US 90A ACCESS MANAGEMENT

HGAC HNTB

DRAFT | January 14, 2014


ALT
90

ACKNOWLEDGMENTS

Lead Agency
Project Manager

Houston-Galveston Area Council
Stephan Gage

Steering Committee

Houston-Galveston Area Council
Marco Bracamontes
Stephan Gage

Texas Department of Transportation
Paul Bartholomew
Ben Mebarkia, P.E.
Sanjay Upadhyay, P.E.
Jeff Volk, P.E.

Fort Bend County
DeWayne Davis, P.E.
Paulette Shelton
Richard Stolleis, P.E.

City of Richmond
Gary Gillen
Lenert Kurtz
Joseph T. Rogers
Terri Vela
Bill Whitworth

City of Rosenberg
Albert Cantu
Darrel Himley
Joseph T. Rogers
Travis Tanner

Rosenberg Economic Development Corporation
Matt Fielder

West Fort Bend Management District
Rachel Steele

Central Fort Bend Chamber Alliance
Shanta Kuhl

Fort Bend Economic Development Council
Perri D'Armond

Lamar Consolidated ISD
Ronald Oberhoff

Consultant Team

HNTB Corporation
Inas Aweidah, P.E., Project Manager
Martin Gonzalez, P.E.
Brittney Davis

In partnership with
EPIC Transportation Group, LP
Asakura Robinson Company

Transportation Policy Council Members

Honorable Ed Emmett, Chairman, County Judge, Harris County
Honorable Stephen C. Costello, 1st Vice Chair, Council Member, At-Large 1, City of Houston
Honorable Matt Sebesta, Jr., 2nd Vice Chair, County Commissioner, Pct 2, Brazoria County
Honorable Tom Reid, Secretary, Mayor, City of Pearland
Honorable James Patterson, Past Chair, County Commissioner, Pct. 4, Fort Bend County
Michael W. Alford, P.E., District Engineer, TxDOT Houston District
Honorable Norman Brown, County Commissioner, Pct. 4, Liberty County
Larry Calhoun, Executive Director, City of Conroe
Honorable Kenneth Clark, County Commissioner, Pct. 4, Galveston County
Bert Keller, Chairman, Gulf Coast Rail District
Scott Elmer, P.E., Assistant City Manager, City of Missouri City
Tucker Ferguson, P.E., District Engineer, TxDOT Beaumont District
Honorable Robert A. Fry, Jr., Mayor, West University Place
Robert L. Hall, Jr., County Engineer, Chambers County
Honorable Harish Jajoo, Council Member, City of Sugar Land
Dwight Jefferson, Member, Board of Directors, METRO
Honorable Doug Kneupper, P.E., City Engineer, City of Texas City
Daniel Kruger, Director of Public Works & Engineering, City of Houston
Honorable Darrell Morrison, P.E., Council Member, District H, City of Pasadena
Honorable James Noack, County Commissioner, Pct. 3, Montgomery County
Honorable Melissa Noriega, Council Member, At Large 3, City of Houston
Honorable Dennis O'Keeffe, Council Member, City of League City
Janiece Longoria, Commissioner & Chairman, Port of Houston Authority
Honorable Marie Robb, Council Member, City of Galveston
Orval Rhoads, P.E., County Engineer, Waller County
Honorable Terry Sain, Council Member, District 4, City of Baytown
Jack Steele, Executive Director, H-GAC, H-GAC At-Large
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

