ACKNOWLEDGMENTS

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Arthur L. Storey, Jr., P.E., Executive Director, Harris County Public Infrastructure
Brenda Mainwaring, Ex-Officio Member, Vice President, Public Affairs, Union Pacific Railroad
Honorable Allen B. Fletcher, Ex-Officio Member, 8-County Region Representative, Texas State Legislator
# Study Purpose and Goals

1. Study Purpose and Goals
2. Study Process
3. Study Area
4. Project Facts
5. Study Area Growth

# Analysis of Existing Conditions

1. Physical Characteristics
   - Land Use & Zoning
   - Roadway & Intersections
   - Existing Typical Sections
   - Driveway & Access
   - Signing & Pavement Markings
   - Pavement Condition
   - Railroads
   - Pedestrian & Bicycle Infrastructure
   - Transit
   - Planned Projects in the Area

2. Operational Characteristics
   - Crash Data Analysis
   - Crash Rate Comparison
   - Daily Traffic Volumes
   - Intersection Turning Movement Counts
   - Driveways Unsignalized Intersection
     - Turning Movement Counts
     - Traffic Flow
   - Intersection Geometry
   - Traffic Signals
   - Existing Traffic Analysis

3. Existing Policies
   - TxDOT Access Management
   - Existing Management Practices

# Goals of Public Involvement

1. Goals of Public Involvement
2. Public Involvement Plan
   - Steering Committee
   - Stakeholder Meetings
   - Public Meetings

3. First Public Meeting
   - Excerpts from First Public Meeting

4. Second Public Meeting
   - Excerpts from the Second Public Meeting
RECOMMENDED IMPROVEMENTS & IMPLEMENTATION STRATEGIES

Recommendations
- Signalized Intersections Improvements
- Roadway Improvements
- Public Transit Improvements
- Downtown Area Improvements
- Bicycle Route Improvements
- Pedestrian Improvements

Traffic Analysis
- Signalized Intersection LOS
- Roadway LOS
- Traffic Signal Warrant Analyses

Benefits of Recommended Improvements
- Travel Time Savings
- Crash Cost Savings
- Air Quality

Implementation
- Considerations for Short- to Medium-Term Improvements
- Considerations for Long-Term Improvements
- Phasing and Cost Strategy
- Recommended Improvement Layouts

FUTURE CORRIDOR NEEDS

Issues Regarding Access Management
- Property Owner and Developer Needs versus Public Needs
- Agency obligation to provide access
- Intergovernmental Coordination
- Driveway Permitting and Design Requirements.
- Access Management Implementation Strategies

Strategies for Future Development
- Livable Centers
- Envisioning Groups
- Downtown Redevelopment
- Redesigning Morton Street
- Redevelopment along the Study Area Corridors

APPENDIX

A Access Management Principles
B H-GAC Regional Analysis Zone Data
C Driveway Density Summary
D Planned Projects in Study Area
E Intersection Lane Use and Turning Movement Counts
F Traffic Analysis
G Benefits Calculations
H Detailed Cost Estimates

SUPPORTING DATA CD

1 Crash Data
2 TxDOT ADT Maps
3 Signalized Intersection Turning Movement Counts
4 Driveway and Unsignalized Intersection TMCs
5 Existing Traffic Signal Inventory
6 Existing Signal Timing Plans
7 Existing 2013 AM Peak Intersection LOS Results
8 Existing 2013 PM Peak Intersection LOS Results
9 Scenario 1 - 2015 AM Peak Intersection LOS Results
10 Scenario 1 - 2015 PM Peak Intersection LOS Results
11 Scenario 2 - 2015 AM Peak Intersection LOS Results
12 Scenario 2 - 2015 PM Peak Intersection LOS Results
13 Synchro Traffic Model Files
EXECUTIVE SUMMARY

The Houston-Galveston Area Council, in partnership with TxDOT, the cities of Richmond and Rosenberg, and Fort Bend County, commissioned the HNTB team to conduct an access management study to evaluate US 90A from Bamore Road to Harlem Road, FM 1640 from Bamore Road to FM 762, and FM 762 from FM 1640 to US 90A, in Fort Bend County, Texas. The purpose of the study was to recommend access management tools that can be implemented to reduce traffic delay and improve safety and mobility.

