Visualization Products

3D Models and Renderings

Depending on the need, 3D models and renderings can vary widely in scope and complexity. These products can range from simple objects to be included in illustrations to a complete and accurate model of a highway project. These models are built with specialized tools within a CADD package like Bentley ORD and with specialized modeling software such as 3D Studio Max. If the product is a highway project, the actual CADD design files and coordinate geometry will be used to create the model. These models can be used to take measurements to investigate design and construction issues. Renderings can be created from any angle to be used as illustrations for training manuals, workshops, design, construction, and public involvement.
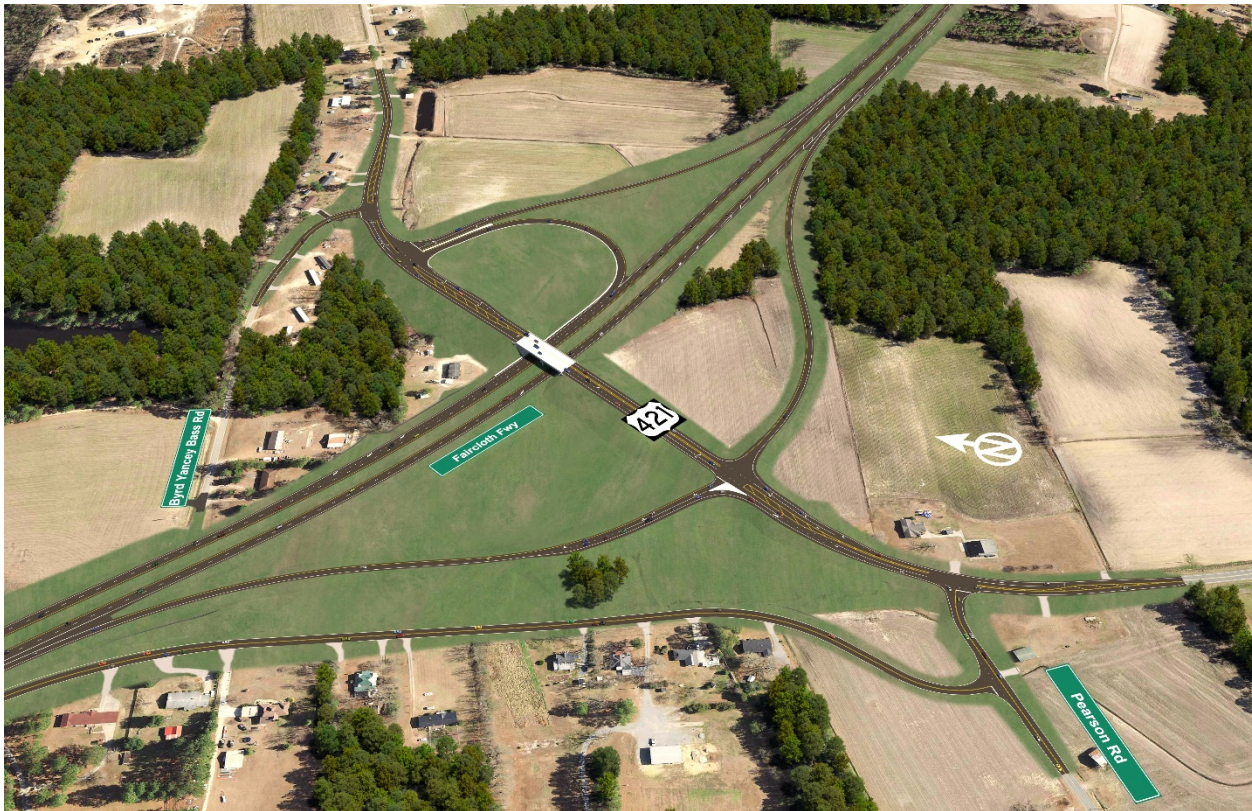

Figure 1 High Level interchange rendering.

Photosimulations

Photosimulations are the combination of proposed design elements with actual photographs from the site. This can sometimes be accomplished by simply painting the proposed elements over the photograph with an image editing program such as Adobe Photoshop. Usually however, these projects involve building a 3D model from design information and creating a rendering of only new elements. This rendering is then composited or layered with the existing site photograph in the image editing software. This process involves a trip to the project site to take the photograph possibly with the use of a bucket truck for an elevated perspective. The camera placement has to then be replicated in the modeling software and matched to the site photo. This process can be complicated by the presence of trees and buildings that will be removed exposing elements not present in the existing photograph. After compositing, painting is done to blend the new elements with the existing.

Figure 2 Bridge Photosimulation

Animations

With a complete 3D model and virtual camera(s), multiple frames can be rendered and compiled to create a video animation. The standard frame rate for film is 24 frames per second. This means in order to create 1 minute of film, 1440 frames would have to be rendered. These frames are compiled in video editing software such as Adobe Premiere. Animations are typically the most costly product in terms of time and resources. The exception is when many photosimulations would be required to meet the goals of the project. If a complete model is required anyway, it is more efficient to render an animation than to create photosimulations from multiple locations. The drawback is that the animation will not be as photo-realistic since it is entirely computer generated. It is possible to composite animations with existing video at much greater expense.

Figure 3 Animation playlist at NCDOT.gov