

New Open Road Tolling Technologies on Tampa's Elevated Reversible Express Lanes

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Expressway Authority

Open Road Tolling

- All Electronic Toll Collection
- No Cash Tolls – No Toll Booths
- No Stopping to Pay Tolls
- 100% Free Flow Traffic

Open Road Tolling

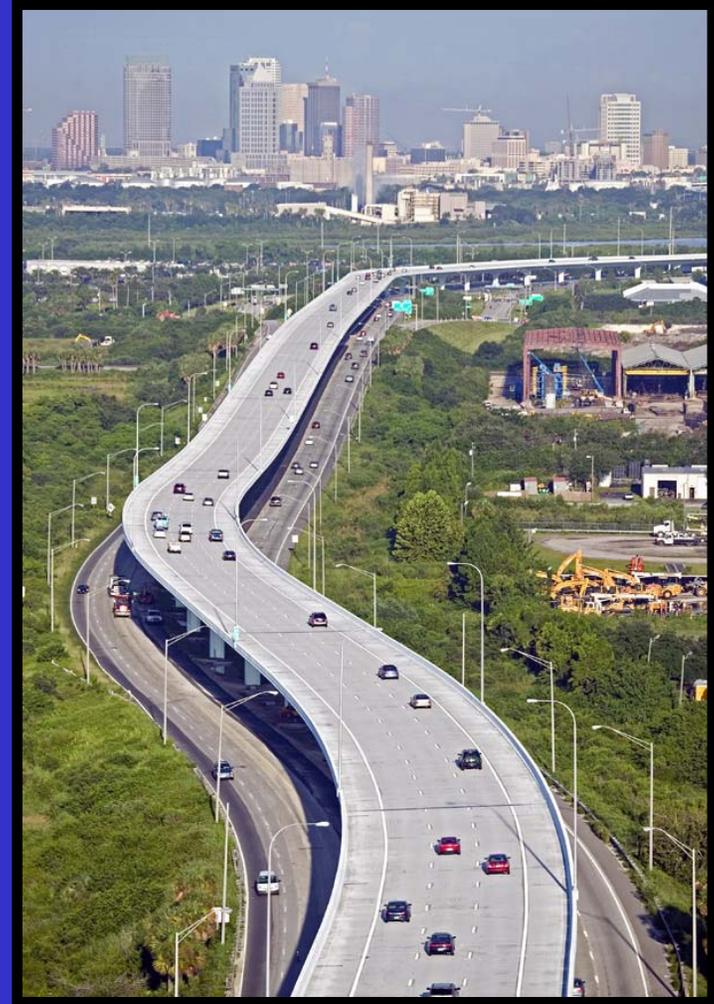
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- In-Vehicle RFID Transponders**
- Fixed Location Roadside Readers and Transmitters**

Open Road Tolling

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- 100% Free Flow Traffic
- In-Vehicle RFID Transponders
- Fixed Location Roadside
Readers and Transmitters
- High-Speed Photography & OCR
Equipment to Capture & Read
License Plate and Vehicle Images

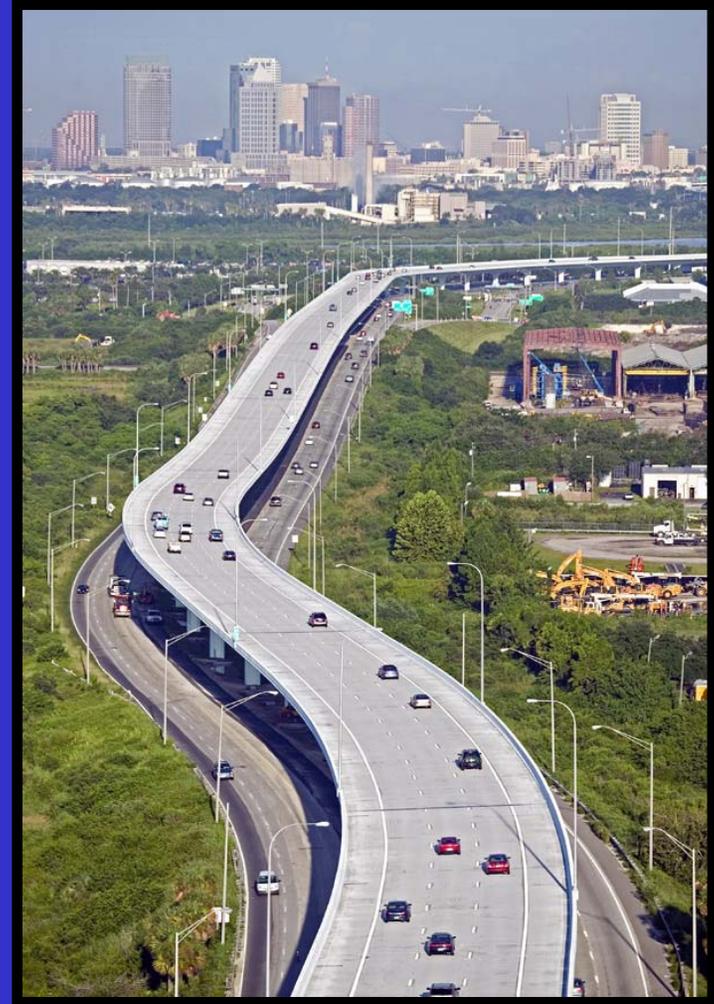
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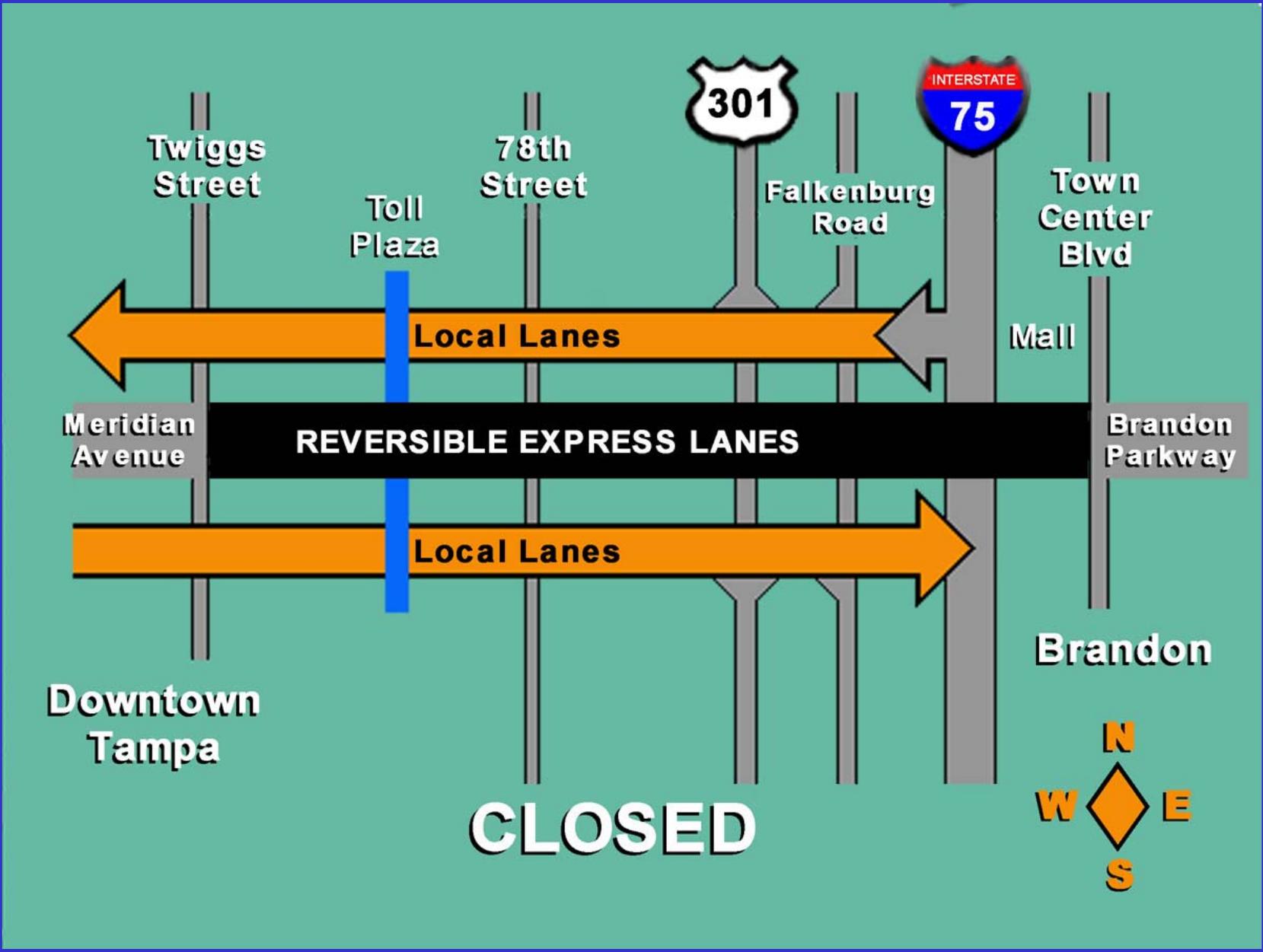
- ❑ Tampa Crosstown Reversible Lanes
- ❑ 3-lane Elevated Toll Facility in the Median of 4-Lane Toll Expressway
- ❑ Florida SUNPASS ETC System
- ❑ New Video Toll Collection Product (Toll-By-Plate)



