

# **WELCOME TO THE MEETING!**

Please Sign In

**Pick Up Handouts** 

**View Presentation** 

**View Exhibits** 

**Ask Questions** 

**Share Your Thoughts** 

**Leave Your Comments** 

# Purpose of the 2<sup>nd</sup> Public Scoping Meeting

- 1. Present and gather your input on the:
  - a. Alternatives Evaluation Process
  - b. Universe of Alternatives
  - c. Six Preliminary Alternatives
- 2. Present updated and approved documents:
  - a. Need and Purpose Statement
  - b. Agency Coordination and Public Involvement Plan
- 3. Discuss project with you and answer questions
- 4. Receive comments on the project
- 5. Present the project timeline
- 6. Encourage your continued involvement

# **Project Team**



Lead Federal Agency



Joint Lead Agency



















**Biological Resources** 

# North - Hardy Corridor Studies History

North-Hardy Planning Studies - METRO, TxDOT, H-GAC

- 2003 North-Hardy Corridor Alternatives Analysis Report
  - \* Examined transit and highway alternatives
  - \* Recommended that transit alternatives be examined prior to detailed evaluation of highway alternatives
- 2004 North-Hardy Corridor Planning Studies Alternatives Analysis Report (Transit Component)
  - \* Findings used to develop a regional transit system plan that combines an aggressive bus service program with Advanced High CapacityTransit (light rail)
- 2005 North-Hardy Planning Studies Alternatives Analysis Report (Highway Component)
  - \* Recommended highway alternative from downtown Houston to Beltway 8 North is to add four managed lanes to the IH 45 / Hardy Toll Road Corridor
- 2011 TxDOT / FHWA Begin Environmental Document Preparation (Environmental Impact Statement) for North-Hardy Corridor Highway Component
  - \* IH 45 (N) from US 59 to BW 8 North
  - \* Hardy Toll Road Corridor from downtown to BW 8 North
  - \* Portions of IH 10, IH 610 & US 59 near the downtown Houston area

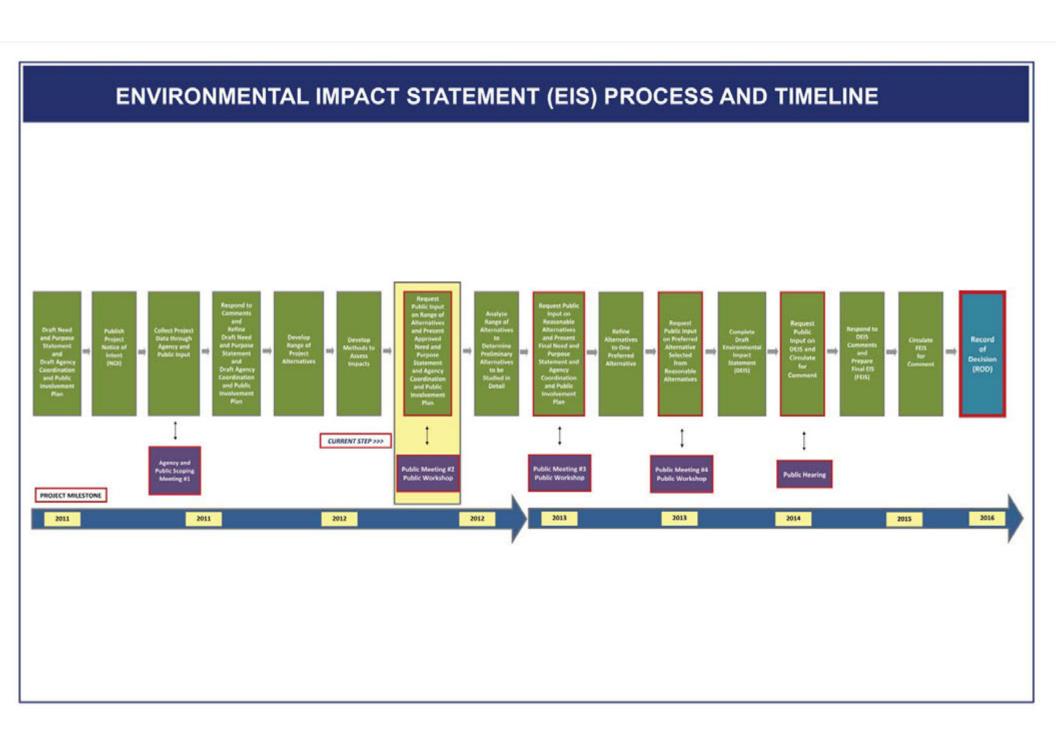
## What is an EIS?

