Improvements for Carlson Office 2021

Highlights

- **Carlson Photo Capture** – Download project data including TINs, images, coordinate files and point clouds.
- **Dynamic Point Attributes** – Create point attributes that dynamically resize to view in the current zoom level.
- **Parking Layout** – New commands to layout parking spaces inside a closed perimeter polyline and along a centerline.
- **Create Curb Profiles** – Create curb profiles from a reference EOP profile with series of different templates.
- **GIS Import ODBC** – New command to import GIS data from ODBC databases including relational databases.
- **Solids Timing** – New command for underground timing of 3D solid models.
- **Tunnel Network** – New command to create 3D solid of an intersecting network of tunnel alignments.
- **BIM Commands** –For IntelliCAD, new BIM commands to work with Revit or IFC underlays in the drawing.

General

- **AutoCAD 2021** – Added support for this new version.
- **IntelliCAD 10.0** – Tool palettes with key Carlson command. Graphics upgrade with anti-aliasing, visual styles and lighting. Added dynamic input and revision control for drawings.
- **Carlson Photo Capture** – New command to download project data including TINs, images, coordinate files and point clouds.
- **User Interface** – Added 5 new ribbons, added 50 new toolbar icons and updated hundreds of icons.
- **File Selection** – Added functions to create, rename and remove subfolders.
- **Save Drawing Named By Current Time** – New command to create a copy of the current state of the drawing with a unique name by the current date and time.
- **Report Formatter** – Added setting for attribute format for output to Excel. Added option to underline rows.
- **3D Viewers** – Added ability to place text in the scene and draw text to CAD. Added support for TIN files with textures.
- **Google Earth Export** – Added option to make polygons for closed polylines.
- **Join Nearest** – Added setting to skip the options dialog. Added progressive filters option to automatically run multiple times with greater tolerances.
- **Draw 3D Polyline** – Added ability to create a 2D polyline at the same time. Added method to create an arc to a specified tangent out. Added ability to simultaneously draw the polyline in the 3D Viewer window.
- **Draw Table** – Added method to create a table from scratch using spreadsheet entries. Added setting for table justification.
- **Add Polyline Vertex** – Added method for projecting picked point onto the polyline.
- **Boundary Polyline** – Added method to auto-select entities to process.
- **Shrink Wrap Entities** – Added setting to control max gap to join.
- **Colors From Layers** – New command to set entity colors by layer color.
- **Drift Offset** – New command the increases the offset amount proportional to the distance along the polyline.
- **Offset 3D Polyline** – Added option whether to remove co-linear points.

Survey Commands

- **Area Annotation** – Added method to create both area labels and area table. Added options to label with underline and italics.
- **Line Annotation** – Added method to place labels at a percent position from the end points.
- **Auto Annotate** – Added control to put line and curve table tags on the inside or outside.
- **Stack Label Arc** – Added more leader format options.
- **Point Import Text File** – Added option to apply prefix or suffix to point names. Added filter to skip points with a specified description string.
- **List Points** – Added option to report GIS attributes from CRDB format. Added full set of projection definitions for reporting a second projection.
- **Point Group Manager** – Added method to create a group by non-surface status and method to switch group definition to a point list.
- **Dynamic Point Attributes** – New command to create point attributes that dynamically resize to view in the current zoom level.
- **Move Point Attribute With Leader** – Added option to turn off snaps. Added setting to control offset from leader to the label.
- **Auto Annotate** – Added suffix setting to total distances.
- **Edit Process Raw File** – Added report of points by date and added report method to report in color using the spreadsheet coloring. Added support for linking photos to points using SurvPC coding in the RW5.
- **Field To Finish** – When redrawing points, the program will retain any custom edits of the label positions. Added setting for linetype text font style. Added method to set linetype by code or GIS attribute and added method to label a GIS attribute

along linework. Added prefix wildcard coding. For the pipe features, added option to use the code description for the pipe material or name. For the tree features, added support for companion codes for the tree canopy, option to skip treeline for specific codes, added setting to report in fractions of an inch and added option to only use the label setup for the table and not the point description. Added a separate setting whether to draw GIS attribute labels. Added new COLOR special code to set the entity color. For OH special coding, added support for changing the number of offset along the polyline. For OFB special coding, added code option to close the polyline.

- **SurvNET** – For computing closures, added automatic traverse loop detection. Added option to report traverse point only, not sideshots. Added option to use the normal distribution for error ellipse on points that pass the Chi-Square test. The standard error results are now automatically stored as point attributes to the output CRDB file.
- **Legal Description** – Added option to report course numbers. Added option to report railroad curve values and option to report scaled areas.
- **Double Proportion Line Division** – Added option to output resulting point to the coordinate file.
- **Edit Text On Arc** – Added option to change text offset.
- **Best Fit Circle** – Added option to report using the report formatter.
- **Best Fit Centerline** – Added option to remove outlier points.
- **Create Points From Entities** – Added option to create points at center of polyline rectangle.
- **Change Polyline Linetype** – Added option to set the text font style.
- **Offset Dimensions** – Added option to create labels as MText.
- **Label Point Comparison** – New command to label the difference between two points.
- **Label Offset Distances** – Added settings for layer, style, rotation, curvy, mtext and sizes.
- **Label Coordinates** – Added settings for number of digits before the decimal.

