Operating a Smarter Detour

Using Collaboration, Planning and Technology

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Overview

• Great example of collaboration between agencies and project stakeholders

• Minimized delay and disruption to motorists during significant construction closures

• Leveraged
  • Information sharing
  • Big Data
  • Coordinated signal systems
  • Traffic management centers
Background
Initial Plan
Initial Plan

• Night-time closures
• One direction at a time
• Not a major undertaking
• Single weekend plan for each direction would be developed
That would be a boring presentation
A New Twist

• Project Engineering and Construction plans changed
  • Incentives tied to schedule

1 direction overnight
Challenges

- Coordination
- Construction schedules
- Weather
- Trains
- Normal high-volume weekend traffic
- Existing signal coordination
- Many local and regional events
Let's Close I-30!
Back to the Drawing Board

1. Planning
2. Advance Coordination
3. Day of Operations
4. After
Planning

- 6 closures planned
  - First – November 9-11, 2018
- Detour routes
- Diversion timing plans
- Temporary traffic control
City Systems

• TACTICS Central System
• Communications to detour signals
• Video surveillance

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36 intersections
36 intersections
25 controllers
16
9
Development of New Timing Plans

- 1,500 vph was routed eastbound and westbound through the modeled detour network
- All available capacity was shifted to the detour movements.
- Provided equally dispersed capacity for detouring traffic
Development of New Timing Plans

16 s

66 s

120 seconds

150 seconds
Pre-Prepared Timing Plans

• Recognized unknowns (such as impact of SH 360 traffic and magnitude of diverting traffic)
• Initial late-night implementation on non-event date
• Rather than setting up a schedule, plans were implemented and changed as needed based on observed conditions

Late Night 120  Late Night 150  Weekend 150
Recommended Improvements for Enhanced Intersection Operations

• Recommended coordinating with NTTA to make use of SH 161 direct connectors to and from IH 30
• Recommended temporary lane assignments and channelization to improve intersection operations
• Use of dynamic lane assignment signs (creating dual left-turns at critical locations)
  • Use of variable message signs (convey information to motorists)
  • Use of cones for lane closures and channelization, to convert signalized or yield-controlled right-turns at critical intersections to “Free Rights”, and to guide traffic into desired lanes in advance of modified intersections.
• Modified signing and pavement markings
• Minor improvements to curbs and medians to better facilitate heavy left-turn movements
EB Detour

EB Main at SH 161

- Create a dual left
- Requires split-phasing of E-W movements at NBFR
- To assure full capacity, traffic in inside EB lane must be channelized into left-hand turn lane

Advantages:
- Relatively easy to sign
- Probably not confusing
- Synchro v/c ratio ≈ 1.02
Advance Coordination

• Involve all stakeholders
• Schedule around events
• Advance notice to discourage drivers
Stakeholders

North Central Texas Council of Governments

Arlington, Texas

Grand Prairie

Kimley-Horn

Texas Department of Transportation

TTI

Texas Rangers

NTTA

NORTH TEXAS TOLLWAY AUTHORITY

URS

DFW

Dallas Fort Worth International Airport

Lone Star Park

Six Flags OVER TEXAS
Traditional Media

I-30 Closed this Weekend
FM 157/ Collins St - PGBT
7 P.M. Friday - 5 A.M. Monday
Traditional Media
Traditional Media

Avoid Arlington 183 or I-20
I-30 in Arlington and Grand Prairie to be closed all weekend [bit.ly/2QwY1vx]
Coming to @tx_live for weekend 🏈 games?

Reminder that I-30 between FM 157/Collins St & PGBT will be closed thru Sunday for a bridge removal. Detours are available through Arlington & Grand Prairie for alternate access.
Day of Operations

• First of 6 closures took place on November 9-11, 2018.
• Signal Timing Plans were activated and monitored from Arlington and Grand Prairie TMC’s.
  • Both Kimley-Horn and City Staff
  • Friday evening into early Saturday morning
  • 8:00 AM Saturday until IH 30 was reopened (~7:30 PM Saturday)
• Vehicles choosing to follow the marked detour was significantly less than anticipated.
• Almost all intersections and detour elements monitored at TMCs via cameras.
• TMCs provided insight and recommendations to Contractor and PD personnel on the street
  • Real-time adjustments
  • Documented for future use
  • Real-time updates into the WAZE system.
• NCTCOG and TTI collected field data during the closure
  • Relative increases in traffic along the detour and other adjacent routes
  • Travel-time data along the detour route.
Day of Operations
Results
Early Finish

• Scheduled to be closed until 5 a.m. Monday
• Reopened just after 7 p.m. Saturday

29 Hours
Early
Qualitative Observations

• Hugely successful
• Advance notice very effective
• Drivers not fully adhering to detour routes
• NO ISSUES OBSERVED
Quantitative Observations

- NCTCOG used crowd-sourced data from anonymized cell network data
- Only 2 routes had travel time increases >5% during closure compared to typical Saturday in November
  - EB Green Oaks Blvd from Collins Street to SH 360
  - WB Green Oaks Blvd from SH 360 to Collins Street
- Showed that advertising/operations/monitoring were very successful
- Perhaps target Green Oaks for additional timing next time
Lessons Learned
Lessons Learned

• Process valuable for a detour of this magnitude
• Regular application throughout Texas recommended
• Preparation, preparation, preparation
  • Develop and implement timing before hand
• Communications
  • Stakeholders (early and often)
  • Public
• Work with partners
• Demand management was crucial
• Leverage Big Data
• Leverage modern systems
  • Real-time adjustment
  • Monitoring capabilities
Contact Information

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