EXPRESS LANES: THE GOOD, THE BAD & THE UGLY
BILL CRAMER
Communications Director
IBTTA
Upcoming Meetings

Exhibit and Sponsorship Opportunities Available Now!
Contact Terri Lankford, tlankford@ibtta.org.

Transportation Policy & Finance Summit
March 13-15 | Washington, DC
www.ibtta.org/DC
Registration Open

Maintenance & Roadway Operations Workshop
May 15-17 | Newport, RI
www.ibtta.org/NEWPORT
Registration Open. Agenda Posted.
*IBTTA's Annual Service Project

Summit on All-Electronic Tolling, Managed Lanes & Interoperability
July 24-26 | Boston, MA
www.ibtta.org/BOSTON
Meeting Planning Group working. Agenda to be posted soon.

IBTTA 84th Annual Meeting & Exhibition
September 11-14 | Denver, CO
www.ibtta.org/DENVER
Call for Presentations currently underway. Deadline: March 13

Global Summit of Mexico
October 16-18 | Mexico City, Mexico
www.ibtta.org/MEXICOCITY
Call for Presentations currently underway.
Professional Development Hours & Logistics for Today

• Professional Development certificate: email kdavis@ibtta.org
• Submit Questions via the Q&A Pod
• Files can be downloaded from the Files Pod
• The Webinar will last one hour
• Slides and recorded audio will be on the website within a day. www.ibtta.org/webinars
MODERATOR
DOUG CHASTAIN
Vice President, Sales and Operations, Western U.S., Xerox

PANELISTS
Nic Barr, Vice President, Operations, Transurban
Julià Monsó, Vice President, Toll Operations, Cintra
John O’Neill, Acting Chief of Operations, Maryland Transportation Authority
NIC BARR
transurban
495 AND 95 EXPRESS LANES
### 495 & 95 EXPRESS LANES

#### KEY DIFFERENCES

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>495 Express Lanes</th>
<th>95 Express Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td>10 miles</td>
<td>28 miles</td>
</tr>
<tr>
<td><strong>Separation</strong></td>
<td>Posts only</td>
<td>Full separation from GP lanes</td>
</tr>
<tr>
<td><strong>Directionality</strong></td>
<td>Dual direction</td>
<td>Reversible</td>
</tr>
<tr>
<td><strong>Jurisdictional boundaries</strong></td>
<td>Single county</td>
<td>Three counties</td>
</tr>
<tr>
<td><strong>Terminus</strong></td>
<td>GP lane transition</td>
<td>Transition to HOV3+</td>
</tr>
<tr>
<td><strong>Shoulder width</strong></td>
<td>Up to 30’</td>
<td>Up to 12’</td>
</tr>
<tr>
<td><strong>HOV penetration</strong></td>
<td>8-10% of traffic</td>
<td>30-40% of traffic</td>
</tr>
</tbody>
</table>
FACILITY CHARACTERISTICS
LENGTH AND CUTOVERS

Diagram showing facilities with general purpose lanes, express lanes, and general purpose lanes.
FACILITY CHARACTERISTICS
GP & EXPRESS LANE SEPARATION
FACILITY CHARACTERISTICS
GP & EXPRESS LANE SEPARATION

495 Accidents Originating on GP Lanes

JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
2015
FACILITY CHARACTERISTICS

REVERSIBILITY AND GATE MANAGEMENT
JURISDICTIONAL COMPLEXITIES
ENFORCEMENT COMPLEXITIES
TERMINUS COMPLEXITIES

495 NORTHBOUND
TERMINUS COMPLEXITIES
495 NORTHBOUND
JULIÀ MONSÓ

cintra
AGENDA

I. What Makes These Projects Different?
II. The Public Interest Perspective
III. The Engineering Perspective
IV. The Operational Perspective
Cintra is sponsoring 4 Express Lanes Projects:

- LBJ  Dallas (Texas)
- NTE  Fort Worth (Texas)
- NTE35W  Fort Worth (Texas)
- I-77  Charlotte (North Carolina)

North Texas TEXpress Lanes System

- Barrier/Grade separated
- 17-13.5-10.5 Miles per corridor
- 2-3 lanes per direction
- Variable/Congestion Pricing
- 2-3 Segments based tolling (entrance ramp gantries)
- 50% HOV discount

Barrier/Grade separated
- 27 Miles corridor
- 1-2 lanes per direction
- Variable/Congestion Pricing
- Trip based tolling (mainline gantries)
- 100% HOV discount
What Makes These Projects Different?

