Explore Project Explorer in Autodesk Civil 3D

Shawn Herring
Consulting & Services Manager / Infrastructure AE
Twitter | @TheShawnHerring
LinkedIn | https://www.linkedin.com/in/theshawnherring/
About the speaker

As an accomplished consultant for over 15+ years, Shawn Herring is a well-known figure in the civil infrastructure design community. Shawn has many titles, Consulting & Services Manager for ProSoft, Owner of Region Engineering & Surveying and Co-Founder of RealityOne which specializes in LiDar and drone reality capture.

Over the past decade Shawn has been involved in hundreds of projects across the country. During his vast career, Shawn has trained thousands of CADD users, helped hundreds of civil infrastructure companies and major Department of Transportations implement new technologies, standardize workflows and enhance productivity. Shawn has been a part of 100’s of Drone and LiDar scanning projects, ranging from simple roadway scans to complex contaminated land restoration projects consisting of 1000’s of acres.

No matter which hat Shawn is wearing, his goal is the same, to empower organizations with the information and skills they need to improve their workflow, differentiate themselves and drive measurable results.

Shawn is a contributor/author for several local, national and international publications. His forward thinking and professional insights have been published in UC&D magazine, Informed Infrastructure and AUGI magazine to name a few. Shawn has traveled the US and Canada as guest presenter/key note speaker for many user groups and industry-specific conferences. He has also been a sought-after presenter at Autodesk University over the past several years.

In addition to being a highly sought-after industry consultant, outside of the office, Shawn enjoys spending his personal time with his family and being in the outdoors. He also believes in giving back to his community. Shawn sits on many local advisory boards and volunteers his time with incredible organizations like the Boys & Girls club of America, Make-A-Wish Foundation, the Boy Scouts of America and the Special Olympics.
Session Info

Session ID: CES468864

Session Title: Explore Project Explorer in Autodesk Civil 3D

Take control of your project like never before! Project Explorer brings a whole new level of design to your projects. This session takes you through a live project and the benefits you'll gain by implementing Project Explorer. Even on the simplest of projects you will see a huge time/cost savings by being able to review and modify your design as well as utilize automated reports that will help you further understand your design at every step of the game. Get ready to start exploring like never before.
Objectives / Agenda

REVIEW / UNDERSTAND PROJECT EXPLORER CAPABILITIES

Here we will review the interface, capabilities and overall overview of Project Explorer.

DESIGN / MODIFY YOUR DESIGN

Here we will look at ways to quickly modify your design and streamline the editing process.

VALIDATE YOUR DESIGN USING PROJECT EXPLORER

Here we will validate your design by doing quick checks and analysis in Project Explorer.

REPORT AND SHARE DATA WITH THE TOUCH OF A BUTTON!

And finally we will look at the reporting and table options available when using Project Explorer.
Review / Understand Project
Explorer Capabilities
What is Project Explorer?

Project Explorer provides users with an easy-to-use Civil 3D design model review tool and user-configurable report generator. Civil 3D users now have a more efficient way to access, interact, and share the staggering array of design information that is in a Civil 3D model.

Project Explorer:

- Simplifies project data navigation, review, and model editing.
- Makes it easier to discover and evaluate design criteria warnings to help meet design standards
- Facilitates more efficient generation of custom reports and tables that help meet delivery requirements.

With Project Explorer, project teams can reduce overall design times, better manage project complexity, and leverage project resources more effectively.
How is it used?

Typically, to manage project and drawing objects, users would use the Toolspace Prospector tab in Civil 3D.

Now, you can view and edit Civil 3D designs in a tabbed series of object lists, profile and section views, parameter lists, and many other design review tools.

Now, you can validate your design using an extensive range of dynamic tooltips.

And now, you can automate the production of user configurable reports, spreadsheets, dynamic tables, and AutoCAD drawings.
User Interface Layout

The layout of content is handled from the Layout Options window, which can be accessed from the Layout... button in the bottom left of the main Project Explorer window. You can use this window to edit the layout, visibility, and name of all data columns. Layout Options can be saved to Layout Styles which can also be used to control the layout of reports and tables.

