Active Traffic Management Strategies

Objective: Maximize productivity (capacity) and minimize cost (delay, stops)
ATM Arterial Tactics

Agency ATM Strategy

Arterial Monitoring Tactics
- Detectors
- Cameras
- Probes
- Commercial Sources

Signal/Speed Control Tactics
- Adaptive Control
- Speed Harmonization
- Special Plans
- EMS/Transit Priority

Geometric Configuration Tactics
- Dynamic Lane Assignments
- Reversible Lanes
- Dynamic Turn Restrictions

Demand Modification Tactics
- Traveler Info.
- Route Guidance
- Dynamic Parking
- Congestion Pricing
ARTERIAL MONITORING TACTICS
Arterial Monitoring

Overview: Use of technology to monitor and collect real time traffic data

- Provides detailed traffic data
- Data can be used for additional traffic studies or for third party apps

Data collection technology includes:
Cobb County, Georgia

- Overview:
  - Use Bluetooth to collect TT data on 3 corridors
- Usage:
  - Before/after studies of signal retiming
  - Increased awareness by EMS
- Lessons Learned:
  - Size the system appropriately
  - Work with vendor to develop performance measures
Arterial Monitoring Example Application
Intersection Count Monitoring

City of Bellevue, Washington

- **Overview:**
  - Collects data at more than 110 intersections

- **Usage:**
  - Better respond to citizen complaints
  - Availability of extensive 24-hr vehicle data

- **Lessons Learned**
  - Understand how equipment collects and reports data
  - Useful for planning signal timing changes
SIGNAL CONTROL TACTICS
Signal Control Tactics

- Adaptive Control
  - System controller given flexibility to identify green times and offsets on the fly
  - Focus of NCHRP Synthesis 403 (2010)

- Specialized Signal Timing Plans
  - Developed to deal with special events

- EMS/Transit Priority
  - Works within existing timing plan to improve EMS/transit operations
City of Gainesville, Florida

Overview:
- Timing plans affecting >40 intersections for events

Usage:
- Reduces duration of congestion
- Reduced queue spillback onto interstate

Lessons Learned:
- Special timing plans take several iterations to tweak
- Every event is different
Signal Control Example Application
Specialized Timing Plans
Harris County, Texas

- **Overview:**
  - Installed EMS priority signal system at 50 intersections

- **Usage:**
  - Allows signal and EMS vehicles to communicate location data
  - Reduces the “wave” effect of EMS vehicles

- **Lessons Learned**
  - Communication with intended users is key
Signal Control Example Application

EMS Priority

Harris County, Texas
GEOMETRIC CONFIGURATION
TACTICS
Geometric Configuration Tactics

› Dynamic Lane Assignment
  ▪ Allows agencies to change lane assignments to meet different demands
Geometric Configuration Application
Dynamic Lane Assignment

Harris County, Texas

- Overview:
  - Implementing dynamic lane assignment
- Usage:
  - Used to better handle varying traffic patterns
- Lessons Learned:
  - A lot of planning is needed to overcome technical challenges
Geometric Configuration Application
Dynamic Lane Assignment

Harris County, Texas
Reversible Lanes

- Increased capacity in the peak direction
Geometric Configuration Application
Reversible Lanes

West Valley City, Utah

- Overview:
  - DOT installed a reversible lane system on 5400 S

- Usage:
  - Provides additional capacity without ROW acquisition
  - DOT wished to maintain TWLTL

- Lessons Learned:
  - It is difficult to overcome the technical challenge of maintaining the TWLTL
  - Fully account and plan for your objective
Geometric Configuration Application
Reversible Lanes

West Valley City, Utah
Geometric Configuration Tactics

Dynamic Turn Restrictions
- Restricts certain movements only when necessary such as:
  - During a pedestrian scramble
  - RTOR with a heavy volume U-turn

![Traffic signs indicating 'NO RIGHT TURN ACROSS TRACKS' and 'NO LEFT TURN ACROSS TRACKS'](image)
Geometric Configuration Application
Dynamic Turn Restrictions

City of Overland Park, Kansas

Overview:
- Using dynamic turn restrictions at 6 locations

Usage:
- Removal of overlap to favor u-turns
- Reduced conflicts with fire trucks exiting the station
- Turning restrictions for particular phases

Lessons Learned:
- Spend time to understand how equipment operates
Geometric Configuration Application
Dynamic Turn Restrictions

City of Overland Park, Kansas
DEMAND MODIFICATION TACTICS
Demand Modification Tactics

Overview: Use of various tactics to better manage vehicle demand

Demand modification tactics include:

- Arterial Travel Information Dissemination
- Dynamic Route Guidance
- Dynamic Parking Management
- Congestion Pricing
Demand Modification Tactics Application
Dynamic Parking Management

City of Seattle, Washington

- Overview:
  - City allocates an annual budget to perform a study and set parking rates

- Findings:
  - Decreasing rates does not always increase occupancy
  - Originally divided into 22 neighborhoods, additional subdivision is needed

- Lessons Learned:
  - Support/discussion with many stakeholders is useful
  - Required significant technology to make data useful
CONCLUSIONS
Conclusions
Successful ATM Deployments

- Need for dynamic management of arterial ops
  - Recurring/non-recurring congestion
  - Limited capacity improvement options

- Agency with sufficient M/O resources including:
  - Staff/consultant expertise
  - Budget to tweak and maintain
Conclusions
Successful ATM Deployments

Active participation and coordination among stakeholders including:
- Staff
- Politicians
- Community
Conclusions

Successful ATM Deployments

Detailed Planning and Design

- Accurate inventory of infrastructure needs
- Recognition technology is not perfect
- Consideration of project on maintenance costs
- Easy to underestimate required costs (capital/maintenance)
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