Sherman Minton Bridge
Lost 6 of 17 lanes crossing Ohio River

I-64
Sherman Minton
6 lanes

US-31 Clark
4 lanes

I-65
Kennedy
7 lanes
Bridge Counts Pre Closure (2010)

- I-65
- Kennedy
- Minton
- US-31
- Clark

- I-64
- Sherman

122,912
81,924
21,905
I-64 EB pre closure AM Peak
I-64 EB pre closure AM Peak
SUSPICIONS CONFIRMED...

...AND IF WE CLOSE THIS FREEWAY HERE AND THIS EXIT HERE, THEY'LL NEVER GET OFF!

MY TURN! MY TURN!
Day 1 Backup
Backup I-265 Day 1
Data

- INRIX Data
- Sensys Data
- Signal Loop Data
- ITS Sensor Data
- Camera Data
- Planning Department Count Data
- Long Range Planning Model Data
Partners with Data

- Purdue University/J TRP
- Darcy Bullock and Tom Brenan as well as all of their staff
  - INRIX Data Analysis
  - On site traffic reviews
  - Assisted with sensor installations, setup and data collection
<table>
<thead>
<tr>
<th>Time Interval Ending on October, 11 (Tuesday), 2011</th>
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<tr>
<td>Time</td>
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<td>0:15</td>
</tr>
<tr>
<td>0:45</td>
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<td>23:00</td>
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Learned to love flying
Plan of Action

- Interstate Ramp Issues
Plan of Action

- Interstate Ramp Issues
Detour Route

I-265 & I-65 Ramps

I-265 & I-64 Ramps

US-31 Bridge Capacity

I-65 Kennedy Bridge Merge Issues

I-64/I-65/I-71 interchange flow
Widen Ramps to 2 lanes

I-265 EB to I-65 SB

I-64 EB to I-265 EB and I-265 WB to I-64 WB
Could not widen I-65 NB to I-265 WB

I-65 NB to I-265 WB Ramp

Detoured traffic to next interchange
Restrict Ramp I-65 NB to I-64 EB In Kentucky
INRIX Data

ONE HOUR COUNT OF 15 MINUTE PERIODS WHERE AVG SPEED <= 45 MPH

SEPTMBER 9, 2011
Closed I-64 bridge creates heavy traffic

By Associated Press — The Associated Press
Posted: 6:34am on Sep 12, 2011; Modified: 9:40am on Sep 12, 2011

SEPTMBER 12, 2011: Monday after Sherman Minton bridge closed increase in SB congestion observed on IN Side of Kennedy Bridge

SEPTMBER 22, 2011 (Thursday): SB congestion improved on Indiana side of Kennedy Bridge
<table>
<thead>
<tr>
<th>DATE</th>
<th>9/5 (Mon)</th>
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<th>9/7 (Wed)</th>
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<td>53.8507</td>
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### I-265 EB Queuing

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<td>4</td>
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<td>7</td>
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<tr>
<td>(3.0 To 4.0)</td>
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<td>2</td>
<td>3</td>
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<tr>
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<td>2</td>
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<td>4</td>
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Pre and Post Closure

- **Clark**: Pre: 21905, Post: 43163
- **Kennedy**: Pre: 122912, Post: 133620
- **Sherman Minton**: Pre: 81924, Post: 0
Total Volume of All Bridges

Volume 2010: 231787
Volume Sept 2011: 182062
Change in River Crossing Vehicle Volume (Total and Directional Daily Traffic)

≈21% decrease in Daily Traffic
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
Challenges with I-64, I-65 & I-71
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
Create Contra-flow Lane on US-31 Clark Bridge
Clark Bridge
Clark Bridge Southbound
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
Could not meter due to congestion
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
- Increase Hoosier Helper Patrols
Hoosier Helpers

- 4 Additional Hoosiers Helpers
- Overlapping 10 hour shifts
<table>
<thead>
<tr>
<th>Hoosier Helper Assists</th>
<th>SM Closure through Feb</th>
<th>5 months prior to Closure</th>
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</thead>
<tbody>
<tr>
<td>Abandoned vehicle/unable to find</td>
<td>564</td>
<td>192</td>
</tr>
<tr>
<td>Motorist check/assist</td>
<td>1239</td>
<td>95</td>
</tr>
<tr>
<td>Other</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>Remove debris from roadway</td>
<td>140</td>
<td>11</td>
</tr>
<tr>
<td>Traffic control/crash/fire</td>
<td>327</td>
<td>14</td>
</tr>
<tr>
<td>Vehicle repair assist</td>
<td>557</td>
<td>92</td>
</tr>
<tr>
<td>Grand Total</td>
<td>2855</td>
<td>404</td>
</tr>
</tbody>
</table>
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
- Increase Hoosier Helper Patrols
- Traffic Signal Optimization
Traffic Signal Systems

- Deployed 6 engineers to the area on Day 1
- Timing adjustments on four compressed diamonds
- Timing adjustments on multiple INDOT corridors
- Assisted local governments in timing adjustments on local roads
- Established communications and count capabilities for many critical corridors
Compressed Diamond Stansifer Ave
Day 1 Closure Traffic
Day 1 Closure Traffic
Established Communications
Established Count Capabilities
Changed phasing from 4 phase to 3 phase
Continually adjusted timings for the first week as traffic patterns settled.
Traffic Signal Timings

Stansifer Ave Northbound Volume

Traffic Volume

0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

9/5/2011
9/14/2011
10/19/2011
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
- Increase Hoosier Helper Patrols
- Traffic Signal Optimization
- Signage
Local Concerns with “Closed”
Panel Sign Modifications
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
- Increase Hoosier Helper Patrols
- Traffic Signal Optimization
- Signage
- ITS Deployment
Portable DMS Locations
ITS Deployment

New Cameras
New Detectors
New Bluetooth
Bluetooth Travel Times
I-65 SB 7.2MM to 0.2 MM
Clark Memorial Bridge

Sensys Sensor Locations
11/02 – 11/03
Initial Volumes (15 min.)

15 Minute Traffic Volumes
Accelerated ITS Project for Region

- Originally planned for 2015 or later
- Contract Awarded Feb 2012
- Will replace and expand the existing system
Plan of Action

- Interstate Ramp Issues
- Separate the I-65 and I-64 traffic prior to the Kennedy Bridge
- US-31 Clark Bridge Capacity
- Ramp metering and closures
- Increase Hoosier Helper Patrols
- Traffic Signal Optimization
- Signage
- ITS Deployment
- Increased Enforcement
Coordination with other agencies

- Incident Management Meetings
  - Introductions of attendees
    - ISP
    - Sheriff Departments
    - Local PDs
    - Local FDs
    - All EMS personnel
    - InDHS local personnel
    - Spill Recovery personnel
    - Towing Operators
    - Chamber of Commerce
  - Briefing of status of event
  - POC for each agency
  - Distribution list established
  - Media Coverage & contacts
  - ESF-1 event for Transportation
Enforcement
Enforcement
Oversize Overweight Permits

- No overweight allowed on Kennedy
- Height restriction on both Kennedy and Clark
- Madison Bridge under Construction
Traffic Management
Unique Opportunity for Traffic Management

- Large amounts of live data
- Large volumes of post event data (INRIX)
- Real time verification of MOT decisions
Counts continue to rise
Total Crossing Clark and Kennedy

- Pre SM Closure (2010) - INDOT Planning: 231,787
- Post SM Closure Sept 2011 - INDOT Planning: 182,062
- Post SM Closure Nov 3 2011 - INDOT Planning: 185,186

Total: 498,035
Bridge is Open. Drive Safely.
Conclusions

Questions?