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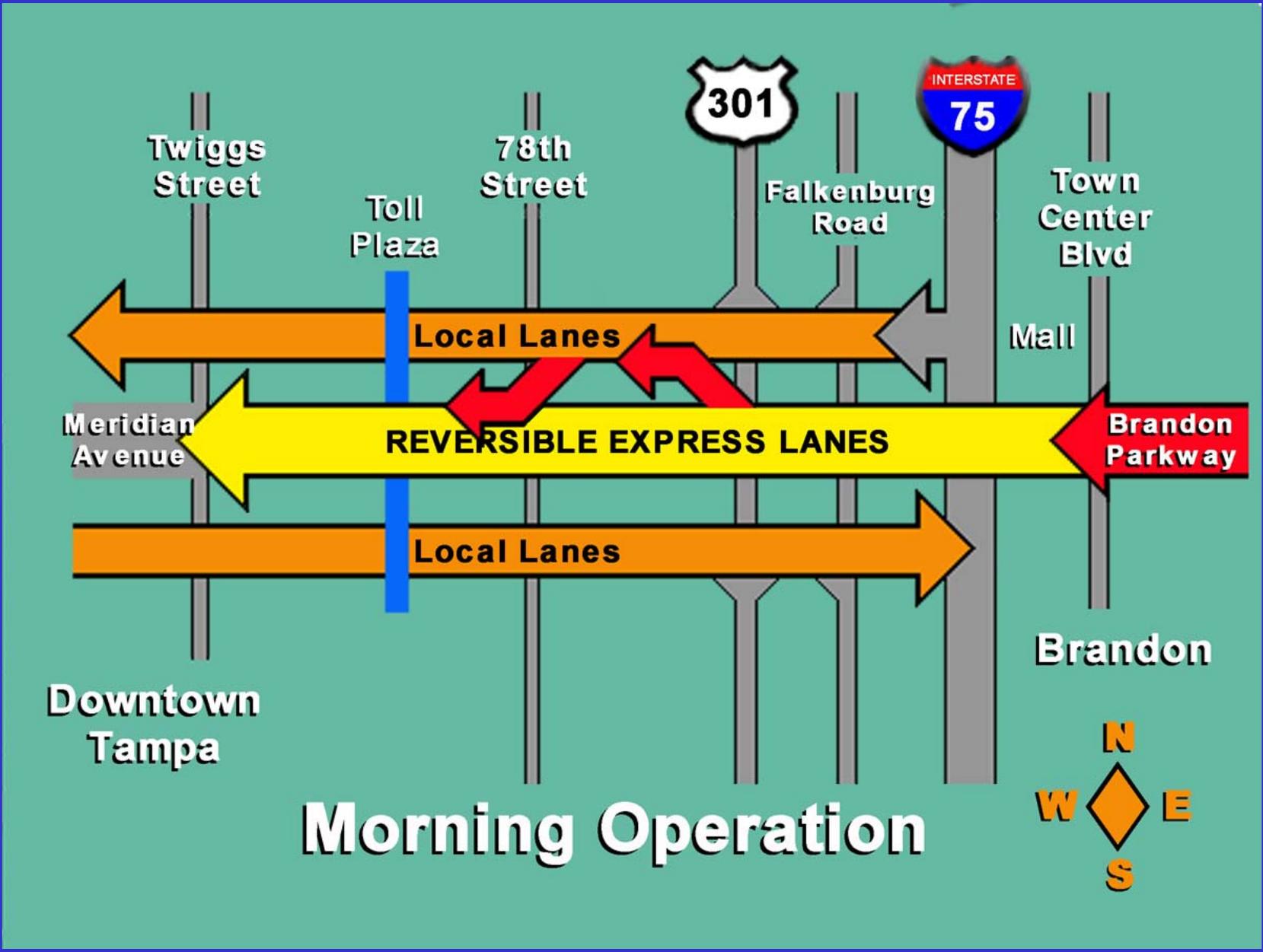
- ❑ **July, 2006 interim partial operations**
(WB 7/06=EB 8/06=Full 1/07)
- ❑ **November, 2006 Toll-By-Plate**
(Video Toll Account/Day Pass)
- ❑ **Total REL Traffic 14 - 15,000 ADT**
(2,500 over original traffic forecast for 1st-year ADT)

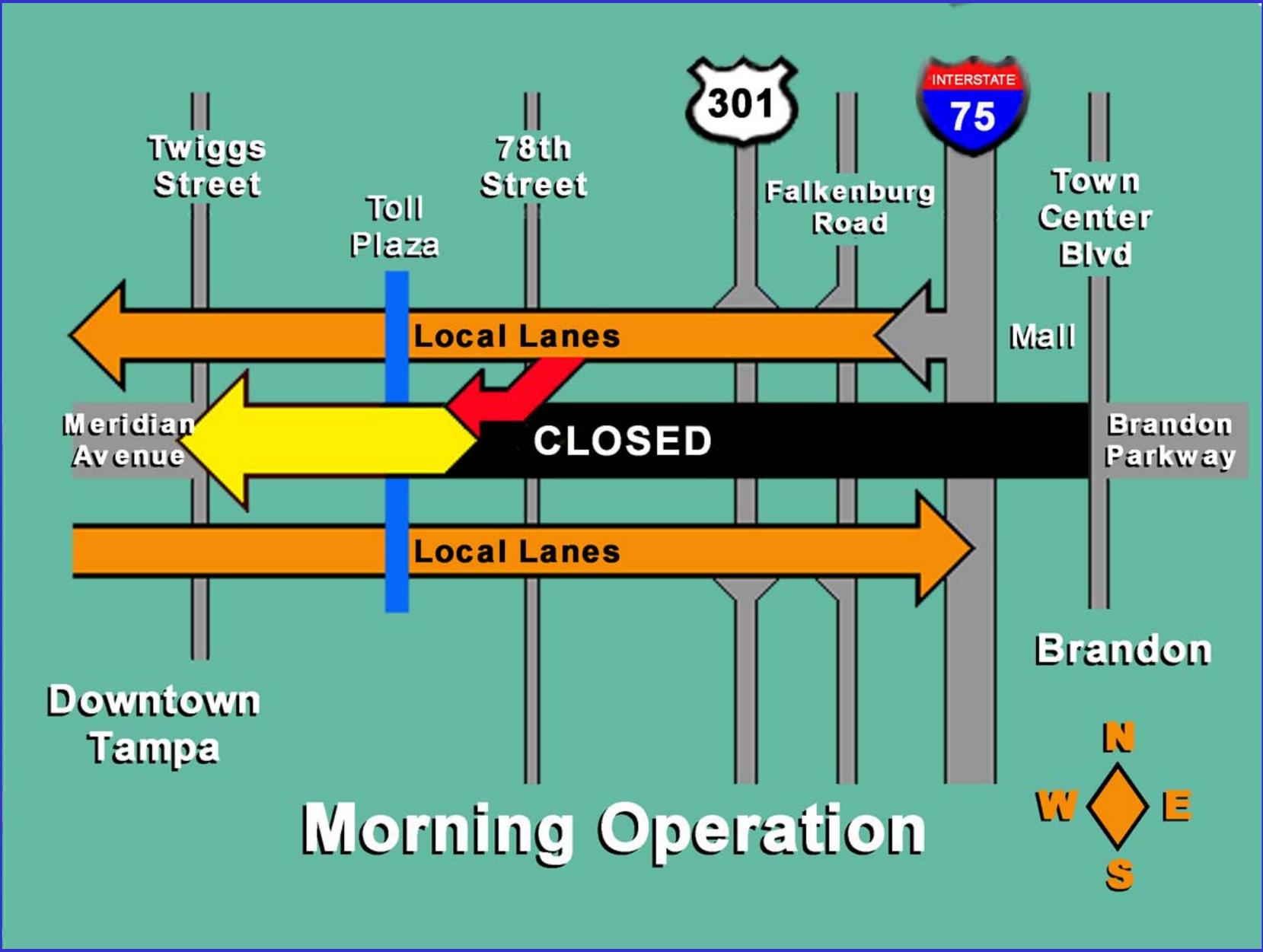




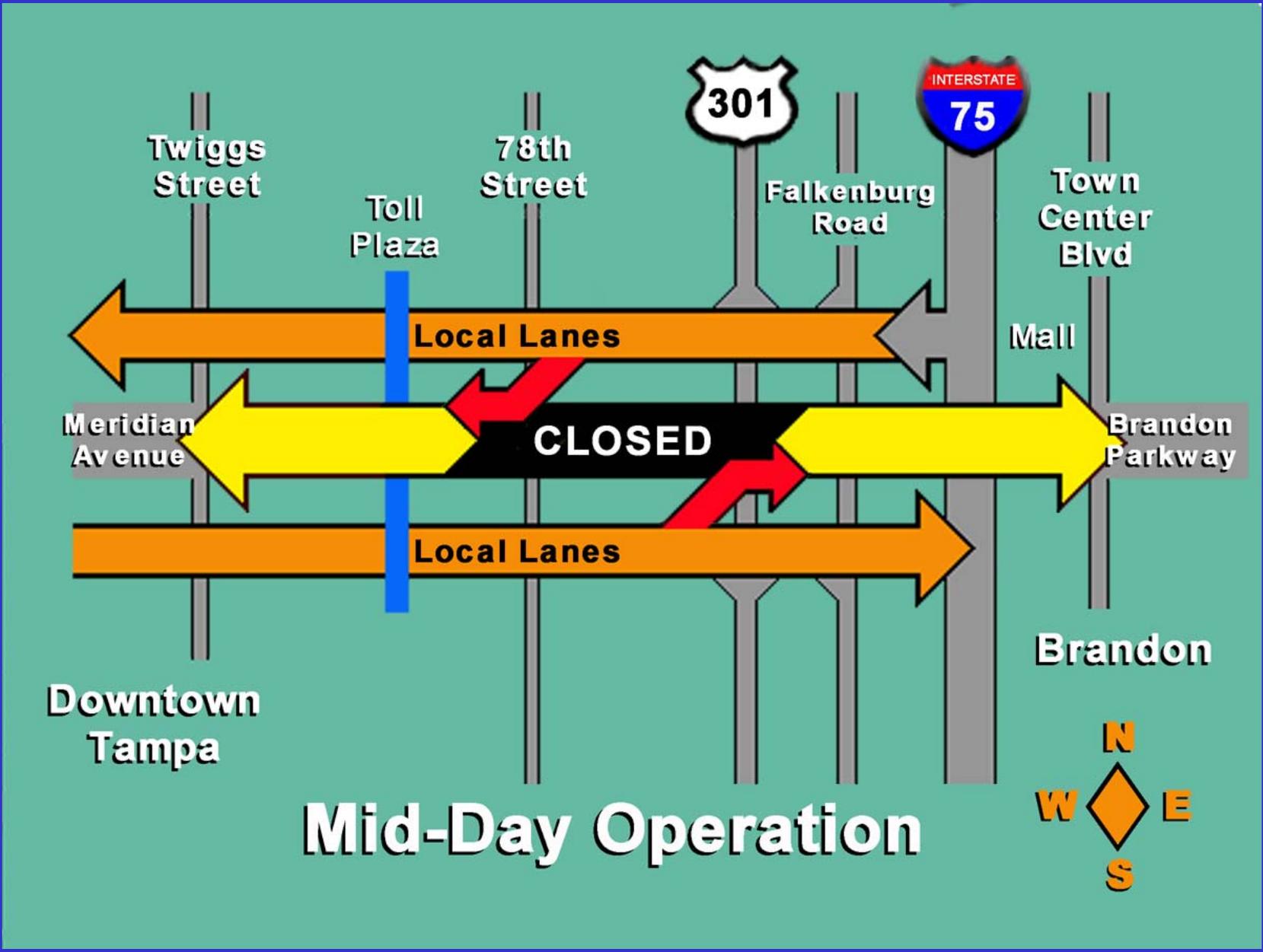
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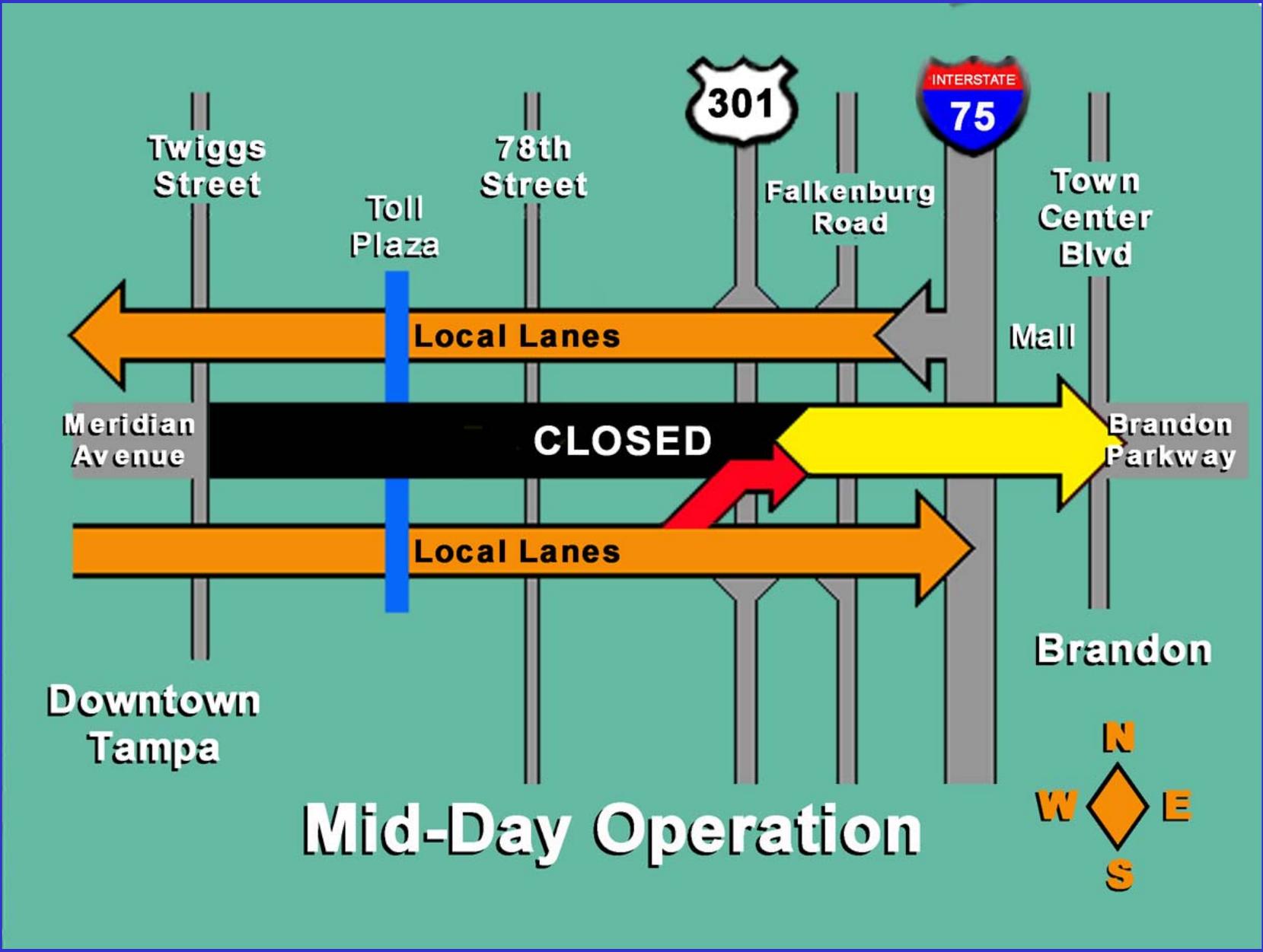




