# Picks n Clicks: Using Non-Surface Entities with Shrinkwrap in Carlson Software

Learn how to keep points with good elevations, such as fire hydrants, property corners and manhole inverts, from being used in a surface model. This quick tip shows how to tag those points as non-surface entities so Shrinkwrap and Triangulate and Contour ignore them, including options to tag points one at a time, by description or automatically in Field to Finish.

*Descriptions, transcripts and other details of this recording have been AI-generated and may contain errors.*

*This video was recorded by Jennifer DiBona using Carlson 2020 with IntelliCAD. The recording date is approximate.*

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# Picks n Clicks: Converting Spot Elevations to Points in Carlson Software

Learn how to turn spot elevations in a drawing into Carlson points saved to a CRD file. This quick tip covers the most common spot symbol types, including blocks, line crosses and text, so you can put existing elevation data to work in surface models, 2D to 3D conversions and more.

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*This video was recorded by Jennifer DiBona using Carlson 2020 with IntelliCAD. The recording date is approximate.*

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# 12 Sessions: 2016 Virtual Workshop

## A Virtual Workshop collection covering Carlson survey and GIS workflows, civil site design and hydrology analysis.

These 12 Survey and GIS and Civil and Hydrology Virtual Workshop sessions show practical Carlson workflows from field data collection and adjustments through site modeling and drainage design. Jennifer DiBona, Jeremy Taylor, Nathan Crews, Scott Griffin, Dave Carlson and Mark Long cover deed entry, traverse adjustments, SurvCE and SurvPC, Field-to-Finish and turning 2D drawings into 3D models. The civil sessions add surfaces and grading, a look at Carlson 2017, LotNet and RoadNet layout and storm sewer and pond design, with a Precision 3D Topo demonstration.

**Key Topics:**

- Carlson deed entry, control points, georeferencing,

imagery and GIS parcel data
- Carlson traverse adjustments, SurvNet least squares workflows and stakeout cut sheets
- Carlson SurvCE, SurvPC and Cloud workflows for field data exchange and stakeout
- Carlson Field-to-Finish coding, automated linework, tree features and pipe data
- Carlson CAD editing, annotation and conversion of 2D drawings into 3D models
- Carlson TIN surfaces, breaklines, contours, pad grading and cut/fill balancing
- Carlson LotNet subdivision layouts and RoadNet road and intersection design
- Carlson watershed analysis, runoff calculations, storm sewers and pond routing
- Carlson Precision 3D Topo terrain editing and the historical Carlson 2017 feature preview

**Sessions In This Series:**

- 1-1: Survey & GIS-Tips & Tricks, presented by Jennifer DiBona
- 1-2: Survey & GIS-Traverse Adjustments, presented by Jeremy Taylor
- 1-3: Survey & GIS-Intro to Precision 3D, presented by Nathan Crews
- 1-4: Survey & GIS-SurvCE, SurvPC & the Carlson Cloud, presented by Jeremy Taylor
- 1-5: Survey & GIS-Overview of Field to Finish, presented by Scott Griffin
- 1-6: Survey & GIS-Elevating 2D to 3D for Models or Staking, presented by Jennifer DiBona
- 2-1: Civil & Hydrology-Tips & Tricks, presented by Jennifer DiBona
- 2-2: Civil & Hydrology-Overview of Surfaces and Grading,

presented by Jennifer DiBona

- 2-3: Civil & Hydrology-Overview of Carlson 2017, presented by Dave Carlson
- 2-4: Civil & Hydrology-Subdivision Layout & Design, presented by Scott Griffin
- 2-5: Civil & Hydrology-Road, Site, Pond, Design & Hydro Part 1, presented by Mark Long
- 2-6: Civil & Hydrology-Road, Site, Pond, Design & Hydro Part 2, presented by Mark Long

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*These sessions were presented by Jennifer DiBona and Carlson staff*Jennifer DiBona covers deed entry, control points, georeferencing and GIS parcel data in Carlson Survey.Jeremy Taylor walks through traversee adjustments, SurvNet least squares and stakeout sheets.Nathan Crews demonstrates Carlson Precision 3D Topo for surface editing and 3D



