Improvements for Carlson Office 2016 [DRAFT]

Highlights

- **IntelliCAD 8.1** – Batch plotting and ribbon toolbar.
- **Settings Server** – New functions in Carlson Configure to distribute command settings and files between Carlson users.
- **SurvNET** – Added method to draw map view graphics in the drawing.
- **Point Creation** – Added option to apply full Field-To-Finish coding for all routines that draw points.
- **Edit Sewer Network Profile View** – New command to change the pipe network model by screen pick edits on profile view.
- **Utility Network** – New command to define model for utility networks.
- **Web Map Service (WMS) Image** – New command to place images from Carlson Image Server or user-specified server.
- **Gantt Charts** – Added Gantt chart output options in Underground, Surface and Spoil timing routines.
- **Haul Cycle Analysis** – Updates for acceleration, spoil timing integration, slow down points, 1-way roads and 3D playback.
- **Image Rubber Sheet** – New command to adjust an aerial image to fit specified control points

General

- **AutoCAD 2016** – Added support for this new version.
- **IntelliCAD 8.1** – Batch plotting and ribbon toolbar.
- **Data Depot** – Added support for Subversion (SVN) server in addition to Bentley ProjectWise.
- **Settings Server** – New functions in Carlson Configure to distribute command settings and files between Carlson users.
- **Save Settings in Drawing** – New option in Carlson Configure to save command settings within each drawing.
- **Toolbars** – Added 36 new toolbar icons.
- **Hatch** – Added support for user-defined hatch patterns from PAT files.
- **Symbol Library** – Added description field for each symbol. Added option to setup sub-categories. Added function to restore default symbols.
- **Load Last Report Formatter** – New command to run the report formatter using the report data automatically saved from the last report.
- **Drawing Inspector** – Added method to report surface elevation from a TIN file.
- **Drawing Setup** – For set text styles, added lookup of font name and settings for width, oblique angle and multiple fonts.
- **3D Viewer By 3DX** – New command to select 3DX model file to set scene to show in 3D Viewer.
- **Station-Offset Transparent Snap ('CL)** – Added method to station from selected segment. Added real-time report of station/offset.
- **Angle Distance Transparent Snap ('TRAVPT)** – New command to set a point by angle and distance from a starting point.
- **Select Objects Filter ('FSELECT)** – New transparent command for select objects prompts to apply a selection filter.
- **Show/Hide By Selection** – New set of commands to select entities to hide, isolate or make visible.
- **Set Level** – New command to assign an additional name to entities which gets used in other commands like filter selection.
- **Level Manager** – New command to list, create and rename level names.
- **Select By Filter** – Added control for combining inclusion and exclusion filters plus new filters for level and linetype.
- **2 Radius Curve Series** – New command to draw a series of two curves between two tangents.
- **Draw Table** – New command to create a table entity by reading a comma separated text file.
- **Edit Table Properties** – Added support for all types of tables instead of only line and curve tables.
- **Text Wizard** – New command to draw text with settings for size, style, layer and color, plus method to use current drawing properties.
- **Text With Leader –** Added option for default text angle.
- **Move Text With Leader** – Added support for moving a group of text entities.
- **Draw Text On Line** – Added settings for layer, size, style and color, plus method to use current drawing properties.
- **Line Up Text** – Added option to use polyline to follow.
- **Join Two Polylines** – New command to join two polylines into a single polyline.
- **Remove Polyline Arcs** – Added method to make chords on selected side of polyline.
- **Import 3D Viewer** – New command to import drawing entities from a 3DX file.
- **Google Earth Import** – Added support for aerial images and for GIS data.
- **Google Earth Export** – Added method to create Google tags from Carlson GIS data.
- **Set Google Tags** – New command to add labels to drawing entities to show as labels for Export Google Earth.

Survey Commands

- **Cut Sheet Report** – Added functions to set and modify values for elevation, station and offset. Added method to import from TDS raw data. Added option for user-defined data columns.
- **Map Check By Screen Entities** – Added support for reading data from line/curve tables.

