22 Sessions: 2022 Virtual Workshop

A Virtual Workshop series featuring Carlson Software training in CAD fundamentals, survey workflows, field data collection, hydrology and point cloud processing

The 2022 Virtual Workshops start with CAD fundamentals in IntelliCAD and AutoCAD and an introduction to Carlson, then move into survey, civil and hydrology workflows. Scott Griffin and Carlson staff present a software showcase and round tables on field software, desktop tools and Precision 3D hydrology. Doug Aaberg leads Field-to-Finish, Mark Long covers civil design and later sessions include user case studies on wet ponds, pervious pavers, fire flow, live field design and tips from Travis Maxwell, Finch & Associates and Bill Dennis.

Key Topics:

- Carlson and IntelliCAD setup, command shortcuts, object snaps and precise drafting
- Carlson CAD standards for layers, blocks, dimension styles, templates and custom linetypes
- Carlson survey points, deed entry and correlation, annotation and legal descriptions
- Carlson Field-to-Finish, TIN surfaces, contours and GIS imagery
- Carlson layouts, viewports, legends, title blocks, sheet

sets and PDF plotting
- Carlson 2023 drawing cleanup, CADnet PDF and BIM tools, retaining walls and subdivision layouts
- Carlson SurvPC field least squares, BIM stakeout, map overlays and Cloud data exchange
- Carlson BRx7 GNSS, hybrid robotic surveying and drone hardware demonstrations
- Carlson Hydrology and Precision 3D Hydro pond routing, storm networks and parametric inlets
- Carlson Point Cloud LAS imports, ortho imagery, bare earth extraction and automated feature extraction

Sessions In This Series:

- 1-1: Introduction to CAD, presented by Jennifer DiBona
- 1-2: Introduction to CAD, presented by Jennifer DiBona
- 1-3: Introduction to CAD, presented by Jennifer DiBona
- 2-1: Introduction to Carlson, presented by Jennifer DiBona
- 2-2: Introduction to Carlson, presented by Jennifer DiBona
- 2-3: Introduction to Carlson, presented by Jennifer DiBona
- 3-1: Carlson Software Showcase: Overview of Carlson, presented by Scott Griffin
- 3-2: Carlson Software Showcase: Field Software Round Table, panelists: Sarah Winter, John Gerber, Dough Aaberg & Butch Herter
- 3-3: No Recording
- 3-4: Carlson Software Showcase: Desktop Software Round Table, panelists: Leonid Entov, Lon Watson, Mark Long, Scott Griffin & Doug Aaberg
- 3-5: Carlson Software Showcase: Hydrology & P3D Round Table, panelists: Bruce Carlson, Shan Lu & Mark Long
- 3-6: Carlson Software Showcase: Hydrology & P3D Round Table, panelists: Bruce Carlson, Shan Lu & Mark Long
- 3-7: No Recording
- 4-1: Field to Finish from Start to Finish, presented by

Doug Aaberg

- 4-2: Field to Finish from Start to Finish, presented by Doug Aaberg
- 4-3: Field to Finish from Start to Finish, presented by Doug Aaberg
- 5-1: Civil Design in Carlson Software, presented by Mark Long
- 5-2: Civil Design in Carlson Software, presented by Mark Long
- 5-3: Civil Design in Carlson Software, presented by Mark Long
- 6-1: User Case Study: Wet Pond Design for Multi-Family Development, presented by Travis Maxwell
- 6-2: User Case Study: Pervious Paver Parking Lot Design, presented by Finch & Associates
- 6-3: User Case Study: Fire Flow Analysis Case Study, presented by Travis Maxwell
- 6-4: User Case Study: Live Field Design, presented by Bill Dennis of Civil Design Team LLC
- 6-5: Tips & Tricks in Carlson Software, presented by Travis Maxwell

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*These sessions were presented by Jennifer DiBona and Carlson staff*Jennifer DiBona opens with CAD fundamentals, the IntelliCAD

interface and drafting precision.Jennifer DiBona covers layers, properties, blocks, dimension styles and drawing templates.Jennifer DiBona explains linetypes, linetype scales and paper space layouts and viewports.







Jennifer DiBona introduces Carlson 2023 setup, configuration, project folders and annotation standards.Jennifer DiBona covers annotation settings, templates, CRD points and deed tools.Jennifer DiBona ties together Field-to-Finish, surfaces, GIS imagery, legends and





plotting.Scott Griffin showcases Carlson 2023, including drawing cleanup, Field-to-Finish, CADnet and B tools.Carlson staff discuss SurvPC 7 updates, field least squares, BIM stakeout and map overlays.





Carlson staff answer desktop software questions on the 2023 release, CUI customization and civil tools.Bruce Carlson, Shan Lu and Mark Long discuss hydrology workflows and Precision Hydro.Bruce Carlson continues the hydrology and Precision 3D discussion with storm



sewer and inlet design.Doug Aaberg starts Field-to-Finish from code tables and special codes through automated linework.



Doug Aaberg continues Field-to-Finish with special codes, templates, finishes Field-to-Finish with symbol rotation, pipes, trees and automated labeling.Mark Long begins civil design with LotNet subdivision layout and RoadNet setup.Mark Long continues RoadNet with templates, intersections, super elevation and cul-de-



symbols and layer setup.Doug Aaberg







sacs.Mark Long designs sanitary and storm networks and merges surfaces in Carlson Civil and Hydrology.Travis Maxwell presents a wet pond design case study for a multi-family site in HydroNet.

