

AutoTURN Overview and Suggested Use

Toolbar Overview

The following is a review of all features available in the AutoTURN 5 software.



Program Settings

Sets various general program settings, such as general simulation settings, program permissions, as well as provides functions for upgrading a license or for moving licenses between computers



Simulation Properties

Sets the various properties for turn simulations (i.e. update, max. width, various vehicle envelops, etc) and hatching of vehicle simulations



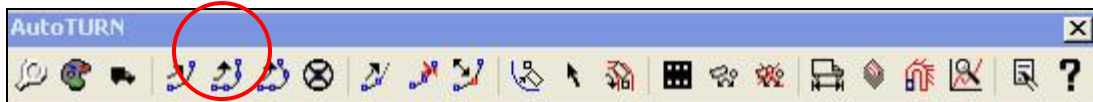
Vehicles

It sets the current design vehicle. This tool is also used to create new vehicles; new vehicle types and groups, to add loads and/or sight lines to vehicles, and calculates the steering lock angle for custom vehicles



Generate Arc Path

It generates a path that follows an arc from the start position to the position of the mouse.



Generate Corner Path

This tool generates a corner maneuver, by setting of the turn radius and the amount of turn sweep or by selecting reference geometry on the departure alignment to set the included angle



Oversteer Corner Path

It generates an oversteer corner maneuver, as a result of setting: the turn radius, the amount of turn sweep and available area to oversteer



Steer a Path

Provides a means of driving a vehicle by moving the mouse



Continue Simulation

Continues generating the selected simulation



Delete Last Section

Removes the last section of the simulation



Path Control

It is used to make adjustments to existing simulations by moving or adding nodes. Nodes are the start or end points of the sections in a simulation



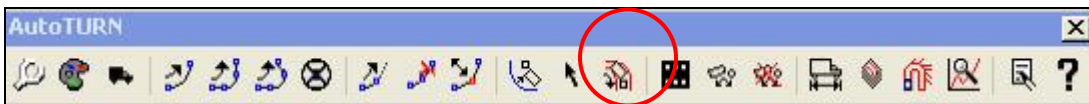
Place Offset Simulation

Places a simulation where an offset distance specified by the user is maintained from a boundary element.



Select Active Path

Sets the current active simulation and active path used by the following tools: Update Simulation Properties, Place Simulation, Run Animation, Place Vehicle, Delete Vehicle, View, Insert Profile, and Report



Place Simulation

Used to create the simulations in drawings by using pre-drawn paths



Run Animation

Runs the current Active Path or Active Simulation



Place Vehicle

Allows the placing of an additional vehicle plan view drawing in the active simulation



Delete Vehicle

Deletes vehicles in simulations that were placed using the Place Vehicle tool



Insert Profile

Inserts a dimensioned profile of the current vehicle (i.e. vehicle name, units, all vehicle dimensions, lock to lock time, steering lock angle, and articulating angle)



Recall Simulations

It allows you to control which simulations to recall for instant comparisons. As many as 100 simulations may be stored for any given drawing file



Generate Template

Automatically generate electronic turning templates of the current standard or custom design vehicle



View Report

View the vehicle's Steering Angle graph as you generate a simulation or placed a simulation. Additionally, it saves a report to the text file to be incorporated within the project documentation



Tutorials

Take the user through exercises with a series of step-by-step on-screen instructions



Help

Provides in-depth information on features as well as step-by-step instructions for specific features and tasks

Suggested Use of Application

The majority of AutoTURN users utilize the application's abilities simply as a checking tool to validate existing designs, or to provide supporting engineering information to support deviation from empirical standards.

Utilize built-in AutoTURN and native MicroStation abilities (ie\ clearance envelopes, tentative snaps, and interpolate by arcs) to create initial intersection or roundabout geometry as simulation line string elements and then convert the line-string objects for inside curb radii to arc fit complex chain geometry.

Theoretical Concept:

1. Create intersection center alignments
2. Offset intersection alignments by $\frac{1}{2}$ median widths and then by full lane widths for as many lanes that occur in each direction of travel
3. Determine the suitable design vehicle and speed
4. Set 2' clearance envelopes for the simulations ... ($2' \text{ clearance} = \text{lane width} - \text{vehicle body width} - (\text{lane position}/2)$ or $2' = (12' - 8' - (4'/2))$)
5. Generate right-hand turn simulations in all 4 quadrants with simulation start and end alignments centered in the approach and departure lanes
6. Use the AutoTURN Recall Simulation command to rename each completed turn to be a more meaningful name (ie\ North to West – RH Turn)
7. Generate left-hand turn simulations in all 4 quadrants with simulation start and end alignments centered in the approach and departure lanes
8. Use the AutoTURN Recall Simulation command to rename each completed turn to be a more meaningful name (ie\ North to East – LH Turn)
9. Use the MicroStation Convert Element to B-Spline command to convert a copy of the right-hand inner radii line string to B-Spline Geometry
10. Trim the B-Spline geometry to the intersection with the approach and departure curb edges
11. Use the MicroStation Drop B-Spline Curve to be an arc fit Complex Chain based on a desired number of points or equal arc lengths
12. Review the intersections of the left-hand radii at divider medians to determine suitable nose median shapes and locations
13. Determine suitable locations for pedestrian crosswalks
14. Design suitable pedestrian refuge islands (if applicable) based on a suitable offset to the edge of the through lanes and the outer clearance radius of the right-hand turning simulations
15. Evaluate radii and compare against empirical values in the design guidelines to determine if the modified AutoTURN design is acceptable
16. Use the AutoTURN Recall Simulation command to replace all of the previously deleted\modified turn simulations into the intersection design to confirm design validity