- Controversial topic
  - Express Lanes have been a controversial topic for a long time. Noteworthy milestone in 2001 when the Washington Post in supporting the Governor of Maryland’s decision to cancel a project to deploy HOV lanes in US 50, went on to mock the proposal, implying that a HOT lane system would create a two-tiered transportation system favoring the rich. “Will it be ‘Lexus Lanes’ or ‘Lumina Lanes’?”

- Constructing in a highly congested corridor: The promise of a better commute once the construction terminates may not be enough to compensate the inconvenience of the construction. Pressing need to reduce the impact during construction.
  - Utilities
  - Maintenance of Traffic
  - Maintenance of existing ITS

- Operating Variable/Congestion Pricing
  - Having fees changing every 5 minutes.
  - There is a high number of critical ITS roadside components.
  - Integration between ITS & Tolling is real not a pure theoretical assumption.
The good track record of the Express Lanes since the first segment of LBJ was open in December 2013, have validated the concept

1. Economic grown within the corridor
   - “Meg Jakubik, assistant to the city manager, said Bedford is making a strong recovery from the recession with sales tax revenue 5.23 percent higher than last year. The sales taxes went up during North Tarrant Express construction, and Jakubik said she is pleased with the results.”

2. Usage
   - Since the project’s completion nine months ahead of its original schedule, NTE has seen significant increases in a variety of categories. In one year, the corridor is moving 23 percent more traffic than before construction began, and as of Aug. 31, 2.1 million different vehicles have used the new NTE TEXpress-managed lanes with 4% grow Q4 over Q3.

3. Perception of equity and fairness associated to a general congestion decrement
   - For drivers who choose not to use the project-s managed lanes, the general-purpose lanes alone are moving 5 percent more traffic than pre-construction levels, with an 80 percent reduction in congestion on general-purpose lanes.
The Engineering Perspective

Coordination between the CJV and the Toll System Integrator becomes a significant challenge

- DB contractor provides all civil works
  - Conduits, ground boxes, foundations, etc…
  - Power to closest ground box
- Toll systems integrator installs
  - All equipment, poles, cabinets, fiber optics, etc…

- The early Design allows to accommodate both the Civil Contractor Schedule and Integrator Schedule
- Having construction already going on while the ITS/TCS design is finalized creates many problems for the DB contractor and the toll integrator
- Finally it allows to optimize the Installation
The Engineering Perspective

Signaling and network consistency becomes a key issue

“EXPRESS” vs “TEXPRESS”

Add TExpress Lane Logo

Route markers

Show HOV Discounts

Not displaying VIDEO CHARGES

TO

TEXAS

121

TEXAS

183

FM. 157

HIGHER RATES FOR NO TAG OR LARGER VEHICLES

HOV 2+

$ X.XX

$ X.XX
The Operational Perspective

- **Customer:** Understanding our customer and making them understand our value proposition.
  - **Usage Pattern:** Even when express lanes have a similar value proposition that a conventional toll facility (trip reliability, time savings and road safety), dynamic toll fees alter the way the driver makes sense of such value, and therefore their usage pattern. Do not expect to have a “one size fits all” scenario, in particular when it comes to:
    - Tag/Video penetration
    - Public reaction to higher toll rates
  - **Outreach:** Make it simple!
    - Toll Fee structure, discounts, categories
    - Lane configuration and signaling

“It seems backwards to me, if traffic slows down then the price of the toll should go down, why should anybody pay more when they are driving more.” *Wednesday Female*

“That sounds way too complicated.” *Wednesday Female*

“Why would I pay more to sit there longer?” *Wednesday Male*

“This is too complicated for me.” *Thursday Female*

“I like having a choice, but this choice seems too complicated.” *Thursday Female*
The Operational Perspective

- **Usability**
  - Trust is a precious asset!
    - Offer a Plan Your Trip and Check Past Rates functionality
    - Accept being challenged

- **Understanding**
  - Data Gathering and Segmentation
  - Open and managing Communication Channels
  - Helping a customer used to highways with fixed toll rates become familiar with corridors that offer an option, which is dynamic tolled
  - Better understand the media and messages that frame managed lanes as offering higher reliability travel alternatives

- **Toll Service provider**
  - Spent time setting a clear and transparent relation to the Toll Service Provider, removing uncertain and blurry responsibilities
  - Reconciliation of Fees, Pas Through and Incidentals

- **HOV & Collection Enforcement**
  - Empiric data show that blocking the shoulders results on a capacity reduction of the mainline that ranges from 19% to 23%.
  - “HOV enforcement only patrols” may be an option to mitigate this problem.
  - A combined automatic + manual (central system) enforcement process is an alternative.
I-95 Express Toll Lanes: Lessons Learned