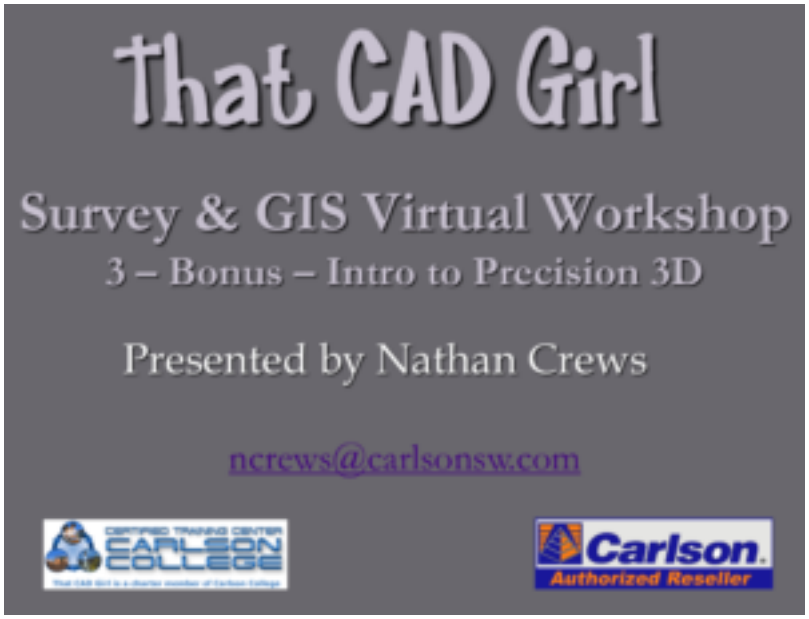
survey modeling.Jeremy Taylor covers SurvCE, SurvPC and Carlson Cloud workflows for field data and stakeout.Scott Griffin introduces Field-to-Finish coding, automated linework, tree features and data.Jennifer DiBona shows how to turn 2D drawings into 3D models for surfaces or staking.Jennifer DiBona shares Civil and Hydrology tips, including polyline tools, annotation and layout utilities. Jennifer DiBona overviews Carlson surfaces and grading, including TINs,












breaklines and contours.Dave Carlson previews new features and enhancements in Carlson 2017.







Scott Griffin covers LotNet subdivision layout and RoadNet road and intersection design.Mark Long begins road, site, pond and hydrology design in Carlson Civil and Hydrology.Mark Long continues road, site, pond and hydrology design with storm sewers and ponds.









# 18 Sessions: 2020 Virtual Workshop

## A Virtual Workshop series featuring Carlson Software case studies, expert Q&A and practical training in survey drafting, civil design and 3D modeling

The 2020 Virtual Workshops combine Carlson demonstrations and project case studies with developer and support round tables. Sessions follow survey drafting, annotation, Field-to-Finish, machine-control models, civil and hydrology design, drawing cleanup, CAD standards, point clouds and sanitary and utility networks in Carlson Hydrology. Round tables cover desktop software, Precision 3D, Dynamic CAD and SurvCE and SurvPC field software, while Dwayne Tindall of CAD Masters explains Autodesk licensing changes for Carlson users. Jennifer DiBona hosts with Scott Griffin, Jeremy Taylor, Walt Liles, Mark Long, Bruce Carlson, Doug Aaberg, Steve Cummings, David Kraus and other Carlson staff.

