CES500101

Optimizing Drainage Design Workflows

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Learning Objectives

- Learn how to initiate an export of your Civil 3D ® pipe network data to InfoDrainage
- Learn how to create a pipe network and 3D surfaces from an InfoDrainage model
- Learn how to create smart objects for all the traditional and sustainable drainage elements
- Learn how to adopt drainage design iterations through round-trip exchange of data reducing the risk of errors

Description

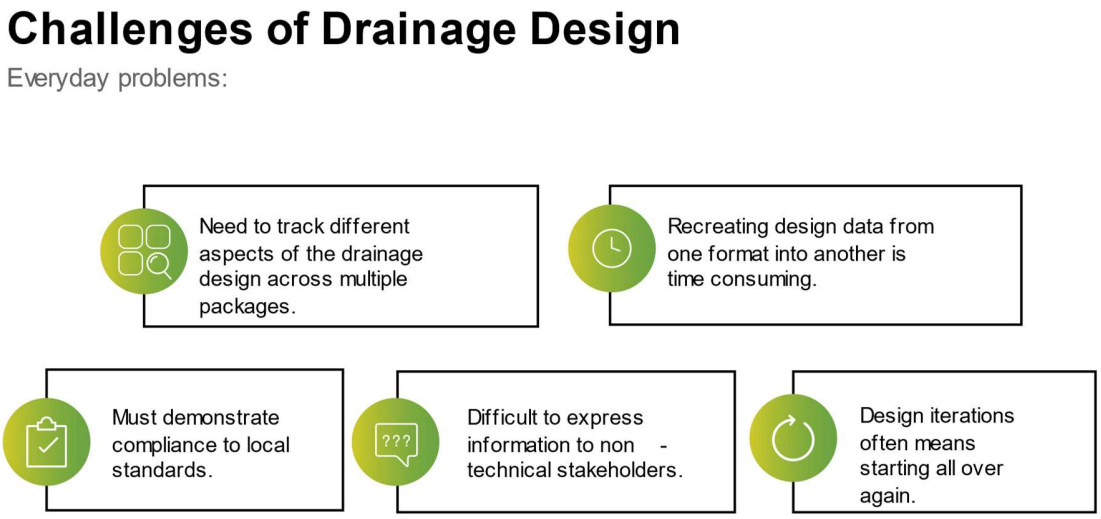
InfoDrainage for Civil 3D® software is a tool designed to support the requirements of delivering BIM (Building Information Modeling) compliance with optimized drainage design workflows. Civil 3D pipe networks and surfaces can be created from InfoDrainage networks or vice-versa and kept up to date via Parts Mapping. With InfoDrainage providing the tools to design, optimize, analyze, and compare drainage designs, gaining approval can be easy. Including traditional drainage and green infrastructure elements as 3D objects, the design remains true to site, helping to better communicate and support sustainable design approaches. Drainage designs involve iterative changes, which can be a painful and time-consuming process. Round-tripping is supported from InfoDrainage to Civil 3D networks, which can help to reduce data errors during required model updates. Using InfoDrainage for Civil 3D, engineers can efficiently represent their designs, giving greater confidence in the validity and accuracy of design information.

Speaker(s)

Jessica Jefferys has 15 years experience and technical expertise in drainage design and product management looking after industry leading Drainage Design products and engaging with the large multi-disciplinary customer base. Jessica is actively involved in several industry bodies and has a keen interest in promoting green infrastructure as part of sustainable surface water management approaches.

Mark has 14 years' experience working across the software industry, with experience spanning, The Cloud, Asset Management and the Water Sector. Mark is a Solutions Engineers and specialises in drainage design solution customer engagement.

Drainage Design Challenges

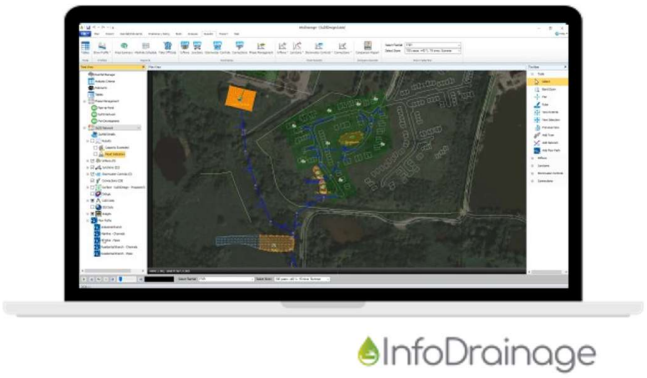


Many of the drainage design challenges we hear are linked to the exchange of data with other packages so with our InfoDrainage product we have build an integration with Civil 3D that installs as a ribbon to allow data to be exchanged via parts mapping.