User Interface Preferences

The remaining options in the Project Explorer window such as fonts, colors, the layout, and visibility of Object Category tabs, and profile view colors and scales, are controlled from the Project Explorer Preferences window.
Project Explorer
– Design / Modify your design
Working in Project Explorer

All information displayed in the Project Explorer window is live geometric project data from the Civil 3D model. Therefore, if something is modified or added to the Civil 3D model, the content in Project Explorer will update automatically.

If you use dual monitors, consider keeping Project Explorer open on your second monitor while you work in Civil 3D.
Alignments, Profiles & Sections

Being able to see all alignments, profiles and sections in one area, and to be able to switch between features is key to streamlining workflows. Here, we will start with viewing and editing alignments, profiles and sections within project explorer.

Assemblies & Corridors

A massive amount of data exists within your assemblies and even more so within your corridor model. Project Explorer streamlines the viewing and editing of these models and provides insight into the data behind the scenes like never before.
Pipe Networks

The options within Project Explorer for pipe networks are never ending! You can easily switch between pipe runs, edit multiple lines, SWAP MULTIPLE parts and make global changes that you’ve always wanted to make, but never had the option to.

Point Groups, Surfaces & Parcels

The are many other objects in Project Explorer you can view, edit, analyze and report on. Here we will quickly explore a few additional tools.
Validate your design using Project Explorer
Validate Your Design

<table>
<thead>
<tr>
<th>Pipe Name</th>
<th>Description</th>
<th>Pipe Style</th>
<th>Start Invert</th>
<th>End Invert</th>
<th>Slope</th>
<th>Sta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe - (1)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4634.890</td>
<td>4637.100</td>
<td>1.34%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (2)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4627.300</td>
<td>4633.780</td>
<td>4.83%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (3)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4633.960</td>
<td>4651.250</td>
<td>4.32%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (4)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
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<td>4695.250</td>
<td>2.63%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (5)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4655.350</td>
<td>4657.350</td>
<td>5.76%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (6)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4657.550</td>
<td>4673.100</td>
<td>5.96%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (7)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4673.300</td>
<td>4684.650</td>
<td>4.00%</td>
<td>SS</td>
</tr>
<tr>
<td>Pipe - (8)</td>
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<td>SC - Double Line (SS)</td>
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<td>SS</td>
</tr>
<tr>
<td>Pipe - (9)</td>
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<td>SC - Double Line (SS)</td>
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<td>4685.700</td>
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<td>SS</td>
</tr>
<tr>
<td>Pipe - (10)</td>
<td>PVC SS/BBY OTHERS</td>
<td>SC - Double Line (SS)</td>
<td>4685.800</td>
<td>4666.830</td>
<td>0.41%</td>
<td>SS</td>
</tr>
</tbody>
</table>

- Dynamic violation reporting is an important feature within the Project Explorer window. Violation reporting quickly draws your attention to:
  - Areas of your design which may not fully meet your design goals
  - Objects within your civil model which are considered to be in an abnormal state.
- Because Project Explorer always displays live information from the civil model, you can monitor how each violation is impacted by every design decision you make.

- ALIGNMENTS & PROFILES
- PIPE NETWORKS
- ASSEMBLIES
- CORRIDORS
- POINT GROUPS
- SURFACES
- SAMPLE LINE GROUPS
- AUTOCAD BLOCKS
- OBJECT SETS
- REPORT HISTORY WINDOW
Alignments & Profiles

- This alignment contains no entities.
- This profile contains no entities.
- Profile start station (chainage) falls beyond the station range of the associated alignment.
- Profile end station (chainage) falls beyond the station range of the associated alignment.
- Alignment entity is not tangential with an adjacent alignment entity.
- Profile entity is not tangential with an adjacent profile entity.
- Alignment entity does not comply with one or more rules in the assigned Design Check Set.
- Profile entity does not comply with one or more rules in the assigned Design Check Set.