This Executive Summary documents the study goals, existing conditions, public involvement, recommended short-, medium-, and long-term improvements, and project benefits.

STUDY GOALS

- Improve traffic flow along US 90A, FM 1640, and FM 762
- Improve safety and decrease the number of crashes
- Create corridor access management guidelines
- Provide phasing plan for implementation of solutions
- Provide for an open process throughout the project development

Figure ES.1: Study Area
EXISTING CONDITIONS

**Varied Typical Sections/ROW**
Typical sections and right-of-way (ROW) width vary along all of the corridors. This inconsistency can cause driver confusion and creates issues for pedestrians and cyclists.

**Driveways**
All study area corridors have high driveway densities.

The Institute of Transportation Engineers recommends no more than 4 driveways per 500 feet or roughly 42 driveways per mile. The high driveway density in these locations corresponds very closely with the locations of high crash rates observed below.

**Crash Rates**
A majority of crashes within the study area occur at intersections and can be attributed to high driveway density, inappropriate off street parking, and a lack of protected left turn lanes or proper turning storage for vehicles.

Crash rates for the study corridors are 2.1 to 4.2 times higher than the Texas average crash rate, indicating a significant safety concern.

### Figure ES.2

### Table ES.1: Driveway Density along Study Area Corridors

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Segment</th>
<th>Distance (miles)</th>
<th>Total Driveway</th>
<th>Driveway Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 90A</td>
<td>Barmore Rd to Lane Dr</td>
<td>3.3</td>
<td>232</td>
<td>70.5 driveways per mile</td>
</tr>
<tr>
<td>US 90A</td>
<td>Lane Dr to Harlem Rd</td>
<td>4.2</td>
<td>105</td>
<td>25.1</td>
</tr>
<tr>
<td>FM 1640</td>
<td>Barmore Rd to Radio Ln</td>
<td>2.2</td>
<td>152</td>
<td>69.6</td>
</tr>
<tr>
<td>FM 1640</td>
<td>Radio Ln to FM 762</td>
<td>1.6</td>
<td>39</td>
<td>24.8</td>
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<tr>
<td>FM 762</td>
<td>US 90A to FM 1640</td>
<td>1.3</td>
<td>83</td>
<td>63.1</td>
</tr>
</tbody>
</table>

### Figure ES.3: Crash Rate by Roadway Section

![Crash Rate by Roadway Section](image)
Traffic
The traffic analysis found that the number of lanes is adequate for current volumes, but the signalized intersections are not functioning at an appropriate level of service (LOS) due to number and length of turn lanes, alignment with cross streets, close proximity of driveways, and signal phasing and timing.

Table ES.2: LOS of Study Area Corridors

<table>
<thead>
<tr>
<th>Corridor</th>
<th>LOS</th>
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<tbody>
<tr>
<td>US 90A</td>
<td>C</td>
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<tr>
<td>FM 1640</td>
<td>D / C</td>
</tr>
<tr>
<td>FM 762</td>
<td>D</td>
</tr>
</tbody>
</table>

Physical Constraints
The study area is unique due to geographic location.

- The Brazos River presents mobility challenges due to the cost of bridge crossings and the lack thereof.
- The existing bridges over the Brazos River create a bottleneck for traffic entering and leaving Richmond.
- The location of the railroad tracks restricts certain improvements along the tracks, such as roadway widening or accommodation of bicycle and pedestrian facilities.

Public Involvement
Public involvement efforts for this project were maximized to ensure the greatest amount of participation, including steering committee meetings and several stakeholder and public meetings. A project website was also created to keep interested parties informed of project progress.
RECOMMENDED IMPROVEMENTS

Recommended improvements were identified to improve intersection capacity and improve safety along the corridors. Some of the key recommended improvements are listed below, categorized as short-, medium-, and long-term.

