AUTODESK.

Nine questions to ask your current civil design software provider.

This whitepaper presents the top questions Bentley civil design software customers should ask when assessing options in the face of change.

QUESTION ONE

A recent announcement from Bentley suggests they have released technology that advances what's possible in road design, construction, and operations through the use of industry-leading innovations. What is the current state of infrastructure engineering technology?

Dynamic 3D modeling and design was introduced a decade ago to civil engineering professionals with the release of Autodesk® AutoCAD® Civil 3D®. At the time, it was an industry leading innovation. Since then, advancements in technology have opened doors to new ways to perform civil design that goes well beyond the CAD-based, 3D modeling and design features and functionality that your software provider may claim are innovations that 'advances what's truly possible in Civil Design'.

QUESTION TWO

Bentley states OpenRoads contains industry leading innovations, including the ability to build 3D models from the start of the project, the ability to quickly import, view and manipulate large amounts of data, and the ability to work with any data available for your preliminary design projects including GIS and topological data. Does other civil design software have this same functionality?

The features mentioned are not unique to the OpenRoads platform. The ability to build 3D models from the start of the project, the ability to quickly import, view and manipulate large amounts of data, and the ability to work with existing data sources on preliminary designs including GIS and topological data are all functionality Autodesk has offered for years with software offered as part of the Autodesk® Infrastructure Design Suite Premium and Ultimate editions.

Consider Gremmer & Associates, a Wisconsin-based transportation engineering consultant who delivered a bid package in January 2009 by using Civil 3D to achieve their goal of creating a high-quality, more accurate design that required fewer requests for information than are typical. They found benefits in the software's ability to more accurately visualize the impact of on-the-fly design changes. More recently, Cole Engineering used Autodesk® InfraWorks™ software to consolidate different data files (such as 2D CAD, GIS, raster, and 3D models) to create an existing conditions model. The team then developed its pre-engineering design with Civil 3D software and imported that design into InfraWorks to create data-rich project visualizations and simulations in the context of the surrounding neighborhoods. This not only helped them accelerate design processes, it helped the firm distinguish its proposal from its competitors' and secure the detailed design contract.

QUESTION THREE

Will I need to migrate to template and corridor modeling if I choose to implement my current Bentley civil design software on the OpenRoads platform?

Yes. While template and corridor modeling technology may have been available to you for the past couple releases, if you are one of the many users who have not adopted this design methodology, you will be impacted.

If your legacy workflows are based on cross sections and applying criteria files to CAD graphics to create design surfaces, moving to templates and corridor modeling will not only require training on new processes, it will also require the development of the components and templates that replicate existing criteria files. This development effort could require a significant number of man hours as no translator currently exists to convert criteria files to components and templates. Considering the disruption to current work practices and the need to retrain staff, now is a good time to consider moving to Autodesk solutions. Autodesk offers a more comprehensive solution with the Autodesk Infrastructure Design Suite Premium or Ultimate edition, both which contain Autodesk AutoCAD Civil 3D and Autodesk InfraWorks, the latter which offers breakthrough 3D data modeling, design and visualization technology. In addition, consider that more graduating students entering the job market have been trained on Autodesk technology, better positioning your company for the future.

QUESTION FOUR

For years I have been using Bentley InRoads® software, so I am already familiar with using templates to perform corridor modeling. Will any extra work be required for me to migrate to the OpenRoads platform?

Developing roadway definitions may be a familiar part of your current workflows, however for existing projects with corridor definitions already defined and stored in external files, it is our understanding that these definitions will have to be redefined. If the current format your civil design software uses contains the definition of the parts that are used to create the corridor model such as specific horizontal and vertical alignments and the template(s) to apply, along with all special controls such as point controls, secondary alignments, parametric constrains, and target aliasing, these will have to be recreated.

QUESTION FIVE

I am proficient at the special site modeling tools my Bentley civil design software has offered in past releases. Can I continue to use these site modeling tools?

You will likely find that your special site modeling tools have been replaced by other functionality. This being the case, new workflows must be created to replicate past processes.

QUESTION SIX

I am accustomed to having design data stored in external data files. Will design data continue to be stored in external data files?

No, with the OpenRoads platform, the drawing file becomes the repository for engineering information. This means that a more in depth understanding of your drafting platform may be required since standard drafting tools will be utilized to store, edit, and access engineering information with the new technology. For example, surfaces are stored in the drawing as a terrain element and the display properties of a terrain element are controlled by user-defined element templates and accessed through the use of custom settings libraries. Since advanced features of your drafting package, such as element templates, models, references, project explorer, element information, 3D modeling, design libraries, and geographic coordinate systems are being utilized to a greater extent, the need for additional training may be required.

QUESTION SEVEN

Will the storage of engineering data in the drawing file further require me to change existing data management practices and workflows.

Most likely. With the introduction of new drawing based terrain elements (surfaces) and civil geometry (horizontal & vertical) a new level of complexity is introduced for current users that may require a change in data management practices and workflows.

QUESTION EIGHT

Are there other data management issues I need to be aware of?

Since not all existing workflows for plan generation processes take advantage of the new platform, plan production workflows are dependent on the file formats of earlier versions for geometry and surfaces and therefore either data synchronization or data exporting is required to create plan documents. The result is the need to establish new data management standards and additional training for users who need to understand how the data is being managed.

QUESTION NINE

I've been using the same Bentley civil design software for many years. Why should I be cautious about implementing a new release?

Consider that you will be faced with an initial release of a platform, unproven by time and application. Autodesk has a well-established solution whose demonstrated success is supported by a decade of customer use.

Consider the alternative. Consider Autodesk.

Since the introduction of 3D model-based design ten years ago, Autodesk has continued to help civil engineering professionals improve their workflows with solutions that take advantage of state-of-the-art technologies to help solve today's industry challenges. Advancing beyond

the limits imposed by drafting platforms, Autodesk also provides a visually compelling, data-rich immersive model first environment with Autodesk® InfraWorks 360™ Pro software. With the ability to aggregate big data to tackle even the biggest projects, Autodesk InfraWorks 360 Pro provides 3D infrastructure engineering in context which complement existing Civil 3D workflows. You can do X, Y, Z. Collaboration via the cloud makes project data more accessible to a wider audience. The unique data ability to author and edit engineering data of virtually any type makes it a solution that enables workflows across the lifecycle, from planning to management of infrastructure assets.

Autodesk offers a comprehensive civil engineering software solution that combines intelligent, model-based tools to help you throughout the project execution and lifecycle of transportation, land, and water projects. With broad access to the Autodesk portfolio—both on the desktop and in the cloud—our customers can benefit from integrated workflows, an expanded toolset, industry-specific suites workflows, and a more consistent user experience and more economical and convenient access.

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