

Warringah Freeway Upgrade

Sydney, Australia



Project Overview

The Warringah Freeway, with daily traffic of over 250,000 vehicles, is one of Sydney’s busiest arteries, connecting the northern suburbs to the bustling city center via the iconic Harbour Bridge.

Recognized as one of Australia’s 30 most congested roads, the freeway plays a vital role in the economy. And with Sydney’s population expected to grow from 5 million to 8 million in the next 40 years, the Warringah Freeway Upgrade (WFU) was essential to support community development, economic growth, and enhanced traffic safety and mobility.

Starting in 2021, Transport for New South Wales (TfNSW) spearheaded the formidable task of upgrading the Warringah Freeway. The project included new bridges, new underpasses, new tunnel entry and exit structures and major road widening supported by significant upgrades to ITS operating systems. The scale and complexity of the project were complicated by the freeway’s size, with up to 23 lanes of traffic, four interchanges, and 10 bridges, all within a tight 4 km-long urban corridor.

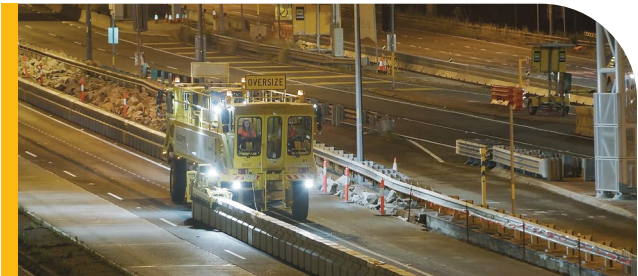
A key challenge throughout the project was minimizing the impact of construction on daily commuters, including motorists and ~150,000 bus passengers, while maintaining the highest safety standards for workers.

An Overnight Effective Solution

The Warringah Freeway upgrade project included about 80 km of travel lanes over an alignment of 4 km. The scale and complexity of the work required nightly lane closures to allow construction to proceed without disrupting peak travel times. Installing and removing multiple lane closures using traditional barriers would have taken up to three hours leaving limited time for work to take place.

A shared commitment to finding innovative mobility and safety solutions led the project team to adopt the Road Zipper System™ for moveable barrier-based flexible lane configuration.

The Road Zipper barrier transfer machine transferred the barrier at a top speed of 8 km/h (5 mph), closing and opening lanes on demand, and allowing construction crews up to 3 additional hours to work on the freeway every night. With Road Zipper technology, construction was carried out more efficiently and safely, resulting in total construction time savings of over a year on the project.



Road Zipper Implementation

More than 4,000 meters (~2.5 miles) of pre-cast Concrete Reactive Tension System (CRTS) Road Zipper moveable barriers were used throughout the different phases of the project. With the Road Zipper solution allowing 3.0 to 5.5 meters of lateral barrier transfer range, lane and shoulder closures were completed quickly, safely, and efficiently with limited worker exposure to live traffic.

During the day, the barrier was stored on the shoulder, keeping all travel lanes open to traffic. At night, when peak travel period ends, the Road Zipper would zip out the barrier wall to create a safe, positively protected work zone. Road Zipper lane closures can be completed with limited or no worker exposure to live traffic and while keeping all

remaining travel lanes open to traffic. This lane closure strategy resulted in greater worker safety and more space for heavy equipment to operate, dramatically increasing project efficiency and productivity. Smooth and efficient lane closures maximized the work window every night, and before 4 a.m. each day, the Road Zipper zipped the wall back to the shoulder, opening lanes for morning traffic flow into Sydney.

Steven Clark, Project Director (WFU, CPB Contractors, and DT Infrastructure) commended the efficiency of the Road Zipper technology during the project spotlight for Transport for NSW Gateway to Innovate.

“When we consider the volume of our works that we have at night which are about 30% of our shifts, the benefit that this technology brings – it enables us to rapidly mobilize our [Road Zipper] concrete barriers, separating the traffic and our workers just after peak periods, conduct our works during the night and as we approach the morning peak, we can continue our works right up to that peak”

Steven Clark, Project Director
WFU, CPB Contractors, and DT Infrastructure Joint Venture.

Project Benefits

The Road Zipper System helped improve the work zone impact of the Warringah Freeway Upgrade project by maximizing traffic flow, reducing disruption for motorists, shortening construction time, and improving worker safety by providing maximum protection.

SAVED TIME

In addition to improving worker safety throughout the project, the Road Zipper enabled contractors to reduce the construction duration by **1-1.5 years**.

MAXIMIZED OVERNIGHT CONSTRUCTION HOURS

Road Zipper dynamic lane reconfiguration allowed **up to 3 additional hours of construction time per nightly shift** compared to conventional lane-closure and work-zone protection strategies.

IMPROVED WORK ZONE SAFETY AND EFFICIENCY

Work zone productivity was maximized by creating a **distraction-free, wide, and positively separated work zone**, rather than exposing workers to live traffic.

EASILY MANAGED TRAFFIC FLOW

Dynamically reconfigured travel lanes based on peak travel periods **maintained critical access for hundreds of thousands of motorists and bus passengers** each day.

16 WEEKS  2 WEEKS

CONSTRUCTION TIME

“During the 2023-2024 Christmas break, the Road Zipper helped us complete 16 weeks of traditional construction work in just 2 weeks.”

Steven Clark, Project Director for WFU, CPB Contractors, and DT Infrastructure Joint Venture.



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General details for the Road Zipper System are subject to change without notice to reflect improvements and upgrades.
Additional information is available from Lindsay Transportation Solutions Sales and Services, Inc.