CONSTRUCTION CASE STUDY

A9 | GERMANY

THE ROAD ZIPPER SYSTEM™ KEEPS TRAFFIC MOVING SAFELY THROUGH GERMAN ROAD REPLACEMENT PROJECT

ROAD ZIPPER™
BY LINDSAY

Built in the 1930s, the A9 roadway connects Berlin, Leipzig/Halle, Nürnberg, Ingolstadt and Munich, Germany. To maintain the condition, efficiency and safety of the heavily travelled roadway, major repairs and renovations were needed on a 9.4 km (5.84 mile) section between the Langenbruck junction and the Holledau motorway triangle. In total, six traffic lanes (three in each direction) and 12 underpasses needed to be replaced.

Initially, officials planned to keep the six lanes flowing during construction by using conventional methods to work alongside traffic. However, there was not enough space. Before the project could begin, crews would have had to complete six months of pre-construction work, building and hardening the outside shoulders and shoring up bridges, adding an additional €3 million euros to the overall cost of the project and causing significant traffic delays.

Officials also considered narrowing the roadway to five lanes and manually reversing the center lane during peak traffic times. However, when this method was used during a previous A9 project, the configuration's very narrow traffic lanes presented many obvious challenges.

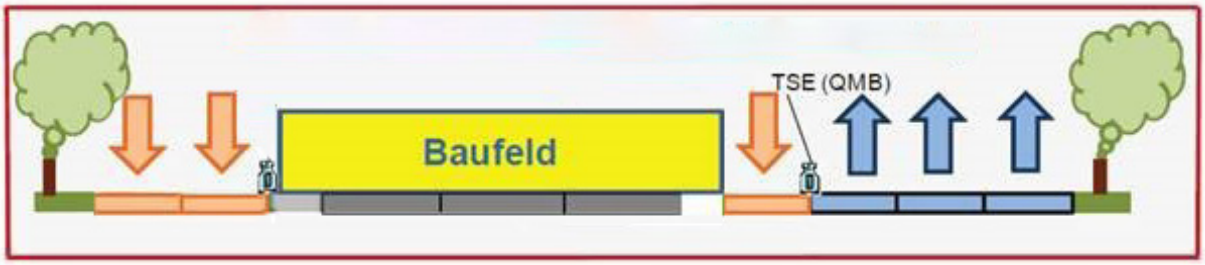

Exhibit 1: Traditional construction phases with 6 lanes.

To avoid these challenges, officials instead opted for a solution that would save time and money, while providing much needed flexibility. Working in collaboration with German partner SITEC and the Autobahn Direktion Südbayern (ABDS), Lindsay deployed the Road Zipper System.

A smarter, safer and faster way to protect construction crews and manage congestion, the cost-effective solution uses a Barrier Transfer Machine to lift barriers and reconfigure travel lanes in real time, while maintaining a secure barrier between lanes.

For the A9 project, which is to be complete by the end of 2021, the Road Zipper adjusts the moveable barrier to keep at least two lanes of traffic moving in each direction at all times. The center lane is reassigned twice a day, from Monday through Thursday, to accommodate commuter traffic. In the morning, the lane moves traffic in the direction of Nuremberg and, in the evening, it moves it back toward Munich.

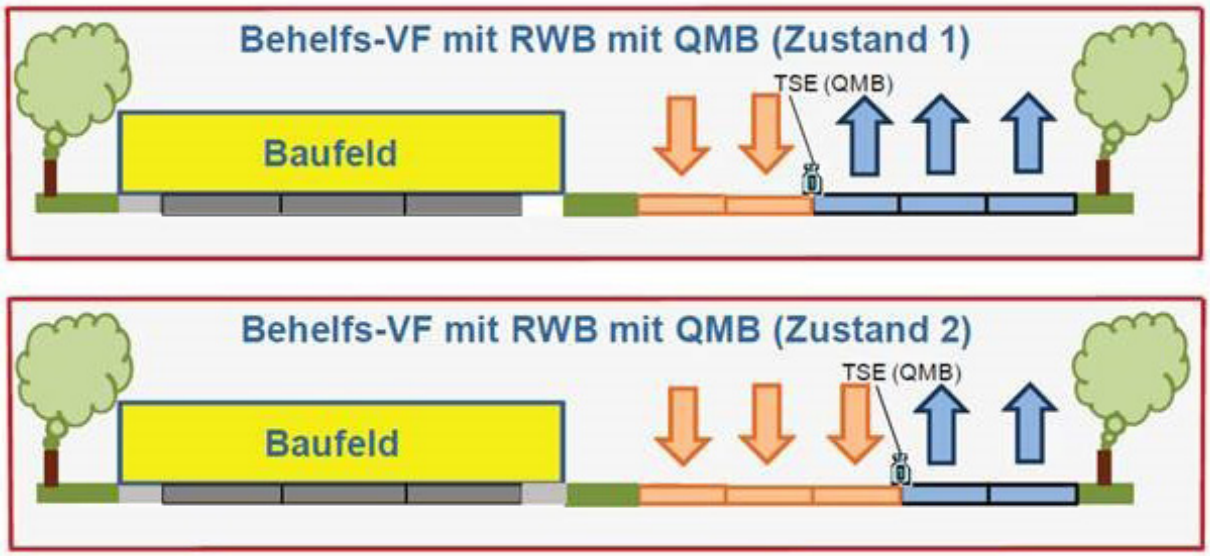

Exhibit 2: Roadzipper solution with 5 lanes that equals 6.

Using the Road Zipper System, officials are able to:

ALLOW FULL-WIDTH CONSTRUCTION

This eliminated the pre-work phase, reducing construction time by 40%, or 110 days. The ability to work the entire construction field also improves the pavement quality, because will be no seams between the work zone and the traffic lanes.

KEEP TRAFFIC MOVING

With wider lanes, speed and capacity are not as limited as they would be in conventional work zones.

RE-ROUTE THE HIGH-SPEED TRAINS

Because high-speed train tracks run under the bridges, the work had to be scheduled three years in advance. The Road Zipper™ allowed for full closure on one side of the roadway so crews could quickly, efficiently and safely demolish and rebuild the bridges with only six complete track closures instead of the twelve it would have taken if conventional methods were used.

ADD ANOTHER LAYER OF PROTECTION FOR CONSTRUCTION CREWS

The moveable barriers allow for a larger work area and helps keep vehicles out of the construction site.

PROVIDE FLEXIBILITY IN THE EVENT OF A TRAFFIC ACCIDENT

For example, when a very large truck accident blocked two lanes, crews moved the barrier to open up another lane so traffic could move past the accident.

ADJUST THE TIMES WHEN THE BARRIER IS MOVED

In 2020, as COVID-19 spread, the barrier movement schedule was adjusted to meet changing traffic demands. And, when the pandemic forced a complete lockdown, crews stopped moving the barriers altogether - saving operating costs as well as wear and tear on the machine.

Officials estimate the Road Zipper System will cut total construction time by 12-18 months and save approximately €10 million euros.

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