InfoDrainage

Dedicated graphical drainage design tool

- Streamlined design workflows
- Detailed, accurate representation and analysis of green infrastructure
- Integration with Civil 3D



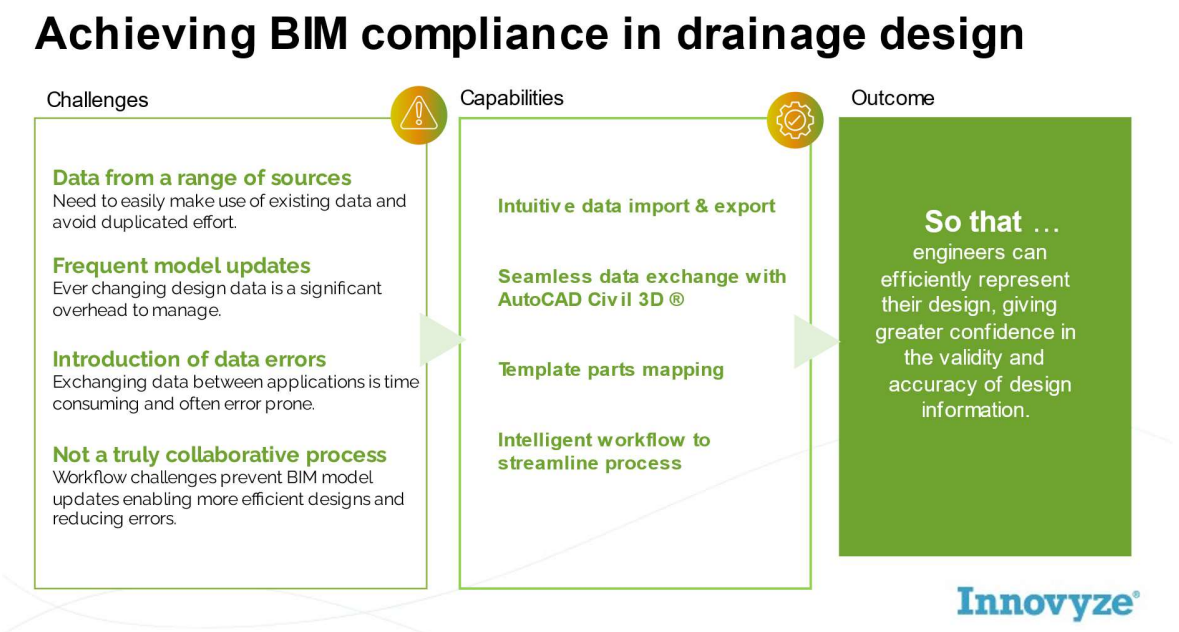
You can find out more information on InfoDrainage by the following links:

InfoDrainage 5 Challenges of Drainage Design Infographic

3min Overview Video

InfoDrainage Website

InfoDrainage Webinar – BMP and Green Infrastructure



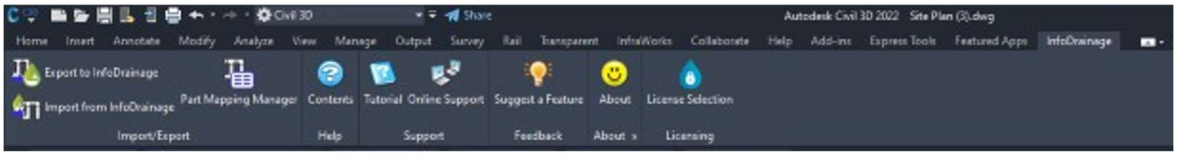
With the seamless data exchange with Civil 3D that includes a representation of all aspects of the drainage design we can optimise the design workflow.

InfoDrainage for Civil 3D®

InfoDrainage for Civil 3D®

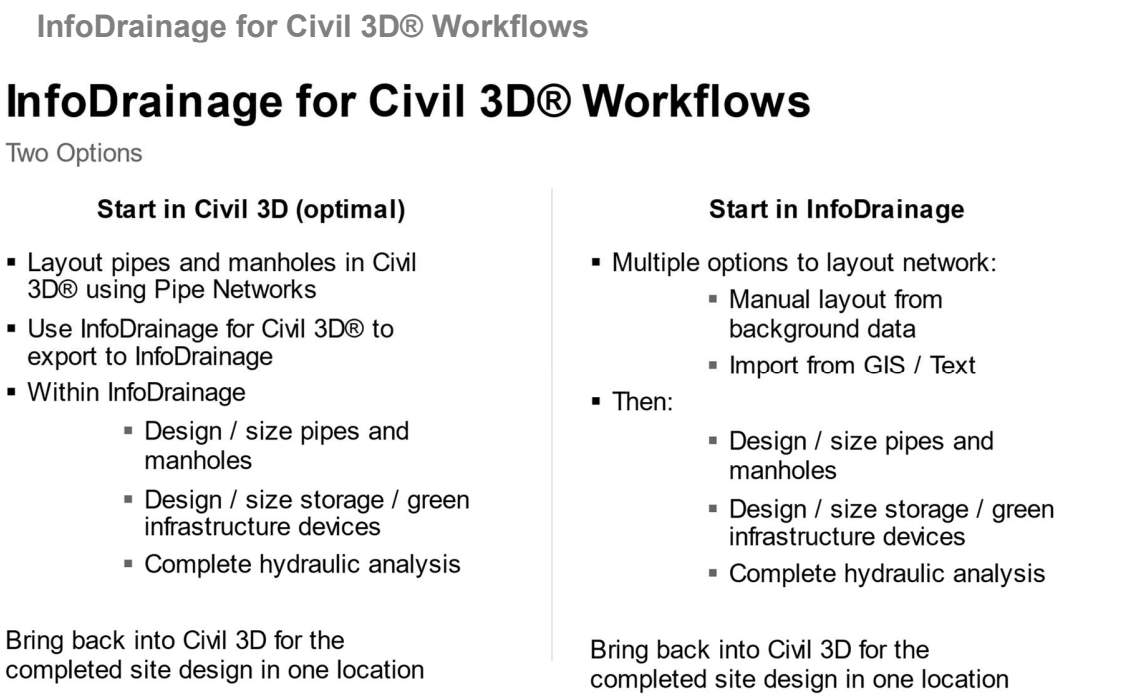
Two Installers:

- InfoDrainage
- InfoDrainage for Civil 3D



InfoDrainage is a standalone drainage design package that can be used without Civil 3D but with InfoDrainage for Civil 3D we can make maximum use of the existing work already done in Civil 3D and ensure our overall site design remains up to date.

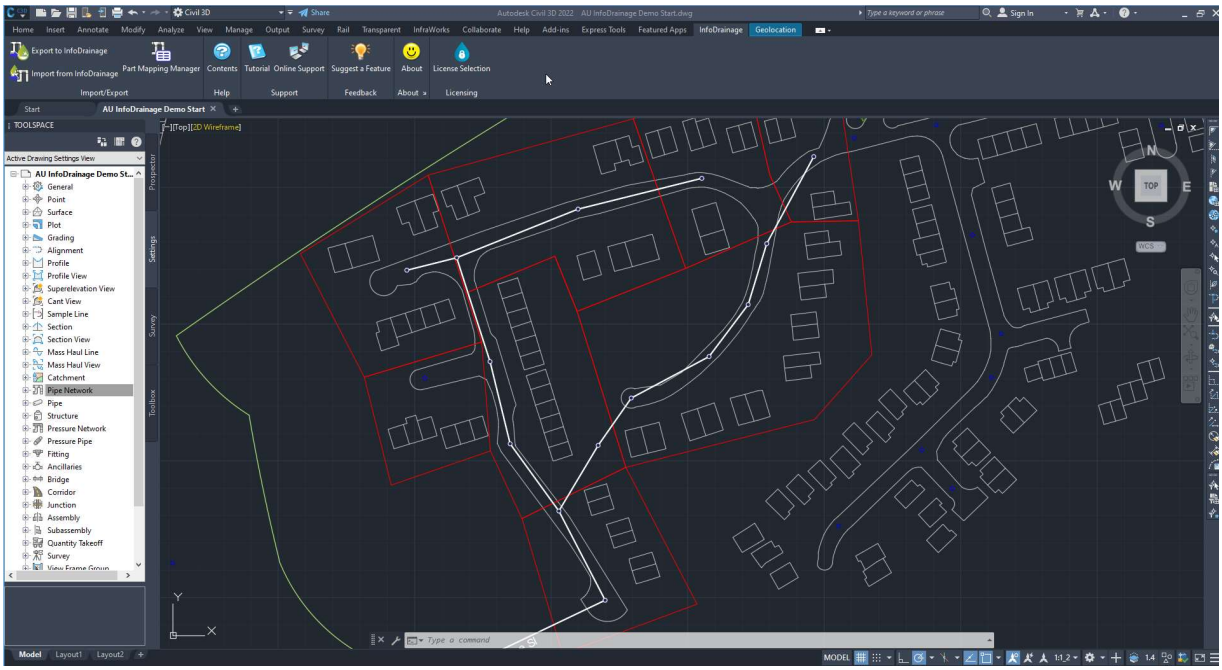
InfoDrainage and InfoDrainage for Civil 3D are separate installers. InfoDrainage for Civil 3D installs as a ribbon within Civil 3D and is designed to allow the exchange of data between Civil 3D and InfoDrainage via a Parts Mapping Manager.



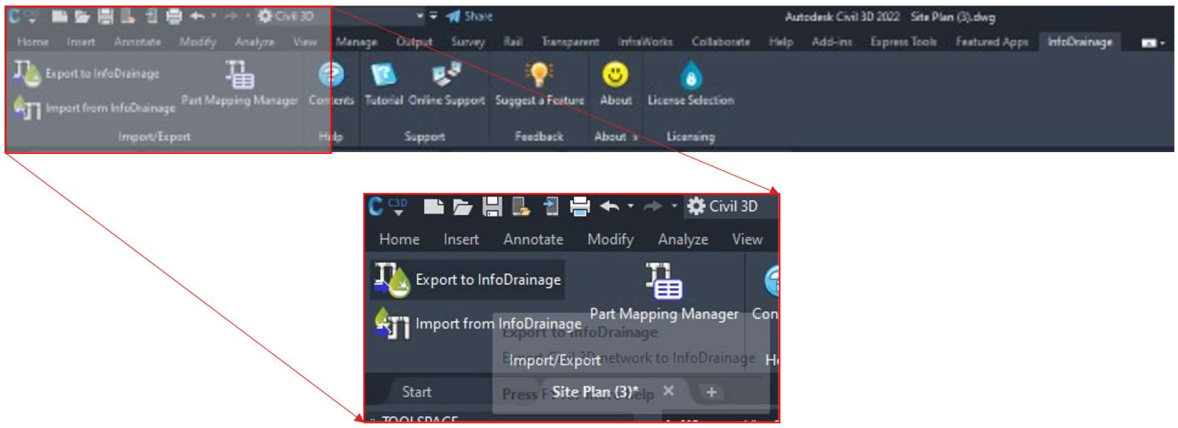
Users can follow two workflows when using InfoDrainage for Civil 3D®, either starting in Civil 3D® or starting in InfoDrainage. Working with customers we find the optimal workflow usually originates, and finishes in Civil 3D® enabling users to use the best of both packages and avoid duplication of effort creating an initial layout.