- **Visual COGO** – Added bearing-bearing, bearing-distance and distance-distance intersection functions.
- **Best Fit Line** – Added method to calculate a 3D line.
- **Point Creation** – Added option to apply full Field-To-Finish coding for all routines that draw points.
- **Point Entity Updates** – Improved performance greatly for routines that modify point entities in the drawing.
- **Renumber Points** – Added method to renumber by adding prefix or suffix to point numbers.
- **Point Group Manager** – Added method to set point range by RW5 file.
- **Enter Deed Description** – For entering curve data, added method to use different units.
- **Deed Correlation** – Added method to use polylines for input instead of points. Added option to use the Report Formatter. Added option to move deed points to survey points.
- **SurvNET** – Added method to draw map view graphics in the drawing.
- **Edit Process Raw File** – Added process setting to override backsight azimuth when have a backsight point in the coordinate file.
- **Field To Finish** – Added new /// special code for a comment to replace the description label. For text and custom attribute labels, added ability for fields as equations of note or GIS attributes. Added bar separator in description to indicate end of coding. Added method for linework descriptions to use point special descriptions. For custom block attributes, added settings for prefix/suffix. Added method to set level names by code. For tree features, added method to size symbol by the code.
- **Offset Points By Interval** – Added method to use a TIN or grid surface to set point elevations.
- **Building Offset Extensions** – Added method to create points along building envelope and option to create points at polyline vertices.
- **Annotation Leaders** – Added arrow-line style for end point leaders.
- **Distance Annotation** – Added option to use commas in distance labels.
- **Azimuth Annotation** – New set of commands to label azimuths together with distances similar to the bearing methods.
- **Curve Annotation** – Added new method to draw curve dimensions along chord line and radius lines.
- **Curve Table** – Added field options for tangent in and out.
- **Label Coordinates** – Added different prefix settings for north/south and east/west.
- **Point To Point Table** – New command to create table with from point, to point, angle and distance.
- **Point Table** – Added option to create as a Table Entity.
- **Polyline Report** – Added option to select and report multiple polylines.

Civil Commands

- **2D To 3D Polyline By Slope From Reference** – New command to elevate vertices by slope from a reference 3D polyline.
- **Cut/Fill Report** – New command to report cut/fill between two surfaces at an interval.
- **Cut/Fill Contours** – Added option to use color ramp and added setting for daylight tolerance.
- **Cut/Fill Grid Map** – Added option to label the cell number within the grids.
- **Cut/Fill Slope Lines** – Added option for continuous and new styles for middle dot and end dot. Added proportional method. Added setting for line color.
- **Draw Spot Elevations** – Added option to round elevation labels to the nearest 0.5.
- **Station Polyline Centerline** – Added option for units in miles.
- **Label Station Offset** – Added option for units in miles.
- **Triangulation Data Check** – New command to check source data for errors like crossing breaklines.
- **Triangulate and Contour** – Added option to prefix layers with the surface file name. Added option to draw shrinkwrap perimeter polyline on specified layer.
- **Triangulation File Utilities** – Added function to apply geoid to the TIN.
- **One Triangulation Surface Volumes** – Added stockpile mode that uses TIN perimeter to make reference surface.
- **Two Triangulation Surface Volumes** – Added option to use multiple inclusion perimeters and report each separately.
- **Two Grid Surface Volumes** – Added option to use multiple inclusion perimeters and report each separately.
- **Grid File Utilities** – Added function to offset perpendicular to the surface. New function to apply a geoid to the grid.
- **Contour From Grid File** – Improved speed for generating contour polylines.
- **Design Pad Template** – Added method for topsoil removal within the disturbed area. Added option to set color of pad triangles when updating the TIN surface.
- **Elevate Pads By Grade Rules** – Added method to elevate by reference point on pad.
- **Tag Pad Reference Point** – New command to set reference points to use with Elevate Pads By Grade Rules.
- **Surface Inspector** – Added options to show surface slope and station/offset from a reference centerline.
- **Slope Zone Analysis** – Added method to hatch triangles by zone when using TIN surface model. Added ability to save slope zone colors into the TIN file.
- **Draw Sections** – For sheet output, added setting for column station order. Also for sheet output, when using the method to output to a new drawing, added option to create separate drawings for each sheet. Added method to save and recall a set of SCT files for drawing to a XST file.