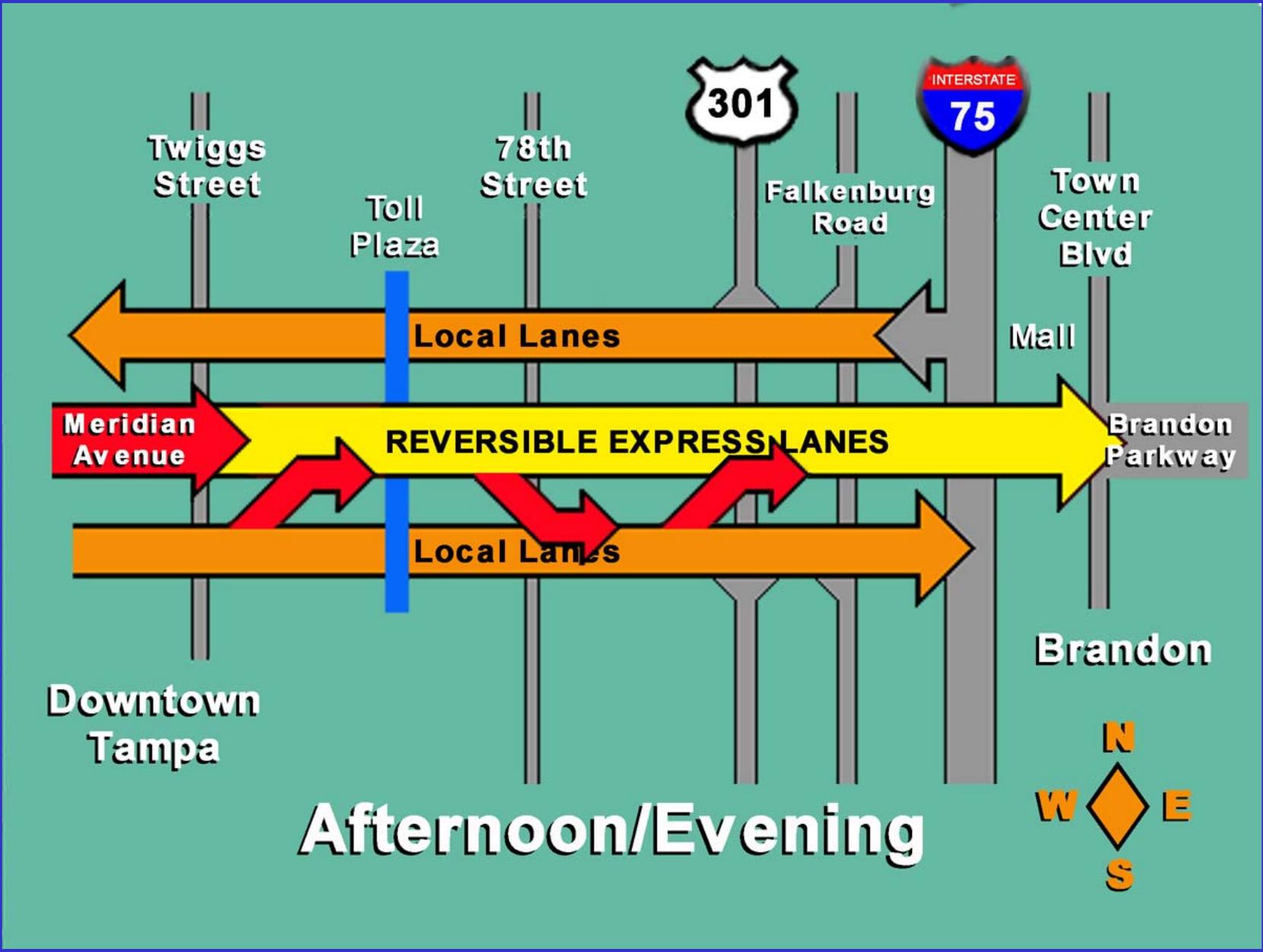
Morning Operation



Mid-Day Operation



Mid-Day Operation



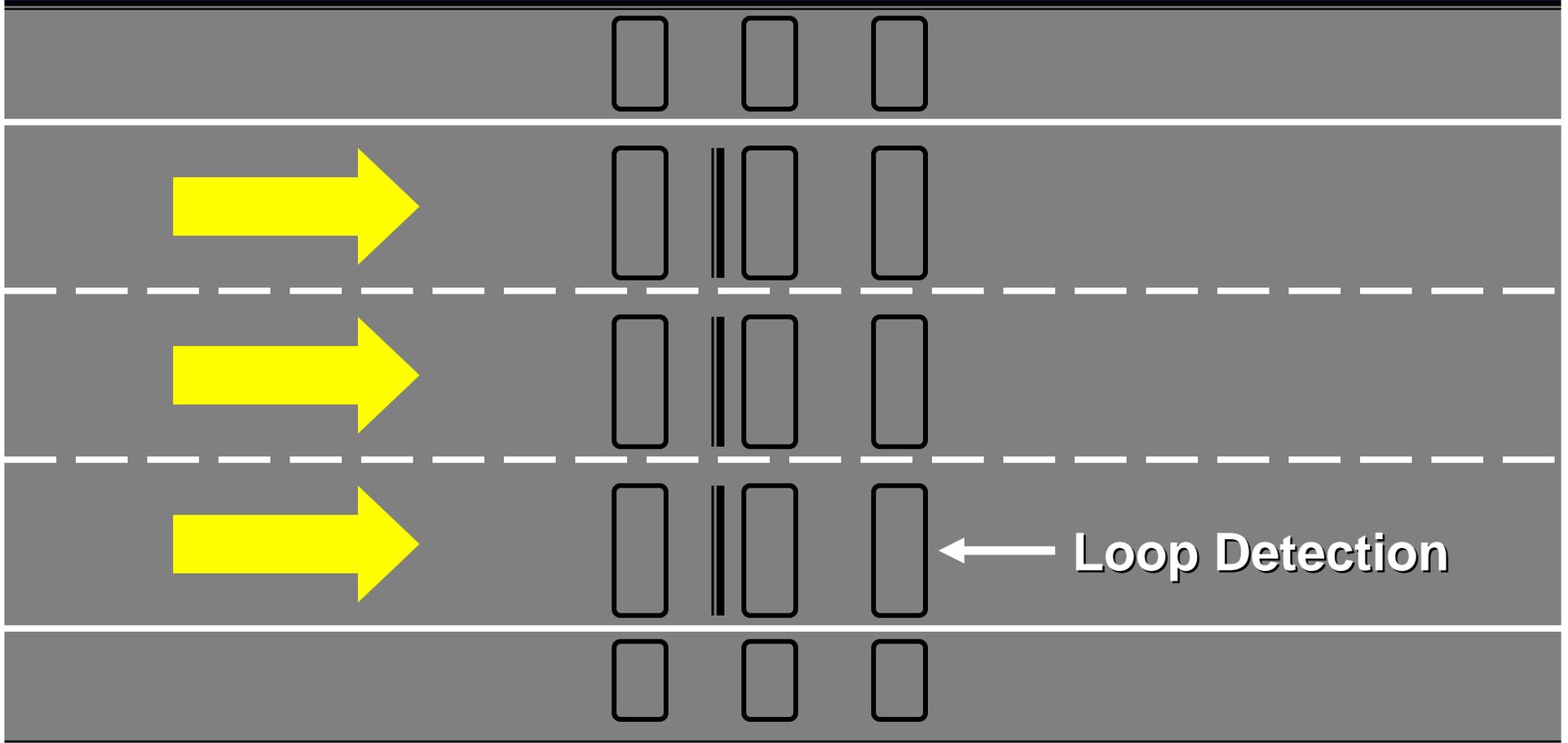


**Standard of Accuracy
Goal: > 99%**

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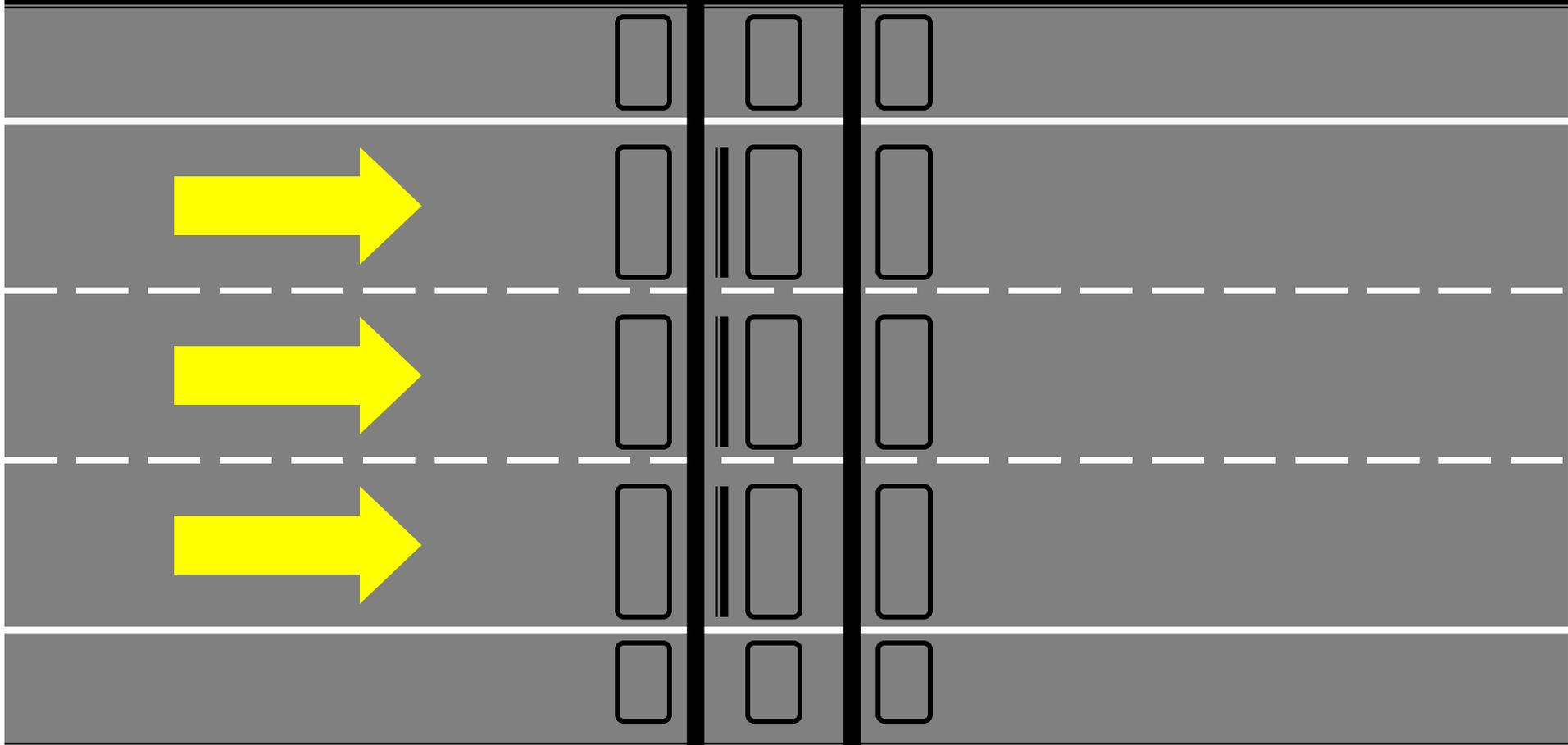
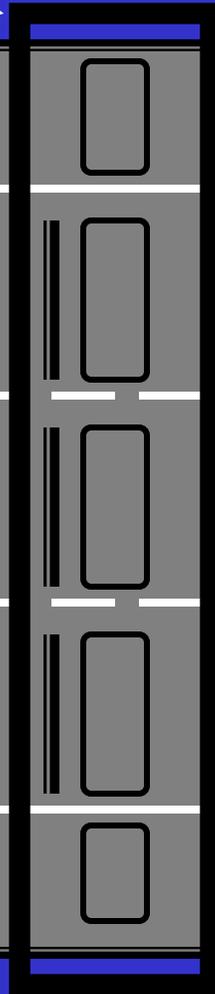