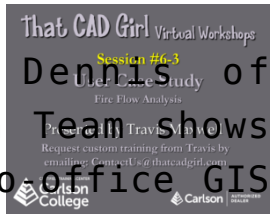






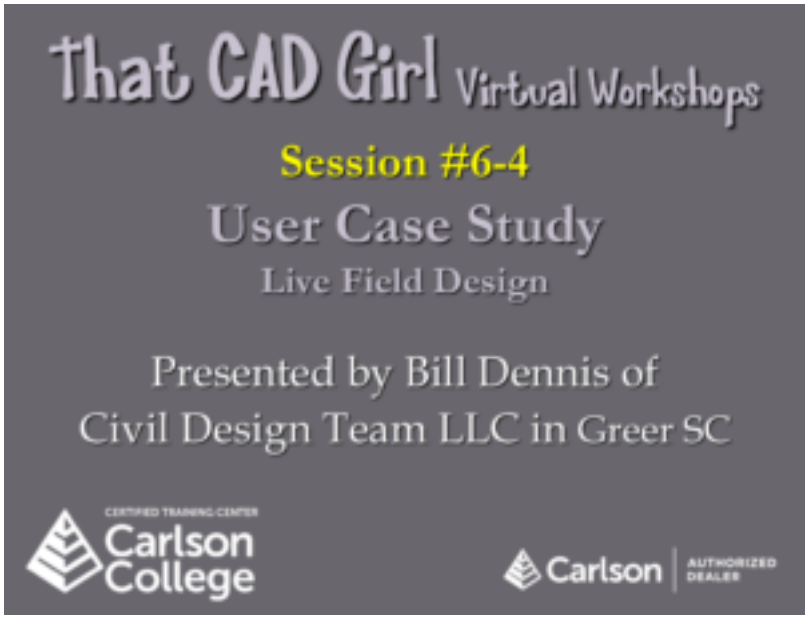
Finch & Associates present a pervious paver parking lot stormwater case study in HydroNet.Travis Maxwell presents a fire flow analysis case study with Carlson pressure pipe tools.Bill Dennis of Civil Design Team shows live field-to-office GIS and CAD design





techniques.Travis Maxwell shares project-data tips using tables, custom fields, sheet sets and LiDAR.





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3 Sessions: Site Selection and Feasibility Studies

A Virtual Classroom demonstrating site selection and feasibility studies using Carlson to evaluate development constraints, compare grading options and estimate construction costs.

Site Selection and Feasibility Studies with Travis Maxwell shows how to evaluate commercial, industrial and residential sites in Carlson before detailed design. Sessions cover assembling

imagery and terrain, reviewing floodplain and wetland constraints and using SiteNet to compare grading alternatives and cut/fill. The follow-up applies RoadNet and LotNet to residential road and lot grading, driveway and pad design and construction cost estimates.

Key Topics:

- Carlson project setup, coordinate systems and Google Earth imagery and boundary exchange
- Carlson terrain imports, contour generation and GIS shapefiles for reviewing site constraints
- Carlson SiteNet target layers, grading boundaries and existing and proposed surface checks
- Carlson cut/fill analysis, earthwork balancing and soil import and export comparisons
- Carlson pad grading, retaining wall concepts and 3D polyline tools for grading alternatives
- Carlson SiteNet unit costs using line lengths, closed polyline areas and block counts
- Carlson RoadNet and LotNet for subdivision layouts, building pads and lot grading transitions
- Carlson storm and sewer quantity reports, pipe depth summaries and utility network tools
- Carlson road templates, subgrade definitions and earthwork quantity comparisons

Descriptions, transcripts and other details of these recordings have been AI-generated and may contain errors.

*These sessions were presented by Travis Maxwell.*Travis Maxwell starts site feasibility with GIS data, flood review and SiteNet

earthwork.Travis Maxwell compares grading alternatives, balances cut/fill and estimates construction costs.A follow-up on residential lot and road grading, utilities and cost estimates in SiteNet, RoadNet and LotNet.





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8 Sessions: 2023 Virtual Workshop

A Virtual Workshop series featuring Carlson Software training for survey data processing, point clouds, civil design and construction takeoff.

The recorded 2023 Virtual Workshops explore Carlson Software workflows and Carlson 2024 updates for surveyors, civil

engineers and construction professionals. Scott Griffin presents an overview of Carlson and what’s new in Carlson 2024 while Doug Aaberg covers Survey, GIS and point clouds. Mark Long demonstrates RoadNet and Civil and Hydrology design while Jennifer DiBona presents CADnet, SiteNet and Takeoff.

