16th World Meeting

Safe Dynamic Highways

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CONGESTION AROUND THE WORLD
Unless something changes, Americans can expect to spend 160 hours annually (4 work weeks) stuck in traffic by the year 2035.
Congestion Causes....

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Wasted Valuable Fuel
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Air Pollution

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Congestion Causes....

Wasted Valuable Fuel
Air Pollution
Unsafe Roads
Congestion Causes....

WASTED VALUABLE FUEL
AIR POLLUTION
UNSAFE ROADS
ROAD STRESS!
Social costs:
Situation in Europe: +/- 100 billions €/year
Situation in the USA: +/- 90 billions $/Year

TIME IS MONEY

* Traffic congestion in Europe, table ronde de l’ECMT (European Conference of Ministers of Transport), 2006

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WHAT CAN BE DONE TO ALLEVIATE THIS CONGESTION?
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- use mass transit
- use ramp metering
- use congestion tolling
- use alternative day licence plates

But also:
- build new roads
- use the existing infrastructure more efficiently
Traffic flow the basic principle

**Capacity [vehicles / hour / lane]**

- **Optimal limit (MIN)**: 1500
- **Upper limit (MAX)**: 1800

In Europe the target is to maintain an average of 1600 UVP/h (work situation).

- **Fluid traffic flow**
- **Stop & go – slower traffic**
- **Traffic Jam**
"Dynamic Highways" will reduce congestion using existing lanes

• A "Dynamic Highway" is a road designed to interact with motorists and respond to capacity needs. It utilizes many of the features identified as well as managed lanes.

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Managed Lanes can use existing roads to redistribute traffic to match peak demand

"Dynamic Highway"

“Directional Peak” traffic flow
Managed Lanes redistribute traffic using underutilized road lanes

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QMB - Quick Movable Barriers

would provide the appropriate tool to manage lanes
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Permanent Applications

Construction Applications

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Center lanes may be expanded, eliminated, or relocated to optimize general purpose and special use lanes.
Typical Moveable Barrier Applications:

Permanent median barrier
HOV – Contraflow
Dallas, Texas DART I-30

- Vehicle Occupancy:
  US Average = 1.1
  Dallas HOV = 2.9

- Saves 14 minutes / day
  (Approx. 1 Million hours/year)

- Benefit to Cost Ratio = 6.5 : 1
HOV-Contraflow
Honolulu, Hawaii H-1

- Move More People with Fewer Vehicles
- Reduced morning HOV commute by 25 minutes
- Increased average number of passengers per vehicle
- Increased Bus transit rider ship by over 89%
- Benefit to Cost ratio > 10 : 1

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Creating Managed Lanes with Moveable Concrete Barrier

Contraflow Lanes

Moveable Median (Reversible Lanes)
The Dynamic Highway

Including Moveable Barrier in the Planning Stages
Just a Few of the Managed Lanes Applications Using Moveable Concrete Barrier Around the World

- New Zealand
- Dallas, TX
- Tappan Zee Bridge, NY
- Montreal, Canada
- San Diego, CA
- Boston, MA
- Washington, D.C.
- Honolulu, HI
- Puerto Rico (Multiple)
- Gowanus Expressway, NY
- Midtown Viaduct, NY
- Seattle, WA
- Ben Franklin Bridge, PA
- Walt Whitman Bridge, PA
- Commodore Barry Bridge, PA
- Mexico City, Mexico

Would this not suit to European cities as well?

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System Features

2 primary elements: Barrier Transfer Machine and barrier
Tested to NCHRP 350, EN1317 for positive barrier protection
Reduces fuel consumption and air pollution

The system moves the barriers at

10 to 15 Km/h

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“Green” Benefits of Moveable Barrier

Traffic moving at a faster speed reduces CO$_2$ emissions

H-1 Freeway, Honolulu, HI

• “Zipper” lane commuters save 25 minutes on the morning commute
“Green” Benefits of Moveable Barrier

Traffic moving at a faster speed reduces CO$_2$ emissions
HOV ridesharing means less vehicles on the road

East R.L. Thornton Freeway, Dallas, TX

- Carpoools Increased 300%*
- Bus Ridership Increased 38%
- 15,000 Commuters Daily in the aHOV Lane
- Vehicle Occupancy:
  US Average = 1.1
  QMB™ Dallas = 2.9

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“Green” Benefits of Moveable Barrier

Traffic moving at a faster speed reduces CO$_2$ emissions
HOV ridesharing means less vehicles on the road
Less construction = less damage to the environment
Safe Dynamic Highways
Moveable Barrier Summary
1. Add More Lanes: Into and out of urban centers without costly constructability and environmental reviews
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6. **Reusable Asset**: Deploy and re-deploy MB to meet changing traffic conditions and extend service highway life between major reconstructions
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Permanent Applications

Construction Applications

You can make the difference! Thanks you