Corridor Advisory Group and Task Force Meeting #5

July 22, 2010
Agenda

- Recap CAG/TF #4
- Technical Analysis Findings – Highway Safety and Operations
- Purpose and Need
- Next Steps
- Transportation Toolbox Presentations
CAG /TF #4 Recap

- Problem Statement
- Technical Analysis Findings
- Existing Transportation System
- Summary of Findings
- 2030 Baseline (No Build) Forecasts
- Initial Purpose & Need Discussion
### I-290 Comparative Crash Rates

**CHICAGO AREA EXPRESSWAYS**

*Crashes per Million Vehicles per Mile*

- **Focused Study Area**
  - **Eisenhower — Phase I Study Area**: 2.21
  - **Eisenhower — 4 Lane Section**: 1.65
  - **Stevenson**: 1.37
  - **Kennedy**: 1.61
  - **Edens**: 1.42

- **4-Lane Section East of Focused Study Area**

- **Highest overall crash rate**: I-290 between I-294 and Kostner Ave
- **Highest sub-section crash rate**: I-290 from Central to Austin (3.5)
- **8 highest sub-section crash rates (out of 34)**: on I-290 within study area

Source: IDOT Crash Data 2006-2008
Congestion & Poor Operations:

- 97% of mainline congested up to 17 hrs. each weekday
- Rear end crashes are predominant type, followed by sideswipes and fixed object crashes
- 94% of rear-end crashes occur during congested periods
- 64% of all crashes are rear end
- **Primary causes:** demand exceeds capacity, lane/capacity reductions
Roadway Design Factors *(associated crash type):*

- Abrupt ramp departure angles – short gore lengths *(sideswipe, rear end)*
- Inconsistent exit and entrance ramp patterns between successive ramps *(side swipe, rear end)*
- Narrow shoulder widths *(side swipe)*
- Substandard curve geometry and sight distance *(rear end, fixed object)*
- Lack of lane channelization at intersections *(rear end, side swipe)*
- Inadequate turn lane storage at intersections *(rear end, side swipe)*
21% Severe injury DUI crashes (14 of 67)
No DUI-related fatalities
DUI-related severe crashes on mainline only
71% of severe DUI crashes were off-peak
  - between 9 PM and 6 AM (similar to statewide experience)
Fatal DUI crash statistics (2008):
  - 31% Nationwide
  - 35% in Illinois

Sources: IDOT Crash Data 2006-2008
I-290 EISENHOWER EXPRESSWAY
MAINLINE OPERATIONS, DEFICIENCIES & CRASHES
CAG #5 PRESENTATION
July 22, 2010

PEAK PERIOD OPERATIONS

1/10 Mile
2006-2008 Crash Totals
WESTBOUND

100 Crashes
50 Crashes
100 Crashes

EASTBOUND

50 Crashes
100 Crashes

WESTBOUND

50 Crashes

EASTBOUND

50 Crashes

SHEET 1 of 2

OPERATIONS LEVEL OF SERVICE
Mainline Operations
Intersection Operations
Ramp Operations

DEFICIENCY LEGEND
Weaving
Mainline Shoulder Deficiency
Bridge Functionally Deficient
Safety - High Crash Location

CRASHES

Cross Slope
K Value
Dashes
Vertical Clearance

5% Crash Locations
SEVERE INJURIES
FATALITIES
½ mile west of Mannheim Rd. to Westchester Blvd.
- 409 Crashes per mile – Highest EB Crash section
- **Crash Types:** 62% rear-end, 18% side-swipe, 15% fixed object
- **Contributing Causes:**
  - Heavy Congestion (LOS F) – due to down stream lane drop/capacity reduction
  - Narrow shoulders

Crash statistics from 2006 through 2008
EB Mainline Crashes “Hot Spots”

I-290 EISENHOWER EXPRESSWAY
MAINLINE OPERATIONS, DEFICIENCIES & CRASHES
CAG #5 PRESENTATION
July 22, 2010

PEAK PERIOD OPERATIONS

1/10 Mile
2006-2008 Crash Totals

50 Crashes

Westbound

50 Crashes

Eastbound

100 Crashes

100 Crashes

5% Crash Locations
SEVERE INJURIES
FATALITIES
Westchester Blvd to 25th Avenue

- 374 crashes per mile
- **Crash Types:** 56% rear-end, 33% side-swipe:
- **Contributing Causes:**
  - Congestion (LOS F) – due to capacity reduction/lane drop to 25th Avenue
  - Weaving maneuvers at CD road entrance/auxiliary lane drop
  - Narrow Shoulders