Key Topics:

- Carlson 2024 updates, drawing cleanup, imagery integration and BIM data handling
- Carlson Survey and GIS workflows for Field-to-Finish, feature attributes and shapefile imports
- Carlson Photo Capture and Point Cloud workflows for drone imagery, LiDAR, feature extraction and surface creation
- Carlson survey data processing, coordinate systems, raw data editing and GPS base point corrections
- Carlson Lot Network, RoadNet and Parking Network tools for site design, templates and plan/profile sheets
- Carlson Hydrology workflows for watersheds, runoff calculations, storm pipe sizing and utility crossing checks
- Carlson CADnet workflows for PDF imports, image merging, scaling and digitizing
- Carlson SiteNet workflows for 2D-to-3D conversion, material quantities, topsoil adjustments and machine control exports

Sessions In This Series:

- 1-1 to 2-4 were live.
- 3-1: Overview of Carlson and What’s New in Carlson 2024, presented by Scott Griffin
- 3-2: Overview of Carlson and What’s New in Carlson 2024, presented by Scott Griffin
- 3-3: Overview of Carlson Survey, GIS and Point Cloud, presented by Doug Aaberg

- 3-4: Overview of Carlson Survey, GIS and Point Cloud, presented by Doug Aaberg
- 4-1: Overview of Carlson Civil & Hydrology, presented by Mark Long
- 4-2: Overview of Carlson Civil & Hydrology, presented by Mark Long
- 4-3: Overview of Carlson, CADnet, SiteNet & Takeoff, presented by Jennifer DiBona
- 4-4: Overview of Carlson, CADnet, SiteNet & Takeoff (First 8.5 minutes have no sound), presented by Jennifer DiBona

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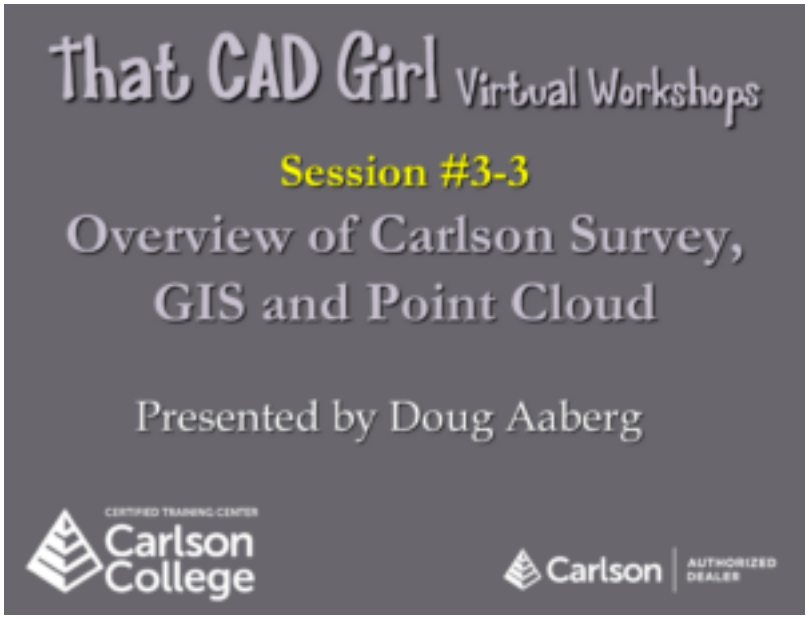
*These sessions were presented by Jennifer DiBona, Scott Griffin, Doug Aaberg or Mark Long.**The first two days were live.***Scott Griffin begins an overview of Carlson and what's new in Carlson 2024.Scott Griffin continues what's new in Carlson 2024, including LotNet, RoadNet and sheet production.

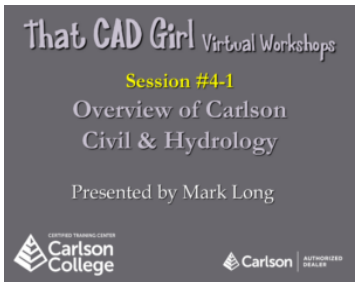




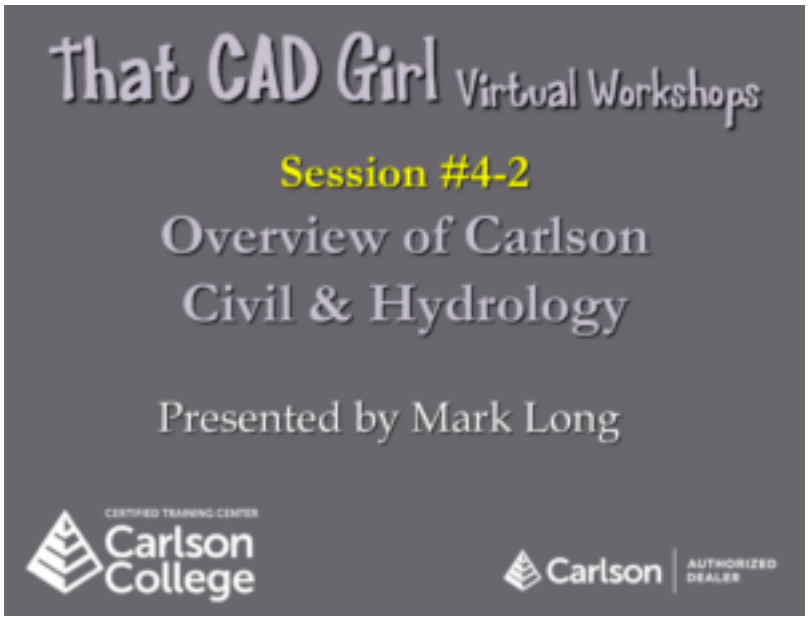
Doug Aaberg begins an overview of Carlson Survey, GIS and point

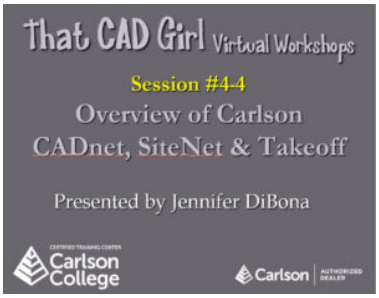
cloud tools.Jennifer DiBona and Doug Aaberg continue the Survey, GIS and point cloud overview.Mark Long demonstrates RoadNet setup, templates, intersections and civil design.