The central part of the workflow undertaking in InfoDrainage may include comparing different sustainable drainage or green infrastructure options sometimes with traditional storage pipes and tanks. More details on the workflows in InfoDrainage can be found at the links above or by contacting us.

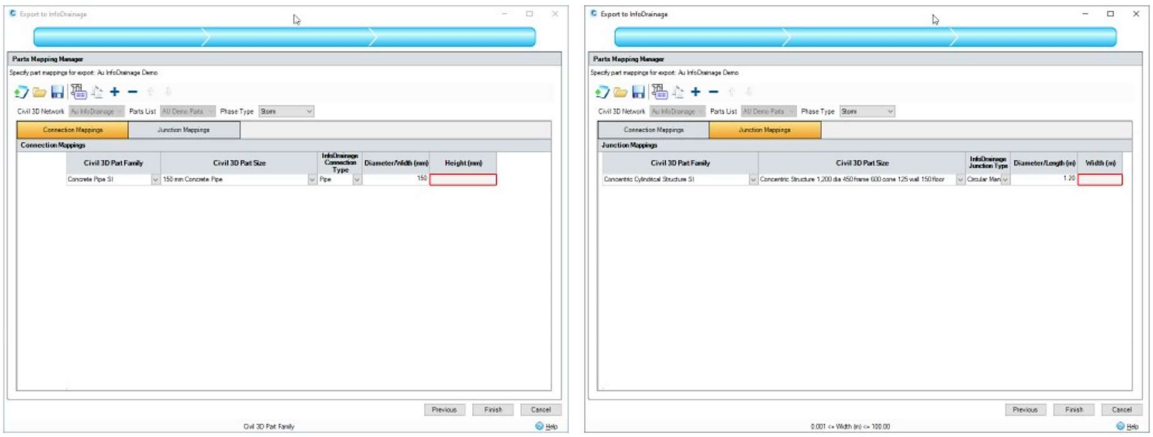
Learn how to initiate an export of your Civil 3D ® pipe network data to InfoDrainage



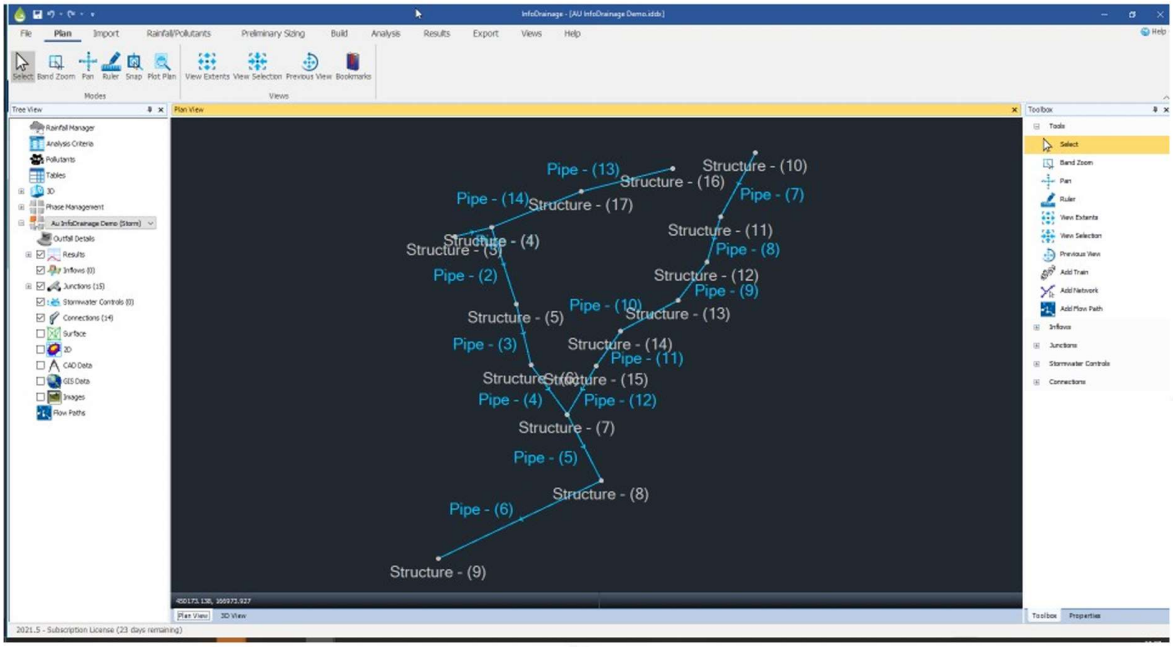
Starting with a Pipe Network in Civil 3D® then use the InfoDrainage Ribbon.