Civil Commands
- **Grid File Utilities** – Import georeferenced TIF files uses projection to set GRD position.
- **Triangulate & Contour** – Added index label style. Added method to set label distance as a scaler by horizontal scale.
- **TIN Editing** – Added undo within the editor and apply function to save the current changes. Shows log of changes with option to revert edits.
- **Triangulation Surface Volumes** – Added option to report deep cut and deep fill volumes separately.
- **Draw Curb Ramp** – Added method to pick curb direction.
- **Design Pad Template** – For grading limits, added method to put retaining wall next to pad and then slope to limits.
- **Cut/Fill Movement** – Added option to apply shrink and swell factors.
- **Spot Elevation Links Manager** – New command to report number of spot labels per surface and reassign surface file.
- **Export DEM TIF File** – New command to create a GeoTIFF DEM file from a TIN file.
- **Quick Profile** – Added settings for the profile colors.
- **Profile Editor** – Added function to set depth from reference profile including method to transition depths between stations. For check stations, added ability to check offset as a cross slope.
- **Create Curb Profiles** – New commands to create curb profiles from a reference EOP profile with series of different templates.
- **Draw Profile** – Added method to clip grid lines above the profile lines. Added new stack profile label method to group values from multiple profiles. Added new grid style of ticks along axis. Added option to label CL stations for PC/PT along profile. New grid title setup for profile names, scales and datum.
- **Draw Section** – Added method to clip grid lines above the section lines. For closed loop sections, added method to report over cut and under cut end areas. Added option to label subgrades with the end areas.
- **Design Template** – Added method to force berm at top of cut.
- **Draw Typical Template** – Added option to label template name and label subgrades for the right side.
- **Vehicle Path Tracking** – Added option to hatch the path, option for path at CL offset, multi-axle support, method to pick icon positions and new description field.
- **Road Network** – Added methods to Draw Profiles and Draw Sections for selected roads. Added support for self-intersecting centerlines. For cul-de-sacs, added option to adjust the centerline to the offset and added method for a hammerhead style with the curb all the way around. For intersection curb return profiles, added method for direct start to end profile without any PVI. Added method to turn off selected roads from processing.
- **Contour From Grid** – Added settings for default layer prefix/suffix. Added option to draw labels as MText.
- **Surface 3D Flyover** – Added model tree of entities in the scene.
- **2D to 3D Polyline By Text** – Added options to keep the existing polyline and assign a new layer to the elevated polyline.
- **Station Polyline/Centerline** – Added method to create offset points at vertices of reference offset polylines. Added option to label the northing/easting at the end point. Added option to label the CL file name. For positioning the station at the +, added method not to draw the +. Added text justification settings for deflection labels.
- **Station/Elevation Label** – Added option for label underline.

- **Parking Perimeter Tools** – Added separate methods for interior corners, exterior corners and extended corners. Added undo function and ability to change settings while in the command. Added graphic previews in the dialog.
- **Parking Islands** – New command to create parking island polylines.
- **Design Parking Along Alignment** – New command to layout parking spaces along a centerline.
- **Design Parking Inside Perimeter** – New command to layout parking spaces inside a closed perimeter polyline.
- **Connect Driveways** – Added option to fillet with curves or flare.

Hydrology Commands

- **Time of Concentration** – Added regression equation method used by LA County.
- **Curve Numbers –** Added area precision settings for both dialog display and reports.
- **Peak Flow –** Added Modified Rational Method used by LA County.
- **Runoff Hydrograph –** Added Rising Limb Factor method.
- **Overland Sheet Flow Manning's n –** New library for this type of Manning's n.
- **HydroNet Explorer –** Added ability to process using EPASWMM engine and added support for Rational method. Added method to reference pre-existing values when reporting proposed analysis results.
- **Sewer Network Model** – Added setting for initial velocity. Added snap to curb method for placing new structures.
- **Sewer Network Plan View** – Added method to draw easement boundaries and added option to use wipeout with the structure labels when using MText. For structure labels, added option to draw a box around the labels and option for no rim elevations on outfalls
- **Sewer Network Profile** – Added ability to label collision clearance of crossings. Added option to prefix or suffix layer names of the profile entities using the sewer network system name. Added layer and color settings for tributary pipe crossings.
- **Sewer Network Reports** – Added subarea report for each catch basin with report formatter.
- **Check/Label Clearance** – New command to label vertical clearance and elevations for two pipes picked in plan view.
- **Stage-Storage Editor** – Added option for biofiltration, option for stone encasement for underground pipes and improved the report.
- **Design Bench Pond** – Added option to use biofiltration.
- **Design Channel**- Added circular pipe method and PDF reporting.
- **Check Collisions** – Added method to check 3D polylines.
- **Laterals** – Added new methods to create perpendicular connections on pipes. Added support for multiple cleanouts.
- **Import Laterals From Text File** – New command to add laterals to the model using data in a delimited text file.
- **EPASWMM** – Added assign average slope method for runoff input types.
- **HEC-RAS** – Added boundary conditions. Added multiple steady state station/flow values to export. Added option to output velocity and depth points.
- **Utility Network** – Added method to add utility lines by selecting multiple 3D polylines. Added method to automatically set profile at depth from surface. Added option to draw easement boundaries. Min Cover Check report includes position of min and max cover. Added method to link Draw Profile to Utility Network to auto update the profile when the network model changes. Added method to draw laterals on the profile.