Mark Long covers hydrology, storm drainage and pipe networks in Carlson Civil and Hydrology.Jennifer DiBona overviews Carlson CADnet, SiteNet and Takeoff module workflows.Jennifer DiBona continues CADnet, SiteNet and Takeoff. The first 8.5 minutes have no sound.





6 Sessions: Customizing Carlson for Erosion Control Permitting and Design

A Virtual Classroom exploring how to customize Carlson for erosion control, permitting and design with reusable CAD standards, drainage tools and coordinated plan sheets

Customizing Carlson for Erosion Control Permitting and Design with Travis Maxwell shows how to organize menus, tool palettes and templates around an erosion control workflow. Sessions cover base maps, standard notes and custom linetypes, then watershed analysis, runoff calculations and grading of sediment basins, swales and stockpiles. Plan sheets, standard details and Excel-linked CAD tables finish the set. Session 1-2 was not recorded.

Key Topics:

- Carlson workspace customization with menus, toolbars and commands from multiple modules
- Carlson tool palettes, CAD scripts and spreadsheet-generated standard notes and blocks
- Carlson custom linetypes, legends, layer standards and annotation scale settings
- Carlson GIS workflows for aerial imagery, topographic maps, parcel data and soil mapping
- Carlson watershed delineation, flow paths, surface checks

and drainage area refinement
- Carlson time of concentration, runoff coefficients and Rational Method calculations
- Carlson Pond Grader for sediment basin layout, earthwork balancing and stage-storage reports
- Carlson 3D polyline grading for swales, stockpiles, surface merging and slope hatching
- Carlson drawing templates, standard details, custom properties and sheet set organization
- Carlson CAD tables linked with Excel for calculation inputs and results

Descriptions, transcripts and other details of these recordings have been AI-generated and may contain errors.

*These sessions were presented by Travis Maxwell.*Travis Maxwell customizes Carlson menus, toolbars and workspaces for erosion control work.This session was not recorded, so no video or transcript is available.



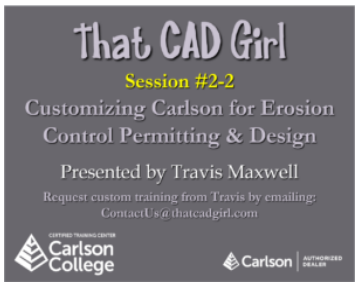
Travis Maxwell automates notes and cleanup with Excel, scripts, layer



translation and GIS data.Travis Maxwell builds erosion control templates, custom linetypes, base maps and sheet sets.Travis Maxwell runs watershed analysis, runoff calculations and sediment basin and pond design.







Travis Maxwell grades swales and stockpiles and automates plan sets with sheet sets and Excel links.



6 Sessions: Fast Track to Surface Modeling in Carlson Software

A Virtual Classroom demonstrating Carlson surface modeling workflows for terrain preparation, site grading, earthwork analysis and road and lot grading

Fast Track to Surface Modeling in Carlson Software with Jennifer DiBona follows building, checking and refining existing and proposed terrain models. Day 1 covers surface inputs, breaklines and boundaries, elevating 3D polylines and grading pads, curbs, sidewalks and walls. Day 2 adds surface comparison and merging, cut/fill and stockpile volumes, LandXML exchange and RoadNet workflows for roads, building pads and lot grading.

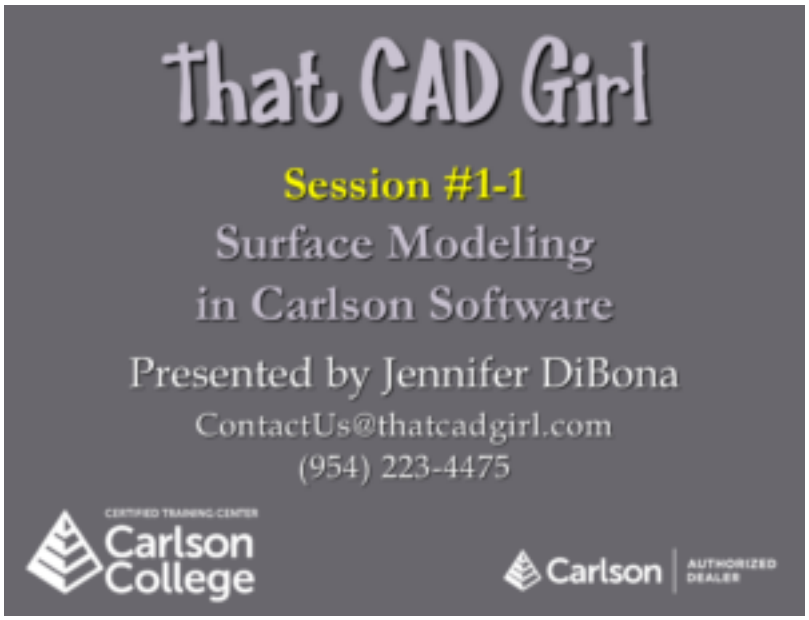
Key Topics:

- Carlson surface data review, elevation checks, non-surface points and shrink-wrap boundaries
- Carlson triangulation, Field-to-Finish breaklines, contour generation and surface inspection
- Carlson contour-based surface limitations, flat triangle controls and public elevation data imports
- Carlson 2D to 3D polyline tools using points, text, slopes and elevation editing
- Carlson building pad grading, daylight lines, curb

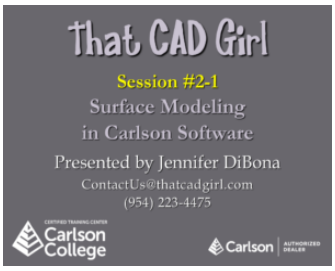
offsets, sidewalks and retaining walls
- Carlson surface comparison, cut/fill maps, earthwork balancing and stockpile quantities
- Carlson TIN and grid workflows, surface merging and LandXML data exchange
- Carlson RoadNet centerlines, profiles, templates, subgrades and dynamic road grading
- Carlson intersections, cul-de-sacs, template point centerlines and road quantity reports
- Carlson RoadNet building pad elevations and lot grading rules

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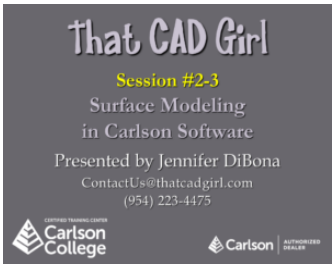
*These sessions were presented by Jennifer DiBona.*Jennifer DiBona builds and inspects existing-ground TIN surfaces from points and breaklines.Jennifer DiBona refines TINs from contours and public elevation data and elevates 2 polylines.Jennifer DiBona labels 3D polylines and grades pads, daylights



and design pad templates.Jennifer DiBona covers LandXML exchange, pad grading, cut/fill balancing and stockpile volumes.

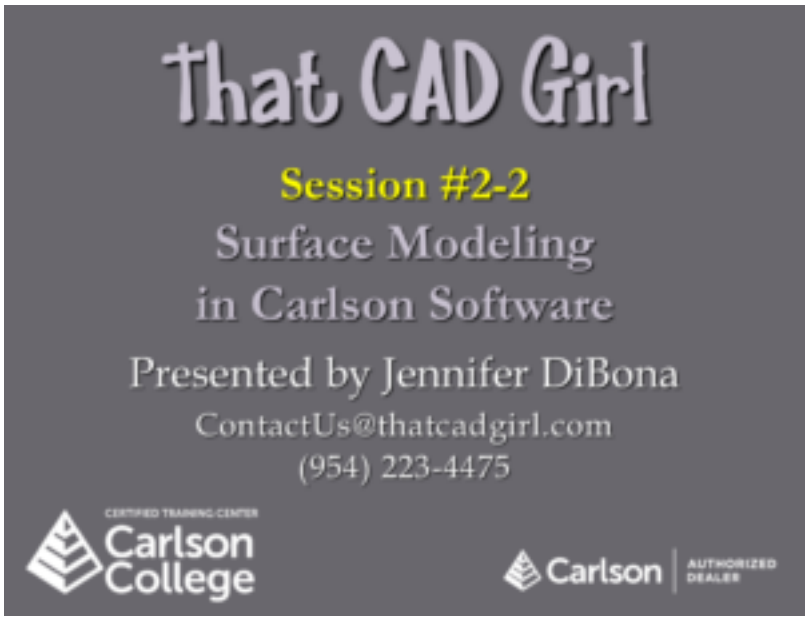


Jennifer DiBona grades curbs, sidewalks and parking lots and starts finishes RoadNet with intersections, cul-de-sacs and automated lot grading.





RoadNet templates.Jennifer DiBona



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6 Sessions: Fast Track to

Carlson Civil Suite and CADnet

A Virtual Classroom introducing Carlson Civil Suite and CADnet workflows for survey projects, GIS data, site grading, road design and plan preparation

Fast Track to Carlson Civil Suite and CADnet with Jennifer DiBona connects survey, civil design and GIS tools through project examples. Day 1 covers Carlson setup and GIS data, deeds and lots, Field-to-Finish and surface modeling. Day 2 demonstrates SiteNet grading and quantities, centerlines and profiles, RoadNet design, storm network drafting and CADnet PDF import and digitizing.

Key Topics:

- Carlson configuration, object linking, data folders and saved project settings
- Carlson GIS shapefile imports, attribute queries, labels and background imagery
- Carlson deed processing, legal descriptions, lot files, setbacks and LotNet layout
- Carlson survey point import, Field-to-Finish codes, annotation and drawing orientation
- Carlson surface checks, non-surface points, shrink-wrap boundaries, triangulation and contours
- Carlson 2D to 3D polylines, building pads, breaklines and site grading
- Carlson SiteNet layer targets, materials, subgrades,

topsoil adjustments and cut/fill reports

- Carlson centerlines, profiles and RoadNet templates, intersections and cul-de-sacs
- Carlson Hydrology storm structures, pipe networks, tables and profile drafting
- Carlson CADnet raster and vector PDFs, image merging, scaling and contour digitizing

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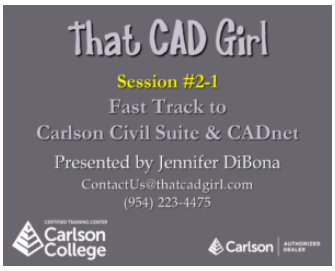
*These sessions were presented by Jennifer DiBona.*Jennifer DiBona introduces Civil Suite setup, modules, project data and GIS integration.Jennifer DiBona covers area and lot layout, deed files, LotNet and Field-to-Finish.



