

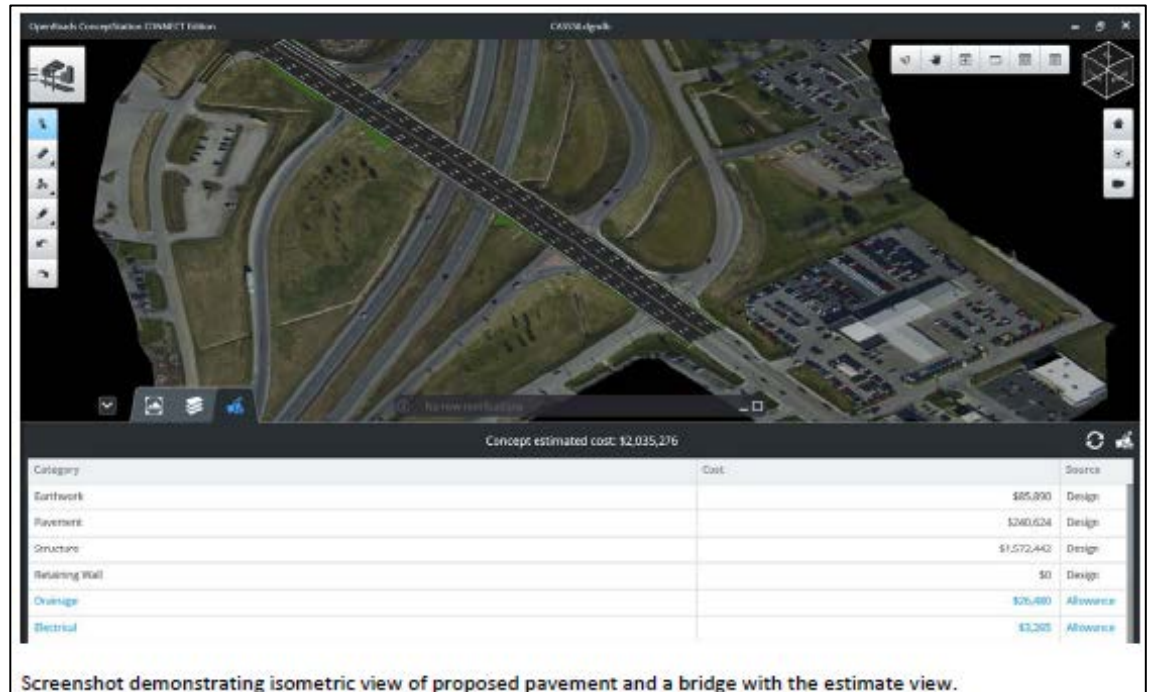


**Projects First-Round Winner**  
Innovations Challenge

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Prepared by Transportation Planning  
Missouri Department of Transportation

## Design Alternative Software



### Description

A new Design Alternative Software solution has been implemented by MoDOT's CADD Services section that enables users to evaluate design alternatives quicker and easier than has been possible. The software is Open Roads ConceptStation by Bentley Systems, Inc. ConceptStation is an innovative, new application to enable rapid and iterative conceptual design. After successful application of ConceptStation to I-70 corridor project, the project served as a pilot project for the ConceptStation implementation. Training material was developed and one user from each district and the bridge division were trained. The premise of ConceptStation is that MoDOT staff can produce quick, easy and accurate conceptual design alternatives. It enables users to assemble data rapidly from a variety of sources to produce 3D conceptual designs, produce cost estimates and greatly decrease the time it takes to produce a design concept. The data sources that are primarily used are terrain data, aerial images and geospatial information. Basic terrain and aerial imagery are available for download in the software so a concept can be started in just a few minutes. ConceptStation works in a 3D environment and the user can use sketching capabilities to quickly place road and bridge infrastructure that match the departments design standards. Users can rapidly generate 3D layouts with associated project costs that can be shared with project teams and stakeholders so they can choose the best option. One of the more valuable features is the ability produce realistic visualizations for the public and stakeholders to help gather feedback and speed project approvals. ConceptStation also can help assess the impacts of work zones by using visualization of traffic control devices, traffic markings and traffic flow in the context of the project location. Traffic models can be imported from Vissim or realistic traffic patterns can be created in the software. ConceptStation is a Bentley Systems, Inc. product and after a model is complete it can be moved, while maintaining the geometric integrity, to MoDOT's roadway design software, Bentley Power GEOPAK, for project design.

## **Benefit**

The efficiencies that the software brings to the process of developing conceptual designs will produce time savings. There is a cost savings because of the ability to evaluate design options and costs earlier and more thoroughly than ever before. This easy-to-use software simplifies work since it replaces the tedious and technical process of acquiring and accumulating project data. It also streamlines the process for performing rough design layouts and computations compared to the department's more advanced final design software. The ability to quickly evaluate multiple design scenarios and traffic control plans enables the designer to provide safer projects. Vissim traffic models can be utilized in ConceptStation.

## **Materials and Labor**

The software cost was \$12,510 for pooled licenses. The yearly software maintenance cost is \$2,682. The class development and training was completed by CADD Services staff.

## **For More Information Contact:**

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Additional photos or videos can be seen by accessing the Innovations Challenge SharePoint page at: <http://sharepoint/systemdelivery/TP/Documents/InnovationsChallenge.aspx>.