GIS Commands

- **Color TIN by Image** – New command to assign colors to the TIN faces using color from a georeferenced image.
- **Point GIS Editor** – Added method to add all attributes for a feature. Added imports for Trimble JXL and format settings for Trimble CSV.
- **Define GIS Features** – Added import for feature attribute definitions from Google KML.
- **Import ODBC** – New command to import GIS data from ODBC databases including relational databases.
- **Export Geodatabase** – New command to export GIS data to an ESRI Geodatabase.

Geology Commands

- **Drillholes** – Added status flag for each strata record whether the strata has been edited from the original values.
- **Compare Drillholes To Block Model** – New command to report differences between drillhole attribute values and the block model.
- **Import Drillholes –** Added support for CONSOL format.
- **Graphic Drillhole Report** – Added method to label water table and draw symbol.
- **Custom Drillhole Report** – Added options to process selected strata and to substitute label for null values.
- **Composite Strata by Interval** – New command to composite a drillhole by depth interval.
- **Composite Strata by Elevation** – New command to composite a drillhole by elevation range such as for benches.
- **Apply Wash –** New command to calculate attribute values at different densities.
- **Apply Faults** – Added method to apply high/low models to make continuous strata surface.

- **Auto Run Residuals** – Added method to output GRD files.
- **Define Block Model Auto Run** – New command for batch processing creation of multiple block models.
- **Block Model 3D Viewer** – Added support for viewing multiple block models.
- **Draw Block Model** – Added method to set layers by grade.
- **Geologic Column** – Added setting for label offset and option to label bed names for composites.
- **Fence Diagram** – Added option to draw grades from block diagram on separate layers and option to groups fence diagram entities.

Surface/Underground Mining Commands
- **Surface Equipment Timing** – Added weighting by qualities in 3D Pick.
- **Solids Timing** – New command for underground timing of 3D solid models.
- **Merge Small Benches** – Added option to run on all benches or a specific bench.
- **Tunnel Network** – New command to create 3D solid of an intersecting network of tunnel alignments.
- **Make Solid By Sections –** Added method to model an open surface like a cliff face, method to use interior points, option to limit the sample width, option to triangulate ends and option to show resulting solid in the 3D viewer
- **Make Solid From Survey Points –** New command to create a solid from survey points plus a perimeter polyline.
- **Trim Solid** – Added method to trim by station range along a 3D polyline.
- **Draw Solid Centerline** – New command to create a 3D polyline along the center of a solid.
- **Panel Precedence By Polylines** – New command to assign precedence from polylines.

Construction/Trench Commands
- **Overexcavate Volumes** – Added reporting of overexcavated strata volumes.
- **Water Table –** Added method to model water table surface and report cut below water table.

CADnet Commands
- **BIM Commands** –For IntelliCAD, new BIM commands to create a Revit or IFC underlay in the drawing, show BIM properties, snap to BIM objects and explode BIM objects to standard CAD entities.
- **AEC Entities** –For IntelliCAD, new commands to create AEC objects including walls, doors, windows, railings and stairs.

Point Cloud Commands
- **Graphics** – Using adaptive point sizing with foreground points shown larger than background points. Scene view allows changing coloring method for clouds and added setting for direct cloud color.
- **Select By Color** – New selection method for high contrast and ability to screen pick to set color tolerance.
- **Import Cloud** – Added ability to import Carlson surfaces for TIN and GRD files.
- **TIN Surface** – Added smooth function using the moving least-squares method.
- **Draw Polyline –** Added keyboard shortcut actions like A for Arc and C for Close. Added right-click menu with common functions like Move, Arc and End. Added active polyline display modes for highlight as dashed, thicken or none. Added color setting for elevation labels. Added method to name polylines using the polyline layers
- **Edit Polyline –** Added function to set a single elevation.
- **Register Cloud –** New method to transform a cloud using multiple control points and a least-squares method.
- **Align Cloud –** Added a method to use two sets of control points to define the transformation.
- **Create TIN –** Sets colors of TIN faces using point cloud colors.
- **Volumes –** Added report method for the Report Formatter and method to enter a base elevation.
- **Tree Feature –** Added method to put tree points in a region or hide.
- **Export Cloud to Text File –** Added option to include colors.

Data Conversions
- **Geoids** – Added geoids for US Geoid18, Florida 2018, Netherlands Geoid 2018 and Romania ETRS89v103.
- **Land Desktop Fieldbook** – For import to RW5, added support for direct and reverse shots and option to apply prism constants.