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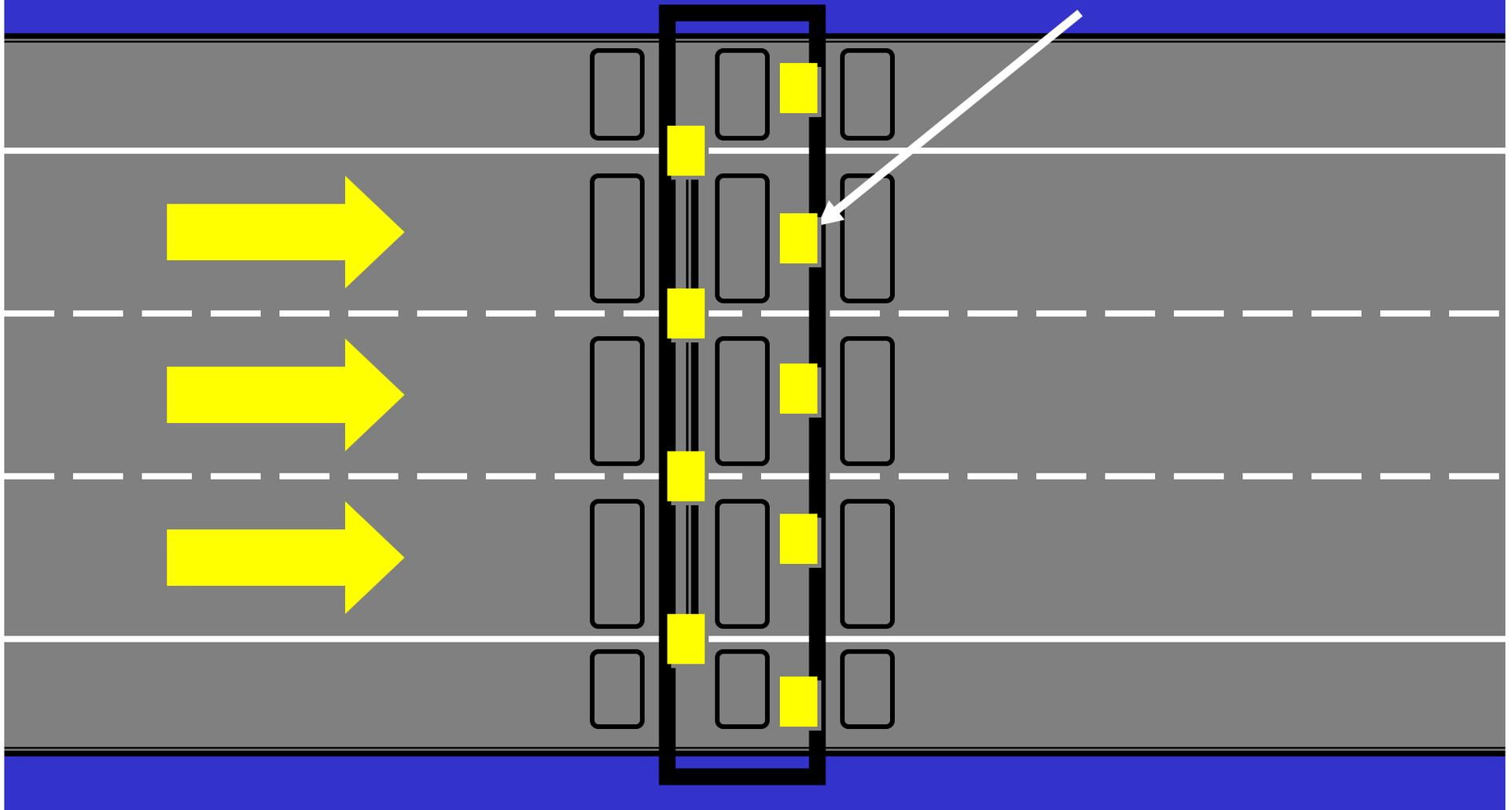
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Overhead Gantry



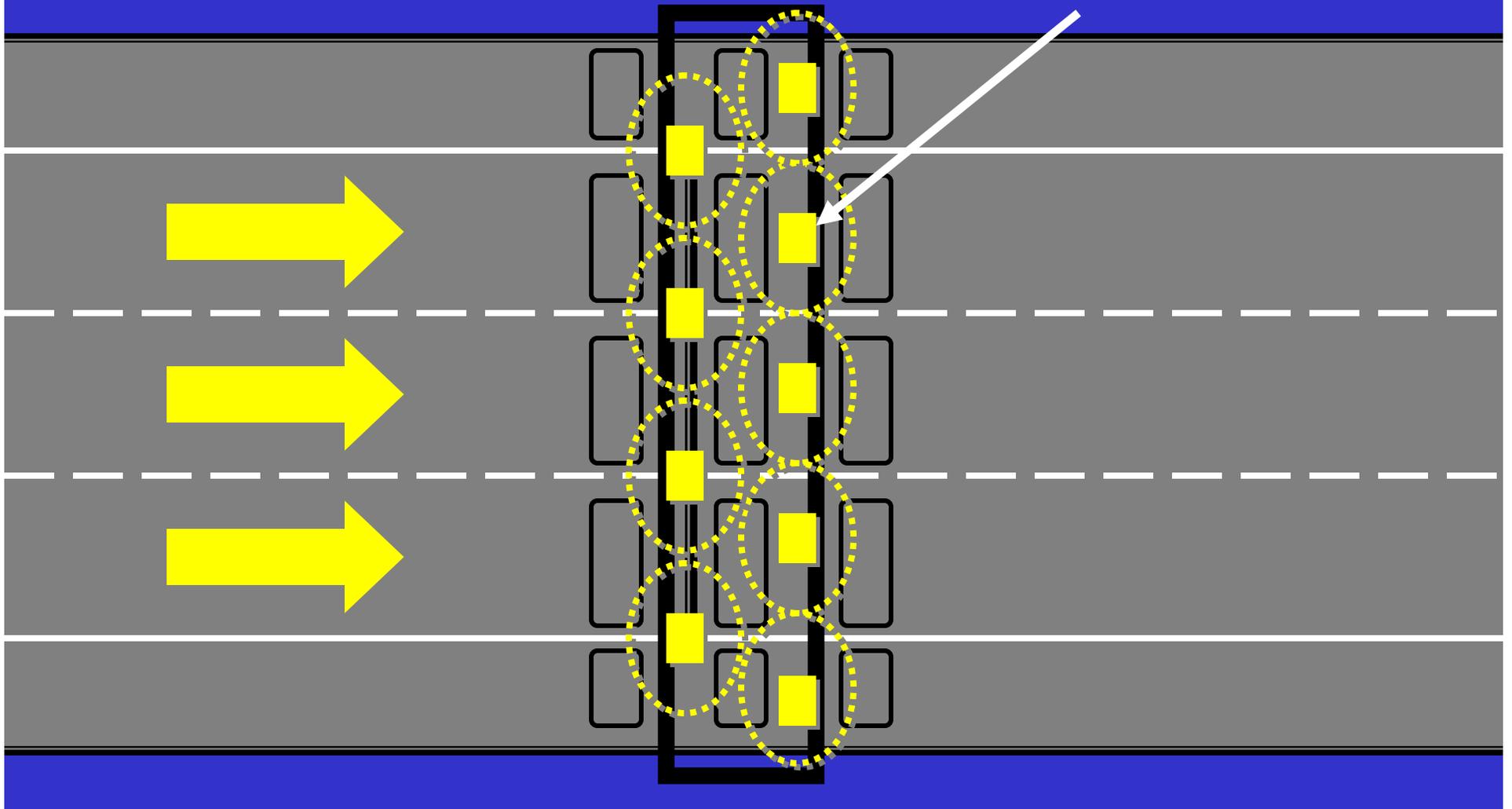
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Reader/Transmitter

