



Top 5 drainage design challenges and how to solve them

Turn drainage design problems into smarter solutions with InfoDrainage





Introduction

Drainage design can be complex and inefficient—often requiring multiple iterations across different programs just to complete a single analysis. This process can consume significant time and budget during critical phases of a project. In this ebook, we explore **five common obstacles in drainage design** and share practical solutions for overcoming them using the advanced capabilities of InfoDrainage.

Top 5 challenges

- 01** You have to do a lot of manual design work
- 02** The iterative design process is hard to track
- 03** Green infrastructure design is complex
- 04** It's difficult to get buy-in from non-technical stakeholders
- 05** Regulatory compliance and reporting are time consuming

CHALLENGE 1

Your drainage designs require a lot of manual work

When drainage designs are performed using individual spreadsheets, disparate hydraulic calculators, or other non-visual tools—you have to face the rework that comes with manually converting designs to a BIM format. This is time consuming and opens your design up to errors.

MANUAL WORKFLOWS

PRESSURES

RECREATING WORK IS INEFFICIENT

Drainage design teams are subject to design changes and evolving requirements from the client and other project stakeholders. These changes cause rework that is time consuming when using manual tool sets.

MANUAL INPUT IS ERROR PRONE

Transcribing data from one program to the other for analysis opens the design up for errors—and puts your firm at risk for negative cost implications and reputational damages. Using multiple programs for your drainage designs puts you at risk each time you open the program to manually transcribe data.

YOUR TEAM IS USING TOO MANY TOOLS

Having to switch between multiple tools for different aspects of the drainage design process is manual and inefficient.

SOLUTIONS

ROUNDRIP WORKFLOWS WITH CIVIL 3D

Integrated data exchange with round-tripping support in Civil 3D to update pipe networks and maintain pipe network references (e.g. surfaces, annotations, alignments, etc.) to maintain 3D models for BIM compliance. This roundtrip workflow minimizes model setup time and ensures design changes are always reflected in your drainage model.

DESIGN DATA TIED TO PIPES AND STRUCTURES

Design data from Civil 3D (slopes, sizes, etc.) follows pipes and structures directly into InfoDrainage. This means you don't have to manually transcribe the specifications in your drainage model, reducing risk of human error.

SINGLE PLATFORM FOR YOUR DRAINAGE DESIGN & ANALYSIS

Use a single, automated platform for any project, with intuitive controls and clear visualization. Instead of using separate tools for pipe sizing, pond sizing, and running drainage related reports, InfoDrainage can streamline the process in a single, comprehensive solution.

OUTCOMES

REDUCE ERRORS AND REWORK

Drainage designs are completed in a BIM compliant tool where outputs can easily be consumed by other BIM compliant software, eliminating error-prone rework and manual entry.

IMPROVE COLLABORATION

Drainage designs are conducted concurrently with other design disciplines, eliminating bottlenecks and allowing projects to finish on time and on budget.

IMPROVE OVERALL DESIGN QUALITY

Using a design tool that consumes data from designers of diverse disciplines ensures drainage structures fit within the allocated space on site, avoiding construction errors and clashes. Drainage designers are able to deliver construction-ready outputs.

INCREASE WORKLOAD CAPACITY

By automating time consuming and mundane drainage design tasks, your firm can positively influence workforce capacity and utilization. Use your skilled resources more efficiently to increase time spent on high-value work.

CHALLENGE 2

The iterative design process is hard to track

A good drainage design will go through an optioneering exercise with multiple iterations to exhaust all opportunities and identify the optimum location, volume, and type of storage structures that achieve the best results for the lowest cost possible. However, this iterative process can be hard to track if you don't have the right tools to properly manage your data.

DESIGN ITERATION



PRESSURES

FILE TRACKING IS DIFFICULT WITH MULTIPLE VERSIONS
As changes are made to a digital design file, designers often need to save their work as a new file so they don't override previous versions. This makes it difficult to track who worked on what and which designs are the latest.

PHASE MANAGEMENT CREATES FILE COMPLEXITY
A design will normally pass through different stages, or phases, from initial pre-development calculations through to the final design. Equally, a number of different scenarios may be considered during the design process as there can be multiple solutions to the same problem.