Pipe Networks

- Pipe Networks: This pipe network references a Parts List which is missing or invalid. (v4.0.2.0)
- Pipes: Minimum pipe cover of (x) is violated by (y).
- Pipes: Maximum pipe cover of (x) is violated by (y).
- Pipes: Minimum pipe slope of (x) is violated by (y).
- Pipes: Maximum pipe slope of (x) is violated by (y).
- Pipes: Minimum pipe length of (x) is violated by (y).
- Pipes: Maximum pipe length of (x) is violated by (y).
- Pipes: There is no structure assigned to the start of this pipe.
- Pipes: There is no structure assigned to the end of this pipe.
- Structures: There are no pipes connected to this structure.
- Structures: Maximum diameter or width of (x) for pipe(s) connected to this structure is violated by (y).
- Structures: Maximum pipe drop of (x) across structure is violated by (y).
- Structures: Rim elevation of (x) for this structure does not match the referenced surface elevation of (y).
Report and share data with the touch of a button!
Sharing & Reporting Data

Within your Civil 3D files there is an abundance of information. As you know, within Civil 3D there are many reporting methods for creating tables and exporting reports.

Project Explorer has its own built-in, customizable and exportable reports and tables. These can be built from individual objects as well as a group of “Object Sets”.

Also within Project Explorer are the options to export out to 2D AutoCAD drawings. This export ONLY the Civil 3D Entities, and no other linework.
Object Sets

The Object Sets tab in the main Project Explorer window allows one or more sets of objects to be persistently defined in your AutoCAD drawing. Object Sets are particularly useful for automating the generation of one or more reports from your drawing.

Actions may be associated with each Object Set, and these actions can be triggered with just a single mouse click. For example, a report generating action could be used to create a report file using a pre-configured Layout Style, Report Style, Output File Name, and Path.

Reports

There are two key methods for generating reports and spreadsheets from Project Explorer. The quickest and simplest method is to use the Quick Report to File option. Alternatively, if more control is required over the content or scope of the report, or if it is likely to require updating repeatedly, an Object Set can be used to control the generation of your report.
Generate AutoCAD Drawings

The purpose of the 2D drawing export function in Project Explorer is to allow users to generate DWG files containing simplified 2D versions of their Civil 3D content. Exported geometry should look identical in plan but be built only from 2D entities. Sub-surface geometry and complex relationships that exist in the source Civil 3D drawing should be excluded from the exported drawing.

Generate AutoCAD Tables

There are two key methods for generating AutoCAD Tables from Project Explorer. The quickest and simplest method is to use the Quick Report to AutoCAD table option which supports the creation of static AutoCAD tables only. Alternatively, if more control is required over the content or scope of the table, or if it is likely to require updating repeatedly, an Object Set can be used to control the generation of your table. The Object Sets workflow supports the creation of dynamic AutoCAD tables which are linked back to source object geometry in Civil 3D.
AU 2020 is obviously one of a kind! And this year there are separate sessions for Q&A.

*Q&A Times TBD*

*Check class page for days & times of Q&A Session(s)*

This is a session that could be a 4 hour session and still not have time to go over all aspects of Project Explorer. If you need more information, feel free to reach out to me at anytime.

Thank you,

Shawn Herring
sherring@prosoftnet.com
Key Features

- Project Explorer features a tabbed user interface divided into object categories such as Alignments, Corridors, and Pipe Networks. Each tab features a wide range of information in both tabular and graphical formats. Content can be easily filtered, configured, and reviewed by the user, and many parameters can be edited directly from the Project Explorer window.

- Geometric reports can be exported to a range of popular file formats including Excel spreadsheets and PDF files.

- Object Sets can hold persistent object selections for export to geometric reports, tables or other AutoCAD drawings. Updates can be applied to exported documents when subsequent design changes are applied in Civil 3D.

- Project Explorer is entirely style driven, which ensures that reports, AutoCAD tables, and the Project Explorer user interface itself can be easily configured to the requirements of each user, project, or organization.

- Project Explorer displays a range of warning tooltips for areas of the design which might not meet specified rules or design standards, or objects which may require further scrutiny. For example, pipes might be too long or short, or too deep or shallow; and profiles might have start/end stations which fall slightly beyond the station range of their host alignments. These scenarios, and many others, are far easier to spot in the Project Explorer window.

- Project Explorer features a wide array of tools for reviewing and editing pipe networks such as a multiple part swap tool and pipe run editor.