Tools and Place Adaptive Simulation into equivalent 3D turn simulations
- Work with selected terrain generated from: TORUS and NEXUS grading models; AutoCAD® Civil 3D® surface; AutoCAD® polygon or polyface mesh; MicroStation® mesh
- Analyze a cross-section through the 3D swept path at any selected user point for evaluating tunneling, spatial requirements near buildings or overhead clearance to structures
- Analyze both vehicle bottom and overhead clearance requirements on either a straight line path section or paths with curves
- Section of the 3D swept path will display a different color indicating collision with an object or terrain
- Dynamic visual display of 3D articulation along the axis in a vehicle movement simulation

» 3D PRESENTATION AND REPORTING FEATURES

- Use a sample library of 3D realistic vehicles or user imported realistic 3D models for presentations
- Generate reports including ground profile, body profile, punch through slice, and punch through line
- Create a 2D report indicating the top of the vehicle body; lowest point along the path (i.e. ground clearance); obstacles (indicating locations of intersections between the drive path and obstacles)
- **Analyze Punch Through** – draw a cross section of a selected 3D turn simulation at a cutting plane line and create an annotated section detail
- **Analyze Vehicle Clearance** – create a graph showing the longitudinal profile of a 3D turn simulation and crossing elements

» 3D VEHICLES AND CUSTOM VEHICLE CREATION

- Create or import your own 3D drawings for custom vehicles
- Specify three different ground clearances (front, wheelbase, rear) and the front and rear chamfer for a custom 3D vehicle
- Ability to enter customized roofline when creating a 3D vehicle
- Realistic 3D vehicle drawings supplied for the vehicles in the TRANSOFT/TRANSOFTM librarieslibrary database

» TURN SIMULATIONS AND SWEPT 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

- 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

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TAKE ENGINEERING INTO ANOTHER DIMENSION

» 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
- 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-axel Heavy Hauler
- Other vehicle libraries: Architectural and Transoft Solutions' Realistic Type

» 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/Deceleration and lateral friction per report

» COMPATIBILITY

- Autodesk® AutoCAD® 2007 – 2016 series of products (except AutoCAD LT)
- Autodesk® AutoCAD® Civil 3D® 2010 – 2016 alignments
- Bentley® MicroStation® V8 XM, V8i
- Bentley® PowerDraft (XM, V8i), PowerCivil (V8i)
- Bentley® Power GEOPAK (V8i), Power InRoads (V8i)
- Bricsys® BricsCAD® (Pro and Platinum) V13 – V15
- ZWSOFT® ZWCAD+™ 2014 – 2015
- Full support for 32 and 64-bit operating systems
- System requirements:
  Workstation: Windows® XP, Vista, Windows® 7, Windows® 8
  Network: Windows® Server 2000, 2003, 2008, 2012

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To download our software demos or to find out more information about our products, please visit our website at **www.transoftsolutions.com**

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

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