Table ES.3: Recommended Improvements

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Improvement</th>
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</thead>
</table>
| Short Term (0 - 5 years) | • Raised medians along US 90A  
                      | • Addition of Extension of Left Turn Lanes on US 90A, FM 1640, and FM 762 |
|                  | • Signing, pavement markings, ramps and sidewalk improvements              |
| Medium Term (5 - 10 years) | • Installation of Traffic Signal at Damon St. east of the Brazos River   |
|                  | • New Parallel Roadways North and South of US 90A                         |
| Long Term (10+ years)   | • Additional Brazos River Bridge Crossings (Austin St. and/or Golfview)    |
|                  | • Livable Centers Study in Richmond and Rosenberg                         |

A full list of improvements with costs is provided in the Preliminary Cost Estimate Table (ES.5.)

Benefits

Implementation of the recommended access management improvements is projected to:

- Enhance Traffic Operations
- Reduce Travel Time
  - Reduce delay by 13.6% during the weekday AM peak period (2 hours) and 18.2% during the weekday PM peak period (2 hours).
- Improve Safety Resulting in Crash Cost Savings
  - Estimated average annual crash savings of $4 million
- Improve Air Quality
  - Reduction of 3.4% of Volatile Organic Compounds (VOC), carbon monoxide (CO), and nitrogen oxides (NOx) levels.

Refer to Appendix G for the benefits calculations.

The Transportation Research Board has collected numerous studies that measure the actual crash reductions after implementation of various access management treatments. Applying these estimated crash reductions to the specific short and medium-term access management recommendations yielded the results in Table ES.4.

Table ES.4: Crash Reduction by Segment

<table>
<thead>
<tr>
<th>Facility</th>
<th>Segment</th>
<th>Est % Crash Reduction</th>
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<tr>
<td>US 90A</td>
<td>Barmore to Louise</td>
<td>35%</td>
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<td>Louise to Railroad</td>
<td>36%</td>
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<td>Railroad to Damon</td>
<td>14%</td>
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<tr>
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<td>Damon to Harlem</td>
<td>17%</td>
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<tr>
<td>FM 1640</td>
<td>Barmore to Louise</td>
<td>35%</td>
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<tr>
<td></td>
<td>Louise to Lamar</td>
<td>36%</td>
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<tr>
<td>FM 762</td>
<td>FM 1640 to US 90A</td>
<td>46%</td>
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</table>
### EXECUTIVE SUMMARY

#### US 90A ACCESS MANAGEMENT PRELIMINARY COST ESTIMATES

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<tr>
<td>Optimize Traffic Signal Timing</td>
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<th>Improvement</th>
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<tr>
<td><strong>LONG TERM (10 years +)</strong></td>
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<tr>
<td>Extend Austin Street east across the Brazos River, connect to Avenue A</td>
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<tr>
<td>Extend Harlem Road south of US 90A to New Territory</td>
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<td>Widen Old Richmond Road</td>
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<td>Widen FM 3155: US 90A to George Park</td>
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<tr>
<td>Extend Golfview east across the Brazos River to US 90A at FM 359</td>
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<td>Construct new east-west road north of US 90A from FM 359 to SH99</td>
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<td>TOTAL (LONG TERM)</td>
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<td><strong>GRAND TOTAL</strong></td>
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</table>

*All costs are based on TxDOT 12-month average bid tabs for Houston (Oct 2012 to Sept 2013)

Units: EA = Each, INT = Intersection, MI = Miler, SF = Square Feet, LS = Lump Sum
<table>
<thead>
<tr>
<th>Number</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Total (in Millions)</th>
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</thead>
<tbody>
<tr>
<td>6,866</td>
<td>SF</td>
<td>$13.00</td>
<td>$9,58</td>
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<tr>
<td>29,005</td>
<td>SF</td>
<td>$13.00</td>
<td>$377,065</td>
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</tbody>
</table>

$9,58

$377,065

TBD

TBD

TBD