

Improvements for Carlson Office 2022

General

- **AutoCAD 2022** – Added support for this new version.
- **IntelliCAD 10.1** – Improved speed and new features like sheet sets with the Publish command.
- **Toolbars** – Added over 30 new toolbar icons and a new ribbon for GeoTech.
- **Open Drawings Map** – Added method for custom properties for drawing records and method to store a drawing database on a shared network location. From the Map view, added function to open Windows File Explorer for the drawing's project folder.
- **Settings Server** – Added method to copy data files into project folders.
- **Project Data Sub-Folders** – Added separate Program Settings folder for settings files.
- **Data Depot** – Added details to the history log and the ability to restore a previous version of a data file. Adding files to Data Depot supports working from project level with controls on which files to add.
- **Carlson Configure** – Added setting to control font used for dialogs.
- **Select CAD Default Settings** – New command to choose classic or modern CAD user interface settings.
- **Drawing Cleanup** – Added functions to remove duplicate text and to remove unused registered apps.
- **Import Polyline File** – Added method for locating by station/offset values from the file.
- **Drawing Inspector** – For polylines, added reporting of current position distance. For centerline polylines, added reporting of spiral data.
- **Draw MText** – In many commands that create MText, added an option to set the Text Frame to draw a box around the text.
- **Translate Layers** – Added method to import layer names from the drawing.
- **Line Up Text** – Added method to pick two points to define angle, option to respace and option to use text for alignment reference.
- **Arrowhead with Line** – New command to draw a two point leader with an arrowhead.
- **Boundary Polyline** – Added option to create 3D polyline.
- **Shrink-Wrap Entities** – Added options to ignore zero elevation entities for input, to elevate zero elevation vertices, and to erase the input entities.
- **Add Intersection Points** – Added option to average elevations at intersection within a tolerance.
- **Draw Label For Companion Linework** – New command for Draw To Standard to create a label using properties by layer.
- **Draw Standard Item by Quick Key** – New command to create entities for Draw To Standard by typing a quick key instead of dialog list selection.
- **Reports** – For PDF reports, added option to make PDF report files read-only. For Report Formatter, new option to put text lines at the bottom of the report and added function to sort the list of available fields.
- **3D Viewer** – Added zoom extents function.
- **Angle Info** – Added ability to handle 3D angles.
- **Layer ID** – Added option to label the layer name.
- **Command Search** – Added reporting of toolbars for the commands.

Survey Commands

- **Drone Mission Planning** – New command to create a drone mission plan.
- **Carlson Photo Capture** – Added method to download files by file type.
- **Input/Entry Distance Scale** – Added method to scale distances in many COGO commands such as Enter Deed Description.
- **Import Text/ASCII File** – Added ability to read points from a SurvCE/Layout job database (.jdb) file. Added functions to save and load settings to a .rpnt file.
- **Import Distance/Angle File** – Added field for deed name for importing multiple deeds.
- **Edit Process Raw Data** – Added function to update the descriptions in the RW5 from a coordinate file. Added function to apply Field-to-Finish substitution codes to the descriptions in the RW5 file. Added report option for the description on the same line as the data. Added an optional warning on processing for points with a blank description. Added option to use a larger font for the spreadsheet. For processing GPS records added storing the lat/lon and RMS values to the CRDB as attributes.
- **Edit Process Level Data** – Added method to adjust elevations based on the number of turns.
- **SurvNET** – Added option to merge output point text file with control points.
- **Draw Points** – Added option to label elevations in inches.
- **Point Group Manager** – Added methods to create a point group of points unassigned to a group and to create group from point number suffix.