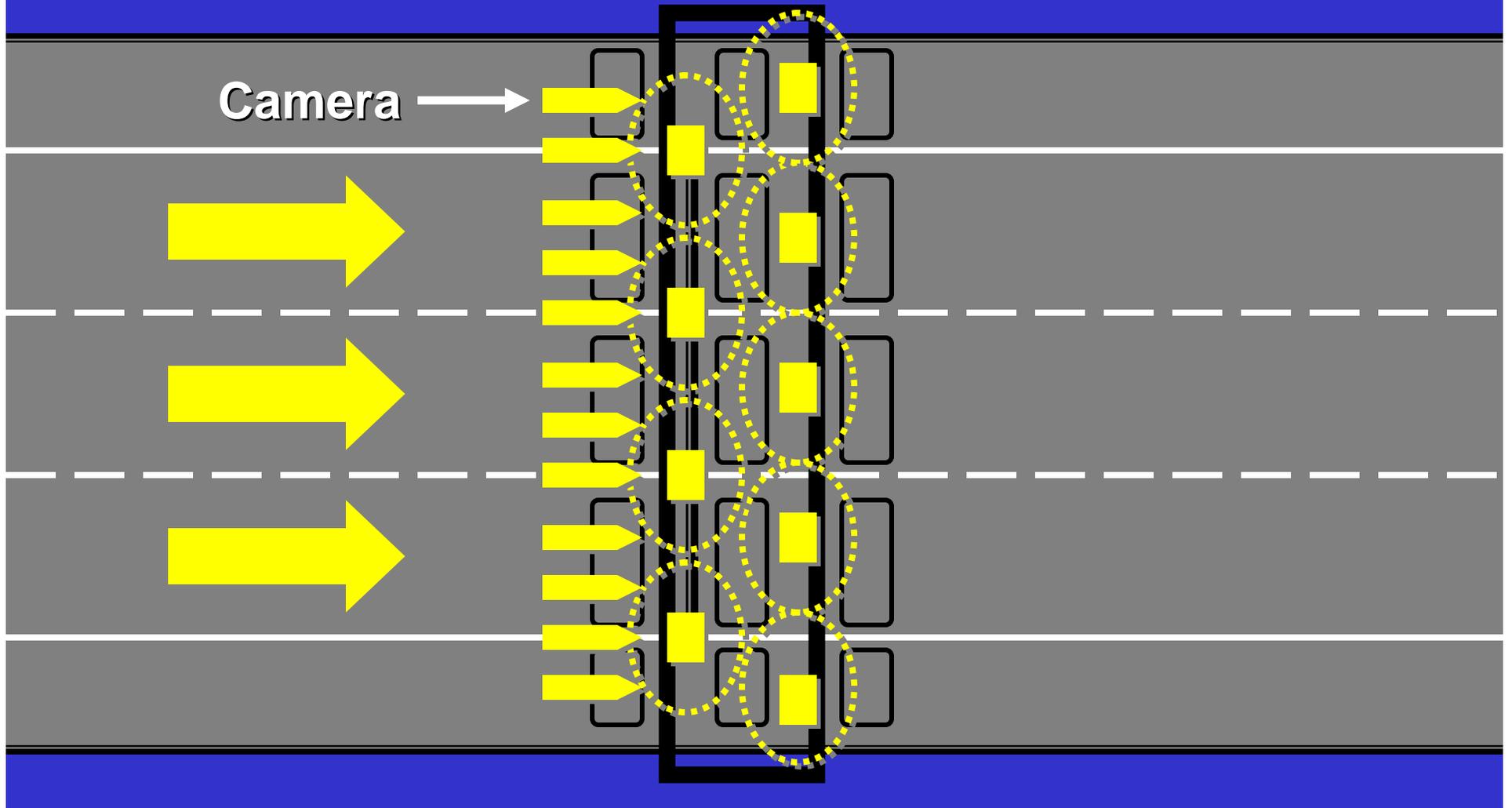


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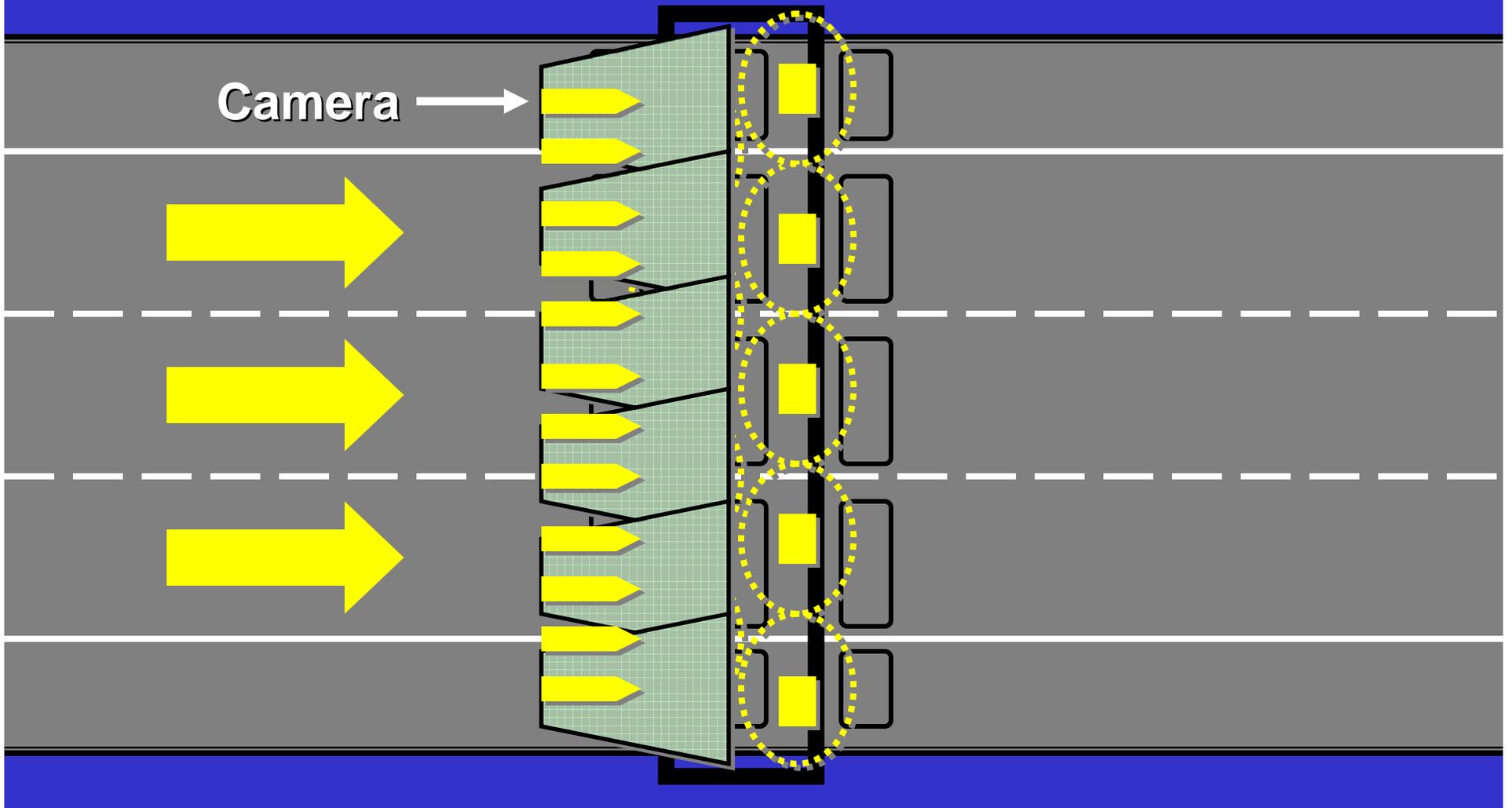
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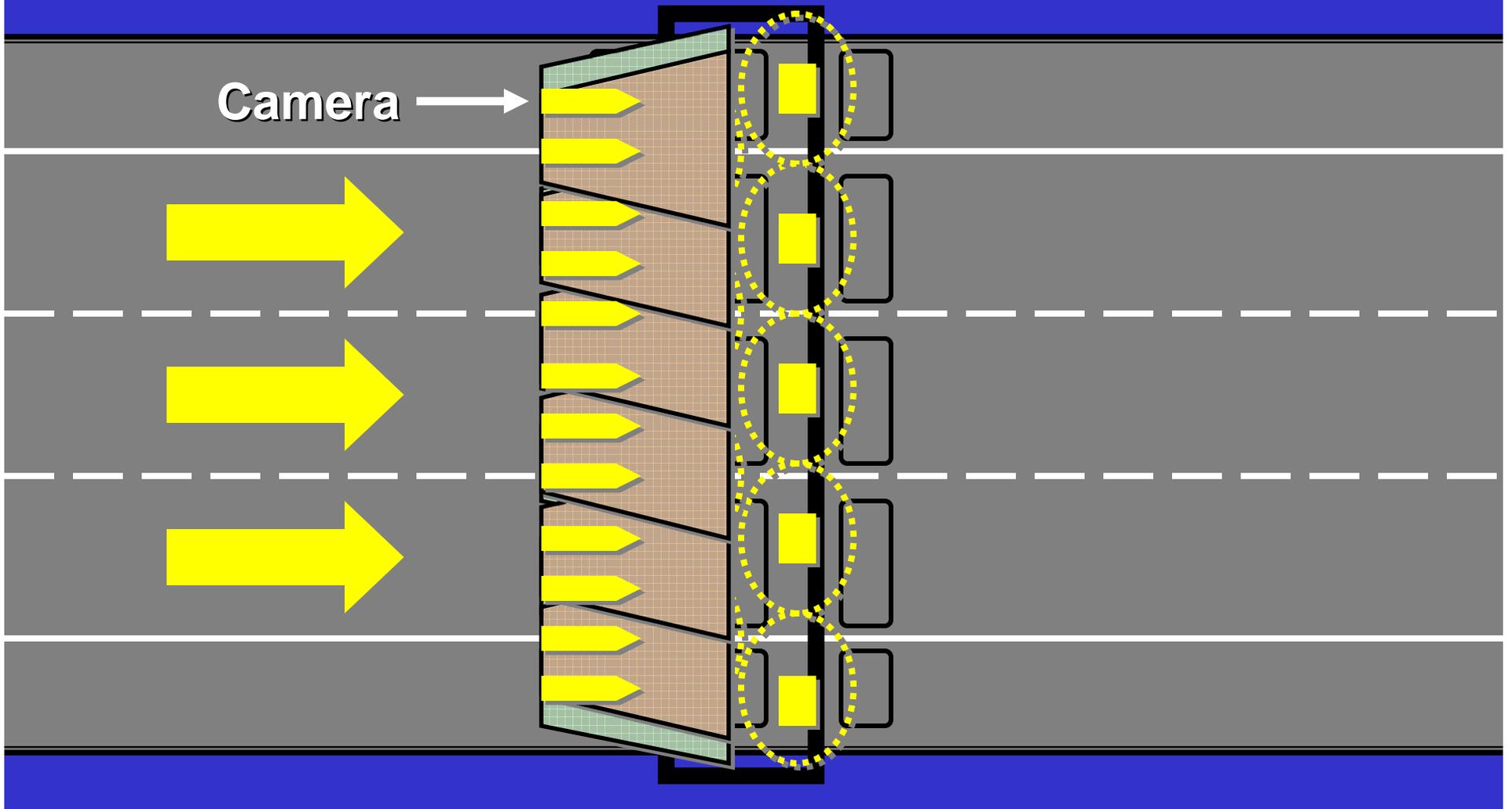
