National Operations Center of Excellence 2019 TSMO Awards Submission for Consideration: Best TSMO Project (Creative Solution)

GDOT Reversible Lanes Intelligent Transportation System & Traffic Information Management Project
The Georgia Department of Transportation (GDOT) provides public access video to introduce and explain the Reversible Express Lanes. Go to the following links for GDOT videos:

https://www.youtube.com/watch?v=K8ZTOhGFc-k

https://www.youtube.com/watch?v=VtgChQiWy_w

https://www.youtube.com/watch?v=IDhEwFO_9qw
The Project

For the Reversible Express Lanes Project, in addition to being the lead designer for the extensive civil engineering project, Parsons also provided Intelligent Transportation Systems (ITS) and Traffic Incident Management (TIM) expert training to the State of Georgia for Georgia’s first Reversible Tolled Express Lanes in Metro-Atlanta.

– Collaborative Effort Between Georgia Department of Transportation (GDOT) and Georgia State Road and Toll Authority (SRTA)
– Dedicated tolled reversible lanes flowing traffic into Atlanta during the morning commute and outbound during the evening commute
– Offers predictable, quick commute times as driver’s choice
– I-75 South Metro Express Lanes
  • 12 miles along medial of I-75
  • Opened July 2017
– Northwest Corridor Express Lanes
  • 29.7 miles along I-575 and I-75
  • Opened September 2018
The Parsons provided ATMS system, branded by GDOT as NaviGAtor, currently manages over 5,200 ITS devices. 840 of these devices are for the Express Lanes.

**Reversible Express Lanes ITS Hardware**
- Warning Gates
- Barrier Gates
- Emergency Access Gates
- Accident Investigation Sites
- Traffic Signals
- Closed-Circuit Television
- Cameras Dynamic Message Signs
- Access Control System Cabinets
- Detection System
- Toll Zone
- General-Purpose Scan Site

**Reversible Express Lanes ITS Software**
- Roadside Access Control System (RACS)

- 89 Dynamic Message Signs (DMS)
- 6 Traffic Signals
- 405 Closed Circuit TV Cameras
- 165 Video Detection Systems
- 15 Programming Logic Controllers
- 160 System Gates
System Gates

Entry/Exit Access Gates

Emergency Access Gates

Warning and Barrier Gates

Entry/Exit Access Gates
Traffic Incident Management

To ensure the highest levels of operational readiness, and in partnership with GDOT and SRTA, the Parsons team of experts trained the Highway Emergency Response Operator (HERO) Unit and First Responders for all Reversible Express Lane activities.

- Multi-agency incident response coordination
- Emergency Access Gates
- Accident Investigation Sites
- Lane Transition/Reversal Process
- Maintenance
- Motorist Assistance
- Towing and Recovery
- Customer Service
- Communications
- Manual Operations of ITS devices
- Loss of communication to ITS devices

AWARD-WINNING FIRM
Parsons received a Recognition Award from the GA TIME Task Force at their annual conference in Augusta, GA on October 30, 2018. This GA TIME Task force award recognizes the efforts of Parsons emergency transportation specialists in providing guidelines for responders, classroom and in-field training, and conducting a massive outreach program to prepare over local 50 agencies to respond and operate in the Northwest Corridor Express Lanes.
Operations Enablement with Innovative Intelligent Transportation Systems
• Parsons enhanced existing GDOT NaviGAtor ATMS software for reversible lane operations
  – Reversible Access Controlled System (RACS)
• RACS automates reversal workflow
  – Ensures road safety
  – Prevents human error
  – Provides flexibility in operations
• RACS enables GDOT operators to:
  – Monitor traffic
  – Control message signs
  – Operate road access gates
• Parsons also enabled GDOT State Road and Tollway Authority (SRTA) with version of NaviGAtor – SRTA ITS
  – Enables dynamic toll pricing
  – Manages and displays toll rate dynamic message signs
  – Re-use of GDOT NaviGAtor reduced implementation cost and risk
RACS – Accurate, Real-time, Easy to Use

At-a-Glance Status

Multiple Device Control

Single Screen overview of entire system

Integrated CCTV Viewer
RACS – Accurate, Real-time, Easy to Use

Device Control from Viewer Screen
At a glance congestion monitoring with color-coded travel time signs
RACS – Integrated Information Readily Available

- Device Icons Integrated on ATMS Map for ease of use
- Video Wall Display that Enables view of Roadway through CCTVs
- Inter-agency Operations
  - SRTA Operator
  - GDOT Operator
RACS – SAFETY FIRST, Supervisor Manual Controls

Interlock Safety Feature Prevents Unsafe Operation

Provides for Manual Control of Signals

Provides for Manual Control of Signs

Provides for Manual Control of Gates
RACS – SAFETY FIRST, Automated Workflows

Easily Modifiable Workflow Library in UI

No Programming or back-end changes required
Integration with GDOT 511 for real-time traffic information to the Public
SRTA ITS - Express Lanes Dynamic Pricing

• Toll prices rise and fall based on demand for use of the Express Lanes to keep traffic free flowing and ensure reliable travel times