- **Field to Finish** – Added ability to run Triangulate & Contour to draw contours or make a TIN of the points and polylines. Added new utility feature. For pipe features, added ability for separate pipe feature settings per code, option to label structure names along the pipe and option to draw both pipe 3D faces and polylines. For tree features, added offset by tree symbol size as factor of text offset, added option to draw labels as MText and added settings to control order of input parameters. Added setting for annotative points per code. For GIS attributes on a line, added support for multiple attributes. Added option to match first symbol scale when creating a second symbol. New special code of OO for Offset Only that draws only the offset polyline. For OH offset horizontal special code, added method to repeat the offset multiple times. For hedge linetype, added ability to control width using OH or OFB special codes. For RECT special code, added setting for using a third point as a rectangle corner or an offset for the rectangle width. For text attributes prefix/suffix settings, as string of [DESC] gets replaced by the point description. Added method to draw only points with GPS status of Fixed. Added option to hide the drawing under the Mtext labels. Added support for using fixed parameters with multiple codes.
- **Offset Point Entry** – Added option for slope stations.
- **Annotation** – Added option to use a custom block for endpoint leaders. For Stack Label Arc and Annotate With Leader, added option to create as MLeaders. For bearing leaders, added support for annotative leaders.
- **Line/Curve Table** – Added option to draw the table as MText without the grid lines.
- **Stack Label Arc Auto Place** – New command to automatically place the arc labels at the mid-point of the arc.
- **Stack Label Arc Pick Side** – Added option whether to draw leader.
- **Label Angle** – Added method to create an angle table. Added ability to handle 3D angles.
- **Distance Table** – New command to create a distance table of pairs of points and distances.
- **Offset Dimensions** – Added option to use CAD's current dimension style.
- **Linetypes** – Added method for multiple dashes between the symbol/letter such as ---C---C---
- **Legal Description** – Added method to report exterior angles.
- **Map Check** – Added support for azimuth format angles.
- **Deed Correlation** – Added method to screen pick points.
- **Process Deed File** – Added option to report using the Report Formatter.
- **Area Descriptions By Interior Text** – New command to tag area descriptions by automatically finding text inside polylines.
- **Best Fit Line** – Added method to screen pick CAD points, method to add more points to the calculation and option to set output layer.
- **Convert CRD to ASCII By Folder** – New command to batch process converting coordinate files to text files.

Civil Commands

- **Triangulation Surface Manager** – Add Point inside TIN hole has new option to fill the hole.
- **Triangulation File Utilities** – Added a Remove Spikes tool and added function to draw drainage low points.
- **Grid File Utilities** – Added export for DEM files.
- **Triangulate & Contour** – Added option to use linetype for depression contours.
- **TIN Rebuild Inside Perimeter** – Added method to apply inverse distance to adjust elevations within a perimeter. Added method to raise low points within a perimeter to fill-in low points to prevent ponding.
- **2D to 3D Polyline By Profile** – New command to elevate a polyline using a profile.
- **2D to 3D Polyline By Screen** – Added method to extrapolate elevations.
- **Curb Ramp** – Added graphic preview to dialog. Added option to taper only the first ramp section. Added method to do curb-cut only with no ramp. Added method to pick the curb position separately from the polyline selection. Added a separate curb taper method.
- **Wall Polyline Editor** – Added layback slope, freeboard, bury depth, output to solid model (.mdl), color/texture for 3D viewing, and report including backfill quantities and wall volume. Added double-click on the wall polyline to run the wall polyline editor. Added support for using wall polylines in Takeoff design surface modeling.
- **Elevate Pads By Grade Rules** – Added option to add break points to lot lines and option to create swales.
- **Cut/Fill Movement** – Added option to label cells.
- **Stockpile Volume** – Added method to use lowest elevation around perimeter as flat base elevation.
- **Surface 3D FlyOver** – Added support for viewing solid models (.mdl). Added settings for camera based light and shading for front, back or both sides. Add Model to the scene also draws a symbol in the drawing when the Model Library has the model defined with a CAD symbol.
- **Slope At Points** – Added method to use a coordinate file and two points to define the slope.
- **Elevation Zone Analysis** – Added method to use TIN surface and set colors in the TIN file for the elevation zones.
- **Vehicle Path Tracking** – Added option to draw section view of vehicle with dimensions and added vehicle section view preview to dialog.
- **Polyline To Centerline File** – Added method to define station at a reference point.
- **Label Station Offset** – Added method to label CL crossings in plan view with option to label layer names.
- **Design Parking Inside Perimeter** – Added ability to create islands at ends of parking rows. Added option whether to create spaces around the perimeter and option to add remainder parking space to the corner.