- **Draw Profile** – Previews in settings dialogs use active drawing viewer instead of fixed image. For VC labels, added options to left justify, label prefix on separate row, set prefix for slopes and place station text at the top. Also added option to draw VC labels in a table. For crossing labels, added control of leader size and option to solid fill pipe shape. Added prefix option for grid elevation labels. For profile label names, added settings for size, layer and location. Added support for stacking more than three profiles. Added method for pipe label equations using other pipe values. For horizontal label box, added settings for prefix for cut and fill labels. For grid settings, added style of none.
- **Horizontal Axis Elevations** – Added controls for colors and added functions to save and load the settings.
- **Station-Elevation-Slope Label** – Added settings for style, draw leader and orientation as horizontal or vertical.
- **Offset-Elevation Label** – Added settings for layer, style and orientation as horizontal or vertical. Added pick point method.
- **Define Median Adjustments** – New command to setup road design for a median by picking a plan view polyline for the median alignment and creating the road design files for the Template Point Centerline and Template Series File.
- **Design Template** – Added method to extend ditch to tie at ROW limit.
- **Road Network** – Added setting to extend the intersection station range by a distance.
- **Section Report** – Added method to reference a TIN surface and report elevation difference to the cross sections.
- **Lot Network Report** – Added method to report all buildings that fit per lot with method to create table.
- **Import National Elevation Dataset (NED)** – New command to import a surface model from NED.

Hydrology Commands

- **Ribbon** – Created new ribbon toolbars for hydrology commands.
- **Draw Sewer Network Plan View** – Added separate settings for invert in/out labels. Added option to draw rip-rap.
- **Sewer Network Design** – For HEC-22 energy loss, updated calculations to the 2009 (3rd edition) formula.
- **Edit Sewer Network Plan View** – New command to change a structure location by screen pick.
- **Edit Sewer Network Profile View** – New command to change the pipe network model by screen pick edits on profile view.
- **Hydrograph Editor** – New command to edit time and flow data in a spreadsheet.
- **Pipe Culvert Design** - Added outlet control by gradually varied flow method.
- **Utility Network** – New command to define model for utility networks.

GIS Commands

- **Import GIS Data** – Added method to import GIS data from TDS rw5 and raw files.
- **Export Esri SHP File** – Added option for positions in lat/lon format.
- **Define GIS Features** – Added functions to import feature definitions from SurvCE VTT and TDS RAW files.
- **Web Feature Service (WFS)** – New command to import GIS layers as linework with GIS data.
- **Edit World File** – Added function to transform coordinate system for geo-referenced images.
- **Web Map Service (WMS) Image** – New command to place images from Carlson Image Server or user-specified server.
- **Draw Entity Images** – New command to draw images attached to entities.

Field Commands

- **Drivers** - Upgraded many drivers from the SurvCE updates.
- **Tilt and Compass** – Added support for tile and compass sensors in the 3D Viewer for the Microsoft Surface 3.
- **Field To Finish** – Switched to using full Field To Finish coding from Survey module.
- **Elevation Difference** – Shows surface profile in real-time.
- **Pipe Network** – New set of commands to measure pipe networks and store as-built values.

Geology Commands

- **Define Geologic Model** – Added Auto-Complete option for adding grids that fills out settings based on previous patterns.
- **Surface Mine Reserves** – Upgraded user-interface with tab dialog to organize settings. Improved processing speed by 25%. Setup adjustments for key loss by top/bottom thickness, key dilution by adding non-key to key, key loss by thickness and overall recovery factor. Added method to set key dilution and loss adjustment parameters per seam by using Strata Definition File.
- **Strata Models** – Added ability to use channel samples for seam stacking.
- **Strata Grids Auto Run** – Added method to create strata composite grids.
- **Strata Isopach Maps** – Improved speed for generating isopach polylines.
- **Drillhole Text Formatter** – Added option for header for labels and option to color labels by grade parameters.
- **Voronoi Diagram** – Added method to process points.
- **Draw eLog** – Added method to automatically draw multiple LAS files next to geologic columns in the drawings.
- **Create Drillhole From eLog** – Added option to filter data.
- **Export Block Model** – New command to output a block model to a text file.