#### What is an Environmental Impact Statement (EIS)?

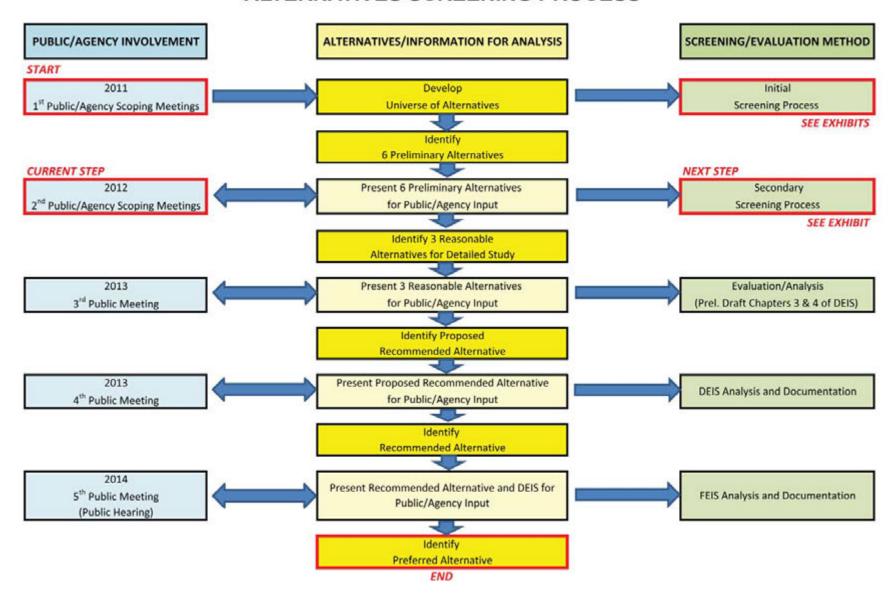
- A full disclosure document detailing the environmental review process through which the transportation project was developed
- Includes the consideration of a range of reasonable alternatives
- Analyzes the potential impacts resulting from the alternatives
- Demonstrates compliance with other applicable environmental laws and executive orders
- The EIS process is completed in the following ordered steps
  - o Notice of Intent (NOI)
  - o Draft EIS document (DEIS)
  - o Final EIS document (FEIS)
  - o Record of Decision (ROD)
- The National Environmental Policy Act of 1969, as amended, requires Federal agencies to prepare Environmental Impact Statements (EISs) for major Federal actions that will significantly affect the quality of the human environment

#### What is the National Environmental Policy Act (NEPA)?

- An environmental review process that considers multiple alternatives as possible ways to complete a project
- Includes alternative alignments and variations of multi-modal configurations, such as railway and roadway combinations
- Considers the no-build or no-action alternative, which would be to do nothing
  - o Provides a baseline to which we can compare the build alternatives
  - Analyzes what would occur if nothing was done to address the needs of the project area
- Alternatives are identified, analyzed, evaluated, and documented, with regard to the impact each would have on the natural, built and social environment.
- Potential impact information, along with engineering schematic design, is used to determine the best possible alternative for the community and those who use the facility



#### ALTERNATIVES SCREENING PROCESS



# **ENVIRONMENTAL CONSTRAINTS MAP** PROJECT LIMIT PROJECT LIMIT PROJECT LIMIT PROJECT LIMIT PROJECT LIMIT North Houston Highway Improvement Project Legend National Wetland Inventory 100-Year Floodplain Park ---- Future Hardy Downtown Connector Hospital Bikeway Metro Light Rail Learning Center Fire Station 500-Year Floodplain School + Cemetery 🚵 University / College

#### **UNIVERSE OF ALTERNATIVES - INITIAL SCREENING** SEGMENT 1

	T	Si	EGMENT 1											
<b>DRAFT</b>	Initial Screening of Universe of Alternat													
					Initial Scr	eening of U	Iniverse of	Alternative	es					
			Engineering Traffic											
			(oN/8		_	S	Land Use and Cultural Resources within the Right-of-Way							
			Ğ Ğ		s/No	/Lov				<u> </u>				
SEGMENT 1 BW 8 to IH 610	Alternative Type	Description	Meets Need and Purpose and Project Goals (Yes/No)	Meets Current Design Criteria (Yes/No)	Additional ROW - Cavalcade to Quitman (Yes/No)	Traffic/Mobility Improvements* (High/Medium/Low)	Community Parks (Yes/No)	Cemeteries (Yes/No)	National Register of Historic Places (Yes/No)	Recorded Archeological Sites (Yes/No)				
Alternative 1	Existing Configuration	NO BUILD SCENARIO	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A				
Alternative 2	TSM Upgrades	TRANSPORTATION SYSTEMS MANAGEMENT (TSM) PROJECTS	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A				
Alternative 3	WIDEN EXISTING WITH ELEVATED MANAGED LANES	ADDITION OF DIRECT CONNECTOR FROM IH 45 TO HARDY TOLL ROAD THAT INCLUDES FOUR (4) MANAGED LANES. ALSO INCLUDES WIDENING OF HARDY TOLL ROAD TO PROVIDE ONE ADDITIONAL LANE INBOUND AND OUTBOUND.	Yes	Yes	N/A	Medium	No	No	No	No				
Alternative 4	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON WEST SIDE OF IH 45.	Yes	Yes	N/A	High	No	No	No	No				
Alternative 5	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON EAST SIDE OF IH 45.	Yes	Yes	N/A	High	No	No	No	No				
Alternative 6	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON BOTH SIDES OF IH 45.	Yes	Yes	N/A	High	No	No	No	No				
Alternative 7	ELEVATED MANAGED LANES	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON A SINGLE STRUCTURE AT CENTER.	Yes	Yes	N/A	High	No	No	No	No				
Alternative 8	ELEVATED MANAGED LANES	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON TWO (2) SEPARATE STRUCTURES ON LEFT AND RIGHT SIDES OF CENTERLINE.	Yes	Yes	N/A	High	No	No	No	No				

Selected as Preliminary Alternative

Alternative 1, the "No Build" Alternative, will advance with the Build Alternatives through the process.

\*Traffic/Mobility Improvements is a rating determined using outputs from the travel demand models. The model provides information on how many drivers will use the highway if improved, how this compares among various alternative improvements, and how many hours drivers can expect to save traveling on the highway if improved, also known as Vehicle-Hours Traveled (VHT).

