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# When Being Ahead of The Curve Is A Matter of Life and Death

## Helping Engineers Design Safer Roads, Save Millions, and Save Lives

RDVSYSTEMS

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## Introduction

Texas DOT, which prides itself on being at the leading-edge of interchange design, had contracted with Poznecki-Camarillo Inc. (PCI) to design a new turbine interchange along a busy highway corridor.  A goal on the $70 million interchange was to maintain specific minimum design speeds on all connections, and from the start the DOT was concerned about meeting road safety standards.

And for good reason - every year in the United States, roadway crashes claim the lives of more than 38,000 people and cause serious injury to over 4 million more. Many of these crashes can be attributed to roadways that DO NOT conform with safety design requirements set by the American Association of State Highway and Transportation Officials (AASHTO).

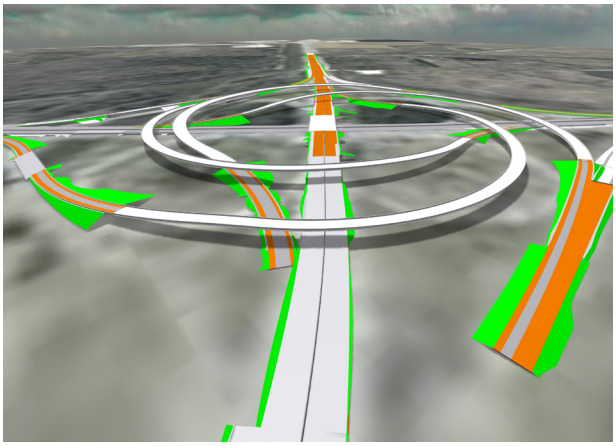
## Built-in Roadway Risk

While the non-compliance of some of these hazardous highways may find their origins in design, construction, and/or maintenance negligence, there is a much deeper, more troubling issue at hand. AASHTO's "Policy on Geometric Design of Highways and Streets", a.k.a. the Green Book, provides two-dimensional schematic road safety methodologies that have not changed in over 70 years, despite the fact that 3D roadway modeling is now commonplace. The Green Book's guidelines are fundamental to roadway engineering. However, from a sight distance perspective, they focus only on vertical and horizontal curve values, ignoring many of the environmental and man-made hazards that impact driver safety. It is out of this fundamental and dangerous gap that RDV's Road Safety Audit 3D was born.

## Instead of Going Back to The Drawing Board, Road Safety Audit 3D Reinvents It

Back to our story. The design of the interchange was well on its way and as work progressed, revealing the true, complex nature of the ambitious design, the DOT's concerns grew. Deciding to take action, Texas DOT approached RDV, asking that they deploy Road Safety Audit 3D to assist the PCI team in assessing the interchange design's sight distance and ensuring that it met AASHTO requirements.

PCI provided the 3D design to RDV in Bentley's OpenRoads format. Additional visualization characteristics were refined to reflect all of the environmental variables and RDV used the RSA 3D software to conduct comprehensive sight distance simulations of the interchange's design. It turned out that the DOT's instincts were spot-on and its fears were corroborated - the design was deficient from a stopping sight distance perspective.