I-290 EISENHOWER EXPRESSWAY
MAINLINE OPERATIONS, DEFICIENCIES & CRASHES

CAG #5 PRESENTATION
July 22, 2010

PEAK PERIOD OPERATIONS

Operations Level of Service
- Mainline Operations
- Intersection Operations
- Ramp Operations

Legend:
- Green: Normal Operation
- Yellow: Minor Deficiency
- Orange: Moderate Deficiency
- Red: Severe Deficiency

Crash Totals
- 2006-2008
- Westbound:
  - 100 Crashes
  - 50 Crashes
  - 10 Crashes

- Eastbound:
  - 100 Crashes
  - 50 Crashes
  - 10 Crashes

- 5% Crash Locations
- Severe Injuries
- Fatalities
25th Avenue to 1st Avenue

- 329 crashes per mile
- **Crash Types:** 78% rear-end, 15% side-swipe
- **Contributing Causes:**
  - Severe stop-and-go Congestion (LOS F)
  - Substandard ramp geometry (short gore lengths)
  - Closely spaced ramp weaving maneuvers
  - Narrow shoulders
Laramie Avenue to Austin Boulevard

- 537 crashes per mile – highest crash rate in study area
- **Crash Types:** 77% rear-end, 16% side-swipe
- **Contributing Causes:**
  - Mainline capacity/lane reduction
  - Extended periods of congestion (LOS F)
  - Weaving to-from mandatory left lane exit ramp

Austin Boulevard to west of Austin Blvd. on ramp

- 434 crashes per mile
- **Crash Types:** 83% rear-end, 10% side-swipe
- **Contributing Causes:**
  - Congestion (LOS F)
  - Narrow Shoulders
  - Left hand merging maneuvers
WB Mainline Crashes “Hot Spots”

I-290 EISENHOWER EXPRESSWAY
MAINLINE OPERATIONS, DEFICIENCIES & CRASHES

CAG #5 PRESENTATION
July 22, 2010

Operations Level of Service
Mainline Operations
Interaction Operations
Ramp Operations

Deficiencies Legend:
- Mainline Shoulder Deficiency
- Ramp Angle
- Ramp Slope
- Exit/Entry Lockout
- Guardrail Functionality Classes
- Median/Centerline Location

Crossing

5% Crash Locations
- Severe Injuries
- Fatalities

Westbound

Eastbound
Harlem Avenue Interchange Area

- 498 crashes per mile
- **Crash Types:** 70% rear-end, 19% side-swipe
- **Contributing Causes:**
  - Congestion (LOS F)
  - Narrow Shoulders
  - Left hand exit and entrance merging maneuvers
Crossroad Crash Causes

- Overall Crash Types:
  - 32% turning
  - 32% rear-end
  - 14% angle
  - 13% sideswipe

Contributing Causes:

- Congestion (demand exceeding capacity)
- Inadequate turn lane storage lengths
- Narrow lanes and lack of channelization

I-290 crash rates are highest in the region.

Rear-end crashes related to congestion most prevalent.

Lane/capacity reductions and weaving are key contributors to congestion and crashes.

**Severe crashes**: majority occur off-peak.
**Factors**: higher speeds, night, DUI.

**Intersection crashes**: rear end, turning, angle.
**Factors**: congestion, inadequate turn lane storage lengths, lack of lane channelization.

Source: IDOT Crash Data 2006-2008
Definition: “any non-driving activity a person engages in while operating a motor vehicle”

- Visual – taking your eyes off the road
- Manual – taking your hands of the wheel
- Cognitive – taking your mind off what you’re doing

- 5,870 fatalities in 2008 attributed to distracted driving (16% of all)
- Younger drivers most susceptible
- Cell phone usage while driving can increase crash likelihood 4x
- Education and enforcement are most common tools against DD

Source: www.Distraction.gov, the official US DOT website for distracted driving
More detailed information can be found in the I-290 Crash Analysis Technical Memo

- Detailed Crash Data
- Mainline Section Analysis
- Ramp, Crossroad & Frontage Roads
- K&A Analysis
- Contributing Factors
Purpose and Need Discussion
A summary of the transportation problems to be addressed – what are the needs, why should they be addressed