			SEGMENT 2	2														
<b>DRAFT</b>		EVALUATION CRITERIA																
				I	Initial Scr	eening of U	f Universe of Alternatives											
				Engin	eering	Traffic	Environmental											
			s/No		<u> </u>	(v	Land Use and Cultural Resources within the Right-of-Way											
SEGMENT 2	Alternative		Meets Need and Purpose and Project Goals (Yes/No)	Meets Current Design Criteria (Yes/No)	Additional ROW - Cavalcade to Quitman (Yes/No)	Traffic/Mobility Improvements* (High/Medium/Low)	Community Parks (Yes/No)	Cemeteries (Yes/No)	National Register of Historic Places (Yes/No)	Recorded Archeological Sites (Yes/No)								
IH 610 to IH 10	Type Existing	Description	₩ N/A	No	No													
Alternative 1	Configuration	NO BUILD SCENARIO  TRANSPORTATION SYSTEMS	N/A	N/A	N/A	N/A	N/A											
Alternative 2	TSM Upgrades	MANAGEMENT (TSM) PROJECTS	N/A	No	No	N/A	N/A	N/A	N/A	N/A								
Alternative 3	Widen Existing	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL PURPOSE LANES AND TWO (2) REVERSIBLE, SPECIAL PURPOSE LANES.	Yes	Yes	No	Medium	No	No	No	No								
Alternative 4	Widen Existing	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES.	Yes	No	No	High	No	No	No	No								
Alternative 5	Elevated Hot Lanes	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL PURPOSE LANES AND TWO (2) ELEVATED HOT LANES.	No	Yes	No	Low	No	No	No	No								
Alternative 6	Widen Existing	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL PURPOSE LANES AND TWO (2) NON-BARRIER SEPARATED HOT LANES.	No	Yes	No	Low	No	No	No	No								
Alternative 7	Widen Existing	TEN (10) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) BARRIER SEPARATED HOT LANES.	No	No	No	Low	No	No	No	No								
Alternative 8	Widen Existing	TEN (10) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) NON-BARRIER SEPARATED HOT LANES.	No	Yes	No	Low	No	No	No	No								
Alternative 9	Widen Existing	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) REVERSIBLE MANAGED LANES.	No	Yes	No	Low	No	No	No	No								
Alternative 10	Widen Existing	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES.	Yes	Yes	No	High	No	No	No	No								
Alternative 11	Widen Existing with Elevated Managed Lanes	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON A SINGLE STRUCTURE AT CENTER.	Yes	Yes	No	High	No	No	No	No								
Alternative 12	Widen Existing with Elevated Managed Lanes	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON DOUBLE DECKER STRUCTURE AT CENTER.	Yes	Yes	No	High	No	No	No	No								
Alternative 13	Widen Existing with Elevated Managed Lanes	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON TWO (2) SEPARATE STRUCTURES ON LEFT AND RIGHT SIDES OF CENTERLINE.	No	Yes	No	High	No	No	No	No								
Alternative 14	Add Tunnel to Existing	TUNNELED ROADWAY UNDERNEATH IH 45. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	No	High	No	No	No	No								
Alternative 15	Add Direct Connector	ADDITION OF DIRECT CONNECTORS ALONG IH 610 CORRIDOR FROM IH 45 TO HARDY TOLL RD. INCLUDES FOUR (4) MANAGED LANES. THIS ALTERNATIVE ALSO INCLUDES WIDENING OF HARDY TOLL ROAD TO PROVIDE ONE ADDITIONAL LANE INBOUND AND OUTBOUND.	Yes	Yes	No	Medium	No	No	No	No								

Selected as Preliminary Alternative

Alternative 1, the "No Build" Alternative, will advance with the Build Alternatives through the process.

<sup>\*</sup>Traffic/Mobility Improvements is a rating determined using outputs from the travel demand models. The model provides information on how many drivers will use the highway if improved, how this compares among various alternative improvements, and how many hours drivers can expect to save traveling on the highway if improved, also known as Vehicle-Hours Traveled (VHT).