TABLE OF CONTENTS

4 RECOMMENDED IMPROVEMENTS & IMPLEMENTATION STRATEGIES

5 FUTURE CORRIDOR NEEDS

6 APPENDIX

SUPPLEMENTAL DATA CD

EXECUTIVE SUMMARY

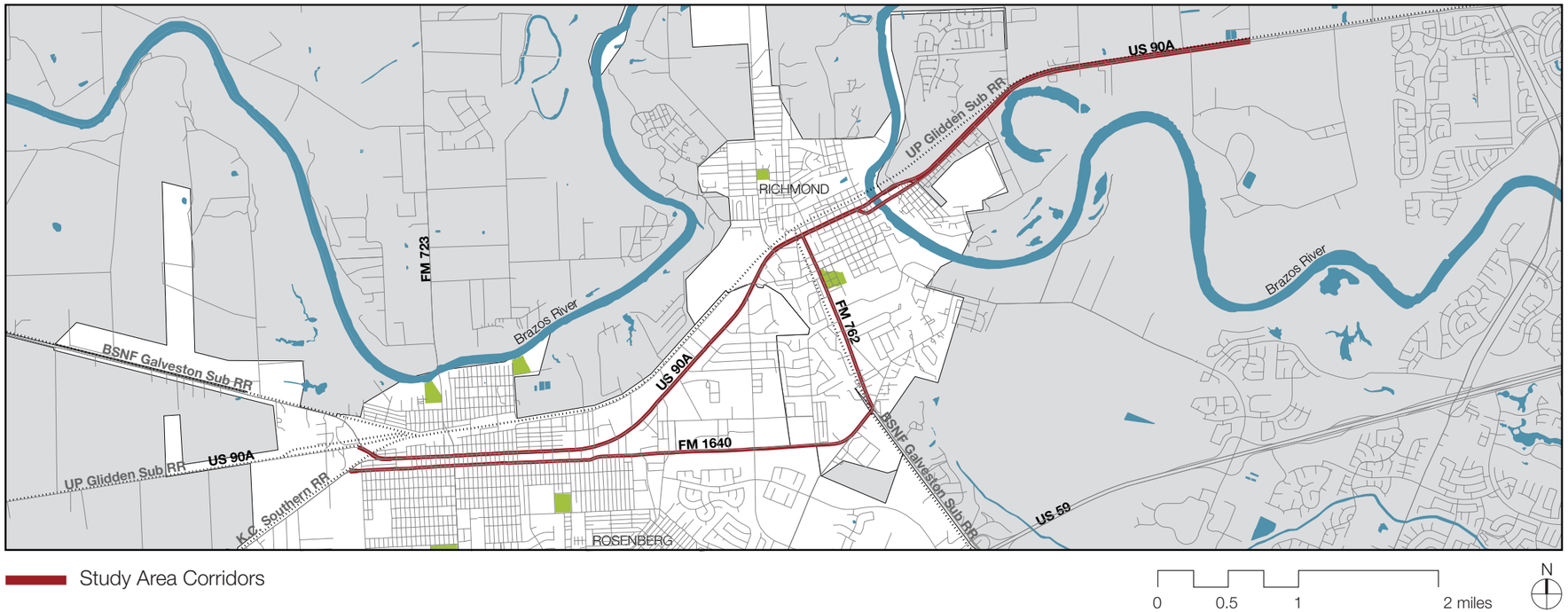
The Houston-Galveston Area Council, in partnership with TxDOT, the cities of Richmond and Rosenberg, and Fort Bend County, commissioned the HNTB team to conduct an access management study to evaluate US 90A from Bamore Road to Harlem Road, FM 1640 from Bamore Road to FM 762, and FM 762 from FM 1640 to 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.

Table ES.1: Driveway Density along Study Area Corridors

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

Figure ES.2

Figure ES.3: Crash Rate by Roadway Section

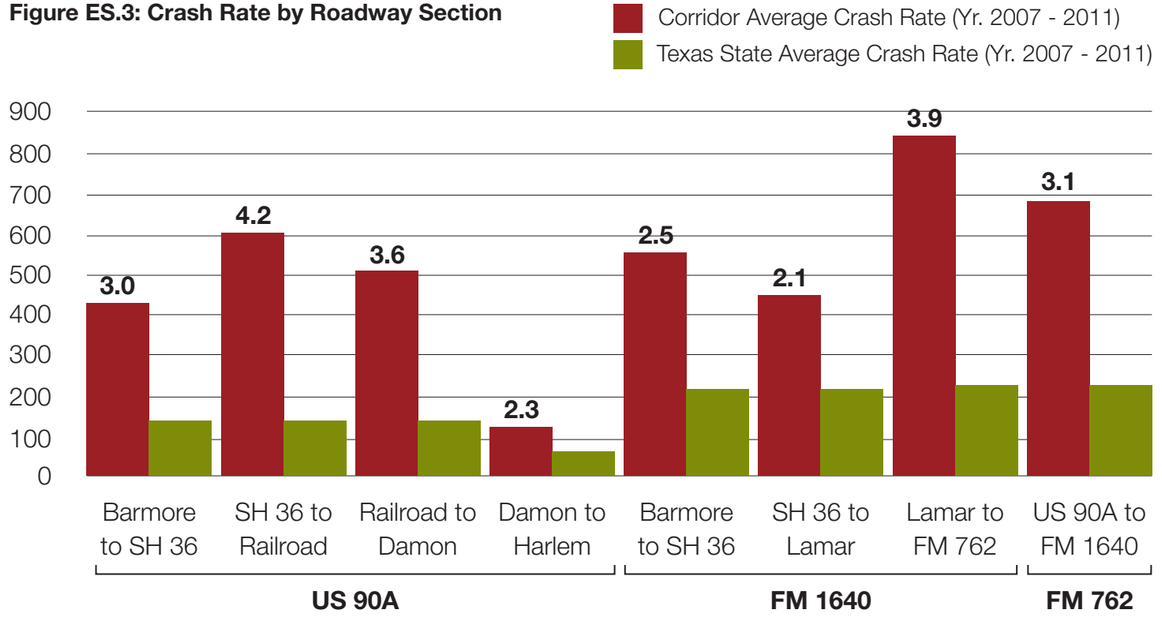


Figure ES.4: Westbound Bridge over Brazos River

Figure ES.5: UPRR Crossing at US 90A and Pitts Rd

Figure ES.6: Public Meeting #1

Figure ES.7: Public Meeting #2

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

Corridor	LOS
US 90A	C
FM 1640	D / C
FM 762	D

Physical Constraints

The study area is unique due is 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