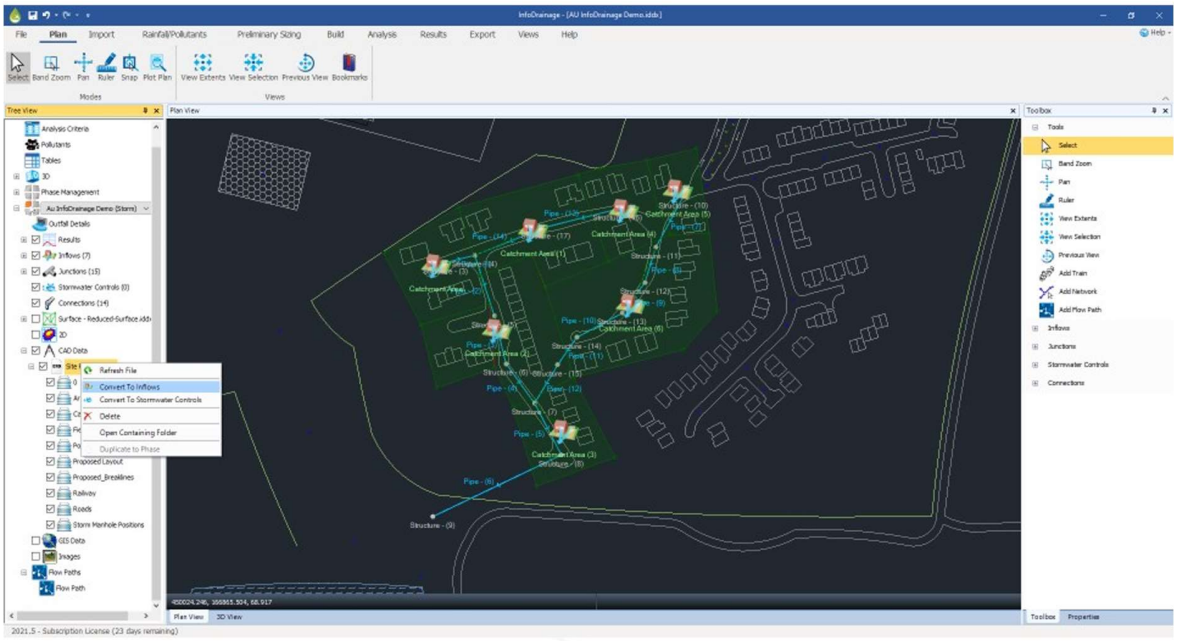
Select the option to Export to InfoDrainage from the ribbon and the Parts Mapping manager will appear.

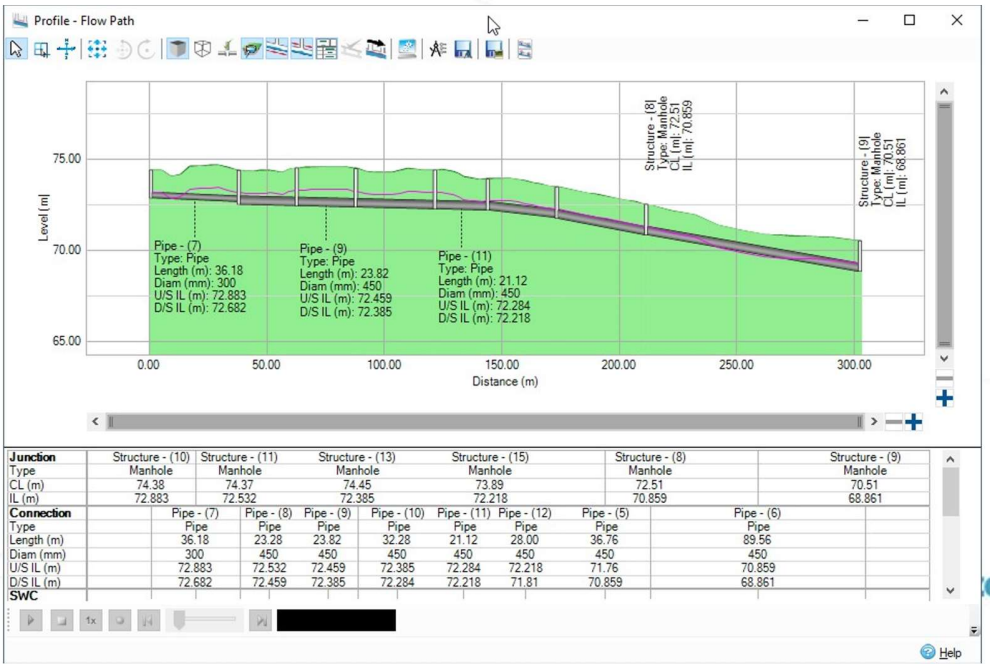


After selecting an InfoDrainage file name to save to, a .iddx file, both pipe (Connection) and manholes (Junction) must be mapped. Each different part used must be mapped but this is remembered once set up and can be saved to a template if the same parts are used on each job.