		SE	EGMENT 3												
<b>DRAFT</b>			EVALUATION CRITERIA												
			eening of L	Iniverse of	Alternative	es									
			_	Engin	eering	Traffic	Environmental								
			(es/No)		(ON	.ow)	Land Use and Cultural Resources within the Right-of-Way								
SEGMENT 3 Downtown Loop System	Alternative Type	Description	Meets Need and Purpose and Project Goals (Yes/No)	Meets Current Design Criteria (Yes/No)	Additional ROW - Cavalcade to Quitman (Yes/No)	Traffic/Mobility Improvements* (High/Medium/Low)	Community Parks (Yes/No)	Cemeteries (Yes/No)	National Register of Historic Places (Yes/No)	Recorded Archeological Sites (Yes/No)					
Alternative 1	Existing Configuration	NO BUILD SCENARIO	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A					
Alternative 2	TSM Upgrades	TRANSPORTATION SYSTEMS MANAGEMENT (TSM) PROJECTS	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A					
Alternative 3	Convert Downtown Loop to One Way Loop	CONVERT EXISTING DOWNTOWN LOOP ROADWAY NETWORK TO A ONE-WAY LOOP.	Yes	Yes	N/A	Medium	No	No	No	No					
Alternative 4	Add Tunnel to Existing	TUNNELED ROADWAY UNDERNEATH LA BRANCH ST AND TERMINATES AT THE US 59/SH 288 INTERCHANGE. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	Medium	No	No	No	No					
Alternative 5	Add Tunnel to Existing	TUNNELED ROADWAY UNDERNEATH IH 45, THEN CONTINUES UNDERNEATH BAGBY ST AND TERMINATES AT SPUR 527. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	Medium	No	No	No	No					
Alternative 6	Add Tunnel to Existing	TUNNELED ROADWAY UNDERNEATH IH 45, THEN CONTINUES TO JEFFERSON ST AND TERMINATES AT IH 45 SOUTH OF THE IH 45/US 59 INTERCHANGE. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	Medium	No	No	No	No					
Alternative 7	Add Tunnel to Existing	TUNNELED ROADWAY UNDERNEATH HOUSTON AVE AND SPLITS TO JEFFERSON ST AND BAGBY ST. TUNNEL TERMINATES AT IH 45 SOUTH OF THE IH 45/US 59 INTERCHANGE AND SPUR 527. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	High	No	No	No	No					
Alternative 8	Elevated Managed Lanes	ELEVATED ROADWAY ALONG HOUSTON AVE AND TERMINATES AT IH 45 NEAR ALLEN PARKWAY. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	Low	No	No	No	No					
Alternative 9	Add Tunnel to Existing	UTILIZES EXISTING IH 10 HOV BRIDGE INTO DOWNTOWN AND THEN BECOMES TUNNELED ROADWAY UNDERNEATH IH 45 AND JEFFERSON ST AND TERMINATES AT IH 45 SOUTH OF THE IH 45/US 59 INTERCHANGE. INCLUDES FOUR (4) MANAGED LANES.	Yes	Yes	N/A	Low	No	No	No	No					
Alternative 10	Widen Existing	EIGHT (8) LANE SECTION FROM IH-10 TO IH 45/US 59 INTERCHANGE INCLUDES EIGHT (8) GENERAL PURPOSE LANES.	Yes	Yes	N/A	Medium	No	No	No	No					

Selected as Preliminary Alternative

Alternative 1, the "No Build" Alternative, will advance with the Build Alternatives through the process.

<sup>\*</sup>Traffic/Mobility Improvements is a rating determined using outputs from the travel demand models. The model provides information on how many drivers will use the highway if improved, how this compares among various alternative improvements, and how many hours drivers can expect to save traveling on the highway if improved, also known as Vehicle-Hours Traveled (VHT).

# Secondary Screening Process for Preliminary Alternatives

															EV	ALU.	ATIO	N CRIT	ERI	A														
DR	PRAFT Secondary Screening Process of Preliminary Alternatives																																	
		Engineering Traffic Environmental																																
			(Yes/No)			(ôN	(wo-			L	and U	se			Cu	ltura	l Res	ources			N	latural Re	esources		Air	Noise		S	ocio	econ	omic	s	Haa	zMa
			) si			Yes/	l <sub>m</sub>								(0)		s)	Te .	Fle	oodii	ng	Wildlife	Wetlands	Streams		12	П		2	П		2		
Segment 1 Preliminary Alternative	Alternative Type	Description	Meets Need and Purpose and Project Goals	Signature Project Potential (Yes/No)	Meets Current Design Criteria (Yes/No)	Additional ROW - Cavalcade to Quitman (Yes/No)	Traffic/Mobility Improvements* (High/Medium/Low)	Community Parks (Yes/No)	Cemeteries (Yes/No)	Commercial (acres)	Residential (acres)	Industrial (acres)	Public (acres)	Total Additional ROW (acres)	National Register of Historic Places (Yes/No)	Recorded Archeological Sites (Yes/No)	Archeological High Probability Areas (acres)	Historic Sites Potentially Eligible for National Register (Yes/No)	Floodway (acres)	100-Year Floodplain (acres)	Detention Basins (acres)	Threatened & Endangered Species (Yes/No)	Wetlands (acres)	Streams (acres)	Number of Sensitive Receptors (number)	Noise-Sensitive Receivers (number)	Residential Displacements (number)	Displaceme	Residences Adjacent to Roadway (Yes/No) Businesses Adjacent to Roadway (Yes/No)	Churches (number)	Schools (number) Visual Impacts (Yes/No)	es in Community Cohe	Environmental Justice Issues (Tes/No)	Superfund Sites (number)
Alt. 1 Alt. 3			$\vdash$	$\vdash$				$\vdash$					_							Н	$\vdash$						+	+	+	Н	+	+	+	
Alt. 4 Alt. 5 Alt. 6					٨	1ATI	RIX 1	го	BE	СО	MF	LE	TE	D D	U	7/\	IG	THE	N	EX	Τ.	STEF	OF T	THE E	IS	PR	oc	E	ss		_		E	
Alt. 7 Alt. 8			-					-									-										$\vdash$	-	-	Н	+	+		_

<sup>\*</sup>Traffic/Mobility Improvements is a rating determined using outputs from the travel demand models. The model provides information on how many drivers will use the highway if improved, how this compares among various alternative improvements, and how many hours drivers can expect to save traveling on the highway if improved, also known as Vehicle-Hours Traveled (VHT).