DESIGN OUTPUTS ARE DIFFICULT TO COMPARE
When collaborating on a design that involves multiple disciplines, there will be changes coming from different sources. Without proper tools, comparing these different designs to determine the best one can be time consuming.

SOLUTIONS

SAVE MULTIPLE DESIGN ITERATIONS IN ONE FILE
Multiple design iterations can be saved in the same InfoDrainage file making it easy to keep track of your data.

SIMULATE MULTIPLE PHASES IN A SINGLE FILE
With the ability to save multiple phases in the same InfoDrainage file, you can run new scenarios and easily analyze multiple phases in one pass.

COMPARE DESIGNS IN A COMPREHENSIVE REPORT
Comparing the results between multiple scenarios helps to streamline the design process as it is possible to make a quick informed decision.

OUTCOMES

REDUCE DESIGN COMPLEXITY
Manage drainage design complexity in the most efficient way with better file management, comprehensive simulation capabilities, and streamlined reporting.

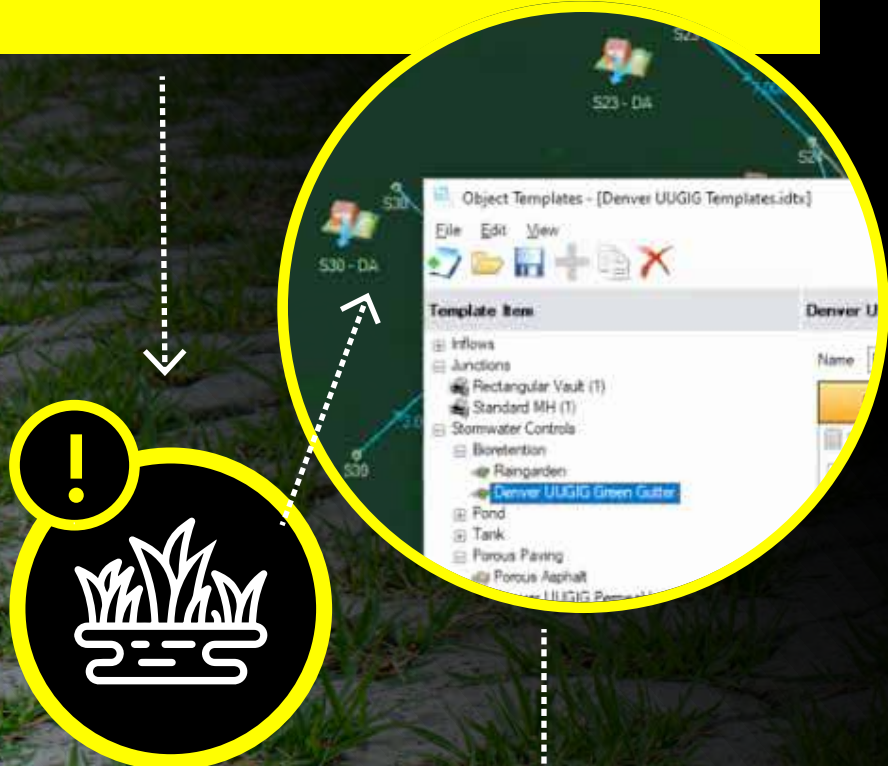
REDUCE ERRORS AND REWORK
As design changes and multiple phases are able to be easily tracked within InfoDrainage, designers can be confident they are working on the latest files. This reduces design errors and laborious rework due to iterative processes.

CHALLENGE 3

Green infrastructure design is complex

Sustainable or green drainage design is more complex than the traditional design approach because it requires multiple green infrastructure elements connected in a series to achieve the same storage requirements as a traditional site design. With this approach, we not only need to solve for water quantity, but also water quality, amenity and biodiversity. This is a complex design challenge that requires specialized software to address.

GREEN INFRASTRUCTURE



PRESSURES



DEMAND FOR GREEN INFRASTRUCTURE IS INCREASING

Globally, there is an increased demand for the incorporation of green drainage structures due to the environmental benefits. Designers are pressured to deliver even though there is a lack of information in the industry on how to incorporate complex green infrastructure in the design process.

SOFTWARE DOESN'T SUPPORT GREEN DRAINAGE DESIGN

Green drainage elements are often oversimplified in the design process because standard analysis software and hydraulic calculators either do not support these structures, or make overconservative assumptions rather than taking a physics based approach for accurate hydraulic analysis.

