

» FOLLOW THE LANDMARK WATER TOWER TO PLUMAS STREET, THE HEART OF DOWNTOWN!

AUTOTURN[®]
A CLIENT SUCCESS STORY

THE PAST AND PRESENT MEET

Yuba City, California has come a long way since the first few city blocks were laid out in 1849. The thriving community of 50,000 situated in the orchards 40 miles north of Sacramento has seen the ups and downs so typical of larger (and smaller) American cities - the drift to the suburbs and the declining importance of the downtown.

But this is one city that is successfully fighting back. With a charming array of 1920's buildings in the downtown core accommodating hundreds of intriguing stores, the downtown is back where it belongs - the heart of the city. A city surrounded by the fertile orchards of the North valley with all the delights of the California urban experience - arts festivals, movie theatre complexes, a new town square, farmers markets and a thriving business association. Yuba City boasts the best music, dance and entertainment you'll find anywhere in California's North Valley.

Plumas Street is the heart of downtown and in 2003 a major improvement project was initiated to re-design the street to anchor renewal of the whole area. Historically there were all the complexities and opportunities of the American car based dream. Typically of 1950's urban sensibilities, the car had seemed to be winning the battle - vehicular access and parking predominated and those pedestrian that hadn't fled to the suburban malls were confined to narrow sidewalks. Bicycles were nowhere in the picture.

And it was not only the private automobile that had driven the design - larger trucks pose unique and even more demanding space requirements when it comes to roads and driveways. For deliveries to stores there are trade-off's that can be made. Timing is one - evenings only delivery can be imposed - or at least delivery outside of the commuter peak. But when it comes to safety there's no space for compromise and no managing demand. Whether it's police cars, ambulances, fire trucks or any other emergency vehicle the need is instant and the design is critical. And again it's the larger vehicles that have the special requirements - fire trucks don't generally come in sub compact format.

In an environment of wooden buildings and hot weather, the Yuba City folk predictably have a long history of fire concern. In 1907 most of the business district was destroyed by fire motivating the newly incorporated City to establish a Fire Department that in 1909 could boast two carts, a couple of nozzles, five hundred feet of hoses and a few volunteer fire

fighters. There was even a fire hall of sorts - a donated barn. Speed and capacity may have been a challenge, but at least at that time there was no problem manoeuvring around the streets of early 1900's downtown Yuba City.

Today's fire trucks are on a vastly different scale and they impose stringent access needs - often at odds with the pedestrian and bicycle scale that cities like Yuba City are now trying to create in the downtown core.

For decades road designers have used standard templates that describe the space that a turning vehicle needs, when designing roads. May not seem like rocket science - but when you're looking to achieve a people friendly (read cosy and cluttered) space that still allows emergency vehicles easy access, it can be a challenge. As in all things modern, computers have come to the rescue - civil engineers have



thrown out the plastic templates and embraced new programs that interface with computer aided design. Not only is this approach quicker, it allows the movement of numerous different vehicle types to be replicated with no guesswork needed - and even better than the static templates, variations based on vehicle speeds can even be replicated. Cars, trucks, buses, trailers, motor homes and semi-trailers are typically included in the swept path libraries. And not just North American - vehicles types used all over the globe can be tested: from the Czech Republic to New Zealand, almost any vehicle you'd need to design for is covered in modern computer based planning tools.

THE DRIVE FORWARD

Almost any vehicle ...which brings us back to Yuba City. The AutoTURN program developed by Transoft Solutions, was the package chosen to assist in the design. This is a practical and visual tool with a suite of dynamic simulation modes that lets you witness firsthand how a vehicle traverses a path in live-animated simulations with no guesswork needed. It includes a vast number of emergency vehicles - not just ambulances but also those fire trucks which now come in an amazing array of shapes and sizes: from pumpers, aerials, tankers and quick attach to heavy duty rescues, mini

rescues etc etc. And the program even allows customization to suit unique vehicle characteristics, which is the path that the consultants chose to accommodate the 47 ft fire trucks uniquely used in Yuba City. Though user defined templates aren't as simple as you might think, considering the variety in drive trains, trailers, axles, wheels and front / rear steering combinations.

THE PROOF IS IN THE DESIGN

A dynamic new streetscape with wide brick sidewalks, angled mid street parking and palm fringed pedestrian refuge islands was favoured for downtown Yuba City by the planners Freedman, Tung & Bottomly. But it was up to the engineers to show that this could work, so CHS Consulting Group from San Francisco, California, were brought in. The task: how to balance the need between fire truck access and a pedestrian friendly environment - and convince the officials accordingly.

And the rest is (or shortly will be) history. Joy Bhattacharya of CHS explains: "We had to demonstrate to the City and especially the Fire Marshall that our design would work. We'd tested over 30 different locations along the length of re-designed Plumas Street using AutoTURN ... and fifteen were too tight, requiring redesign". But of course failing grades and design modifications on paper are far preferable to red faces and safety concerns post construction.

CHS used the customizing feature to represent the path that Yuba City fire trucks would follow, confident that the real life complexities of vehicle movement - turn radius, transition curves, superelevation, lateral friction - were accurately reflected by the computer simulation. "Not only is it an excellent design program - it's also a great communication tool" explains Joy. The consulting engineers did have to create a live mock-up to convince skeptical City officials that the AutoTURN findings were valid ...and it passed with flying colours. At least for the other thirty or so locations the computer simulation was sufficient.

When the new brick sidewalks are in place, refuge islands are landscaped and palm trees are flourishing, citizens of Yuba City will be able to enjoy a stroll along a revitalised and friendly Plumas Street. No-one likes to dwell on emergencies, but it's comforting to know that access for fire trucks and ambulances has been built into the design.

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