**Key Topics:**

- Carlson Survey project workflows, point management, deed correlation, legal descriptions and GIS imagery
- Carlson Field-to-Finish, automated annotation, lot closure checks, line and curve tables, and LotNet subdivision tools
- Carlson Civil case studies, RoadNet templates,

intersection grading, profiles and earthwork quantities
- Carlson Hydrology and Precision 3D Hydro workflows for watersheds, storm and sanitary sewers, culverts, detention ponds and utility networks
- Carlson drawing cleanup, 3D polylines, surface triangulation and machine control exports
- Carlson Photo Capture, Point Cloud and scanning tools for drone imagery, LiDAR, terrain models and stockpile volumes
- Carlson settings standardization, reusable templates, CADnet image merging and drafting shortcuts
- Carlson desktop and SurvCE/SurvPC roundtables covering troubleshooting, cloud sharing, surface staking and GNSS workflows
- Autodesk licensing changes discussed in 2020 and workstation considerations for Carlson users

**Sessions In This Series:**

- 1-1: Introduction & Welcome, presented by Jennifer DiBona
- 1-2: Overview of Carlson Software, presented by Scott Griffin
- 1-3: Annotation Tips & Tricks, presented by Jeremy Taylor
- 1-4: No Recording
- 1-5: Case Study:Q&A Project Overview of Using Carlson to Create Machine Control Models, presented by Walt Liles
- 1-6: Case Study:Q&A Project Overview of Using Carlson software in civil engineering design projects, presented by Mark Long
- 1-7: Survey Project from Start to Finish with extra Field to Finish and Surface Modeling, presented by Jennifer DiBona
- 2-1: No Recording
- 2-2: Carlson Desktop Software VIP Round Table & Ask the Experts, presented by Dave Carlson, Lon Watson, Leonid Entov and Scott Griffin

- 2-3: No Recording
- 2-4: Carlson P3D & Dynamic CAD VIP Round Table & ASk the Experts, presented by Bruce Carlson, Mark Long and Scott Griffin
- 2-5: Carlson Field Software VIP Round Table & Ask the Experts, presented by Sara Winter, Jon Gerber and Butch Herter
- 2-6: Overview of Carlson's Point Cloud Manipulation Program
- 2-7: Autodesk Licensing Changes: Plan for the future and how this will affect Carlson Software Users, presented by Dwayne Tindall
- 3-1: No Recording
- 3-2: Customizing, Migrating and Sharing Settings in Carlson Software, presented by Doug Aaberg
- 3-3: Drawing Cleanup for Model Building and Construction Staking, presented by Walt Liles
- 3-4: Point Cloud Demonstration "at the Booth", presented by Steve Cummings
- 3-5: Tips & Tricks in CAD & Carlson, presented by Jennifer DiBona
- 3-6: Hot New Features in Carlson 2021, presented by Scott Griffin
- 3-7: Sanitary Sewer Design in Carlson Hydrology, presented by Mark Long
- 3-8: Utility Network Design in Carlson Hydrology, presented by Mark Long

*Descriptions, transcripts and other details of this recording ha ve been AI-generated and may contain errors.*

*These sessions were presented by Jennifer DiBona and Carlson staff*Jennifer DiBona opens the workshop with a welcome,

logistics and an overview of the sessions.Scott Griffin presents an overview of Carlson Software products and how they work together.

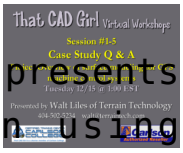






Jeremy Taylor shares annotation tips and tricks for land surveyors in Carlson and CAD.Walt Liles presents a case study on using Carlson to create machine control models.Mark Long presents a case study on using Carlson in civil and hydrology design projects.