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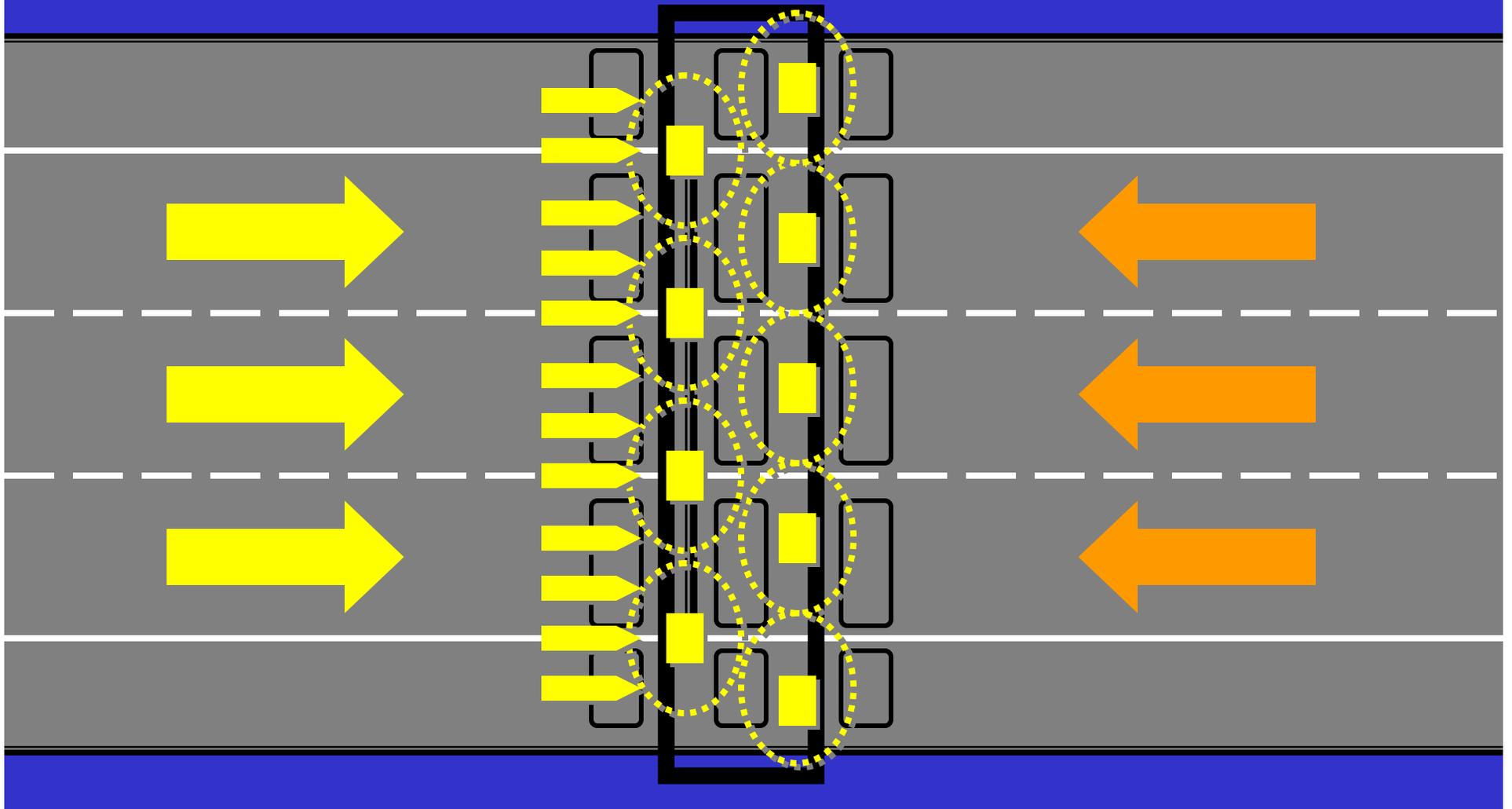
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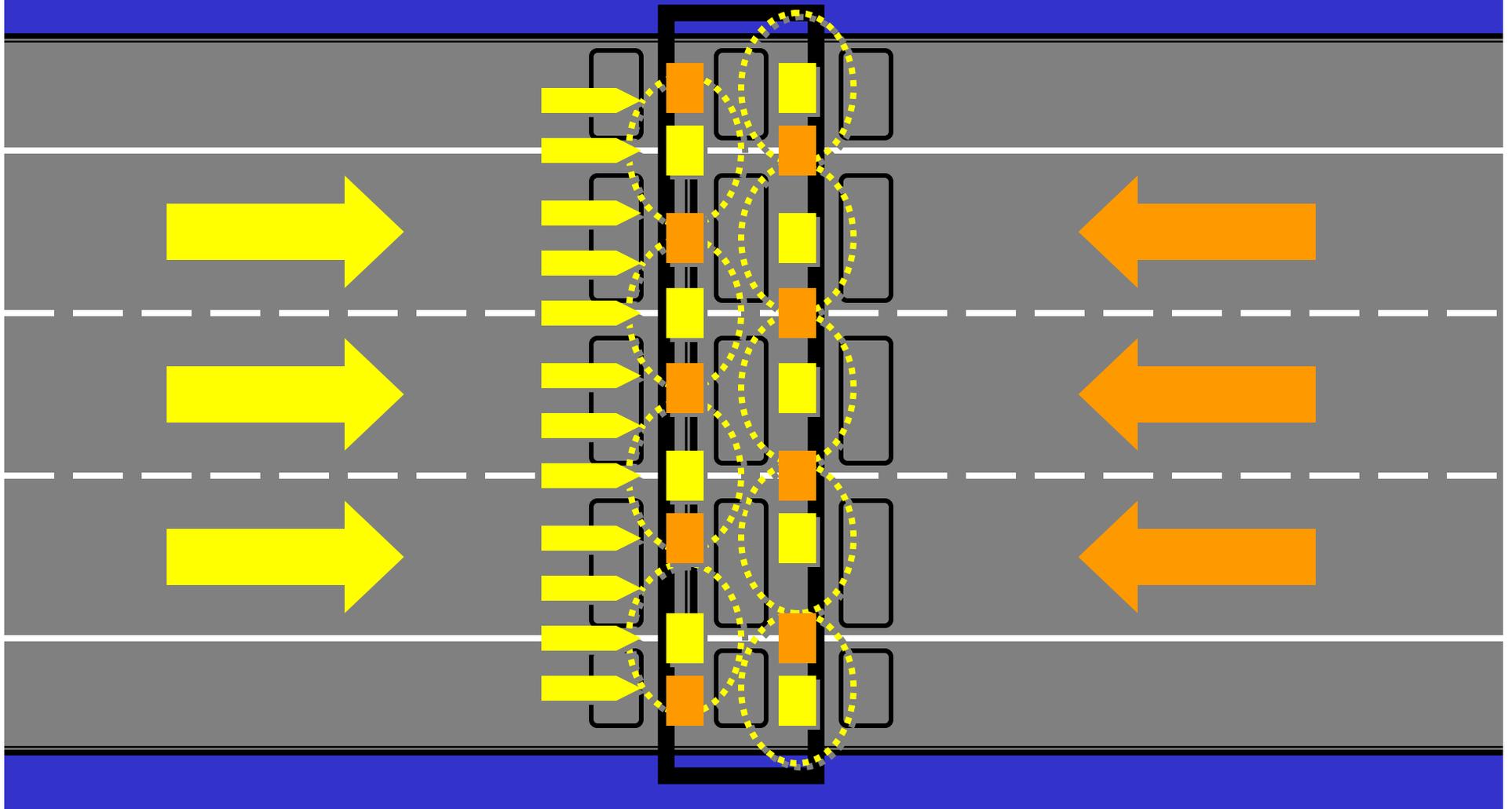
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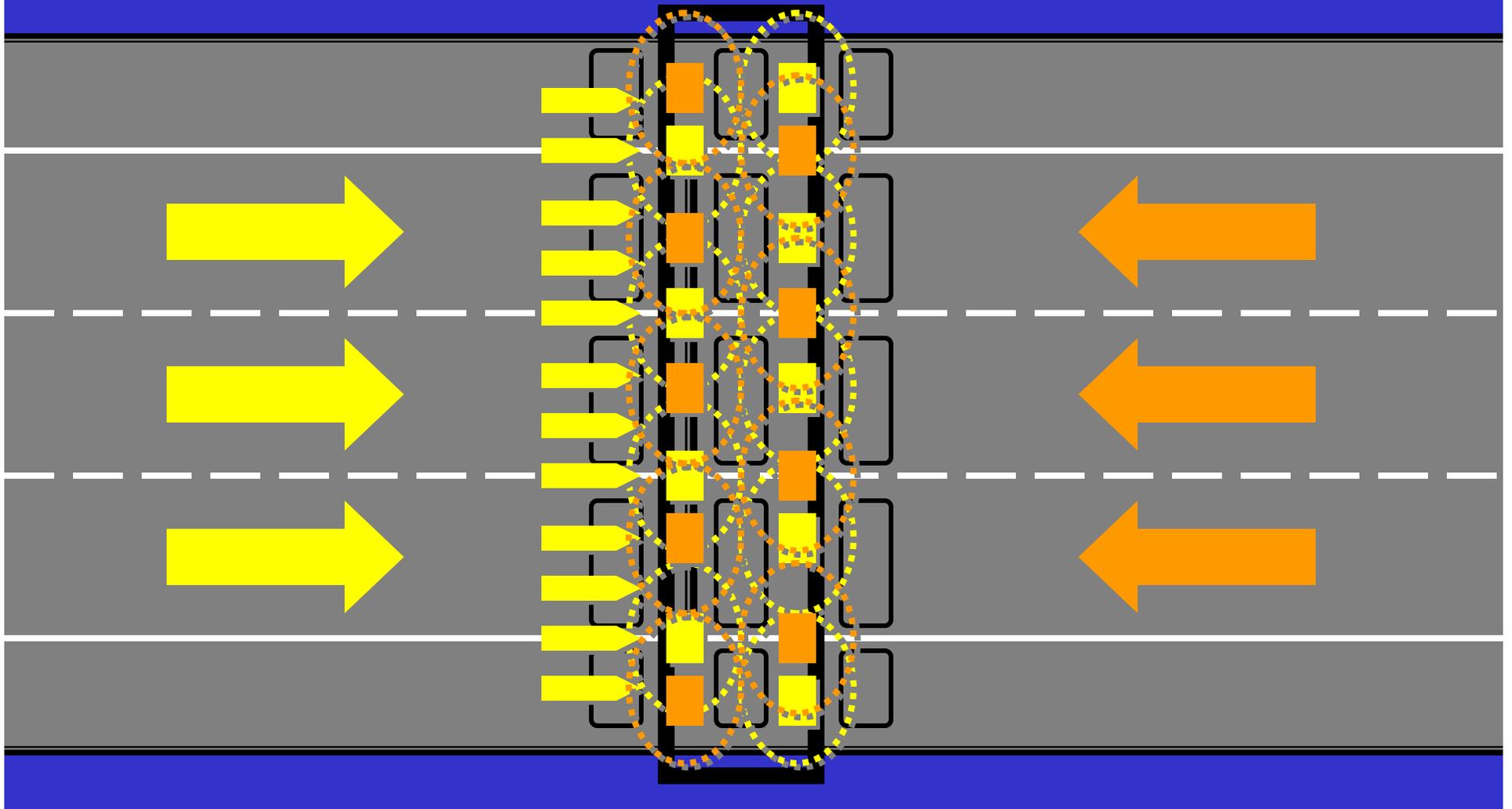
