



When a Special Transport Needs a Special Partner

How Cardno manages its most challenging transport jobs

Brisbane-based Cardno is no stranger to challenging projects. After all, it's a multi-disciplinary engineering, global infrastructure, environmental and social development company with more than 6,000 employees and operations in more than 100 countries.

But Cardno faced a unique test recently through its involvement in a series of solar and wind farms across Australia.

The challenge: ensuring the safe transport of the immense equipment needed for these types of developments.

Building solar and wind energy farms requires the use of oversize and over mass vehicles (OSMV) because hauling the equipment to site is anything but standard.

Consider this: loaded trucks carrying wind farm equipment can measure six metres wide and 80 metres long – and can stop traffic literally and figuratively.

Navigating narrow roads with the blades of a wind turbine or a commercial-scale solar panel would challenge even the most seasoned driver.

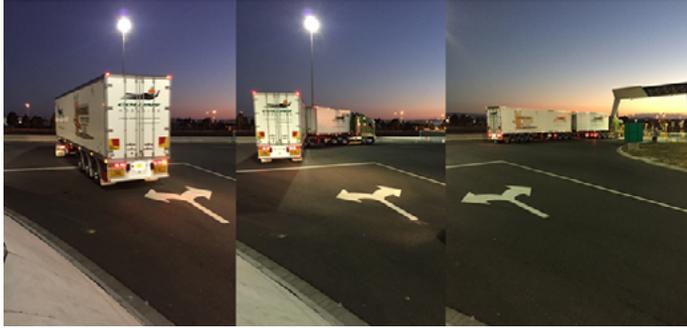
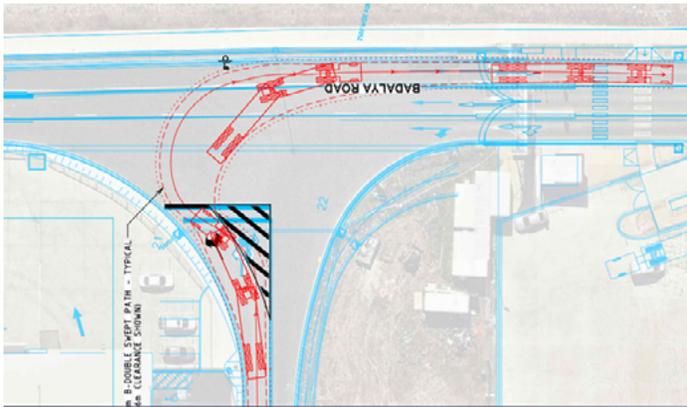
This equipment can strike utility poles, trees and all sorts of road-side structures on its way to a destination unless, of course, the right transportation expertise and tools are deployed.

That's why Cardno turned once again to a trusted partner, Transoft Solutions, a specialist provider of transportation engineering software.

"We've been using the AutoTURN technology from Transoft for more than 10 years," says Matthew Ballard, Principal Traffic Engineer & Transport Business Unit Manager, Cardno.

"A big part of what we do is move things that aren't standard shapes and sizes. AutoTURN supports the non-uniform environments that we operate in and has been an essential tool for our traffic engineering projects."

AutoTURN simulates the path of vehicles in various situations, allowing Cardno to allocate manoeuvring space, and design accessways and intersections that are suitable for many types of vehicles. It's all about using the software to analyze the swept path of the vehicles.



AutoTURN is an easy-to-use software solution

Swept path analysis examines the movement and path of a vehicle to determine the space requirements for vehicle turning manoeuvres. Making swept path analysis part of each phase of the design process can help avoid costly and time-consuming mistakes by ensuring designs safely and efficiently accommodate vehicle movements.

But with this project, they needed something more. *“It was necessary to develop models of these OSMV vehicles to undertake route planning exercises to ensure the equipment could be transported from a port of entry to the development site,”* says Ballard. *“And Transoft came through by providing custom vehicle models for use in our projects.”*

Using custom vehicle models has allowed Cardno to accurately plan haulage routes for vehicles with extreme dimensions.

These models, powered with the AutoTURN technology, have been proven over the years in multiple field tests with Transoft’s wind energy equipment transportation clients.

Transoft representatives say that in one recent test, a driving course was built to replicate the precise roadway geometry. GPS coordinates from key points on the truck, trailer and loaded wind blade were recorded. And using AutoTURN, the swept path of the simulated vehicle matched the swept path of the field test vehicle accurately with variances consistently less than 30 centimeters.

Cardno benefitted from the models in three critical ways:

1. They enabled Cardno to identify the opportunities and constraints along the nominated vehicles routes, so they could adjust accordingly.
2. They helped pinpoint the extent of any intersection upgrades and modification work that would be necessary.
3. And they helped design the site access points for these challenging but significant projects throughout Australia.

And just as importantly, the models supported Cardno’s client experience.

“AutoTURN helps us provide valuable traffic engineering design advice to our clients,” says Ballard. *“This facilitates quicker turnarounds for approvals and streamlines the overall process for our clients as the traffic engineering stage is a crucial early step in projects.”*

Over the years, Cardno has used AutoTURN for a wide variety of projects across a very diverse client list in the public and private sectors.

The software has helped design layouts for shopping centres, hospitals, schools, sporting facilities and industrial parks so traffic and emergency vehicles can access the areas, as needed.

In addition, AutoTURN helps with everything from the traffic management plans for construction sites and loading docks to ensuring access for residential garages and private property.

“What we like about AutoTURN is how easy the software is to use,” says Ballard.

Transoft prides itself on continually improving product features. On a quarterly basis, Transoft updates its extensive libraries of more than 300 manufacturer-based vehicles so customers like Cardno can generate turning simulations they require.



Swept path analysis helps avoid costly mistakes

The Cardno/Transoft relationship is a true example of a win-win. While Transoft and AutoTURN ensures clients comply to the standards and guidelines, it is AutoTURN's ability to support non-standard situations that is critical to Cardno.

This long-time Transoft customer concedes it stays apprised of the competitive offerings for transportation engineering software. "Yes, we've looked at other offerings but from our initial investigations, nobody else offers the same level of functionality and sophistication as AutoTURN," says Ballard.

And Cardno can already see future uses. Using Special Transport Vehicles, AutoTURN could open doors for the company to work in different and/or emerging markets as these vehicles can be a major factor in determining project feasibility.



ENGINEERING THE PERFECT TURN

The birth and maturation of AutoTURN

Believe it or not, it all started more than 25 years ago. Back in 1991 – with the internet just getting some mainstream attention – a University of Calgary civil engineering student was developing the AutoTURN software for Transoft.

And today, after some 18 updates to the software, AutoTURN continues to be used by organizations to analyze road and site design projects including intersections, roundabouts, bus terminals, loading bays, parking lots or any on/off-street assignments involving vehicle access checks, clearances, and swept path maneuvers.

Over the years, upgrades to AutoTURN have included a variety of supported languages, ability to model 3D vehicles, adding vehicle types, and even including speed profile reports.

How it works

It works much like any kind of simulator – think gaming but with a real-world application. If you simply look at a paper version of a site plan, it's tough – and sometimes even impossible – to visualize what the path really looks like, and what the risks could be. If you can see it play out in an on-screen model, you'll feel more confident about what can really work.

AutoTURN can be used for many different design projects such as:

- Construction Sites
- Driveways
- Emergency Vehicle Access
- Fast Food Drive-Throughs
- Intersections
- Loading Bays
- Mine Sites
- Oversized/Abnormal Loads
- Parking Lots
- Petrol/Filling Stations
- Rail Crossings
- Roundabouts
- Special Transport
- Transit/Bus Loops

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