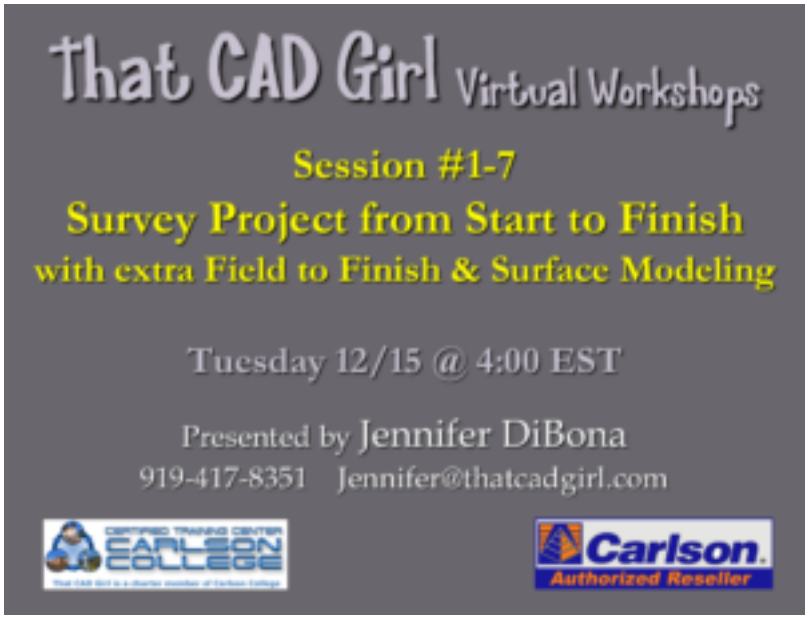







Jennifer DiBona follows a survey project from start to finish

with Field-to-Finish and surfaces.Carlson staff join a desktop software VIP round table to answer user questions.Bruce Carlson leads a Precision 3D Topo, Hydrology and Dynamic CAD VIP round table.







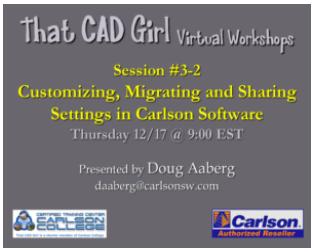


Carlson field software staff answer SurvCE and SurvPC questions in a VIP round table.An overview of Carlson Photo Capture, Precision 3D and Point Cloud tools for drone and s data.Dwayne Tindall of CAD Masters explains Autodesk licensing changes and options for






Carlson users.Doug Aaberg shows how to customize, migrate and share settings in Carlson Software.




Walt Liles covers drawing cleanup for model building and construction staking.Steve Cummings and David Kraus demonstrate Carlson Point Cloud in a virtual booth session.




Jennifer DiBona shares tips and tricks in CAD






and Carlson Software.Scott Griffin highlights the hot new features in Carlson 2021.Mark Long demonstrates sanitary sewer design workflows in Carlson Hydrology.Mark Long covers utility network design workflows in Carlson Hydrology.




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# 17 Sessions: 2021 Virtual Workshop

## A Virtual Workshop series featuring Carlson Software training in CAD standards, survey drafting, surface modeling, grading and survey adjustments.

The 2021 Virtual Workshops combine CAD fundamentals with practical Carlson workflows for surveying, civil design and construction modeling. Jennifer DiBona leads an overview of

Carlson, a basic CAD class, a start-to-finish survey project, Field-to-Finish, surface modeling, site grading and making models from messy drawings. Travis Maxwell covers tips for standardizing Carlson with IntelliCAD, Mark Long shares Civil and Hydrology tips and Doug Aaberg presents Survey tips, advanced Field-to-Finish and traverse adjustment with Carlson GNSS RTK and SurvNet.

**Key Topics:**

- Carlson CAD fundamentals, configuration, project folders, templates and settings management
- Carlson CAD standards for fonts, blocks, tool palettes, linetypes, plot styles and dimensions
- Carlson Survey workflows for point management, deed entry, boundary correlation and final annotations
- Carlson Field-to-Finish code tables, special codes, automated legends, tree features and pipe networks
- Carlson surface modeling and grading with breaklines, 3D polylines, building pads and daylight slopes
- Carlson drawing cleanup, Civil 3D and LandXML imports, SiteNet takeoff, topsoil quantities and cut/fill analysis
- Carlson Civil and Hydrology tools for RoadNet, storm and sanitary systems, utility crossings and structure libraries
- Carlson Survey traverse and least squares adjustments, GNSS integration, checkpoints and report interpretation