A file is then saved which can be opened in InfoDrainage with the pipes and manholes all set up ready for sizing, optimizing and storage or green infrastructure added.



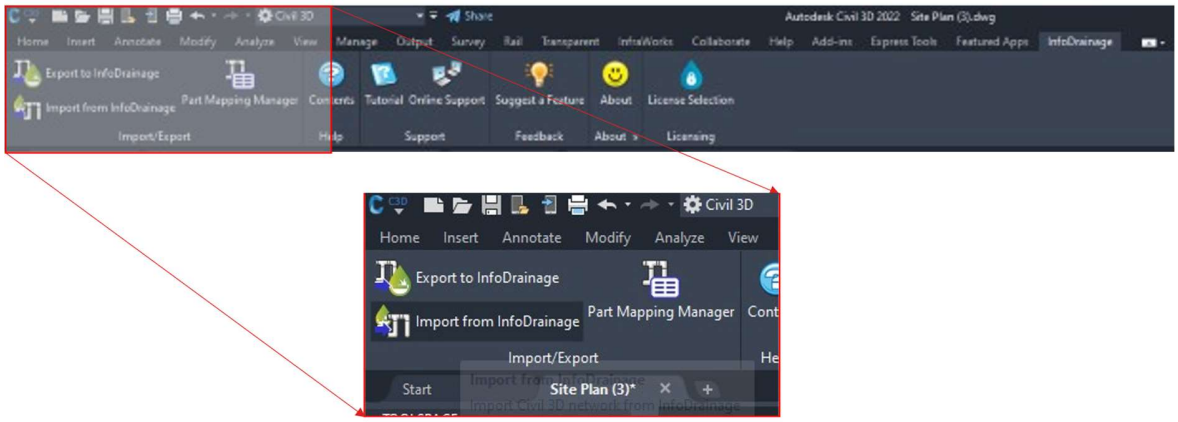


Junction	Structure - (10)	Structure - (11)	Structure - (13)	Structure - (15)	Structure - (8)	Structure - (9)
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole
CL (m)	74.38	74.37	74.45	73.89	72.51	70.51
IL (m)	72.883	72.532	72.385	72.218	70.859	68.861

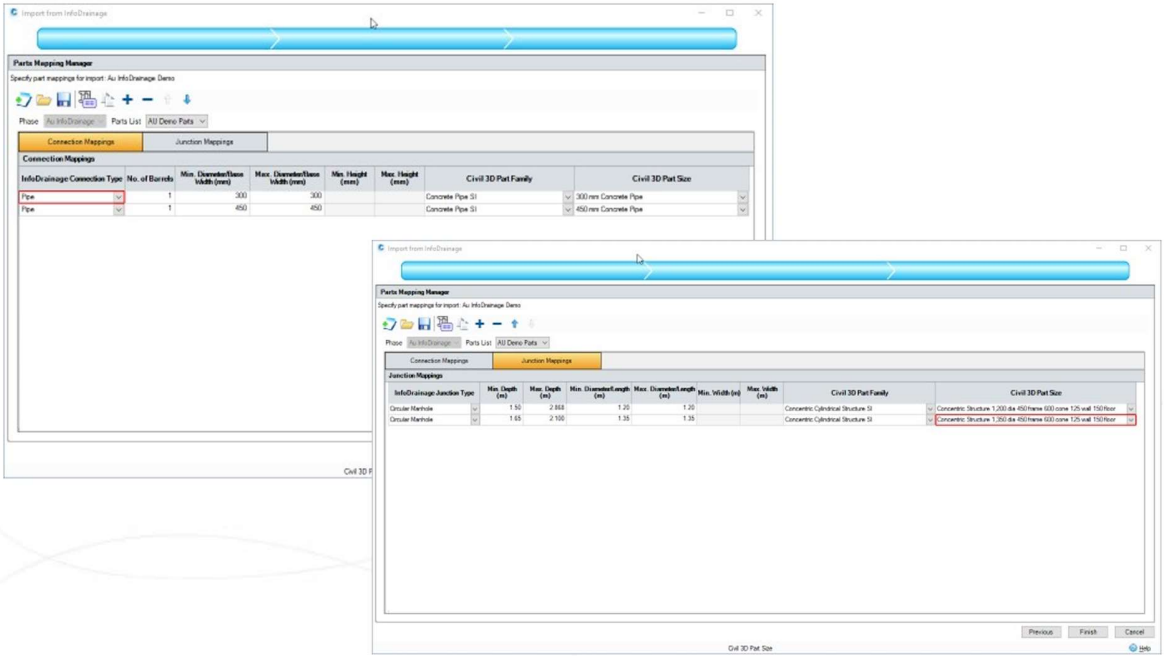
Connection	Pipe - (7)	Pipe - (8)	Pipe - (9)	Pipe - (10)	Pipe - (11)	Pipe - (12)	Pipe - (5)	Pipe - (6)
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Length (m)	36.18	23.28	23.82	32.28	21.12	28.00	36.76	89.56
Diam (mm)	300	450	450	450	450	450	450	450
U/S IL (m)	72.883	72.532	72.459	72.385	72.284	72.218	71.76	70.859
D/S IL (m)	72.682	72.459	72.385	72.284	72.218	71.81	70.859	68.861
SWC								

Note: there is a video shown in the presentation for the Export step.