GREEN INFRASTRUCTURE DESIGN IS COMPLEX

The process of designing a chain of green structures is far more complicated than sizing a drainage pipe because the structures have many more components. Without the right tools, this process can be manual and time consuming.

SOLUTIONS



EASY DRAG-AND-DROP GREEN INFRASTRUCTURE DESIGN

InfoDrainage includes built-in green stormwater controls that can be dragged and dropped right into your design, replacing traditional drainage structures.

CUSTOM TEMPLATES FOR GREEN INFRASTRUCTURE

Create custom templates for various types of stormwater controls—like bioretention, swales, and porous pavement—directly in InfoDrainage to make green infrastructure easy to incorporate into your designs. Use these templates across multiple projects for greater efficiency and compliance.

TOOLS TO AUTOMATICALLY SIZE PIPES

By using the Network Design Wizard option in InfoDrainage, you can automatically size a network of pipes and/or channels to ensure they meet sustainability requirements.

OUTCOMES



BUSINESS GROWTH

Increase recognition as an industry leader in sustainable, green infrastructure design. Improve client satisfaction and grow your business.

ACHIEVE HEALTH & SUSTAINABILITY GOALS

Exceed sustainability performance requirements on a project and reduce environmental impact of your designs.

MEET REGULATORY REQUIREMENTS

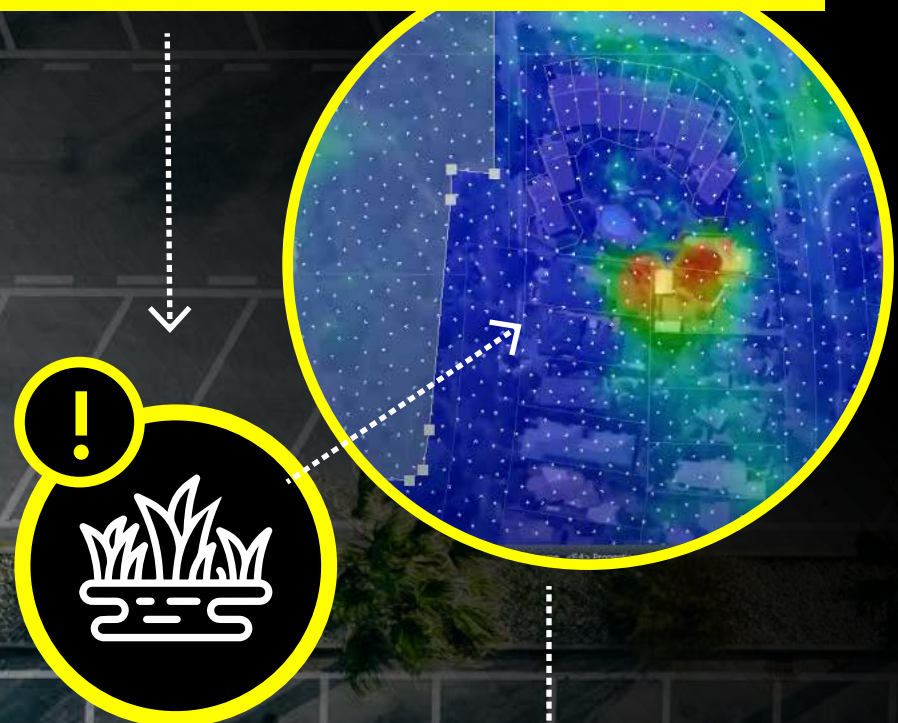
Meet regulatory and compliance requirements with ease. Experience quick approvals that won't slow down your project timeline.

CHALLENGE 4

It's difficult to get buy-in from non-technical stakeholders

Drainage designs can be complex and involve intricate details. Communicating these concepts visually and effectively to non-technical stakeholders can be challenging. Civil engineers are tasked with simplifying complex ideas and creating visual aids separate from their design to help stakeholders grasp the design intent.

NON-TECHNICAL STAKEHOLDERS



PRESSURES



PROJECTS ARE GETTING LARGER AND MORE COMPLEX

Engineering software is hard to understand, especially when you use non-visual tools like spreadsheets or standard hydraulic applications. As projects grow in complexity, so do designs, and designers are tasked with helping non-technical stakeholders make informed decisions.