- **Design Parking Along Alignment** – Added support for alignments with multiple segments, ability to use a polyline or centerline file for the alignment, and support for angled parking. Added functions to create auto treatments and to mirror treatments between left and right sides.
- **Draw Template Polylines** – Added option to densify the template polylines.
- **Template Series File** – Added interpolation option for none.
- **Shrink/Swell Table** – New command to define different shrink/swell factors by station range for cut/fill and subgrade materials.
- **Draw Super Elevation Color Centerline** – New command to draw the centerline polyline with colors for the super elevation transition zones.
- **Process Road Design** – Added method to Template Point Profile to apply change in slope to another grade for a divided highway. Added method to use clip lines at the ends of the road for skewed ends.
- **Road Network** – Added method to create a bottom of subgrade surface. Added method to hatch the template grade areas. Added method for road template gaps by station range.
- **Lot Network > Road Network** – Added option to chamfer ROW intersections instead of arcs.
- **Station Polyline/Centerline** – Added method to store deflection angle into the point description.
- **Draw Profile** – Added option for fixed grid top/bottom elevations. Added option to draw horizontal line at bottom of elevation axis labels. Added option for line under label base elevations. For utility profiles, added pipe thickness and option to limit max offset for station by reference CL. For hatch, added option to label areas. For sewer profile labels above the rim, added method to place by grid top location and option for vertical labels with a leader from the rim. Added option to label manhole names using MText.
- **Draw Section File** – Added method to label the total section distance. For tunnel sections, added support for end areas from a single closed section. Added option to create labels as MText. Added ability to set a description for each station that can be drawn in Draw Section File and reported in Section Report. For slope labels, added filter by user-specified slope amount.
- **Section File Editor** – Added ability in translate elevations to use a profile to adjust the sections.
- **Section Report** – Added method to only report user-specified offsets.
- **Set Descriptions By Offset** – New command to set cross section descriptions by offset.
- **Draw Mass Diagram** – Added method to graph as immediate cut/fill difference instead of accumulative.

Hydrology Commands

- **Rain Lookup Table** – New command to store custom rain events.
- **Merge Watersheds** – New command to combine the polyline perimeters of neighboring watersheds.
- **Time of Concentration** – Added Kerby-Kirpich method.
- **Channel Routing** – Added Muskingom-Cunge and Modified Puls methods.
- **Pond Exfiltration** – Added functions to save and load parameters to a .pdx file.
- **Drop Pipe Spillway** – Added lookup table for entrance loss coefficient. Added functions to save and load parameters to a .drop file. Added PDF report and function to draw diagram to the drawing.
- **Pipe Culvert Design** – Added report option for stage-discharge graph and option to draw HGL on pipe detail graph. Added support for Muskingom-Cunge method.
- **Advanced Weir Design** – Added functions to save and load parameters to a .weir file.
- **Orifice Design** – Added functions to save and load parameters to a .outlet file.
- **Multiple Outlet Design** – Added PDF report method with diagram and stage-discharge graph.
- **Sewer Network** – Added ability to automatically set inlet as on-grade or sag based on the surface. Added support for Inlet Control Devices to limit intercepted flow. Added support for structures with underdrains. Added new yard inlet structure. For SCS rainfall lookup, added methods to choose from lookup table, rain map or NOAA. Added method to round elevations by decimal precision. For draw plan view, added setting for direction of pipe polylines as upstream or downstream. For data table, added ability to control which structures to include in the table. For Review Sewer Network Links, added a method to reassign the data files. Added pipe thickness to editor and reports. Added setting for having raised rim heights. Added a new Line Name field for each structure.
- **Collision Check** – Added option to draw 3D lines between the crossing pipes along with 3D text for 3D viewing. Added coloring of pipe portions that have conflicts. Added report of minimum horizontal and vertical clearance. Added method to check for collision with a surface model. Added option to color pipe segments with a conflict.
- **Compare Sewer Networks** – New command to report differences between two sewer network models.
- **Draw Sewer Profile** – Added ability to draw profiles for normal and critical depth lines.
- **Move Profile Pipe Label** – New command to move sewer profile pipe labels and create a leader.
- **HydroNet Explorer** – Added support for circular pipe reach and culverts. Added support for the Clark and Snyder hydrograph method. For draw plan view, added options to create MText labels, draw connection lines, use default symbols and save/load settings. For reports, added method to control the order of elements.
- **Utility Network** – For pipe labels, added settings to control offset from line and layer for labels. For creating profile at depth, added method to create streamlined profile with min number of profile points and ability to set max depth and min segment

length. Added report function to check pipe depths and min/max cover. Added a description field for each utility with option to label in Draw Profile and Draw Sections. For laterals, added location by offset and slope.

- **Pressure Pipe Network** – Upgraded calculation engine to EPANet 2.2. Added ability to set tank level to create specified pressure. Added ability to add multiple connections or laterals at a time with a specified station interval and demand. Upgraded interface for setting up demand patterns. Added ability to draw symbols for valves in plan view.
- **Pipe Network ID** – New command to pick a pipe network entity and report which pipe network model it belongs to.
- **Review Network Drawing Links** – New command to review pipe network entities in the drawing and report network files with ability to reassign network files.
- **HEC RAS** – Added method to output a cross section of the water level. Added support for version 6.0.