**Sessions In This Series:**

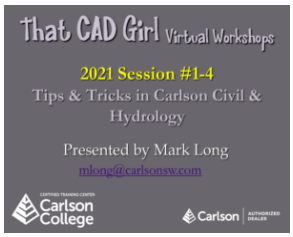
- 1-1: Introduction & Welcome, Overview of Carlson Software, Presented by Jennifer DiBona
- 1-2: Tips & Tricks for Standardizing Carlson Software with IntelliCAD, presented by Travis Maxwell
- 1-3: No Recording
- 1-4: Tips & Tricks in Carlson Civil & Hydrology, presented

by Mark Long

- 1-5: Tips & Tricks in Carlson Survey, presented by Doug Aaberg
- 1-6: Tips & Tricks in Carlson Software and Wrap Up, presented by Jennifer DiBona
- 2-1: Very Basic Introduction to CAD for Carlson Users, presented by Jennifer DiBona
- 2-2: Introduction to Carlson Software, presented by Jennifer DiBona
- 2-3: Survey Project From Start to Finish, presented by Jennifer DiBona
- 2-4: Basic Introduction to Carlson Field to Finish, presented by Jennifer DiBona
- 3-1: Basics of Surface Modeling in Carlson Software, presented by Jennifer DiBona
- 3-2: Site Grading Project from Start to Finish, presented by Jennifer DiBona
- 3-3: Making Models From A Mess, presented by Jennifer DiBona
- 3-4: Tips & Tricks for Site Grading, presented by Jennifer DiBona
- 4-1: Advanced Field to Finish in Carlson Survey, presented by Doug Aaberg
- 4-2: Advanced Field to Finish in Carlson Survey (continued), presented by Dough Aaberg
- 4-3: No Recording
- 4-4: Traverse Adjustment & Best Practices for Network Solutions with Carlson’s GNSS RTK systems, presented by Doug Aaberg
- 4-5: Traverse Adjustment & Best Practices for Network Solutions with Carlson’s GNSS RTK systems (continued), presented by Doug Aaberg

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*These sessions were presented by Jennifer DiBona and Carlson staff*Jennifer DiBona welcomes attendees and presents an overview of Carlson Software products.Travis Maxwell shares tips for standardizing Carlson Software with IntelliCAD.Mark Long shares tips and tricks in Carlson Civil and Hydrology.

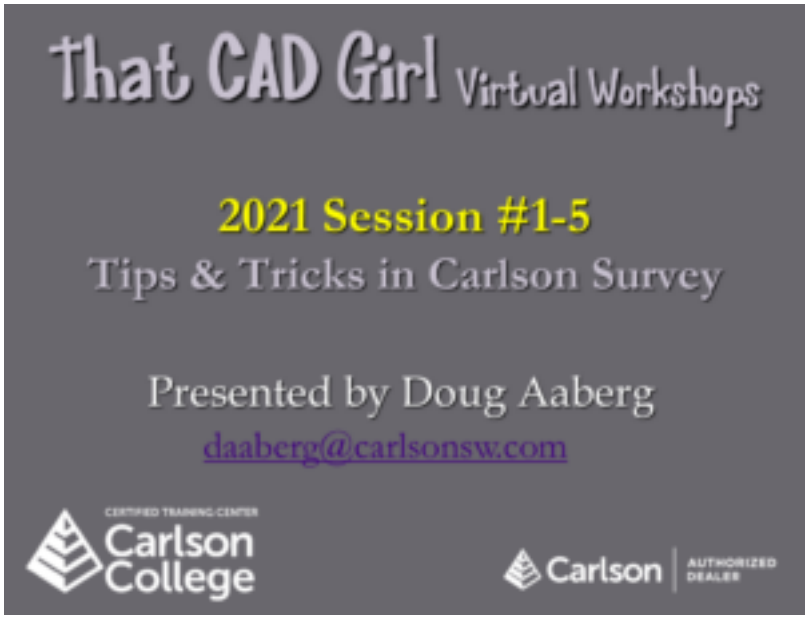






Doug Aaberg shares tips and tricks for users of Carlson Survey.Jennifer DiBona wraps up with more Carlson Software tips and tricks.