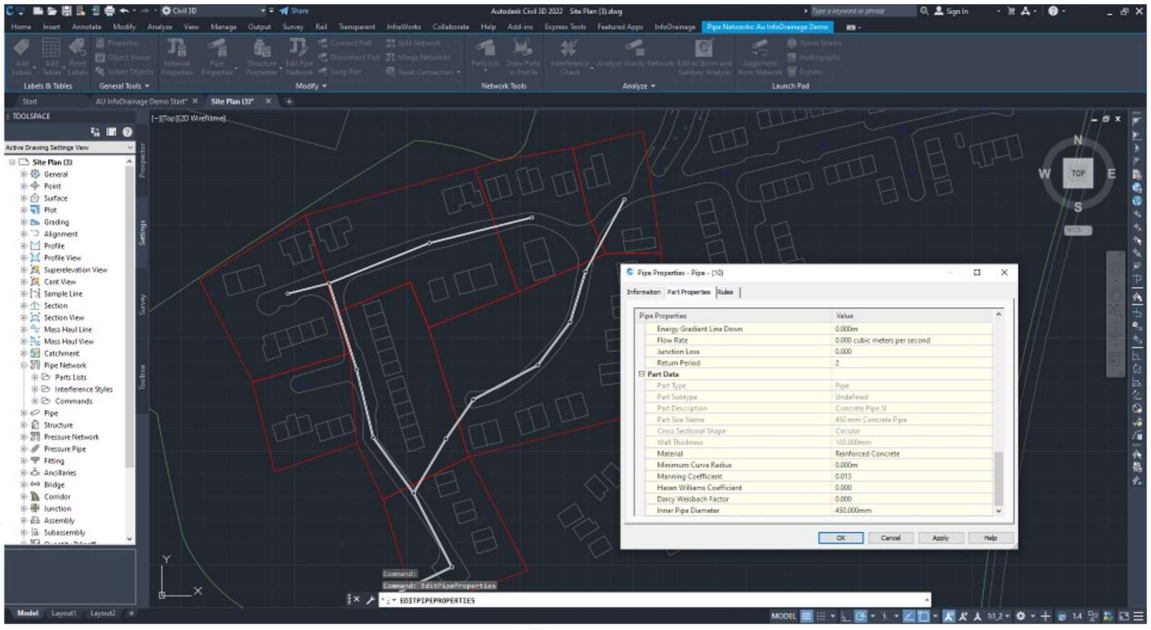
Learn how to create a pipe network and 3D surfaces from an InfoDrainage model



The process is similar in reverse with the Import options selected from the menu to reload the file.



Again, both pipes and manholes must be mapped but will be remembered and can be saved for other jobs.



Existing pipes and manholes are created and new objects added such as storage and green infrastructure structures. These can then continue to be updated with subsequent iterations.

Note: there is a video shown in the presentation for the import step.

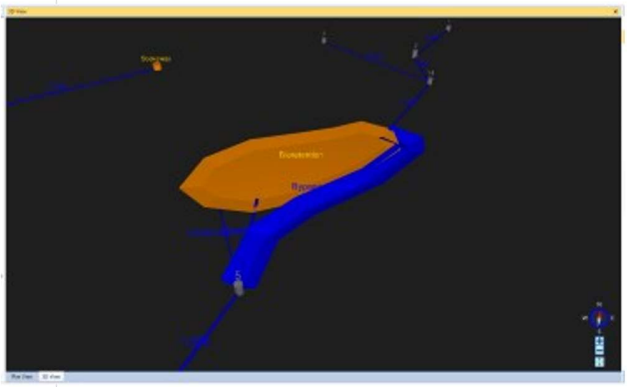
Learn how to create smart objects for all the traditional and sustainable drainage elements

Complex Connection Representation

InfoDrainage connections in Civil 3D® Pipe Networks

Complex Connection types

- Rectangular / Trapezoidal / Triangular Channels – represented as corridors
- Lagged Flow / No Delay – polylines
- Multiple barrels – represented as multiple singular pipes, supported for round tripping
- Intermediate points – represented as short sections with null structures, supported for round tripping



Singular pipes and box culverts and “standard” manholes are supported by the native Pipe Networks in Civil 3D® however additional objects require InfoDrainage to make special cases.

