



## CASE STUDY



# The World is Coming to Rotterdam

## Adding AutoTURN's technology to the bus loop design creates a Central Station fit for a King

*By Chris Johns, Transoft Solutions*

Recently, the New York Times rated Rotterdam as one of the top 10 cities in the world to visit in 2014.

Why? The better question is why not?

Rotterdam is a unique blend of history, architecture, infrastructure and innovation virtually unmatched in Europe. When Transoft Solutions Inc, a North American transportation engineering software company was looking for a European city to call home in 2001, CEO Milton Carrasco was initially looking towards London or Amsterdam as cities with a big population and established technology pedigree. However, Transoft's first European General Manager lived in the Rotterdam suburb of Capelle aan den IJssel and stressed the benefits of the up-and-coming city. Today, Transoft's European headquarters are located just seconds from the mighty Maas River, right in the city center.

It's a good place to be with all the development that is taking place in Rotterdam. One of the new landmarks is Rotterdam's Central Station, a transportation nexus which now rivals Paddington Station in London or Gare de Nord in Paris or any of the leading cities in the world. With all the commerce coming into the city via the massive shipping industry, it stands to reason that upgrading the transportation network to encourage travel and tourism was top-of-mind for planners at the City of Rotterdam.

The original Central Station was known as the Delftsche Poort and Maas station. It was a key link in the Netherlands rail system until it was destroyed in the Rotterdam Blitz of May 1940. As the new Central Station took shape, the old station which served Rotterdam since the late 1950s was demolished. While some were sad to

see an old building come down, many more were pleased to see the new Central Station adding beauty to the skyline. One notable Dutch citizen who is very interested in the beautiful new station is King Willem-Alexander, who will officially open the building on March 13, 2014. Once the project is completed, the station will accommodate 110,000 passengers per day and by 2025 the capacity will rise to 323,000 passengers per day. (Source: [www.rotterdam.nl/rotterdamcentraal](http://www.rotterdam.nl/rotterdamcentraal))

The new station was years in the making and the planning and design phases of the project really accelerated when the City of Rotterdam purchased a 10-seat license of AutoTURN for determining where the bus loop could go and how the station would integrate into the European rail system.

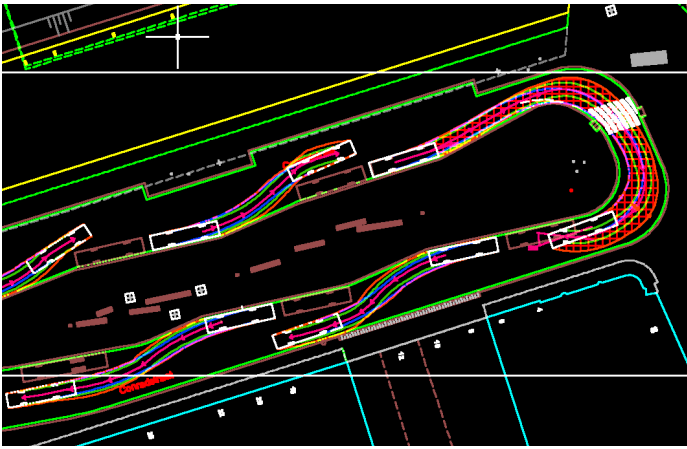
The Rotterdam Central project has been jointly facilitated by the Municipality of Rotterdam, ProRail, the Ministry of Infrastructure and Environment, the Dutch Railways and Rotterdam City Region.

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**"During the process, we changed the platform design and we checked with AutoTURN all the time to see if the changes were possible."**

**Marcus Edelenbosch, City of Rotterdam**

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The City of Rotterdam planners used a customized bus from the AutoTURN vehicle library to test the turning radius at the Central Station bus loop.

The new Rotterdam Central Station is an architectural marvel and an important transportation hub for the city. The City of Rotterdam's Department of Traffic and Transport took an active role in planning the bus terminal section of the Central Station and used AutoTURN from Transoft Solutions to ensure safe operation and design. With the upgrades, Central Station is now an international-caliber train station, with high-speed trains bringing passengers from Paris en route to Amsterdam.

AutoTURN is the world's leading software for vehicle swept path analysis. Transportation engineers have relied on it for decades to accurately visualize turning radii, transition curves, super elevation and lateral friction in all types of roadway, highway and site design projects. It was important for the station planners to have the most accurate data.

"The old bus station was originally located on the main square (Stationsplein) in front of the Central Station," said Marcus Edelenbosch, in the City of Rotterdam's Traffic and Transport department. "Part of the project Central Station was to create an attractive new entrance of the city. That's why the bus station got a new location on the side wing of the Central Station in the Conradstraat (Conrad Street). The old station did not conform to the European standard for accessibility and needed improvement."

The bus station is an integral part of the new Rotterdam Central Station. For the designers of the station, the traveler is central. For European travelers, a pleasant travelling environment and easy access to different modes of transport along with shops and services are important principles. And the new station has exceeded those expectations.

The bus station is located immediately next to the public transport terminal in Conradstraat (Conrad Street). The new bus station is comprised of eleven stops for the city bus services and one stop for international bus services. In addition, the bus station will provide direct access to the subterranean metro station. A section of the road is set aside for loading/unloading and Kiss & Ride passengers.

"We based the details from the very beginning on AutoTURN," said Edelenbosch. "During the process, we changed the platform design and we checked with AutoTURN all the time to see if the changes were possible."



The new Central Station, opening in March 2014, matches the architecture of the surrounding buildings in downtown Rotterdam.

The design challenges of the terminal were complex, due to the limited space available in the Conradstraat (Conrad Street). It is a narrow street surrounded by buildings, and it was important to check that the high boarding curb around the platform couldn't be run over by the buses' front overhang during a turning movement.

The planners at the City of Rotterdam used AutoTURN from the beginning and knew the types of vehicles that were expected to use the new bus terminal and added their dimensions to the AutoTURN vehicle library. Buses with lengths of 12 meters and 18 meters were part of the local fleet, passenger vehicles and several types of trucks were all evaluated in the design phase of the project.

"We started using AutoTURN after the first concept study to check if it was possible to make the bus station fit in the available space," said Edelenbosch. "With the help of the software, all entrance and exit angles and the required lane widths were checked. The dimensions of the Rotterdam Transit Corporation (RET) city buses deviate from the standard bus in AutoTURN. The software allowed us to manually customize these buses."

The relationship between the City of Rotterdam and Transoft Solutions goes back over a decade. Both the company and the city have transformed themselves in the past ten years; since 2001, Transoft has gone global with clients in 120 countries and Rotterdam has added De Rotterdam, the Markthal, the Central Station and many other unique structures to its skyline.

"Rotterdam is an interesting city to visit and the new Central Station is a striking example of the daring, new architecture people are talking about," said Yorick Keeven, regional account manager for Transoft Europe BV. "In an iconic building project like the Central Station, it was important for Marcus and his team to have an accurate picture of the vehicle turning movements for maximum safety and efficiency. We're pleased that our software played an important role in this centerpiece of Rotterdam architecture."

Passengers are already enjoying the streamlined travelling experience of the bus loop and the re-designed Central Station. With the station designed to handle substantially more passengers, Rotterdam will become a popular destination for European travelers. If you go, make sure you stop in the city center. It's a great place to be. ■