• Parsons SRTA ITS system displays toll rates at each Express Lane entry point, giving motorists the choice to enter the lanes when it makes the most sense for them

• Toll rates set by SRTA Board

• Tolls are collected electronically, no toll booths, Neology-provided toll roadside system
SRTA ITS - Real-time Lane and Toll Rate Displays

View of Roadway Signs, in Real-Time, from the GDOT/SRTA Traffic Management Center
SRTA ITS - Enabling Safe Operations for Toll Facilities

Parsons Provided the ITS Solution that Enables SRTA to Reverse Lanes and Provide Accurate Real-time Traveller Information.
Operational Readiness through Expert Training and Preparedness
Training Guidelines and Documents

Parsons Emergency Transportation Specialists developed the GDOT Highway Emergency Response operators (HERO) Standard Operating Guidelines to Include:

- Incident management
- NWC reversal transition process
- Towing and recovery
- NWC maintenance
- Motorist assistance
- Communications
- Emergency access gate (EAG) operations
- Accident investigation sites
- Manual operations of traffic signals, warning and barrier gates
- Field repairs of warning gates
- Inclement weather closure guidelines

Parsons Created Documentation for all Responders:

- Quick-reference guide for in-field reference of proper reversal transitions
- Maps with locations of emergency access gates, accident investigation sites and access points
- Maps with towing and recovery company routes and contact information
- Contact cards with phone numbers of HERO Supervisors and Master Operators, TMC Operators, Cobb and Cherokee County E-911 Center Supervisors and area towing and recovery companies
- Abbreviated procedures for manual operation of gates
- Motorist brochure with NWC FAQ
HERO Training

35 GDOT HERO Master Operators received:

• 128 hours of classroom training
• 560 hours of in-field training including:
  – Over 2,000 system reversals
  – Over 140,000 miles driven
Emergency Responder Training

Parsons conducted extensive training of nearly 2,000 local emergency responders representing over 50 agencies, including:

- 124 hours of classroom / table-top incident response exercises
- 72 sessions of in-field emergency response training
- 51 different agencies – police, fire, towing and recovery, emergency medical services, maintenance, transit including:
  - 20 System access points
  - Transition times, directions of travel
  - Fast ingress and egress of emergency personnel
  - Coordination between dozens of responsible agencies
  - Quick clearance of traffic incidents and roadway hazard mitigation
  - Communications planning and testing
  - Enforcement considerations
  - Emergency access gate operation
Warning & Barrier Gates Training

There are nearly 100 warning and barrier gates throughout the system. GDOT HERO received nearly 700 hours of training on proper gate positions and operations, including:

- Gate locations and proper positions for each transition and related operating procedures
- Hands-on training to visually confirm every single gate position during each reversal transition
- Hands-on training for electronically operating gates, dynamic message signs and signals using an in-field NaviGAtor software interface
- Hands-on training to manually operate gates in the event of a power failure
- Visual inspection of gate damage for quick maintenance response
- Minor in-field gate arm repairs
- Proper communication protocol to the TMC regarding gate failures
“SRTA’s goal for the number of transponders in the Northwest Corridor region was 25,000, starting July 1, 2017. We are happy to report that we met and exceeded that goal with 32,613 transponders so far.”
- Erika Davis, SRTA, 9/16/18

Chris Tomlinson, executive director of the State Road and Tollway Authority, told several hundred engineers, politicians and others at the summit that motorists took more than one million trips on the new lanes in their first month of operations.
- Chris Tomlinson, SRTA, 11/13/18

About 9,000 to 11,000 vehicles use the I-75 express lanes each day, according to GDOT. At morning rush hour, traffic moves about 10-15 mph faster in the express lanes than in the regular lanes. In the afternoon, express lane traffic often moves more than 20 mph faster.
- Russell McMurray, GDOT, 11/26/18

**Northwest Corridor Express Lanes** – Opened to traffic in September 2018, this project added nearly 30 miles of fully reversible, tolled lanes along the I-75 and I-575 corridors northwest of Atlanta. The new lanes have significantly reduced congestion along the I-75 Corridor, cutting average travel times in the general purpose lanes in half and reducing the total time of both morning and evening rush hour. Within four months of opening, commuters took more than 2.5 million trips in the new express lanes.

**I-75 South Metro Express Lanes** – This system of fully reversible, barrier separated toll lanes runs 12 miles along I-75 south of Atlanta. The lanes offer more reliable trip times for motorists and have significantly reduced congestion in the corridor.
- GDOT, 2/15/19
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The GDOT Reversible Express Lanes ITS and TIM project provided technology and expert consulting to enable successful operation of Georgia’s first reversible tolled express lanes; a traffic solution to an ever-growing transportation challenge. The technology was a re-use and enhancement of GDOT’s leading ATMS solution that has been in operation since 1996. The TIM consulting services, provided by industry experts, trained thousands of roadway and emergency responders that has resulted in safe, efficient, and effective roadway operations. Since July 2017, as a result of expert TIM training and the market-leading ITS solutions, GDOT and SRTA have conducted 1,454 roadway reversals.