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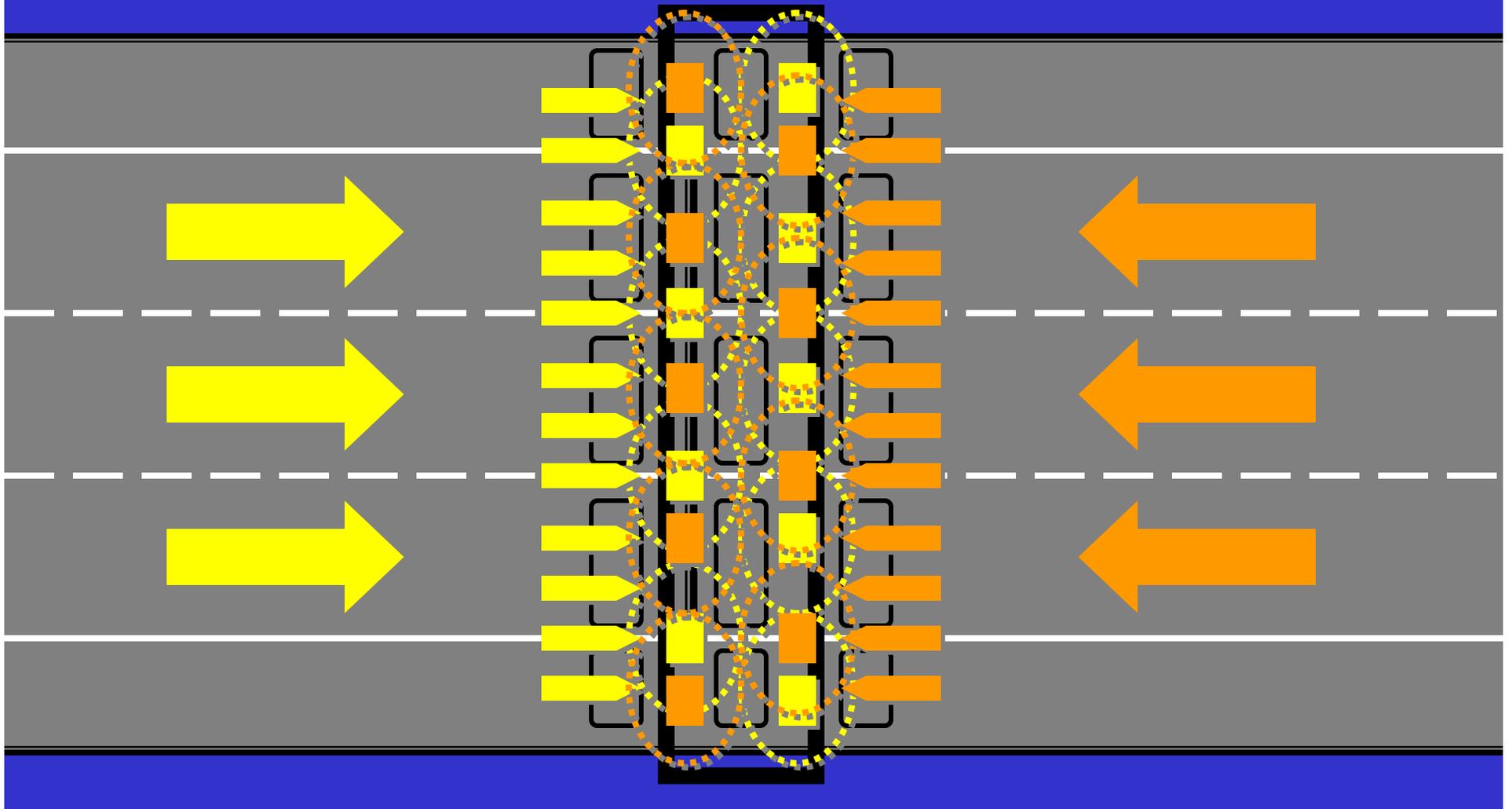
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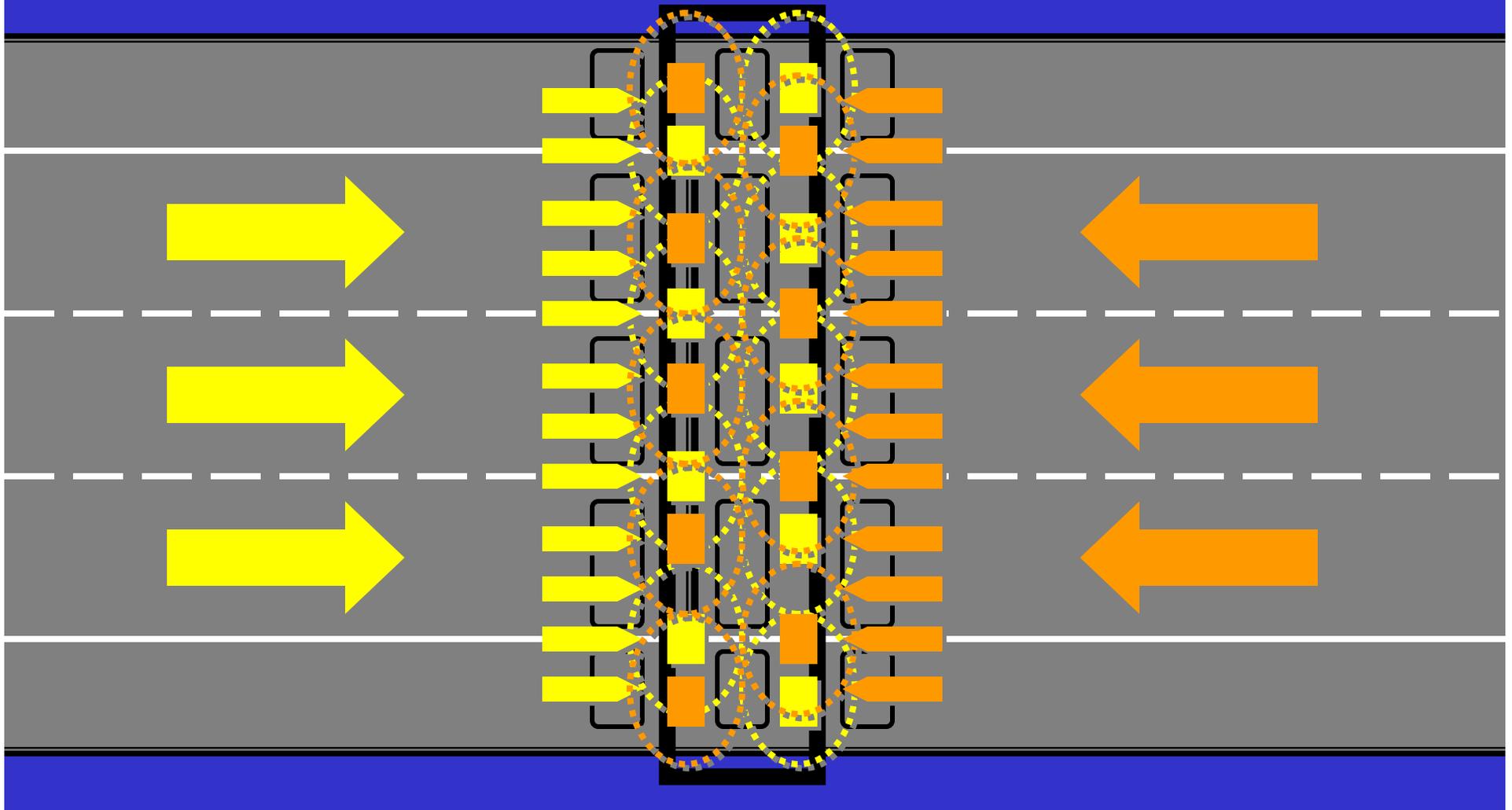
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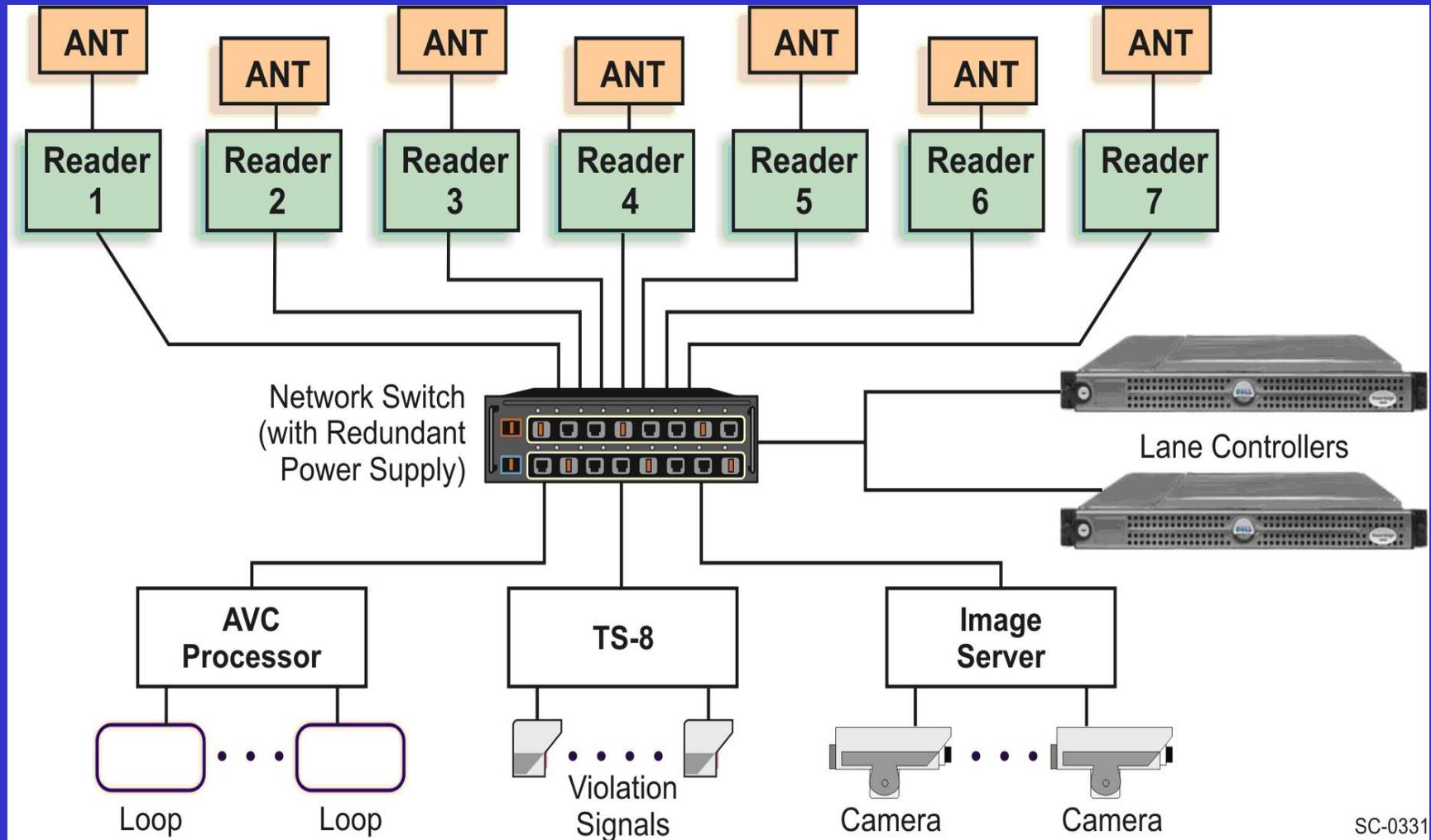
Open Road Tolling

