Tight maneuvers

Software models parking in a confined space

When it comes to urban planning, "densification" seems to be the current mantra, as civil engineers and architects design communities that utilize a smaller real estate footprint.

Chad Fabre, a senior engineer with Fabre Engineering Inc., based in Denver, recently took on a site-development project involving the construction of a 12-unit apartment complex in a densely populated area of downtown Denver.

The specific challenge was getting city approval for the narrow driveway in the middle of the apartment complex. There were two apartment units where garage access was tight, and the Denver city-planning department wanted proof that vehicles could access and exit the garages without making multiple-point turns.

For this project, Fabre needed comprehensive computer-aided design software that could provide vehicle turn and swept-path analysis of cars maneuvering through constricted pathways. From experience, Fabre knew there was software out there that could be used to model and simulate realistic vehicle movements in tight turning conditions.

"I've found AutoTURN fairly simple to use. Like anything, there's always a bit of trial-and-error at first, but it's pretty straightforward afterwards," said Fabre. It took just over half an hour for Fabre to develop a swept-path analysis of a car getting into and exiting a garage. "I've modeled fire trucks, buses and semis before. But this is the first time I've modeled a midsize sedan."

With the software, simulating vehicle turn maneuvers is easy to do, using four SmartPath Tools that incorporate speed, superelevation, lateral friction and turn radius algorithms. All simulation data can be exported to spreadsheets in standard document formats.

Once Fabre completed his vehicle-turn analysis, he provided a detailed swept-path diagram to the city staff for review.

Fabre wanted to go one step further and show visual simulations of the cars driving into and backing out of the garages. For this, he used InVision for road design to animate, coordinate and sequence multiple vehicle simulations in the apartment complex driveway. He then exported the timed,
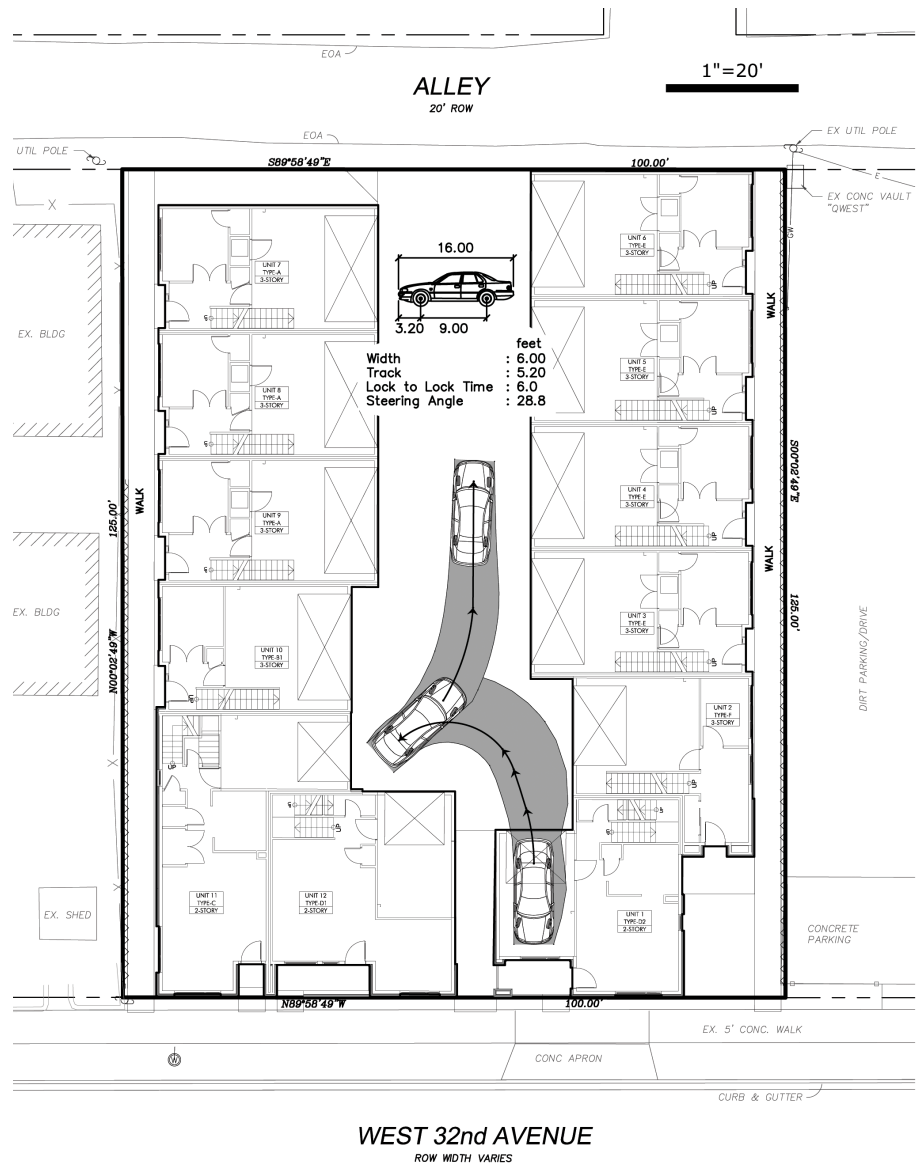
animated sequence into a video file.

With InVision, users can export and save simulations in different multimedia video files, using a number of standard codecs. Different video codecs can be used to reduce video output files. The final recorded files can be opened and viewed on any computer using most video players.

"My clients were impressed," said Fabre. "It was probably more than what was expected, but it did the job." **TM&E**

WEST 32nd AVENUE
ROW WIDTH VARIES