COMPLIANCE AND REGULATORY APPROVALS ARE CUMBERSOME

Decision makers and other non-technical stakeholders don't always have the information they need to assess whether a design meets regulatory, sustainability, or other compliance requirements. This causes mistakes and rework late in the process.

QUALITY CONTROL OF DESIGNS CAN BE DIFFICULT

Without the right tools to detect QA/QC issues, mistakes often go unnoticed in the design stage. These flaws are especially difficult to catch for a non-technical reviewer.

SOLUTIONS



INTUITIVE USER INTERFACE AND VISUAL RIBBONS

The ribbon tabs across the top of the screen in InfoDrainage give a simple, ordered approach to the typical workflow of managing site data and building a drainage scheme. The ribbon tabs are a good way for non-technical stakeholders to contextualize the design scope.

DELUGE TOOL TO VIEW SURFACE LEVELS

Deluge allows the site to be assessed by applying an amount of rainfall to the surface to establish likely channeling and ponding. This will provide a visual indication of where the best locations for Stormwater Controls may be for easy decision making.

PLAN VIEW WITH VISUAL NOTIFICATIONS

The Plan view is the main design surface in InfoDrainage that shows the graphical layout of the site. Flood risk indicators make it easy to see where water levels are reaching flood levels.

OUTCOMES



INCREASE STAKEHOLDER BUY-IN

Manage stakeholder expectations, achieve faster approvals, and keep your designs moving by easily communicating technical concepts in a visual and intuitive format.

IMPROVE CLIENT SATISFACTION

Make sure your client team is informed every step of the way with the necessary project updates presented with a clear, visual interface.

MEET OR EXCEED DESIGN REQUIREMENTS

Even the most non-technical designers can achieve high quality designs that exceed project requirements using simple software controls and visual indications to check design quality as you go.

CHALLENGE 5

Navigating local regulatory compliance & reporting

Local regulatory standards can be complex and constantly evolving, requiring engineers to track codes, regulations, and ordinances across multiple projects. Ensuring your designs meet these standards without slowing down your workflow is a common and time-consuming challenge.

COMPLIANCE & REPORTING

PRESSURES

REGULATORY COMPLIANCE IS A MANUAL PROCESS

Without the right tools, you must manually verify that your designs meet every local requirement at each step, creating delays and increasing the risk of errors.

GENERATING REPORTS IS TIME CONSUMING

Pulling information from multiple sources to create regulatory reports is labor-intensive and prone to oversight.

REQUIREMENTS VARY ACROSS PROJECTS

Different locations have different standards, making it difficult to maintain accuracy and consistency across multiple designs.

SOLUTIONS

DESIGN WIZARD IS BASED ON LOCAL STANDARDS

Size pipes, channels, and manholes according to local standards from the start, ensuring your designs comply with slope and size requirements during initial phases.

ENGINEERING AUDIT TOOL AND HGL PROFILES

Evaluate key design parameters and set thresholds for maximum, minimum, or acceptable ranges. Export HGL profiles as images, PDFs, or CAD files for easy inclusion in reports.

EASY, FLEXIBLE REPORT GENERATION

Generate fully customizable reports and graphs in just a few clicks. Display design compliance with local standards, highlight deviations or areas that need adjustment, and export outputs as PDFs, CAD files, or images—making regulatory approvals faster and more straightforward.

OUTCOMES

MEET OR EXCEED DESIGN REQUIREMENTS

Automated compliance checks and customizable reports help ensure designs satisfy municipal standards, enabling faster approvals.

REDUCE OVERALL DESIGN TIME

Save hours on reporting and compliance verification, freeing your team to focus on design innovation and project delivery.

REDUCE ENVIRONMENTAL IMPACT

Design traditional and green infrastructure that meets environmental standards without adding complexity to your workflow.



Start solving your toughest design challenges today

InfoDrainage simplifies drainage design by helping you manage multiple design iterations, reduce manual workflows, and speed up reporting. Integrations with Civil 3D and other CAD/GIS platforms improve team efficiency, while built-in capabilities support both traditional and sustainable design approaches—helping you turn common design challenges into actionable solutions.

Reduce complexity, save time, and improve coordination across your projects. **Learn more and start your free 30-day trial today.**

[Learn more](#)