John J. O’Neill, III
Acting Chief of Operations
Maryland Transportation Authority

March 10, 2016
**Project Overview**

**Background**
- Second All-Electronic Tolling (AET) facility in Maryland
- Eight (8) miles of managed express toll lanes
  - From I-95/I-895 split to I-95/MD 43 interchange
- Opened on December 6, 2014
  - Revenue collection - 1 week later

**Construction**
- Design/Build (D/B)
  - A new barrier separated facility built in median
    - Two (2) express toll lanes (ETL) in each direction
  - Six (6) total lanes in each direction
    - Four (4) General Purpose (GP) - not tolled; 2 ETLs
**Project Area**

*I-95: I-895(N) Split to North of MD 43*
Project Details

* Maryland Transportation Authority (MDTA) Project
  * Provided financing & managed construction
  * Owns, operates and maintains the facility

* Toll Integrator (TI) - Xerox
  * Services contract

* All-Electronic Toll (AET) Collection
  * E-ZPass transponder or video toll
    * Video toll rates are 50% higher than posted E-ZPass toll rates
  * One (1) tolling zone (gantry) in each direction
  * Variable pricing for Time of Day and Day of Week (includes holiday pricing)
    * Toll Rate Signs (TRS) - communicate variable pricing and travel time to customers
  * Trip construction - not implemented on ETL
Project Audit

* Independent Audit
  * Digital Video Monitoring System (DVMS)
    * Independent transaction monitoring
      * Revenue verification
      * Customer service
      * System monitoring & verification
  * Real-time operations - video monitoring
    * Cameras are IP accessible
    * Accessed on PCs utilizing Agilence Hawkeye software

* Travel Times
  * Measured from transponder reads
    * Entry and exit readers (GP & ETL lanes)
  * Only the match entry and exit times are stored
    * Personally Identifiable Information (PII) is not stored
**Benefits**

* Reduced peak period congestion
  * Including the GP lanes
* More reliable travel times
* Highway speed tolling

“More and more motorists are realizing the benefits of using the I-95 ETL. Time is valuable and these express toll lanes deliver a reliable commute motorists can count on.”

Maryland Secretary of Transportation Pete K. Rahn
**Lessons Learned**

*Construction*

* Establish and give General Engineering Contractor (GEC) Notice to Proceed (NTP) 3 months prior to project start
* Establish project office by the time design begins
* Early/Often/Periodic budget review of project must take place
* Establish roles of MDTA / GEC / Designers / CM before project begins
* Coordinate pre-Type, Size & Location (TS&L) work as early as possible in design
* Establish close working relationship with crucial agencies (utility companies, environmental, local municipalities)

*Coordination*

* A challenge to coordinate work hours, lane closure schedules, mobilization and moving equipment while keeping the most congested section of I-95 open to traffic
Lessons Learned

Toll System Implementation

Utilized Lessons Learned from the ICC

- Improved communications between Agency, IT, Design Builder, and Toll Integrator
- Better coordination for IT related issues
- Placed DVMS cameras pointing downstream to prevent blooming

Toll Integrator needs to assign dedicated resources for design reviews

- Problems with conduit sizes
- Junction boxes needed to be above grade

Design Build contractor needs consistent information from Toll Integrator concerning gantry installation

- Clearly define bracket for attaching overhead toll equipment

Variable pricing (Time of Day) worked very well

- Recommend more detailed analysis before committing to Dynamic Pricing

Factory Acceptance Testing (FAT)

- Complete end-to-end FAT testing is essential to demonstrate functionality of system before going live
  - Testing was done in pieces
Lessons Learned

Maintenance

* MOT required for Preventative Maintenance & Corrective Maintenance
  * Need to close the ETL NB or SB to conduct overhead PMs or CMs
* Would have designed differently
  * Overhead walk-in enclosures to allow technicians to perform routine maintenance without having to close traffic lanes
  * Entry/exit gates that can be utilized for closing the ETLs
* Prepare a Concept of Operations for maintenance
* 2016 snow storm lessons learned
  * ETLs close when there is more than eight (8) inches of snow
  * Need for workable closure option
I-95 Section 200

* Planning study completed / preferred alternative selected
* Not funded for Design or Construction
* No current schedule

Contact Info:
joneill@mdta.state.md.us
410-537-1098
QUESTIONS?

MODERATOR
DOUG CHASTAIN
Vice President, Sales and Operations, Western U.S., Xerox

PANELISTS
Nic Barr, Vice President, Operations, Transcore
Julià Monsó, Vice President, Toll Operations, Cintra
John O’Neill, is the Acting Chief of Operations, Maryland Transportation Authority