

QUICKCHANGE® MOVEABLE BARRIER

FOR CONSTRUCTION APPLICATIONS



IMPROVES SAFETY

Workers and motorists have positive barrier protection at all times.

REDUCES CONGESTION

QMB allows more lanes to be open for peak traffic at all times by reconfiguring the roadway in real time.

SPEEDS CONSTRUCTION

By combining or eliminating stages due to the larger work space, contractors can save months or even entire construction seasons.

CREATES EFFICIENCIES

Dedicated haul lanes create safer, more efficient deliveries and material staging.

BETTER QUALITY REPAIRS

More work zone space allows contractors to use larger, more efficient equipment, resulting in better quality repairs that last years longer.

RAPID STAGE CHANGES

Moveable barrier reconfigures the road in minutes. It can take days to reposition miles of temporary concrete barrier.

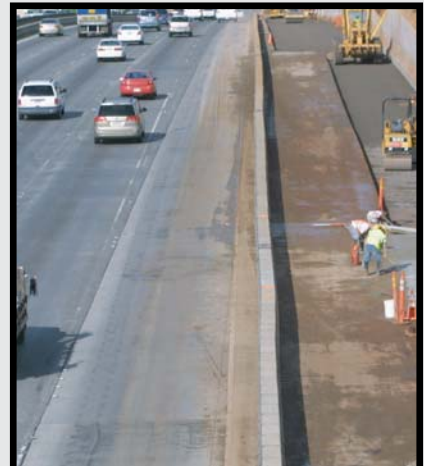
ROAD WIDENING OR SHOULDER / MEDIAN REPAIR

H-1 FREEWAY, HAWAII: ROAD WIDENING

When working in the shoulder or median, moveable barrier allows the contractor to expand the work zone during off-peak traffic hours by taking one or more lanes from traffic. More work zone space can be used for dedicated haul lanes or allow for larger, more efficient equipment. These options help the contractor combine stages and accelerate construction for early job completion with better quality repairs.



More room to work during off-peak



More lanes for traffic during peak

An extra lane is returned to motorists prior to the peak traffic period - Honolulu, HI

EDGE OF ROAD CROSS SECTIONS



Peak Traffic Condition



Off Peak Traffic Condition

The QuickChange® Moveable Barrier System (QMB®) is designed to create a flexible, positive traffic barrier between opposing lanes of traffic, or between motorists and construction work zones. The system uses a wall of interlocked 1-meter barriers that can be lifted and repositioned by a transfer machine to create additional work zone space for construction crews, and to provide more

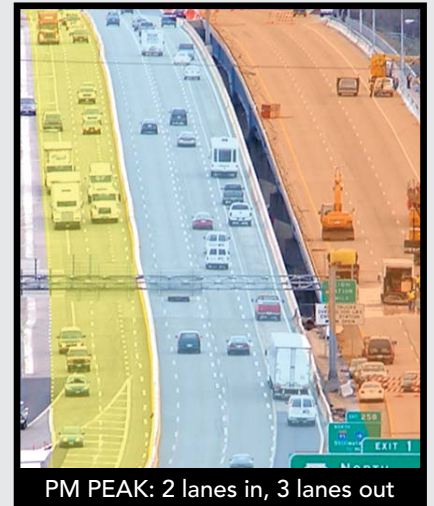
lanes to the peak traffic direction to mitigate congestion. For widening work and shoulder / median repair, QMB allows the contractor to increase the size of the work zone during off-peak traffic hours to create dedicated haul lanes and use larger, more efficient equipment to combine or eliminate stages and significantly accelerate the construction process.

For partial width construction with traffic switches, the QMB system reduces congestion by enabling more lanes to be open during peak hour traffic. The barrier is moved several times per day to reconfigure the roadway in real time to maximize the number of lanes available for peak traffic.

PARTIAL WIDTH CONSTRUCTION WITH TRAFFIC SWITCH

ST. CROIX RIVER BRIDGE, WISCONSIN: PARTIAL WIDTH CONSTRUCTION

During partial width construction, QMB helps keep more lanes open in the peak traffic direction at all times by reconfiguring the road in real time as a “moveable median” with no disruption to live traffic. This significantly reduces traffic queues and user delay costs, and it saves hundreds of thousands, or even millions of dollars in temporary asphalt widening to meet minimum traffic flow requirements.



Award winning I-94 St. Croix Bridge construction project – Wisconsin, USA

TRAFFIC SWITCH CROSS SECTIONS



AM Peak Traffic



PM Peak Traffic

PHYSICAL SPECIFICATIONS

QuickChange Moveable Barrier

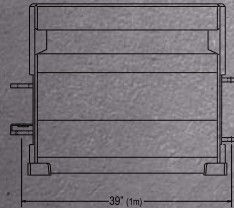
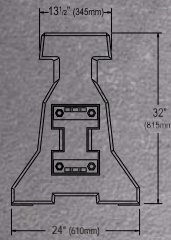
Heavily reinforced concrete barrier sections have similar deflection and superior vehicle stability when compared to standard Temporary Concrete Barrier

Performance

Tested and Approved to NCHRP Report 350, Test Level 3 (100 km/h)
Maximum Deflection at TL3: 52 in. (1.3m)

Mass of Each Barrier Element

Approximately 1425 lbs (646 kg)



| BARRIER TRANSFER MACHINE | |
|---------------------------------|-----------------------------------|
| Transfer Speed | 5 mph (7km/h) |
| Roading Speed | 20 mph (32km/h) |
| Lateral Transfer | Up to 18 feet (5.5m) per transfer |
| Transfer Time | 1 mile in 12 minutes |

QMB CONSTRUCTION CASE STUDIES

Devore, CA I-15

Type: Pavement Reconstruction
Contractor: Coffman Specialties
Project Length: 2 miles

- Project completion accelerated from 8 months to 6 weeks
- Construction savings of more than \$6 million
- Traffic queues and user delay costs minimized¹



Salt Lake City, UT SR 171

Type: Arterial Widening
Contractor: Granite Construction
Project Length: 1.7 miles

- Project completed 7 months ahead of schedule
- Moveable barrier benefits estimated at \$1.7 million to \$2.4 million
- B/C ratio of 10:1 "if all benefits are considered"²



¹ CalTrans, CA4PRS

² T.Y. Lin International, Evaluation of Moveable Barrier in 2 Construction Work Zones

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