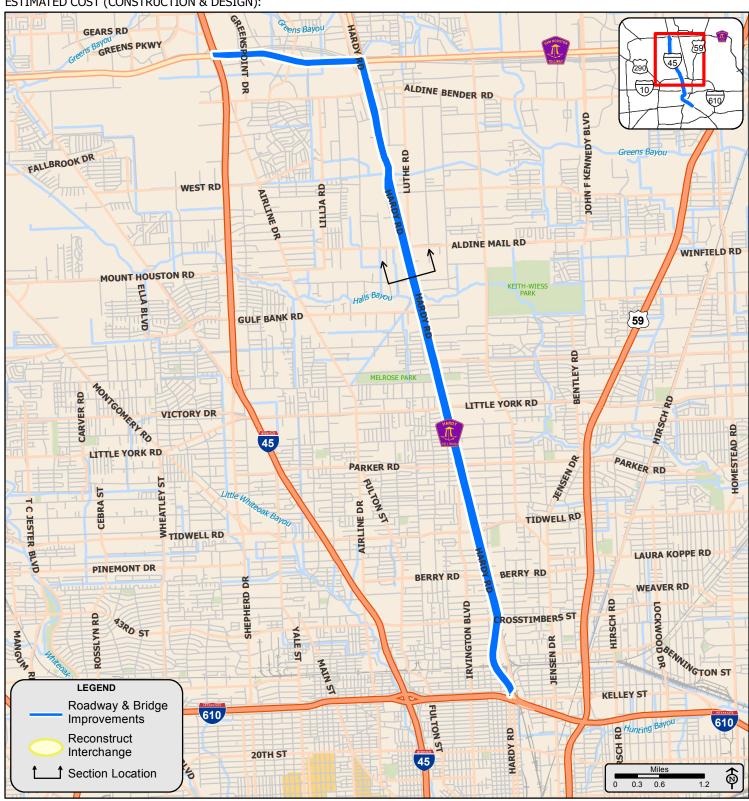
#### NORTH HOUSTON HIGHWAY IMPROVEMENT PROJECT - UNIVERSE OF ALTERNATIVES SUMMARY