Written broadly enough to consider a range of potential solutions

Provides a basis for evaluating initial alternatives
## Regional and Local Travel

<table>
<thead>
<tr>
<th>Technical Analysis Findings</th>
<th>Problem Statement</th>
<th>Stakeholder Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Heavy I-290 traffic congestion</td>
<td>• Traffic congestion on I-290 and arterials</td>
<td>• Address corridor and regional travel needs</td>
</tr>
<tr>
<td>• Parallel arterial congestion</td>
<td>• Improve mobility</td>
<td>• Maximize corridor mobility across all modes</td>
</tr>
<tr>
<td>• Need for improved connectivity</td>
<td>• Connectivity (north-south and east-west)</td>
<td>• Improve reverse commute options</td>
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<tr>
<td>• Improve reverse commute options</td>
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<td>• Foster smart growth</td>
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<td></td>
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<td>• Improve access to jobs</td>
</tr>
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<td>-----------------------------</td>
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</tr>
<tr>
<td><strong>Roadway Operational Deficiencies:</strong></td>
<td>• Traffic congestion on Eisenhower Expressway and arterial roads</td>
<td>• Address I-290 traffic congestion.</td>
</tr>
<tr>
<td>– Poor Levels of Service on I-290 and Arterials</td>
<td>• Transit speed of service</td>
<td>• Improve operation &amp; performance of I-290</td>
</tr>
<tr>
<td>– <strong>Mainline:</strong> Inadequate Capacity, Geometric Deficiencies, Basic # of Lanes and Lane Balance Deficiencies*</td>
<td></td>
<td>• Address the capacity-demand mismatch</td>
</tr>
<tr>
<td>– <strong>Ramp Junctions:</strong> Complex Maneuvers (Close Ramp Spacing), Non-Uniform Geometry, High Volumes, Inadequate Acceleration/Deceleration Lanes*</td>
<td></td>
<td>• Improve service for local and through trips</td>
</tr>
<tr>
<td>– <strong>Interchange Intersections:</strong> Inadequate Capacity and Storage, Non-Optimized Signal Timing, Inadequate Geometry*</td>
<td></td>
<td>• Address traffic congestion on 1st Ave.</td>
</tr>
<tr>
<td><strong>Bus Transit:</strong> Longer bus travel times, multiple transfers, varying service hours &amp; frequencies</td>
<td></td>
<td>• Reduce arterial congestion</td>
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</table>

*Additional information since CAG #4
### Regional Travel

- Substantial travel and congestion in the study area
- Mainline congestion 17 hours per day
  - 97% of Mainline is LOS D or worse during peak hours
  - 100% of Ramp Junctions are LOS D or worse during peak hours

### Local Travel

- 7 of 10 interchanges have failing movements
- 92% of parallel arterials are congested or very congested
- Bus travel times & reliability worse due to arterial congestion
Improve Local and Regional Travel (continued)

<table>
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<tr>
<th>Improve Access to Employment</th>
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</table>

- **Capacity constraints and congestion limit ability to serve growth in traditional and reverse commute markets**
- **Traditional commute**
  - *W/NW Cook & DuPage Co. workers traveling to Chicago face heavy study area congestion via roadways*
- **Reverse commute**
  - *Chicago workers traveling to W/NW suburbs face heavy study area congestion via roadways*
  - *More transit reverse commute options are needed*
- **Study area**
  - *All of the interstates segments & over half of the arterial street segments have congested vehicle miles of travel (CVMT)*
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<td>• I-290 high crash rates and # of crashes in comparison to similar area facilities*</td>
<td>• Roadway Safety</td>
<td>• Reduce crashes</td>
</tr>
<tr>
<td>• Rear-end crashes most prevalent overall; congestion a contributing factor*</td>
<td>• Improve safety of pedestrian and bicycle facilities</td>
<td>• Improve safety for motorists at interchanges</td>
</tr>
<tr>
<td>• Crash “hot spots” – near Mannheim EB, Austin and Harlem WB*</td>
<td></td>
<td>• Left hand ramps</td>
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<tr>
<td>• <strong>Severe crashes:</strong> non-congested periods, higher speeds, DUI, mixture of crash types*</td>
<td></td>
<td>• Detection and clearance of accidents</td>
</tr>
<tr>
<td>• Bicycle/pedestrian crashes related to deficiencies*</td>
<td></td>
<td>• Harrison and Bataan Dr. frontage roads are not safe</td>
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*Additional information since CAG #4
## Needs Summary Points

