STUDY AREA LOCATION
Capital Boulevard Today

• US/NC route highway with expressway characteristics
• 6 to 8 lanes with a median
• Dominant north-south commuting route
• Negligible traffic growth
• Major transit route
• Limited sidewalks
Capital Boulevard Today

• Two major creek systems
  – Crabtree Creek, Pigeon House Branch
• Wetland areas
• History of flooding
• Poor water quality
• Proposed greenway corridors
Capital Boulevard Today

- Current land uses:
  - Industrial/commercial
  - Medium- to high-density residential
  - Vacant along Crabtree Creek

- Land Values Influenced by:
  - “Railroad Valley” – CSX, NS Railroad corridors
  - Prevalence of Industrial Zoning
  - Expressway used to access downtown Raleigh
Visioning on Capital Boulevard

• 1979 Comprehensive Plan
  – Metro Focus Corridor (“Downtown Boulevard”)  
• 1987 Bicentennial Boulevard Project
  – Focus on visual enhancement 
• 1989 Comprehensive Plan
  – Downtown Regional Center and Gateway Corridor  
• 2030 Comprehensive Plan
  – Multi-Modal Corridor
Capital Boulevard Corridor Study

• Issues, opportunities, and constraints
  – Vision for the Boulevard
  – Specific recommendations
  – Capital plan and phasing strategy

• Influencing factors
  – Expanding downtown to Peace Street
  – Potential for transit enhancements
  – Access to public funds

• Corridor Study approved June 2012
Key Issues

• Fast-moving traffic, auto-centric corridor
• Buildings separated by parking or swales
• No public parks, difficult to access greenways
• Limited sidewalk infrastructure
Key Issues

• Multiple driveways and access points
• Disconnected neighborhoods
• Impaired natural resources
• Underutilized properties, high vacancy rates, and subpar leasing rates
Constraints

- Traffic volumes will remain high
- Flooding will continue to be a challenge
- Rail lines and yards are difficult to cross
- SE High Speed Rail unfunded, requires a sealed corridor
- Limited right-of-way in southern section
- Neuse River Riparian Buffer restrictions
Opportunities

• Projects identified to repair natural resources
• Opportunities for mixed-use development?
• Zoning and design guideline changes (UDO)
• Potential transit investments
• Funding available for flood-prone property acquisition
• Pending NCDOT bridge replacement projects
Public Engagement

• Public kickoff - June 2010
  – 250 participants
  – Focus on study area and study topics
• 2\textsuperscript{nd} public meeting - October 2010
  – 50 participants
  – Review of issues, opportunities, and constraints
Public Engagement

• Final public meeting - September 2011
  – 125 participants
  – Present draft Corridor Study
  – Included additional public information efforts for
    • NCDOT Bridge Replacement Projects
    • NCDOT SE High Speed Rail Project
    • Other City transportation initiatives
  – Very positive feedback!
## Corridor Vision Themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy Motoring</td>
<td>A safer and better designed high-capacity highway</td>
</tr>
<tr>
<td>Transitioning to Transit</td>
<td>Bus and rail transit opportunities</td>
</tr>
<tr>
<td>Moving without Fossil Fuels</td>
<td>Walking and biking the length of the corridor</td>
</tr>
<tr>
<td>Greening the Infrastructure</td>
<td>Stream restoration, open spaces, greenways</td>
</tr>
<tr>
<td>At Home on Capital Boulevard</td>
<td>Living, working and leisure on the corridor</td>
</tr>
<tr>
<td>Business and Industry</td>
<td>Opportunity for job-generating uses and activities</td>
</tr>
</tbody>
</table>
HAPPY MOTORING

- Peace Street Interchange square loop concept
- Wade Avenue Interchange,
- West Street Extension
- Decommissioning of Fairview Overpass
- Valley Superstreet
Interchange Concepts
PEACE STREET ALTERNATIVES

<table>
<thead>
<tr>
<th>Measure of Effectiveness</th>
<th>Existing Bridge</th>
<th>At-Grade Option</th>
<th>Square Loop Option</th>
<th>Square Loop Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Delay/Veh (sec)</td>
<td>428</td>
<td>384</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Stops/Veh</td>
<td>1.28</td>
<td>1.69</td>
<td>0.97</td>
<td>0.90</td>
</tr>
</tbody>
</table>

**Network Performance – PM**

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Delay/Veh (sec)</td>
<td>296</td>
<td>286</td>
<td>100</td>
<td>88</td>
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<tr>
<td>Stops/Veh</td>
<td>1.41</td>
<td>2.17</td>
<td>1.65</td>
<td>1.51</td>
</tr>
</tbody>
</table>

- The square loop option outperformed the existing bridge and the at-grade intersection in regard to network measures of effectiveness.
- It was not possible to adjust signal timing the at-grade intersection to provide acceptable delays or levels-of-service, defined as average delay per vehicle of 80 seconds or less.
Interchange Concepts
Capital Plan & Phasing

• Three phases:
  – Downtown Express
  – Valley
  – North Boulevard

• Likely first phase: Downtown Express
  – Peace Street & Wade Avenue interchanges
  – West Street extension & Fairview interchange removal
  – Capital Boulevard Superstreet
  – Devereux Meadows park and stream restoration
NCDOT Projects

• B-5121/B-5317 Bridge Replacement Projects
  – Peace Street Interchange
  – Wade Avenue Interchange

• SE High Speed Rail
  – Flyover south of Wade Avenue

• B-5684 Capital Boulevard at Crabtree Creek
Bridge Replacement Projects
Issues Considered