			Y IMPROVEMENT PROJECT - UNIVI		
	ALTERNATIVE	NORTH H ALTERNATIVE TYPE	OUSTON HIGHWAY IMPROVEMENT PROJECT - UNIVERSE OF AL DESCRIPTION	PREVIOUS STUDY/REPORT	TWAY 8 TO IH 610)  COMMENTS
	NO. 1	EXISTING CONFIGURATION	NO BUILD	N/A	NO BUILD SCENARIO
	2	TSM UPGRADES	TRANSPORTATION SYSTEMS MANAGEMENT (TSM) PROJECTS	N/A	UPGRADE FACILITY WITH PLANNED TSM PROJECTS
10)	3	WIDEN EXISTING WITH ELEVATED MANAGED	ADDITION OF DIRECT CONNECTOR FROM IH 45 TO HARDY TOLL ROAD THAT INCLUDES FOUR (4) MANAGED LANES.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
1 H 6		LANES	ALSO INCLUDES WIDENING OF HARDY TOLL ROAD TO PROVIDE ONE ADDITIONAL LANE INBOUND AND OUTBOUND.		
SEGMENT 1 BELTWAY 8 TO IH 610)	4	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON WEST SIDE OF IH 45.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
SEGN WAY 8	5	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON EAST SIDE OF IH 45.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
BELT	6	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES. ADDITIONAL ROW WILL BE ACQUIRED ON BOTH SIDES OF IH 45.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
	7	ELEVATED MANAGED LANES	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
	8	ELEVATED MANAGED LANES	ON A SINGLE STRUCTURE AT CENTER.  TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
			ON TWO (2) SEPARATE STRUCTURES ON LEFT AND RIGHT SIDES OF CENTERLINE.	,	
		NORTI	HOUSTON HIGHWAY IMPROVEMENT PROJECT - UNIVERSE OF	ALTERNATIVES (SEGMENT 2 - I	H 610 TO IH 10)
	NO.	ALTERNATIVE TYPE EXISTING	DESCRIPTION NO BUILD	PREVIOUS STUDY/REPORT	COMMENTS  NO BUILD SCENARIO
	2	CONFIGURATION TSM UPGRADES	TRANSPORTATION SYSTEMS MANAGEMENT (TSM) PROJECTS	N/A	UPGRADE FACILITY WITH PLANNED TSM
	3	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL	NORTH-HARDY PLANNING	PROJECTS SELECTED AS PRELIMINARY ALTERNATIVE
	4	WIDEN EXISTING	PURPOSE LANES AND TWO (2) REVERSIBLE, SPECIAL PURPOSE LANES. TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL	STUDY (2005)  NORTH-HARDY PLANNING	NOT SELECTED; DOES NOT PROVIDE SUFFICIENT
			PURPOSE LANES AND FOUR (4) MANAGED LANES.	STUDY (2005)	SHOULDER WIDTHS FOR IH 45 MAINLANES
	5	ELEVATED HOT LANES	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL PURPOSE LANES AND TWO (2) ELEVATED HOT LANES.	NORTH-HARDY PLANNING STUDY (2005)	NOT SELECTED; PROVIDES TWO (2) ADDITIONAL HOT LANES AND TWO (2) GENERAL PURPOSE LANES ON 14 45. THE 1H 45/HARDY CORRIDOR TRAFFIC STUDY RECOMMENDS FOUR (4) ADDITIONAL MANAGED LANES WITHIN THE PROJECT LIMITS. DOES NOT MEET NEED AND PURPOSE FOR PROJECT
	6	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES TEN (10) GENERAL PURPOSE LANES AND TWO (2) NON-BARRIER SEPARATED HOT LANES.	NORTH-HARDY PLANNING STUDY (2005)	NOT SELECTED; PROVIDES TWO (2) ADDITIONAL HOT LANES AND TWO (2) GENERAL PURPOSE LANES ON HE 3. THE IH 45/HARDY CORRIDOR TRAFFIC STUDY RECOMMENDS FOUR (4) ADDITIONAL MANAGED LANES WITHIN THE PROJECT LIMITS. DOES NOT MEET NEED AND PURPOSE FOR PROJECT
SEGMENT 2 (IH 610 TO IH 10)	7	WIDEN EXISTING	TEN (10) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) BARRIER SEPARATED HOT LANES.	NORTH-HARDY PLANNING STUDY (2005)	NOT SELECTED, ONLY PROVIDES TWO (2) ADDITIONAL LANES ON IH 45, THE IM 45/HARDY CORRIDOR TRAFFIC STUDY RECOMMENDS FOUR (4) ADDITIONAL LANES WITHIN THE PROJECT UMITS. IN ADDITION, THIS ALTERNATIVE DOES NOT PROVIDE SUFFICIENT SHOULDER WIDTHS FOR THE IH 45 CORRIDOR. DOES NOT MEET NEEL AND PURPOSE FOR PROJECT.
SEGIN (IH 610	8	WIDEN EXISTING	TEN (10) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) NON-BARRIER SEPARATED HOT LANES.	NORTH-HARDY PLANNING STUDY (2005)	NOT SELECTED; ONLY PROVIDES TWO (2) ADDITIONAL LANES ON IH 45. THE IH 45/HARDY CORRIDOR TRAFFIC STUDY RECOMMENDS FOUR (4) ADDITIONAL MANAGED LANES WITHIN THE PROJECT LIMITS. DOES NOT MEET NEED AND PURPOSE FOR PROJECT.