Surface/Underground Mining Commands

- **Merge Solids** – New command to combine two solid models that overlap or touch into a single solid model.
- **Make Solid From Design** – New command to create a solid model using tunnel template, centerline and profile.
- **Design Tunnel Template** – New command to define closed loop template for a tunnel.
- **Range Diagram** – Added spoil by reach method. Added option to label areas in the preview and controls for linework color. Added option to show dragline limits. Added option to flatten the spoil pile on key cuts. Added method to process rehandle.
- **Import Fault Line** – New command to create fault polylines from a text file.
- **Edit Fault Line** – Added method to reduce vertices.
- **Draw Fault Symbols** – Added method to use surface to set dip and strike.
- **Timing Project Manager** – For Mining Precedence Rules, added method to screen pick.
- **Surface Equipment Timing** – Upgraded bottleneck analysis with unit rotation scheme, save/load setup and improved user-interface. Added method to save and load schedule data to a CSV file. Added option to output timing results to spatial database.
- **Configure Section Info** – Added method to define section by selecting existing section insert from the drawing.
- **Auto Panel Layout** – New command to draw outlines for panels using polylines and text labels.
- **Reverse Panel** – New command to switch direction of a panel.
- **Import Mine Plan** – New command to import an underground mine plan in the drawing from a MPD file.
- **Underground Timing** – Added support for multiple levels or seams. Added method to set precedence for retreat mining. Added method to save and load schedule data to a CSV file. Added option to output timing results to spatial database.
- **Haul Fleet Manager** – Added support to have different truck types within the fleet.
- **Haul Cycle Analysis** – Updated calculations to account for acceleration. Added method use output from Spoil Placement Timing to report cycles and number of trucks needed for each block. Added ability to set slow down points along path polylines. Added method to output 3D polylines with truck timing data assigned for playback in 3D Motion Viewer. Added method to use one-way path polylines. Added option to report travel details along the road. Added option to process different grades on a road polyline separately.
- **Spoil Placement Timing** – Added method to set quantity rate from Surface Equipment Timing and skip haul fleet assignments. Added method to set haul fleet assignments using min cycle time or min distance from Haul Cycle Analysis. Added functions to Print and Export to Microsoft Project. Added period unit (day, week, month) for spreadsheet.
- **Gantt Charts** – Added Gantt chart output options in Underground, Surface and Spoil timing routines.

Natural Regrade Commands

- **Profiles** – Improved default profiles for sub-ridges and sub-valleys to be smoother. Also added new global setting to control lengths for sub-ridges and sub-valleys. Profile view shows both current and original profiles.
- **Check Ridgeline** – New function to check ridgeline slopes.
- **Clear Previous** – Added function to clear entities from previous design.
- **Settings File** – Added functions to save and load settings to a file.

Construction/Trench Commands

- **Edit Assign Polyline Elevations** – Added methods to select another polyline to process, to reverse the polyline and to pick the point. Added Distance tab to show distances between points with option to edit.
- **Trench Network Quantities** – Added option to output a TIN surface for the trench.
- **Carlson Grade Project** – New command to setup a project file for Carlson machine control.
- **3D Grade Simulation** – New command to load a Carlson Grade Project into the 3D drive simulation.

CADnet Commands

- **Rubber Sheet** – New command to adjust an aerial image to fit specified control points
- **Raster To Text** – Improved text recognition. Added options for prefix/suffix for numeric mode and option to draw leader by pick. Added method to process multiple labels at a time. Added one pick method after the first conversion.
- **Import Raster To Vector** – Added method to process image within perimeter polyline or window.
- **Raster Save As** – New command to save current image to another file with option to change format.
- **Raster Cut Image** – Added option for background color and method to cut by picked window.
- **Raster Crop Image** – Added option for background color and method to crop by picked window.
- **Raster Deskew** – New command to rotate an image.
- **Raster Negative** – New command to inverse the image colors.
- **Raster Mirror** – New command to flip an image top to bottom or left to right.
- **Raster Shrink Resolution** – New command to lower the image resolution.
- **Raster Brighten/Darken** – New command to change image brightness.

- **Raster Black/White By Threshold** – New command to make an image binary by assigning grays based on threshold.

Point Cloud Commands

- **User Interface** – Upgraded user-interface with more toolbars and cleaned up tab dialogs.
- **3D Viewer** – Added method to auto-center the pivot point for rotating the view.
- **Import Tiff** – Import TIFF image with elevation as color field into a cloud.
- **Clean Cloud** – For the duplicate point method, added method to compare 2D distance. For the redundant method, added option whether to clean vertical or horizontal data.
- **Merge Clouds** – New function to combine two or more clouds.
- **Register Cloud** – New function to register cloud using control points.
- **Cloud Change Projection** – New function to change cloud coordinate system.
- **Adjust Color** – New function to change the cloud color or intensity, or set the cloud color from an image file.
- **Resample Mesh** – New command to resample a mesh to reduce size.

Data Conversions

- **Civil 3D** – New function to convert Carlson points to Civil 3D points. New function to import centerlines from Civil 3D drawings.
- **Geoids** – Added support for Iceland, Latvia 14, Russia and Korea 13.
- **InRoads –** New function to import centerlines from ASC format.
- **MicroStation –** New import point file support for TA2 format.
- **TDS –** Import localization from RAW file.
- **Trimble –** Added export JXL from Carlson RW5.