LINDSAY™ | MOVEABLE BARRIER

THE ROAD ZIPPER SYSTEM™

For Managed Lanes

+ Reduces congestion
+ Increases safety
+ "Fast-build" solution
+ Sustainable solution
+ Qualifies for federal funding
+ Stretches transportation budgets

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THE ROAD ZIPPER SYSTEM™ | FOR MANAGED LANES

The Road Zipper is designed to cost effectively increase roadway capacity and reduce congestion by making more efficient use of new or existing roadways. Applications include high volume highways where additional right-of-way may not be available, where environmental concerns may exist, or where the lack of funding may slow or inhibit support for new construction.

The system can transfer a mile (1.6 km) of high performance concrete or steel barrier up to two lanes in less than 10 minutes, offering DOTs an innovative strategy for making a congested highway more efficient, safe and functional. These benefits can be realized in less than one year and at a fraction of the cost of new construction.

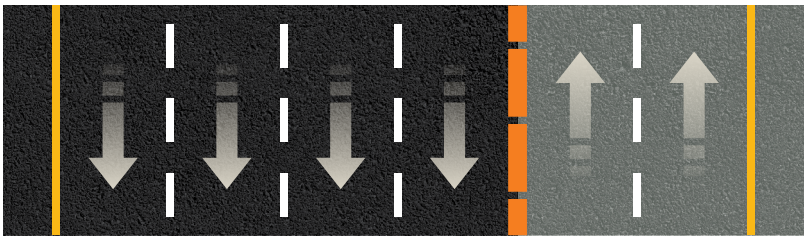
The Road Zipper provides a quick and cost-effective solution for highway capacity improvements. It allows DOTs to preserve their corridor options (Managed Lanes, Bus Rapid Transit (BRT), Reversible Lanes, Contraflow, HOV and HOT Lanes), while providing a "fast-build" solution for mitigating congestion.

Moveable Medians

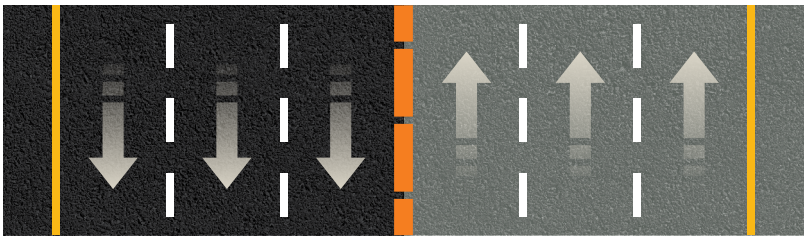
The moveable median is perhaps the simplest way of safely optimizing roadway capacity. In this case, there is no fixed barrier on the highway, and the moveable barrier is the only barrier. The barrier is moved back and forth multiple times per day to reconfigure the travel lanes based on the needs of peak traffic. The moveable median is most commonly applied to bridges and other highway applications with few center structures (viaducts or elevated structures also fit this model).

A moveable median creates a 4/2, 3/3 and 2/4 travel lane pattern using 6 existing lanes

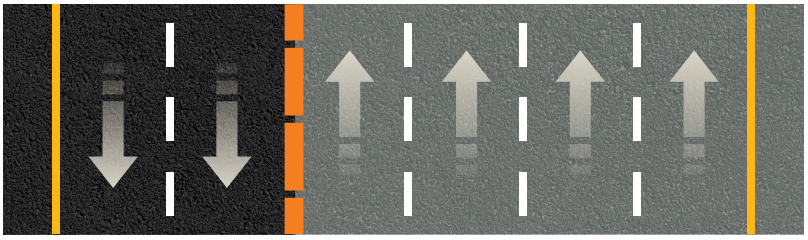
Moveable Median Cross Sections



AM Peak Traffic



Off Peak Traffic



PM Peak Traffic

ROAD ZIPPER BARRIER

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Reduces congestion

Using the Road Zipper, more lanes are available in the peak travel direction by time of the day.

Increases safety

The Road Zipper adds positive barrier protection between oncoming traffic to improve safety against crossover and head-on crashes.

"Fast-build" solution

New construction can take several years to come to fruition while the Road Zipper can often be deployed in about 1-2 years.

Sustainable solution

The Road Zipper improves travel times for motorists thereby reducing emissions due to engine idling or fuel inefficiency. Optimizing traffic throughput on current roadway also reduces new construction related carbon footprint.

Qualifies for federal funding

Federal funds are available to help create managed lanes in the US.

Stretches transportation budgets

To improve traffic mobility through a corridor, the Road Zipper solution can be deployed at a fraction of the cost of new urban freeway construction.

Contraflow Lanes

A single moveable median barrier may not be practical in some situations. This may be because the two directions of the highway are on different elevations or structures, because there is a substantial existing median barrier, or because there are many center structures. In these cases, two moveable walls are used, one on each side of the roadway, in order to take unused capacity from the off-peak side of the road and allow traffic from the peak side to cross over and use the new reversible lane, thus gaining additional capacity. This system provides the same optimization and efficiency as a moveable median despite the geometric challenges.

Contraflow lanes use one wall of barrier for each traffic direction.

Contraflow Cross Sections

AM Peak Traffic

Off-Peak Traffic

PM Peak Traffic

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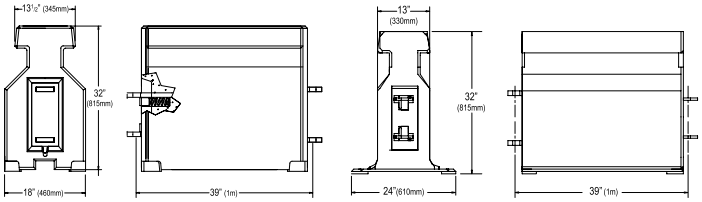
BARRIER TRANSFER MACHINE	
TRANSFER SPEED	5-10 mph (8-16 km/h)
ROADING SPEED	20 mph (32 km/h)
LATERAL TRANSFER	8.5-30 ft (2.6-9.1 m)
TRANSFER TIME	1 mile (1.6 km) in 6-12 minutes



Barrier Specifications

18" Concrete Reactive Tension System (CRTS)

Heavily reinforced concrete barrier sections have superior deflection and vehicle stability when compared to unanchored temporary barriers.

Permanent Deflection

MASH TL-3: 39 in (990 mm)
NCHRP 350 TL-3: 24 in (610 mm)
EN 1317-2 N2: 27.5 in (700 mm)
EN 1317-2 H2: 55 in (1.4 m)

Mass of Each Barrier Element

Approximately 1500 lbs (680 kg)

13" Steel Reactive Tension System (SRTS)

High strength steel structure filled with concrete and Reactive Tension elements resulting in the narrowest profile and low deflection. Ideal for use where low deflection is required and minimum lane width exists.

Permanent Deflection

MASH TL-3: 46.5 in (1181 mm)

Mass of Each Barrier Element

Approximately 1575 lbs (715 kg)

Case Study

M20 Operation Brock (Port of Dover) / Kent, UK

Results

- More than 15,000 commercial trucks cross daily to import/export freight
- With Brexit and the need for border inspections, the Road Zipper moveable barrier traffic management strategy helped manage commercial traffic queuing (when disruptions occur) and minimal delay for non-commercial traffic using M20
- Efficient travel in both direction during port disruptions
- Capacity Improvement and optimal use of M20 rather than new construction
- Investment in a flexible, safe and long-term value solution
- Easy and quick deployment and removal of the managed contraflow lane

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