Jennifer DiBona gives a very basic introduction to CAD commands for

Carlson users.Jennifer DiBona introduces Carlson Software setup, menus and core workflows.Jennifer DiBona follows a survey project from start to finish in Carlson Survey.Jennifer DiBona introduces basic Field-to-Finish for automated survey linework and symbols.Jennifer DiBona covers the basics of surface modeling in Carlson Software.Jennifer DiBona follows a site grading project from start to finish.

















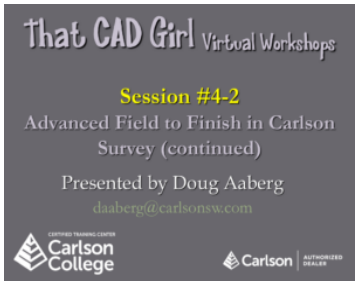


Jennifer DiBona shows how to make machine-control models from

messy CAD drawings.Jennifer DiBona shares tips and tricks for site grading in Carlson.

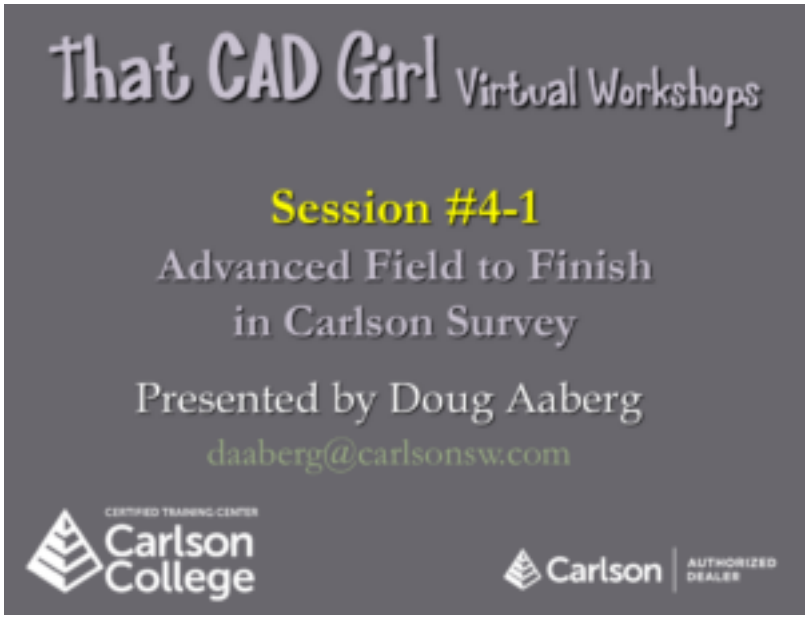



Doug Aaberg begins advanced Field-to-Finish coding techniques in Carlson Survey.Doug Aaberg continues advanced Field-to-Finish coding techniques in Carlson Survey.




Doug Aaberg covers traverse adjustment and



best practices for Carlson GNSS RTK networks. Doug Aaberg continues traverse adjustment and network solution best practices. –




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# 6 Sessions: In Depth Carlson Hydrology

## A Virtual Classroom exploring Carlson Hydrology workflows for rainfall and runoff analysis, storm collection design, detention modeling and utility coordination.

In Depth Carlson Hydrology with Travis Maxwell connects rainfall and runoff methods with practical stormwater design in Carlson software. Day 1 covers rainfall data, Rational and SCS methods, storm sewer settings, inlet capture, gutter spread and pipe

sizing with hydraulic grade lines. Day 2 uses HydroNet for detention and stage-storage, pond grading, outlet structures, underground chamber tables and utility profiles and crossing checks.