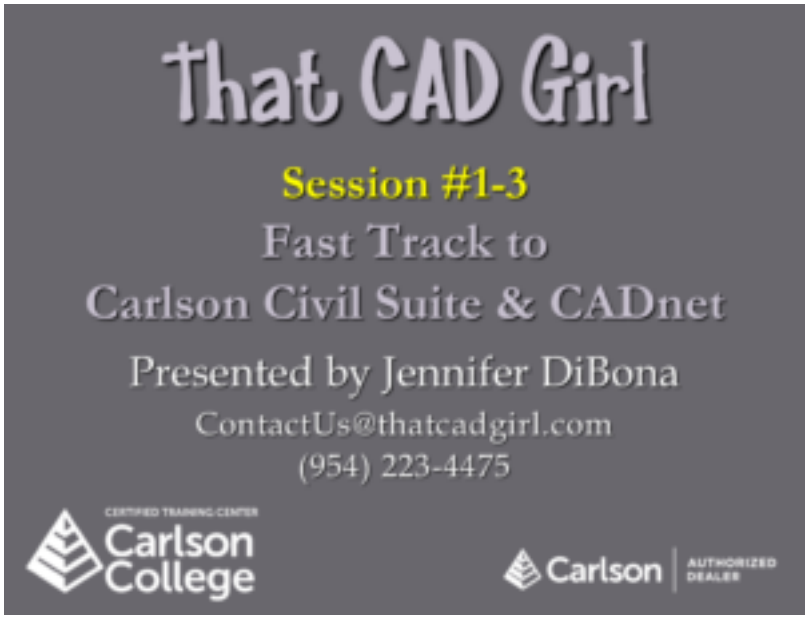


Jennifer DiBona builds and checks surfaces,

contours,annotationand3Dpolyline tools.Jennifer DiBona grades sites, manages surfaces and reports SiteNet quantities and



topsoil.



Jennifer DiBona creates centerlines, profiles, templates and RoadNet road designs.Jennifer DiBona drafts storm networks and uses CADnet to convert PDFs and



rasters into CAD.



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2 Sessions: Using Carlson for

ADA Accessible Design

A Virtual Classroom demonstrating Carlson tools for accessible site grading, curb ramps, parking layouts and slope review

Using Carlson for ADA Accessible Design with Travis Maxwell covers practical methods for grading accessible routes, sidewalks, curb ramps and parking areas. The sessions use Carlson ramp design, RoadNet, ParkingNet and 3D polyline tools for layout and elevation control. Surface modeling, slope zone analysis and dynamic spot elevations help find grading issues and refine transitions to ADA and Fair Housing standards.

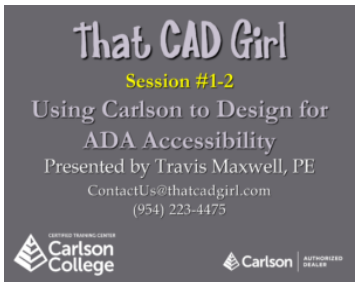
Key Topics:

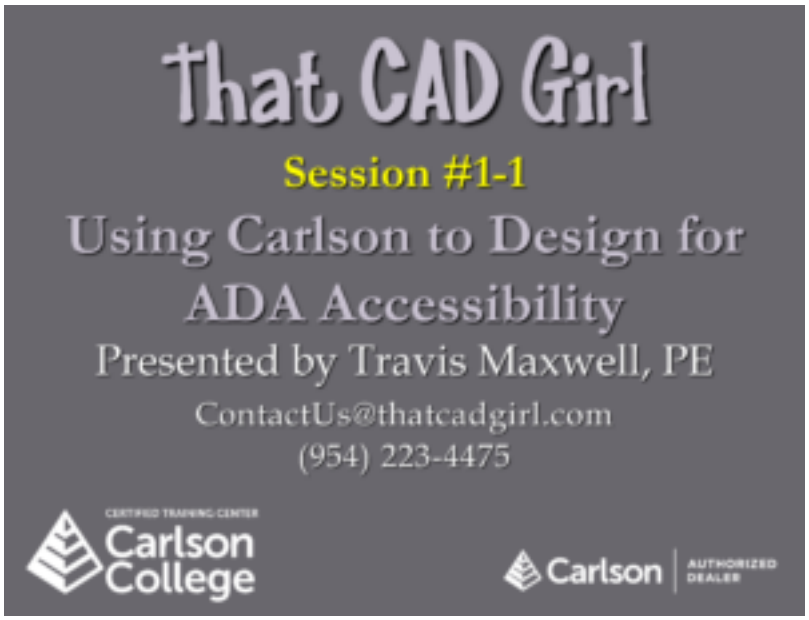
- Carlson site planning for accessible routes, parking spaces, access aisles and sidewalk connections
- Carlson curb ramp design, landings, taper adjustments and transitions along sloping streets
- Carlson RoadNet and ParkingNet workflows for roadway, curb and parking layout
- Carlson grading with sloped planes, 3D polylines, offsets and template polylines
- Carlson TIN surface inspection, triangulation editing and grading corrections
- Carlson slope zone analysis and visual review of running slopes and cross slopes
- Carlson dynamic spot elevations and labels linked to proposed surface files

- Carlson Google Earth data imports and imagery for reviewing site examples

Descriptions, transcripts and other details of these recordings have been AI-generated and may contain errors.