24 High-Speed Cameras

18 Reader/Transmitters



Open Road Tolling



Open Road Tolling

Investment in State-of-the-Art Violation Enforcement

- High-Speed, High-Resolution Photography & Image Storage
- Automated Optical Character Recognition (OCR) System



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Three-Step Image Verification Process

- Photo Capture of Vehicle Image and License Plate
- Human Verification of 1st Photo of Vehicle and Plate
- Automated OCR Using PULNiX “Fingerprint” Image Matching System



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Dulles Greenway Proof of Concept --- 2,000,000+ Images (2004)

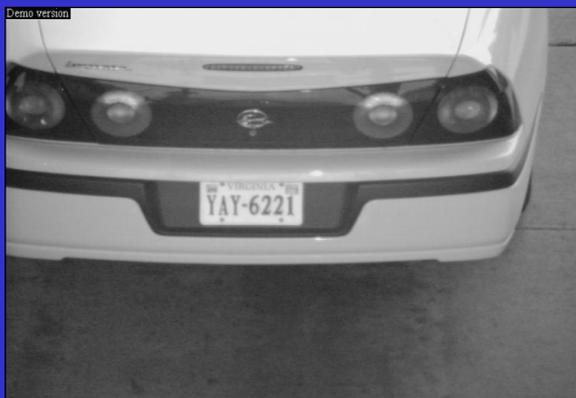
8/4/04 6:26 AM Eastbound



8/16/04 4:44 PM Westbound



8/5/04 9:03 AM Eastbound



8/14/04 10:14 PM Westbound



Courtesy of JAI PULNiX and Accenture

Open Road Tolling

Video images are “truthed” and then “matched” to the original reference image for all future image transactions.

7/22/04 4:44 PM Westbound



8/16/04 5:44 PM Westbound



Initial matching tests demonstrated an ability to distinguish among non-matching vehicles at an extremely high level of confidence --- even for images similar to those above, where nearly identical license plates would normally result in a false read and lead to inaccurate billing.

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Open Road Tolling

...while also identifying instances where the same license plate is located on a different vehicle as a reissued plate.

8/6/04 6:13 AM Eastbound



8/16/04 5:10 PM Westbound



The ability to create a “fingerprint” of each vehicle by associating the license plate with specific vehicle features results in dramatically reduced error rates and minimal manual review.

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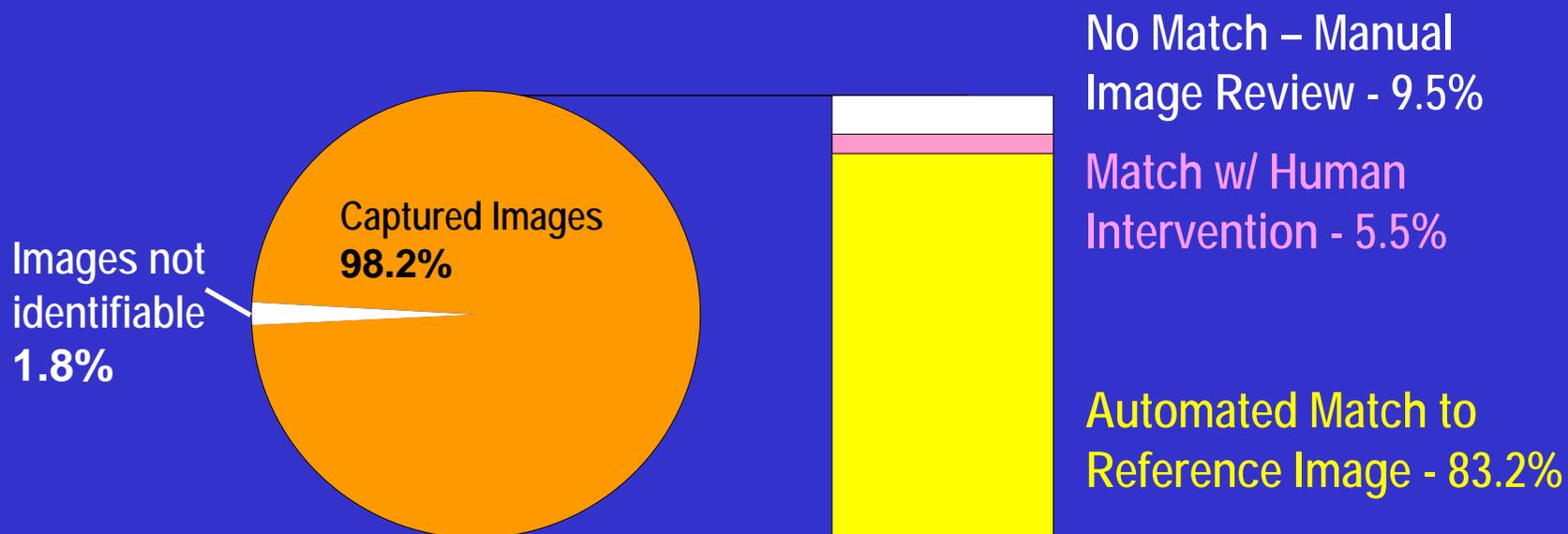
8/16/04 5:10 PM Westbound



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Dulles Greenway – Proof of Concept Results

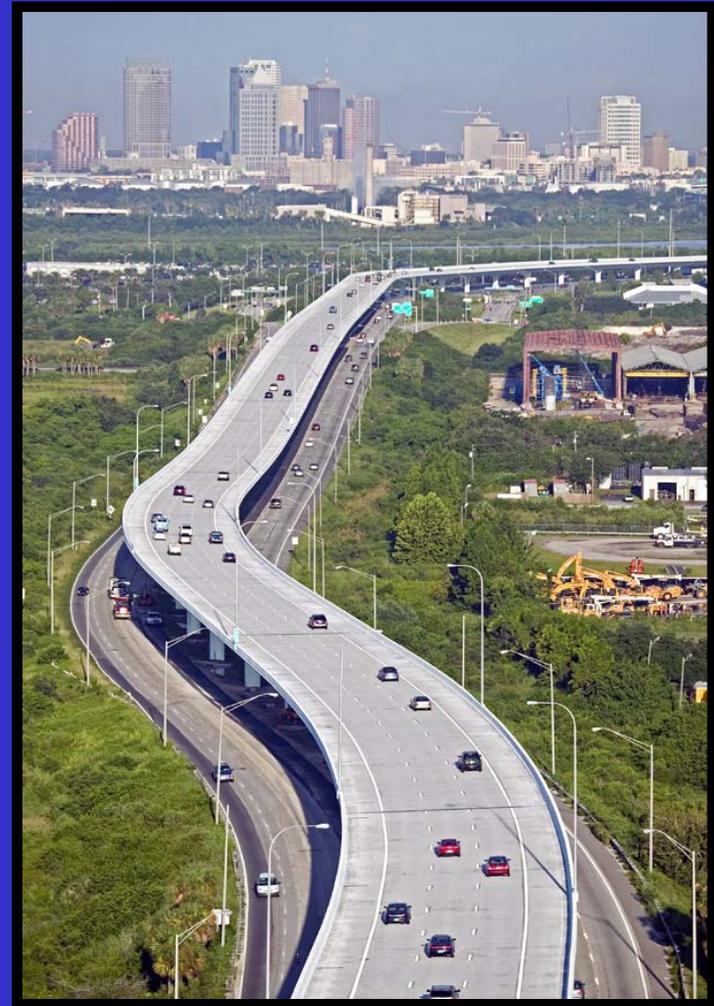


- System accurately captures over 98% of images (readable)
- System can “match” over 83% of images to original reference image with full automation – which minimizes labor cost

Open Road Tolling

PERFORMANCE

- ❑ Multi-Lane Sunpass ETC
- ❑ Toll-By-Plate Video Tolling



Open Road Tolling

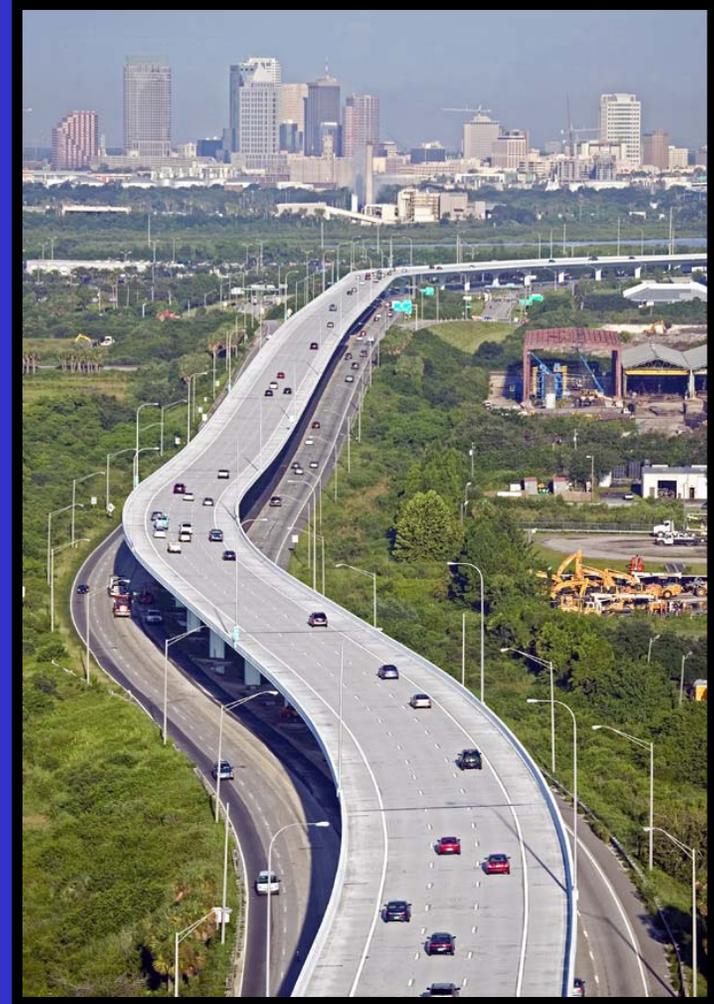
PERFORMANCE

- ❑ Multi-Lane Sunpass ETC
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SYSTEM ACCURACY

>99%



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