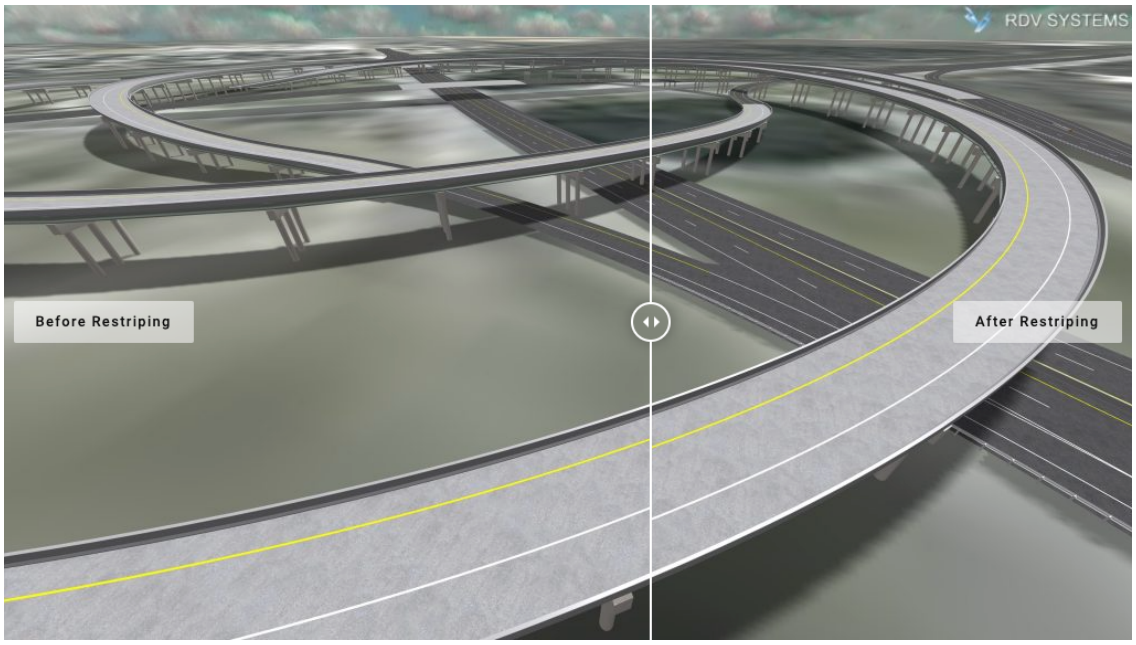


*Turbine Interchange - OpenRoads Model*

*Turbine Interchange - RDV Model*

CLICK HERE to watch Flyover Video Simulation

The majority of the sight distance failures resulted from barriers on elevated ramp curves that caused visual obstructions. RDV coordinated with PCI to identify acceptable design alterations that complied with AASHTO design speed requirements. Fortunately, most of the problems could be resolved by restriping, i.e., shifting the positions of lanes to widen the shoulders on the insides of curves. Subsequent simulations passed the sight distance tests and provided confidence that the modified design truly met the accepted standards. In fact, the RDV analysis was included with the submittal and is now part of the justification paperwork that the design is sound.