	9	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND TWO (2) REVERSIBLE MANAGED LANES.	IH 45N ALTERNATIVES ANALYSIS (2012)	NOT SELECTED; ONLY PROVIDES TWO (2) ADDITIONAL REVERSIBLE LANES ON IH 45. THE IH 45/HARDY CORRIDOR TRAFFIC STUDY RECOMMENDS FOUR (4) ADDITIONAL MANAGED LANES WITHIN THE PROJECT LIMITS. DOES NOT MEET NEED AND PURPOSE FOR PROJECT.
	10	WIDEN EXISTING	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) MANAGED LANES.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
	11	WIDEN EXISTING WITH ELEVATED MANAGED	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
	12	LANES WIDEN EXISTING WITH ELEVATED MANAGED LANES	FORMUSE DATES AND FOUR (8) ELEVATED MAINLAGED DATES ON A SINGLE STRUCTURE AT CENTER. TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON DOUBLE DECKER STRUCTURE AT CENTER.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
	13	WIDEN EXISTING WITH ELEVATED MANAGED LANES	TWELVE (12) LANE SECTION - INCLUDES EIGHT (8) GENERAL PURPOSE LANES AND FOUR (4) ELEVATED MANAGED LANES ON TWO (2) SEPARATE STRUCTURES ON LEFT AND RIGHT	IH 45N ALTERNATIVES ANALYSIS (2012)	NOT SELECTED; PROXIMITY OF ELEVATED STRUCTURES TO EXISTING RESIDENTIAL PROPERTIES
	14	ADD TUNNEL TO EXISTING	SIDES OF CENTERLINE. TUNNELED ROADWAY UNDERNEATH IH 45. INCLUDES FOUR	IH 45N ALTERNATIVES	SELECTED AS PRELIMINARY ALTERNATIVE
	15	ADD DIRECT CONNECTOR	(4) MANAGED LANES. ADDITION OF DIRECT CONNECTORS ALONG IH 610 CORRIDOR FROM IH 45 TO HARDY TOLL RD. INCLUDES FOUR (4)	ANALYSIS (2012) IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
			FROM IN 45 TO HARDY TULL RD. INCLUDES FOUR (4) MANAGED LANES. THIS ALTERNATIVE ALSO INCLUDES WIDENING OF HARDY TOLL ROAD TO PROVIDE ONE ADDITIONAL LANE INBOUND AND OUTBOUND.	(2012)	
		NORTH HOLE	STON HIGHWAY IMPROVEMENT PROJECT - UNIVERSE OF ALTER	RNATIVES (SEGMENT 3 - DOWN)	TOWN LOOP SYSTEM)
	ALTERNATIVE NO.	ALTERNATIVE TYPE	DESCRIPTION	PREVIOUS STUDY/REPORT	COMMENTS
	1	EXISTING CONFIGURATION	NO BUILD	N/A	NO BUILD SCENARIO
	2	TSM UPGRADES  CONVERT DOWNTOWN	TRANSPORTATION SYSTEMS MANAGEMENT (TSM) PROJECTS  CONVERT EXISTING DOWNTOWN LOOP ROADWAY NETWORK	N/A IH 45N ALTERNATIVES	UPGRADE FACILITY WITH PLANNED TSM PROJECTS SELECTED AS PRELIMINARY ALTERNATIVE
EΜ		LOOP TO ONE WAY LOOP	TO A ONE-WAY LOOP.	ANALYSIS (2012)	
ST!	4	ADD TUNNEL TO EXISTING	TERMINATES AT THE US 59/SH 288 INTERCHANGE. INCLUDES	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
3 5 SY	5	ADD TUNNEL TO EXISTING	FOUR (4) MANAGED LANES. TUNNELED ROADWAY UNDERNEATH IH 45, THEN CONTINUES UNDERNEATH BAGBY ST AND TERMINATES AT SPUR 527.	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
SEGMENT 3 TOWN LOOP	6	ADD TUNNEL TO EXISTING	INCLUDES FOUR (4) MANAGED LANES. TUNNELED ROADWAY UNDERNEATH IH 45, THEN CONTINUES TO JEFFERSON ST AND TERMINATES AT IH 45 SOUTH OF THE	IH 45N ALTERNATIVES ANALYSIS (2012)	SELECTED AS PRELIMINARY ALTERNATIVE
Z N N N	7	ADD TUNNEL TO EXISTING	IH 45/US 59 INTERCHANGE. INCLUDES FOUR (4) MANAGED LANES. TUNNELED ROADWAY UNDERNEATH HOUSTON AVE AND	IH 45N ALTERNATIVES	SELECTED AS PRELIMINARY ALTERNATIVE
SEGMENT 3 DOWNTOWN LOOP SYSTEM)			SPLITS TO JEFFERSON ST AND BAGBY ST. TUNNEL TERMINATES AT IH 45 SOUTH OF THE IH 45/US 59 INTERCHANGE AND SPUR 527. INCLUDES FOUR (4) MANAGED LANES.	ANALYSIS (2012)	
<b>×</b> 0	8	ELEVATED MANAGED LANES	ELEVATED ROADWAY ALONG HOUSTON AVE AND TERMINATES AT IH 45 NEAR ALLEN PARKWAY. INCLUDES	IH 45N ALTERNATIVES ANALYSIS (2012)	NOT SELECTED; PROXIMITY OF ELEVATED STRUCTURES TO EXISTING RESIDENTIAL
<u>ā</u>	9	ADD TUNNEL TO EXISTING	FOUR (4) MANAGED LANES.  UTILIZES EXISTING IH 10 HOV BRIDGE INTO DOWNTOWN AND THEN BECOMES TUNNELED ROADWAY UNDERNEATH IH 45 AND JEFFERSON ST AND TERMINATES AT IH 45 SOUTH OF THE	IH 45N ALTERNATIVES ANALYSIS (2012)	PROPERTIES  NOT SELECTED; LOW DEMAND FOR THIS ROUTE PER TRAVEL DEMAND MODEL
	10	WIDEN EXISTING	IH 45/US 59 INTERCHANGE. INCLUDES FOUR (4) MANAGED LANES. EIGHT (8) LANE SECTION FROM IH-10 TO IH 45/US 59	IH 45N ALTERNATIVES	SELECTED AS PRELIMINARY ALTERNATIVE
1	10		INTERCHANGE INCLUDES EIGHT (8) GENERAL PURPOSE LANES.	ANALYSIS (2012)	THE ASSESSMENT ACTERIVATIVE