These are covered on this Help page:
https://help.innovyze.com/display/infodrainage/Representation+of+Unsupported+Data

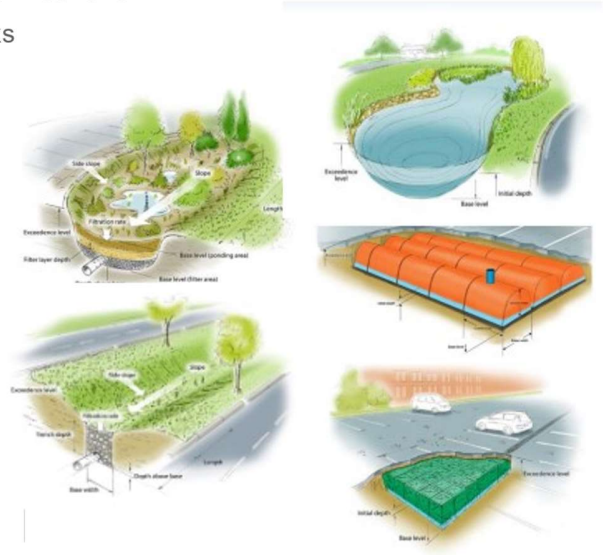
Complex Object Representation

InfoDrainage objects in Civil 3D® Pipe Networks

Stormwater Controls (SuDS/GI)

Feature lines with a mesh surface

- Cellular Storage, Chamber, Infiltration trench, Porous Paving, Soakaways – top and bottom features lines
- Ponds and Tanks – features lines per depth / area/ volume entry
- Bioretentions and Swales – feature lines at top and base of ponding area and base of storage



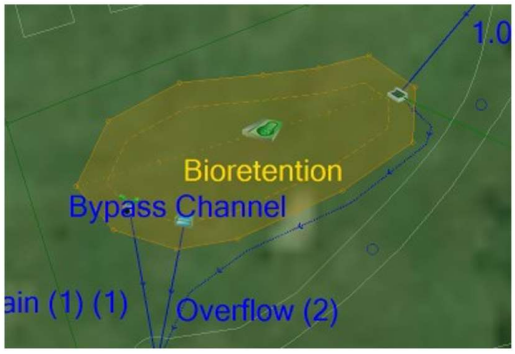
Storage Structures amd Green Infrastructure are represented by feature lines connected by a mesh surface. The feature lines can be edited for round tripping both in terms of changing shape and levels.

Complex Object Representation

InfoDrainage objects

Miscellaneous

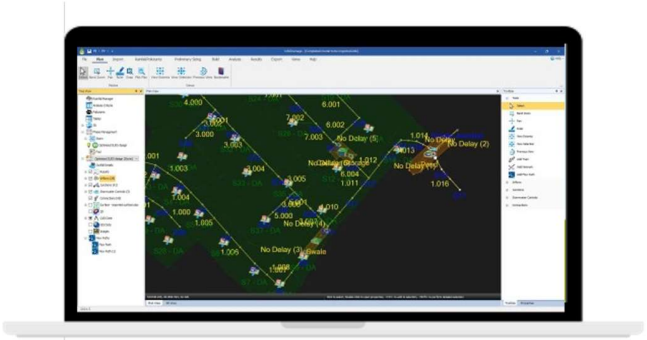
- Simple Junctions – Null Structure
- Inlets – Null Structure
- Outlets (including flow controls) – Null Structure



In some cases, the InfoDrainage model may represent connection points or structures that require a null structure just so that the location and details can be maintained for round tripping.

Importing Complex Structures

- Accurate connections to Green Infrastructure
- Improved 3D object representation
- All drainage design represented



Note: This is shown via video in the presentation.

Learn how to adopt drainage design iterations through round-trip exchange of data reducing the risk of errors

Round tripping tips

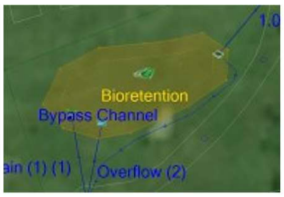
Save InfoDrainage file with the same name – allows the objects to be recognized on the round trip.

If the following objects are moved or deleted in Civil 3D® they will lose their mapping:

- Multiple barrels
- Intermediate points on connections

If the following Null Structure objects are moved outside the outline of a stormwater control, or deleted, InfoDrainage will create a new object on export:

- Inlets
- Outlets



It's important when roundtripping to use the same file name and be aware of moving items that are required to connect the network. This is covered in more detail by the same Help Page mentioned above.
https://help.innovyze.com/display/infodrainage/Representation+of+Unsupported+Data

Review Learning Objectives

1. Learn how to initiate an export of your Civil 3D ® pipe network data to lnfoDrainage
2. Learn how to create a pipe network and 3D surfaces from an lnfoDrainage model
3. Learn how to create smart objects for all the traditional and sustainable drainage elements
4. Learn how to adopt drainage design iterations through round -trip exchange of data reducing the risk of errors

Coming back to our initial learning objects I hope you can now use InfoDrainage to Civil 3D to import and export data for all aspects of the drainage design. Having also reviewed some of the more complex objects and round tripping tips you will be able to adopt design iterations easily. If we can optimize drainage design workflows by using InfoDrainage for Civil 3d, engineers can efficiently represent their design, reduce data errors and data loss and more efficiently complete their drainage design, giving greater confidence in the validity and accuracy of design information.