*These sessions were presented by Travis Maxwell.*Travis Maxwell designs accessible parking, curb ramps and routes to ADA and Fair Housing standards.Travis Maxwell continues ADA grading with slope control, curb ramp modeling and surface checks.





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6 Sessions: Fast Track to CAD and Carlson Software

A Virtual Classroom introducing CAD and Carlson fundamentals for precise

drafting, organized survey drawings, point management and plotting

Fast Track to CAD and Carlson with Jennifer DiBona builds a foundation in AutoCAD and IntelliCAD drawing, editing and organization before introducing Carlson workflows. Day 1 covers the interface, command prompts, coordinate entry, object snaps, layers and blocks. Day 2 configures Carlson settings and templates, CRD point files, point import and editing and paper space layouts, viewports, title blocks and plot styles.

Key Topics:

- Carlson and CAD platform relationships, workspaces, command access, aliases and Quick Keys
- CAD precision tools for Carlson users, including coordinate entry, object snaps and view navigation
- CAD drawing and editing for Carlson users, including selection, move, copy, trim, extend and fillet
- Carlson and CAD layers, entity properties, polylines, symbols and reusable blocks
- Carlson configuration, object linking, project folders and saved settings
- Carlson DWT templates, layer libraries, text styles and drafting standards
- Carlson annotation scalers, Auto Annotate, area labels and line and curve table settings
- Carlson CRD point import, display, editing, coordinate utilities and point history
- Carlson drawing output with paper space, viewport scales, title blocks and plot styles

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*These sessions were presented by Jennifer DiBona.*Jennifer DiBona introduces CAD platforms, the interface, command line and Carlson vs CAD settings.Jennifer DiBona covers drawing and editing commands, object snaps, selection and text.





Jennifer DiBona explains layers, entity properties, blocks and external references.Jennifer DiBona starts Carlson setup, configuration, templates and project folder organization.Jennifer DiBona covers text styles and scales, drawing templates, points and





layer libraries.Jennifer DiBona imports and edits CRD points and sets up paper space layouts and plotting.





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6 Sessions: In-Depth Carlson Takeoff

A Virtual Classroom exploring Carlson Takeoff and CADnet workflows for plan digitizing, 3D surface preparation and earthwork and material quantities.

In-Depth Carlson Takeoff with Jennifer DiBona shows how to prepare site plans for quantity estimating and surface modeling using Carlson Takeoff and CADnet. Day 1 compares Takeoff OEM and the Takeoff Suite and covers PDF import, scaling and digitizing

contours and features. Day 2 turns spot elevations and 2D linework into 3D breaklines, defines materials and subgrades, accounts for topsoil and reviews earthwork reports and surface exports.

Key Topics:

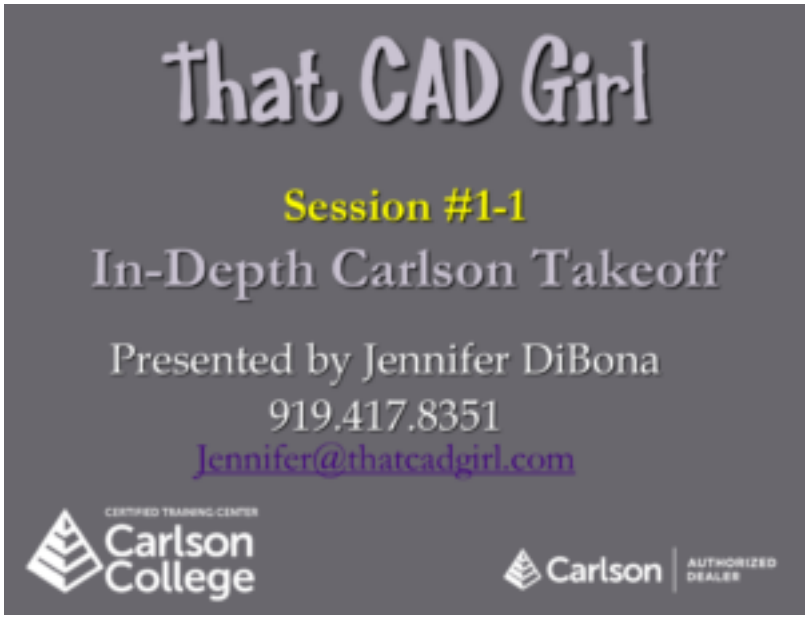
- Carlson Takeoff, Takeoff Suite and Civil SiteNet workflow and menu comparisons
- Carlson CADnet raster and vector PDFs, multi-page imports, image merging and linework extraction
- Carlson image scaling, control references, layer organization and heads-up digitizing
- Carlson existing and proposed contours, spot elevations, material boundaries and counted features
- Carlson 2D to 3D polylines for building pads, sidewalks, curbs, swales and retaining walls
- Carlson drawing cleanup, elevation checks and breakline preparation for surface models
- Carlson existing, design and other layer targets, TRG files, material definitions and subgrade depths
- Carlson cut/fill calculations, topsoil stripping and replacement and material quantity reports
- Carlson surface inspection and LandXML and machine control export workflows