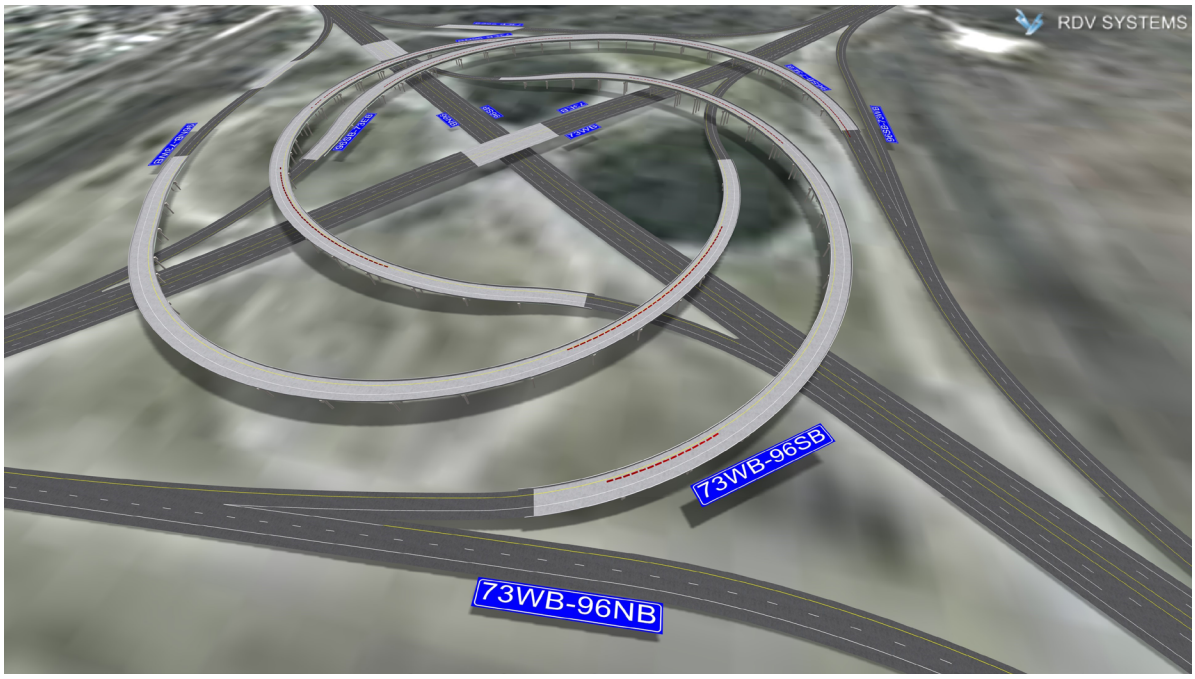



*Restriping Comparison - Before / After*

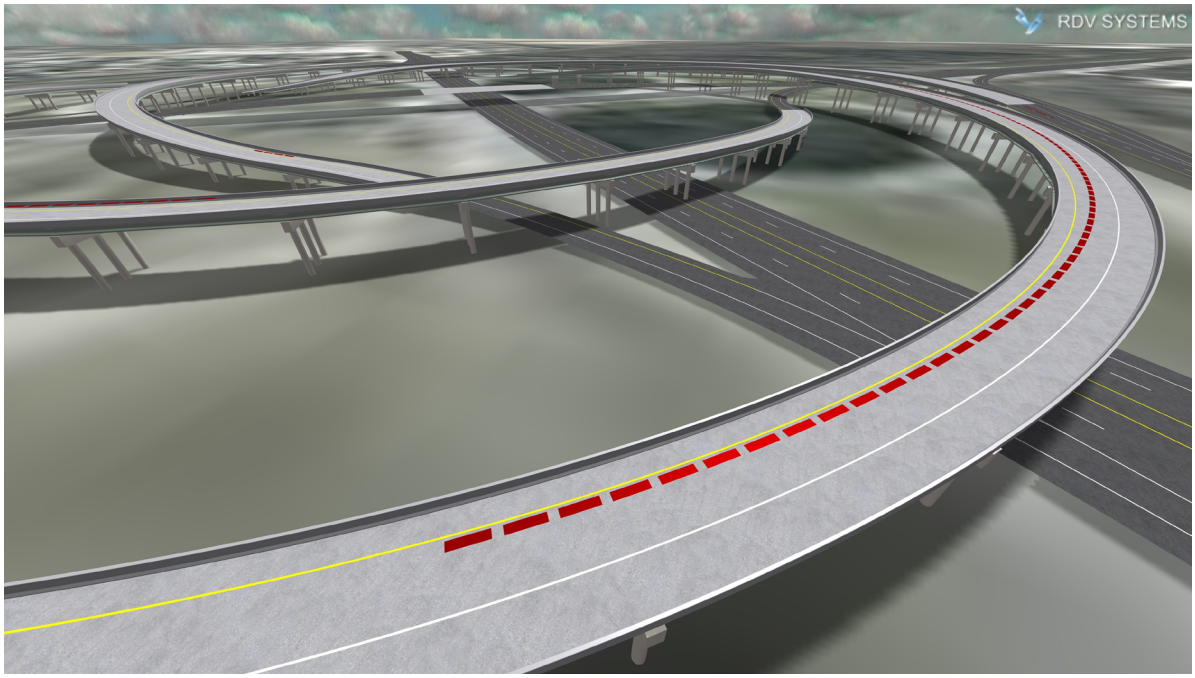
## RDV's Road Safety Audit 3D Technology - Safety First, Sight Distance, and Much More

RDV's Road Safety Audit 3D not only validated the safety of the design and served as a basis for gaining approval of the design, but it also saved money, lots of it. Analyzing the sight distance characteristics using standard tools and methods would have taken hundreds of hours to complete, and might have required rebuilding the design from the ground up. Additionally, such analyses would inevitably rely on current practices which are limited and not nearly as comprehensive as RDV's holistic 3D approach.

RDV completed the safety assessment and helped update the design quickly and efficiently, keeping the project on schedule, avoiding costly downstream expenses, redesigns, and post-construction adjustments, and above all, ensuring road safety. It was an all-around win for the DOT, PCI and the public at large.




*Turbine Interchange Overview - 25mph*




*Turbine Interchange Ramp Curve - 30mph*

Sight Distance Evaluation DriveThru Simulation - Click Here to Watch

## About RDV's Software and Services

RDV Systems has been delivering innovative visualization, BIM software, and Road Safety products since 2005. Our mission is to help engineers, designers, architects and planners communicate proposed projects quickly, effectively and easily at a cost that makes visualization and analysis feasible for projects of any size.  Consultants and public agencies around the world rely on RDV software products and services to visualize, analyze and communicate their designs.

RDV's patented technologies make visualization and Road Safety Audit 3D a rapid and affordable process that becomes an integral part of the entire project lifecycle. Whether your projects involve roads and highways, rail infrastructure, airports, ports and harbors, land development, municipal infrastructure, urban planning, landscape architecture, mining or plant and power, RDV helps you succeed in your projects, analyze sight distance, shorten approval time and gain public support when you can't afford to be misunderstood.

### Join the Road Safety Innovation.

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