Time Frame	Improvement
Short Term (0 - 5 years)	• Raised medians along US 90A • Addition or 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

Facility	Segment	Est % Crash Reduction
US 90A	Barmore to Louise	35%
	Louise to Railroad	36%
	Railroad to Damon	14%
	Damon to Harlem	17%
FM 1640	Barmore to Louise	35%
	Louise to Lamar	36%
FM 762	FM 1640 to US 90A	46%

Table ES.5: Preliminary Cost Estimates

US 90A ACCESS MANAGEMENT PRELIMINARY COST ESTIMATES																	
Primary Funding Source		**TxDOT**				**City of Richmond**				**City of Rosenberg**				**County**			
	Improvement	**Number**	**Unit**	**Unit Cost**	**Cost**	**Number**	**Unit**	**Unit Cost**	**Cost**	**Number**	**Unit**	**Unit Cost**	**Cost**	**Number**	**Unit**	**Unit Cost**	**Cost**
SHORT TERM (Less than 5 years)	***NEW PROJECTS***																
	New Traffic Signal	3	EA	$175,000.00	$525,000												
	Upgrade Signal Equipment	15	EA	$75,000.00	$1,125,000												
	Optimize Traffic Signal Timing	35	EA	$5,000.00	$175,000												
	Synchronize Traffic Signals	1	LS	$50,000.00	$50,000												
	Add Right Turn Lane	69,701	SF	$14.51	$1,011,287												
	Add Left Turn Lane	262,224	SF	$14.51	$3,804,589												
	Pavement Addition	62,873	SF	$13.00	$817,349												
	Add Raised Median / Channelization (Concrete)	92,120	SF	$14.00	$1,289,680												
	Pavement Removal	64,947	SF	$2.06	$133,746					1,586	SF	$2.06	$3,266				
	Add Pedestrian Crosswalks	24	EA	$3,393.00	$81,432												
	Concrete Sidewalks	8,550	SF	$56.00	$478,800												
	TOTAL (SHORT TERM)				**$9,491,883**				**$ --**				**$3,266**				**$ --**
MEDIUM TERM (5-10 years)	New Traffic Signal	1	EA	$175,000.00	$175,000												
	Upgrade Signal Equipment	1	EA	$75,000.00	$75,000												
	Pavement Addition	640	SF	$13.00	$8,320												
	Concrete Sidewalks With Ramps	1,700	SF	$56.00	$95,200												
	Realign Jeannetta St.									1	EA	TBD	TBD				
	Realign Cole									1	EA	TBD	TBD				
	Widen Radio Lane									1	EA	TBD	TBD				
	Realign and Extend Herndon									1	EA	TBD	TBD				
	Widening of US 90A between 5th and 7th St	1	EA	TBD	TBD												
	Extend Avenue A from Damon St to Edgewood St					1	EA	TBD	TBD								
	Realignment and Widening of Miles									1	EA	TBD	TBD				
	TOTAL (MEDIUM TERM)				**TBD**				**TBD**				**TBD**				**TBD**
LONG TERM (10 years +)	Extend Austin Street east across the Brazos River, connect to Avenue A					1	EA	TBD	TBD								
	Extend Harlem Road south of US 90A to New Territory													1	EA	TBD	TBD
	Widen Old Richmond Road									1	EA	TBD	TBD				
	Widen FM 3155: US 90A to George Park	1	EA	TBD	TBD												
	Extend Golfview east across the Brazos River to US 90A at FM 359					1	EA	TBD	TBD								
	Construct new east-west road north of US 90A from FM 359 to SH99													1	EA	TBD	TBD
	TOTAL (LONG TERM)				**TBD**				**TBD**				**TBD**				**TBD**
	GRAND TOTAL				**TBD**				**TBD**				**TBD**				**TBD**

* All costs are based on TxDOT 12-month average bid tabs for Houston (Oct 2012 to Sept 2013)
Units: EA = Each, INT = Intersection, MI = Miles, SF = Square Feet, LS = Lump Sum

US 90A ACCESS MANAGEMENT PRELIMINARY COST ESTIMATES CONTINUED				
Others				Total (in Millions)
Number	Unit	Unit Cost	Cost	
6,866	SF	$13.00	$89,258	
			$89,258	**$9.58**
29,005	SF	$13.00	$377,065	
			$377,065	**TBD**
			TBD	**TBD**
				TBD