**Key Topics:**

- Carlson rainfall data setup, Rational Method and SCS runoff methods and time of concentration
- Carlson GIS and terrain preparation, watershed delineation, flow tracking and StreamStats comparisons
- Carlson watershed layers, soil groups, curve numbers and runoff coefficients
- Carlson storm network settings, inlet libraries, structure placement and surface-based elevations
- Carlson inlet capture, bypass flow, gutter spread and hydraulic grade line evaluation
- Carlson network plan drafting, profile editing, labels and drainage reports
- Carlson HydroNet hydrographs, detention routing and predevelopment and postdevelopment flow comparisons
- Carlson bench pond and bioswale grading, stage-storage data and outlet structure design
- Carlson underground chamber modeling with custom storage tables and external design data
- Carlson utility networks, coordinated plan and profile labels, pipe crossings and collision checks

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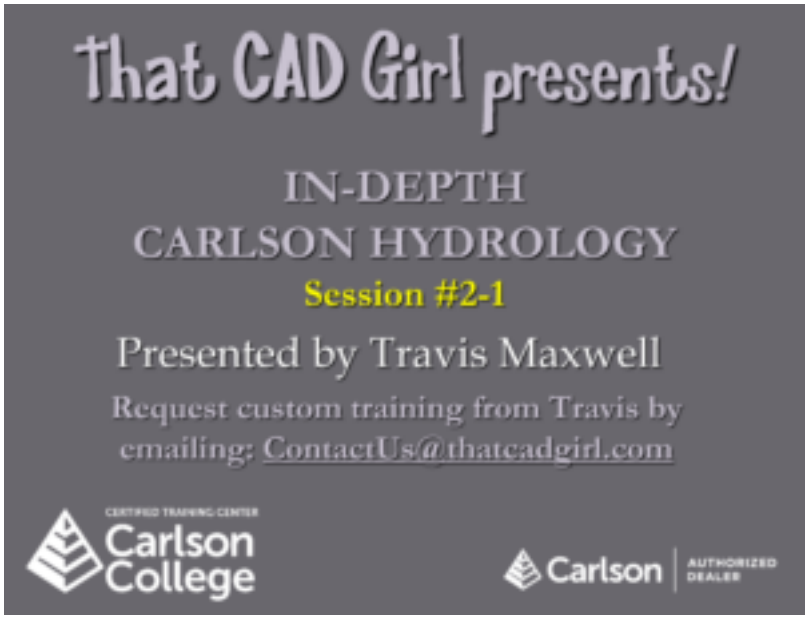
These sessions were presented by Travis Maxwell.Travis Maxwell covers rainfall data, Rational and SCS runoff methods and

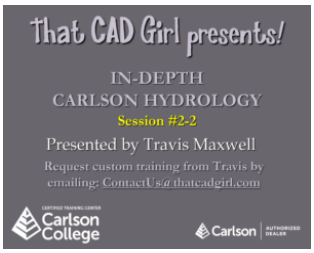
watershed fundamentals.Travis Maxwell sets up storm sewer standards, rainfall IDF data and hydraulic grade checks.Travis Maxwell lays out storm networks, inlet connections and drainage analysis in Carlson Hydrology.Travis Maxwell introduces HydroNet, GIS base maps and detention design preparation.Travis Maxwell builds HydroNet subcatchments, pond grading and outlet controls. Travis Maxwell models underground chambers, refines LiDAR drainage