### Improve Safety for All Users

- Pedestrian – vehicle conflicts on cross roads
- ADA ramp and sidewalk deficiencies
- Limited bicycle accommodations
- I-290 experienced higher crash rates than comparable facilities
Needs Summary Points (continued)

## Improve Safety for All Users (continued)

- Predominant rear-end & side swipes crashes

**Contributing factors:** congestion, weaving & geometrics

- **EB high crash segments:** W. of 25th, 25th to 1st and DesPlaines to Harlem
- **WB high crash segments:** Laramie to Austin and East Ave. to CSX Overpass
### Modal Opportunities & Connections

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<td>• Lack of transit reverse commute options,</td>
<td>• Lack of transit reverse commute options &amp; access</td>
<td>• Improve access to jobs by multiple modes of transportation</td>
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<tr>
<td>connections to employment centers</td>
<td>• Improved connectivity &amp; accessibility for pedestrian</td>
<td>• Improve trail connectivity</td>
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<tr>
<td>• Problematic intermodal connections (Pace/</td>
<td>and bicycle</td>
<td>• Improve bicycle access to CBD and lakefront</td>
</tr>
<tr>
<td>CTA/Metra)</td>
<td></td>
<td>• Improve access to recreational opportunities</td>
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<tr>
<td>• Problematic pedestrian access to transit</td>
<td></td>
<td>• Improve pedestrian crossings over and along corridor</td>
</tr>
<tr>
<td>• Bus stops for CTA stations in traffic</td>
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<tr>
<td>lanes &amp; opposite stations</td>
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<tr>
<td>• Constrained Metra/CTA park-and-ride</td>
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<tr>
<td>facilities</td>
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<td></td>
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<tr>
<td>• Bicycle facility deficiencies</td>
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<tr>
<td>• ADA access deficiencies</td>
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</table>
**Improve Modal Connections & Opportunities**

- **Improve Transit Connections**
  - CTA Blue Line station access
    - Poor pedestrian environment due to pedestrian/vehicle conflicts & narrow sidewalks
    - Bicycle access difficult due to lack of bicycle lanes & inadequate shoulders
    - Bus transfers block traffic & may require passengers to cross traffic
    - CTA intermediate stations are non-ADA compliant
  - Congested auto access and constrained capacity at CTA Forest Park park-and-ride facility
## Improve Modal Connections & Opportunities (cont.)

- **Improve Non-Motorized Connections**
  - Limited access opportunities across I-290 corridor
  - Pedestrian and bicycle facilities substandard
  - Some sidewalks non-ADA compliant
### Age/Design

#### Technical Analysis Findings
- I-290 pavement & CTA track bed/yard & shop nearing end of useful life
- Substandard I-290 geometrics (shoulders, ramps, intersection turning, vertical profile & clearance, bridge functional obsolescence)
- Inadequate storm sewer system in trench (I-290/CTA/CSX) & obsolete pump station
- CTA intermediate stations not ADA compliant & Metra station improvements
- Varied bus stop infrastructure
- CSX vertical clearance & grade

#### Problem Statement
- Infrastructure condition
- Safety
- Physical community cohesion

#### Stakeholder Input
- Increase lifespan of roadway
- Address poor condition
- In need of repair
- Fix pavement buckles
- Address uniformity of ramps
- Lengthen ramps
- Address narrow shoulders
- Bridges are in poor condition
### Improve Facility Condition/Design

- Original design & construction of I-290 over 50 years old
  - Pavement base requires reconstruction
  - Address Structure condition
  - Address Geometric Design
    - Mainline
    - Interchanges
    - Clearances
    - Drainage
Alternatives Development Process
Reasonable alternatives identified and evaluated to address established needs

- Conceptual to Detailed
  - Stakeholder input
  - Refinement
  - Evaluation
  - Repeat

- Single Modes to Combinations
Alternative Evaluation Criteria

- Travel Benefits
- Impacts (built and natural)
- Cost
- Sustainability
Next Steps
Next Steps

- Draft Purpose & Need
- Evaluation Measures
- Initial Alternatives Workshop
Upcoming Meeting

Corridor Advisory Group and Task Force Meeting #6

September 2010

Date and Location TBA

SAVE THE DATE...
Questions?
Transportation Toolbox Presentations

- Safety
- Managed Lanes
- Transit