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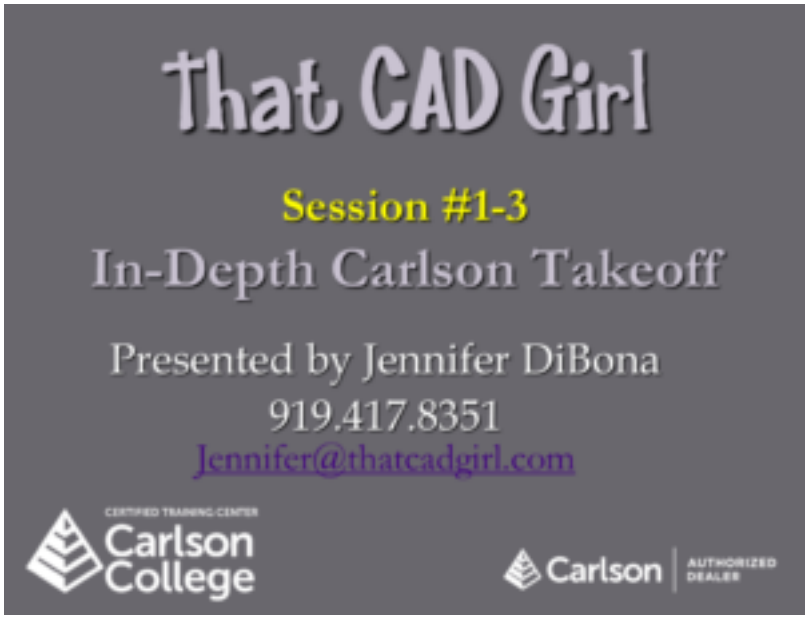
*These sessions were presented by Jennifer DiBona.*Jennifer DiBona compares Takeoff OEM and the Takeoff Suite and starts PDF import

and setup.Jennifer DiBona imports, scales and digitizes PDF grading plans for existing and proposed surfaces.This final session of the first day continues the In-Depth Carlson Takeoff training, showing how to elevate 2D polylines to 3D in Carlson Civil by interior text, by text with leader and by points. It covers building pads, back of curb and top of curb lines, contours with a beginning elevation and increment and a step-down building pad with the ground outside it, then takes a first look at setting retaining wall top and bottom elevations.Jennifer DiBona builds 3D surfaces from 2D plans, including spot elevations and 3D polylines. Jennifer DiBona assigns layers and materials, builds surfaces and calculates cut/fill and



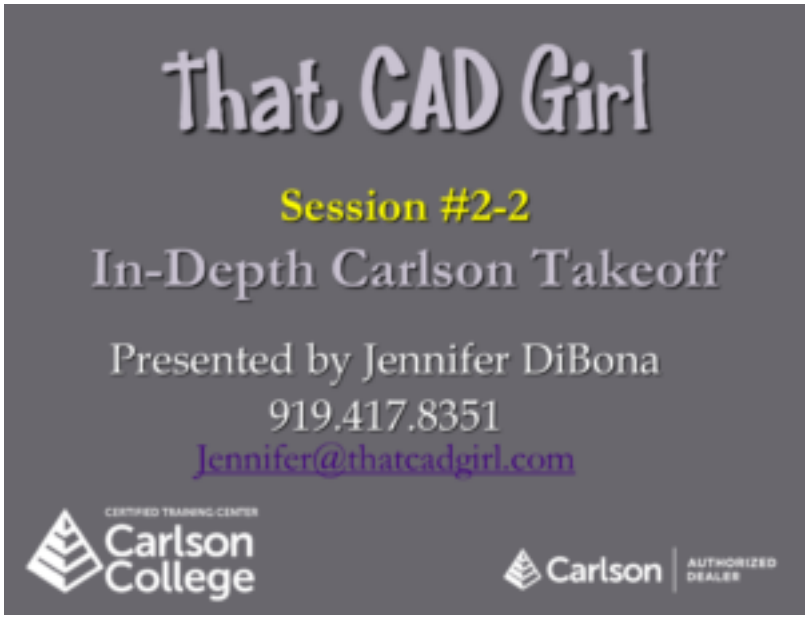






topsoil.Jennifer DiBona elevates 2D linework, grades pads and sidewalks and reports material quantities.





Importing Publicly Available Lidar for Surface Creation

A Virtual Webinar Using Carlson Software – Learn Publicly Available LiDAR for Surface Creation

This Carlson Software webinar demonstrates how publicly available LiDAR can be downloaded, filtered, thinned and prepared for surface creation. Travis Maxwell shows how LAS and LAZ point-cloud files, LAS tools batch processing, Carlson grid files, contours and Google Earth checks can support preliminary terrain modeling workflows.

Key Topics:

- Public LiDAR sources and download workflow
- LAS and LAZ file handling
- Class 2 ground-point filtering
- Grid-file surface creation in Carlson
- Contour review and Google Earth verification

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This session was presented by Travis Maxwell on 06/14/2023.