GIS Commands

- **Database support** – Added support of all GIS database formats to all GIS routines.
- **Upgraded User-Interface** – New dialogs for many commands including GIS Data Editor and GIS Data Inspector.
- **Define GIS Features** – Added import for StartNET, ESRI SHP and Carlson GIS .db features.
- **Point GIS Editor** – Added import for StartNET attributes.
- **Place Camera Symbol** – Added method to use points.

Geology Commands

- **StrataCalc** – Added method to limit pinchout by strata name range.
- **Drillhole Import** - Added option to import mineral drillholes, dynamic import preview in a spreadsheet format, additional error checking and reporting to ensure correctness of imported drillholes
- **Draw Geologic Column** – Added complete custom control over formatting and which values to label. Added option to label bed thickness.
- **Graphic Drillhole Report** - Added new option to specify drillhole length to display on report rather than specifying a plotting scale.
- **Drillhole Text** – Added method to create MText.
- **Google Earth Drillholes** – New command to tag drillhole symbols with drillhole/strata labels for viewing in Google Earth.

Surface/Underground Mining Commands

- **Surface Mine Reserves** – Added custom strip ratio formula. Added non-key tonnage to stored pit attributes.
- **Prepare Value Block Model** – Added cut surface and value calculation method tracking and grid info. Added export to text file function.
- **Assign Directions** – Added support to define directions by lines or leaders.
- **Surface Equipment Timing** – For 3D Pick, added ability to turn benches on/off. Added delay amounts to the report. Added output of period centroids to the spoil timing output file. Added option to skip non-key for timing.
- **View Surface History** – Added method to color surfaces by timing periods.
- **Label Pit Formatter** – Added options for commas in numbers and for higher order rounding.
- **Block Model Viewer** – Improved loading speed by over 10 times. Added option to merge matching grade blocks, option to render the outer shell of grades, option to tag blocks for inspecting in the viewer and ability to set the transparency of block by grade.
- **Block Model Statistics** – Added method to report by grades.
- **Make Solid From Design** – Added support for vertical alignments. Added option to draw cross section and template 3D polylines.
- **Make Solid By 3D Triangulation** – New command to create a 3D solid for a tunnel from a point cloud.
- **Create Gap Points** – New command to create points on a plane to fill in gaps in the point cloud.
- **View Solid** – Added setting for separate color for back side of 3D Faces.
- **Draw 3D Mine Model** – Added method to output an MDL file.

CADnet Commands

- **3D Image Viewer** – Added method to download aerial image from Google Earth.

Construction/Trench Commands

- **Convert Dashes to Polylines** – Added individual method to trace by picking starting segment.
- **Topsoil Removal** – Added method to assign topsoil removal as outside of subgrade areas.
- **Input Trench Line** – Added option to interpolate invert elevations in case of junction without elevation label.
- **Trench Network Quantities** – Added option to use a user-specified TIN as the reference surface. For the plan view map, added option to label stations.

Point Cloud Commands

- **Import** – Added function to import cloud data from CAD points.
- **Export** – Added support for E57 format and RCS format.
- **Solids** – Improved selection, editing and visualization.
- **Create Solid By Poisson** – Added option to use reference alignments for modeling tunnels.
- **Bare Earth** – Added option to put the ground points into a region instead of creating a new cloud. Added method to create a cloud of the non-ground points.
- **Create Polyline** – Added method to create polylines with tangential arcs.
- **Edit Polyline** – Added function to zoom scene to current polyline in editor dialog.
- **Extract Slices** – New function to view cross sections of cloud data and create points and polylines.
- **Curb Breaklines** – New method to create 3D polylines for top and bottom of curb by using edge clusters.
- **Create Breaklines By Slope** – New function to create 3D polylines at the boundaries of slope zones.
- **Color Lines** – Added new method for creating polylines that follow color lines in the cloud such as roadway paint stripes and new method to follow color boundaries such as edge between pavement and grass.
- **Slope Lines** – New function to create breakline polylines by following a slope grade break.
- **Feature Extraction** – Added batch process method to extract multiple features at a time.
- **Power Lines** - New function to extract overhead wires as polylines.

Data Conversions

- **Geoids** – Added geoids for Germany-Hessen, Thailand and Lithuania.