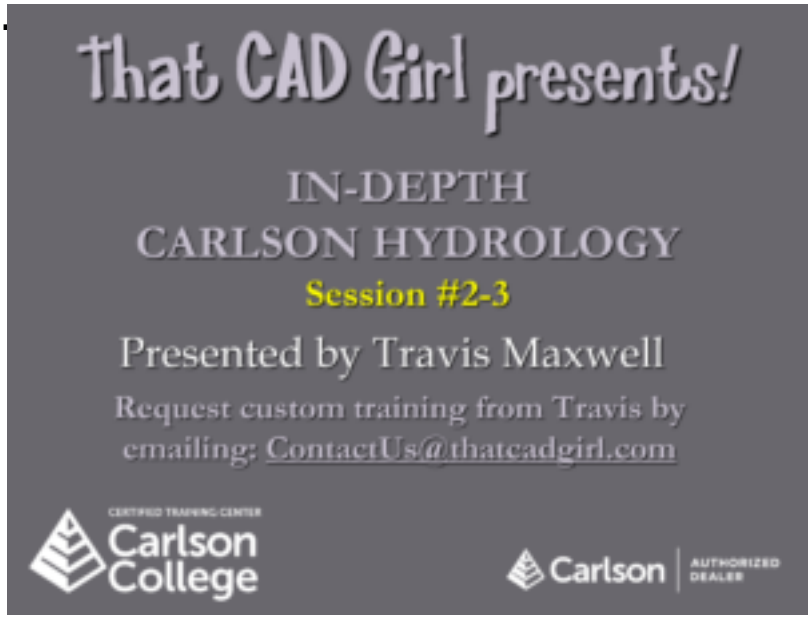




and drafts utility profiles.




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# In Depth Carlson Hydrology Session #2-3

## A Virtual Classroom Using Carlson Hydrology – Learn to detention chambers

This Carlson Software virtual class with Travis Maxwell explores detention chambers, lidar refinement and utility profiles as part of an in-depth hydrology training series. The session demonstrates underground stormwater chamber stage-storage, HydroNet storage-file transfer and routing and LiDAR-to-grid drainage delineation, showing how civil designers can set up, evaluate and troubleshoot drainage models in practical workflows.

**Key Topics:**

- underground stormwater chamber stage-storage
- HydroNet storage-file transfer and routing
- LiDAR-to-grid drainage delineation
- water and utility profile drafting
- pipe crossings and model troubleshooting

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*This session was presented by Travis Maxwell on 03/23/2022.*

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# In Depth Carlson Hydrology Session #2-2

## A Virtual Classroom Using Carlson Hydrology – Learn to hydronet subcatchments

This Carlson Software virtual class with Travis Maxwell explores hydronet subcatchments, pond grading and outlet controls as part of an in-depth hydrology training series. The session demonstrates HydroNet Explorer subcatchment setup, existing and proposed TIN/grid surfaces and detention and water-quality volume estimates, showing how civil designers can set up, evaluate and troubleshoot drainage models in practical workflows.

**Key Topics:**

- HydroNet Explorer subcatchment setup
- existing and proposed TIN/grid surfaces
- detention and water-quality volume estimates
- pitched pond grading and stage-storage
- riser/orifice and spillway routing

*Descriptions, transcripts and other details of this recording ha ve been AI-generated and may contain errors.*

*This session was presented by Travis Maxwell on 03/23/2022.*

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# In Depth Carlson Hydrology Session #2-1

## A Virtual Classroom Using Carlson Hydrology – Learn HydroNet Detention and Stage-Storage Setup

This Carlson Software virtual class with Travis Maxwell explores hydronet, gis base maps and detention design preparation as part of an in-depth hydrology training series. The session demonstrates QGIS base-map and shapefile integration, HydroNet compared with HydroCAD and detention design and stage-storage concepts, showing how civil designers can set up, evaluate and troubleshoot drainage models in practical workflows.

**Key Topics:**

- QGIS base-map and shapefile integration
- HydroNet compared with HydroCAD
- detention design and stage-storage concepts
- storm-network HGL profiles
- soil data and watershed inputs

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*This session was presented by Travis Maxwell on 03/23/2022.*

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# In Depth Carlson Hydrology Session #1-3

## A Virtual Classroom Using Carlson Hydrology – Learn to storm network layout

This Carlson Software virtual class with Travis Maxwell explores storm network layout, inlet connections and drainage analysis as part of an in-depth hydrology training series. The session demonstrates storm drain alignment and inlet orientation, surface and road centerline referencing and network pipe connectivity, showing how civil designers can set up, evaluate and troubleshoot drainage models in practical workflows.

**Key Topics:**

- storm drain alignment and inlet orientation

- surface and road centerline referencing
- network pipe connectivity
- hydraulic grade line troubleshooting
- watershed and soil layer inputs

*Descriptions, transcripts and other details of this recording have been AI-generated and may contain errors.*

*This session was presented by Travis Maxwell on 03/16/2022.*