- Feasibility of construction on existing location
- Impact to natural environment
- Impact to businesses
- Impact to historic resources
- Change to pedestrian access
- Roadway geometry
- Development potential
Peace Street Interchange
Alternative Development Process
Sept 2011 Public Meeting

Alternative P1—Diamond Interchange
Sept 2011 Public Meeting

Alternative P2—Square Loop Interchange
Sept 2011 Public Meeting

Alternative P3—Bowtie Interchange
Nov 2011 – July 2012 Decisions

• Eliminate P1 (diamond)
  – No notable benefits over other alternatives
  – Not consistent with City’s plan

• Refine P2 (square loop)
  – Minimize impacts
  – Improve pedestrian and vehicle access

• Eliminate P3 (bowtie)
  – No notable benefits over other alternatives
  – No public support
  – Not consistent with City’s plan
# Peace Street Interchange

<table>
<thead>
<tr>
<th>Alt.</th>
<th>Description</th>
<th>Preliminary Cost Estimate (millions)</th>
<th>Number of Relocations</th>
<th>Public Preference (16 comments)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Construction</td>
<td>Right-of-Way</td>
<td>Utilities</td>
</tr>
<tr>
<td>P-Base</td>
<td>Replace in-kind (half cloverleaf)</td>
<td>$11.9</td>
<td>$9.9</td>
<td>$4.6</td>
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<tr>
<td>P2d</td>
<td>Square loops</td>
<td>$14.8</td>
<td>$17.7</td>
<td>$3.9</td>
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</tbody>
</table>
October 2012 Public Meeting

Alternative P-Base
October 2012 Public Meeting

Alternative P2d—Square Loops
January – March 2013 Decisions

• Eliminate P2 (square loop)
  – Adverse effect to historic Raleigh & Gaston RR

• Add, then eliminate P4 (square loop/partial coverleaf)
  – Less desirable access in northeast quadrant

• Add P5 (square loop/ramps)
## October 2013 Public Meeting

### Preliminary Costs and Impacts

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<td>$9.9</td>
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<tr>
<td>P5</td>
<td>Square loop/ramps</td>
<td>$15.4</td>
<td>$17.7</td>
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## Preliminary Costs and Impacts

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Wade Avenue Interchange
Alternative Development Process
Sept 2011 Public Meeting

Alternative W1—Trumpet Interchange
Sept 2011 Public Meeting

Alternative W2—Diamond Interchange
Sept 2011 Public Meeting

Alternative W3—Compressed Diamond, West Street—Grade Separation
Sept 2011 Public Meeting

Alternative W4—Compressed Diamond West Street—Right-in, Right-out
Nov 2011 – July 2012 Decisions

• Refine W1 (trumpet)
  – Minimize impacts
  – Work with SEHSR corridor

• Refine W2 (diamond)
  – Consider different West Street connections

• Eliminate W3 (compressed diamond with West Street grade separation) & W4 (compressed diamond with West Street right-in/right out)
  – Requires relocation of Pigeon House Branch
Wade Avenue Interchange

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<td>Construction</td>
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<tr>
<td>W-Base</td>
<td>Replace in-kind (trumpet)</td>
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<tr>
<td>W1a</td>
<td>Trumpet with West St. bridge</td>
<td>$13.2</td>
<td>$12.1</td>
<td>$5.3</td>
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<tr>
<td>W2</td>
<td>Diamond with West St. bridge</td>
<td>$18.1</td>
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<tr>
<td>W2b</td>
<td>Diamond</td>
<td>$11.6</td>
<td>$10.5</td>
<td>$2.5</td>
</tr>
</tbody>
</table>
Oct 2012 Public Meeting

Alternative W-Base
Oct 2012 Public Meeting

Alternative W1a—Trumpet with West St Bridge
Oct 2012 Public Meeting

Alternative W2—Diamond with West St Bridge
Oct 2012 Public Meeting

Alternative W2b—Diamond
January – March 2013 Decisions

• Eliminate W1 (trumpet with West Street bridge)
  – Higher cost
• Refine W2 (diamond/trumpet)
# October 2013 Public Meeting

## Preliminary Costs and Impacts

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- **Alternative W-Base**
- **Capital Blvd**
- **401**

- **Alternative W2c**
- **Capital Blvd**
- **401**
April 2014 Public Hearing
Recommended Alternatives
P5 and W-Base
Public Hearing
P-Base & W2c
NCDOT/Raleigh Coordination

• Regular meetings throughout the NEPA and design process
• Joint public meetings
  – NCDOT interchange projects
  – City Capital Boulevard Corridor Study
• City selection letter
• Memorandum of Agreement
Implementation Challenges

• City Funding
  – $11M share estimate may grow...?
  – CAMPO STP-DA Grant Offsets
  – Right-of-way/condemnation costs uncertain

• Staffing
  – Team transitions, turnover vs continuity of decisions, design parameters

• Cost Assignment/Negotiation
  – Assigning appropriate responsibility for various cost elements
Design Agreements

- Undergrounding utilities
- Additional retaining walls?
- Minimizing use of C/A fencing
- Streetscapes, landscaping, and lighting
- Sidewalk design and location
- Aesthetics of bridges
- City property value
Ongoing

• Implementation Team
  – Multi-departmental group
  – Meets regularly to discuss progress, updates, conflicts

• Flood-prone Property Buyout

• Development Coordination

• Park Planning + Stream Restoration
Questions?
Eric J. Lamb, PE  
Transportation Planning Manager  
City of Raleigh

Eric.Lamb@raleighnc.gov  
(919) 996-2161  
@RaleighMoves

Teresa Gresham, PE  
Transportation Planning Engineer  
Kimley-Horn

Teresa.Gresham@kimley-horn.com  
(919) 677-2194