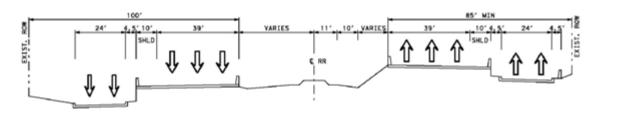
#### **SEGMENT 1**

LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):

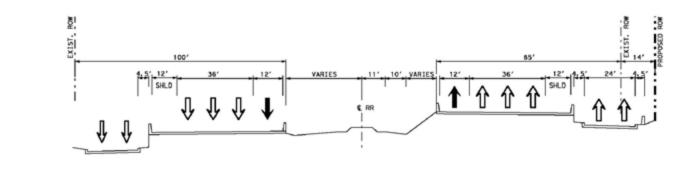


#### **EXISTING TYPICAL SECTION - HARDY TOLL ROAD**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

# **PROPOSED TYPICAL SECTION - HARDY TOLL ROAD (ALTERNATIVE 3)**





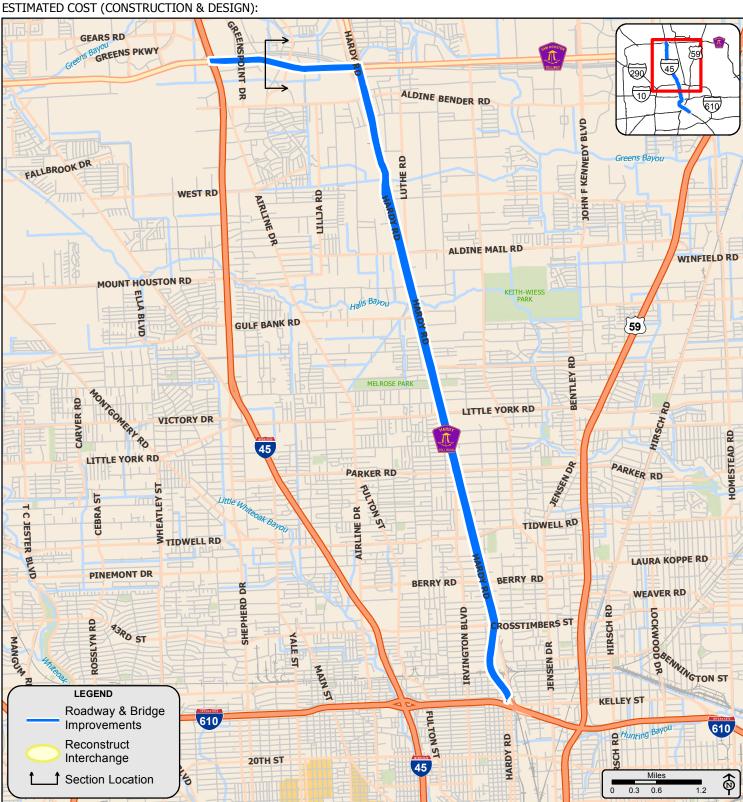




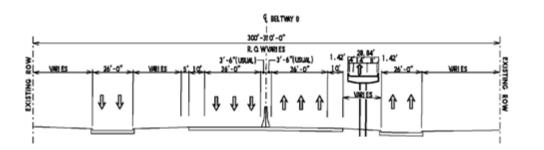


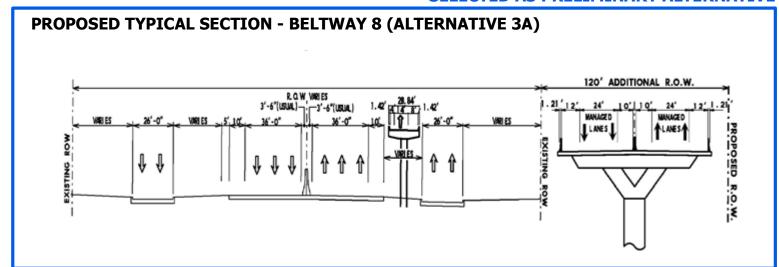
#### **SEGMENT 1**

LIMITS: BELTWAY 8 TO IH 610
LENGTH: 9.75 MILES
ESTIMATED COST (CONSTRUCTION & D



#### **EXISTING TYPICAL SECTION - BELTWAY 8**









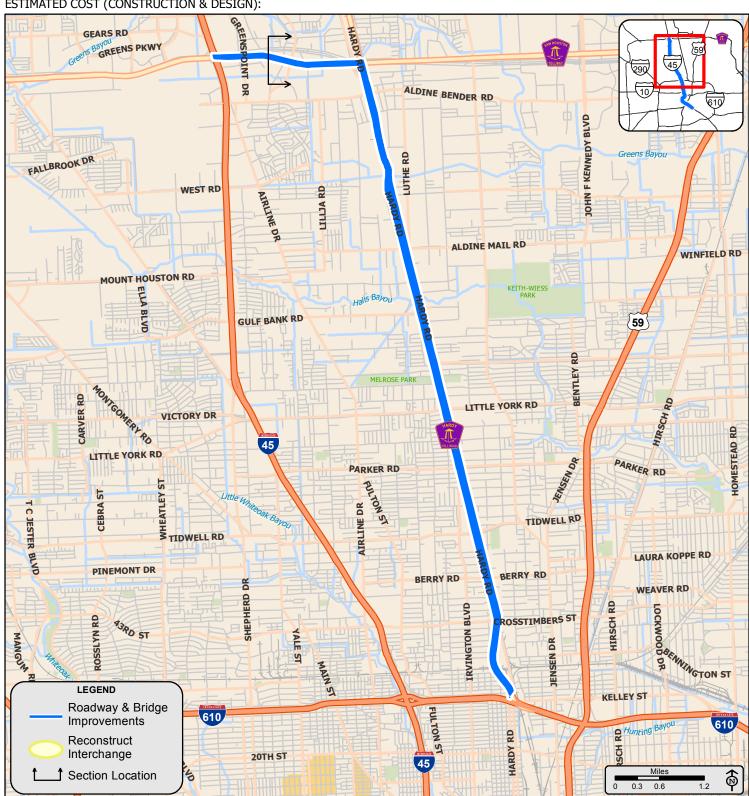




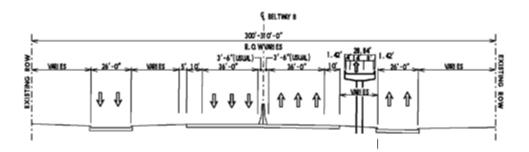
#### **SEGMENT 1**

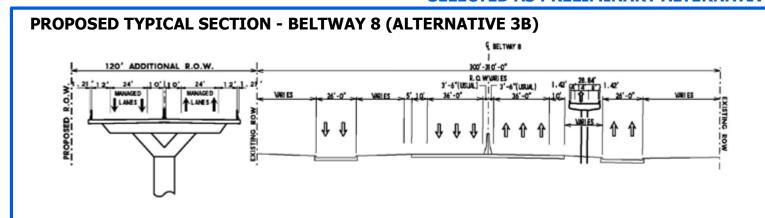
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - BELTWAY 8**











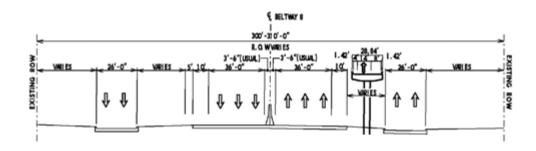


#### **SEGMENT 1**

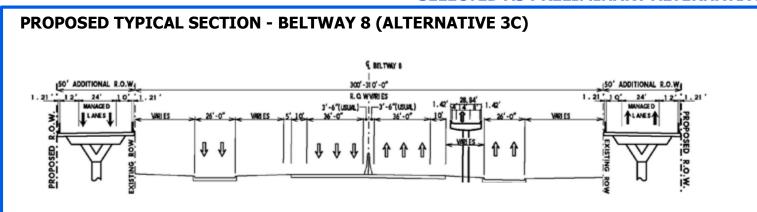
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

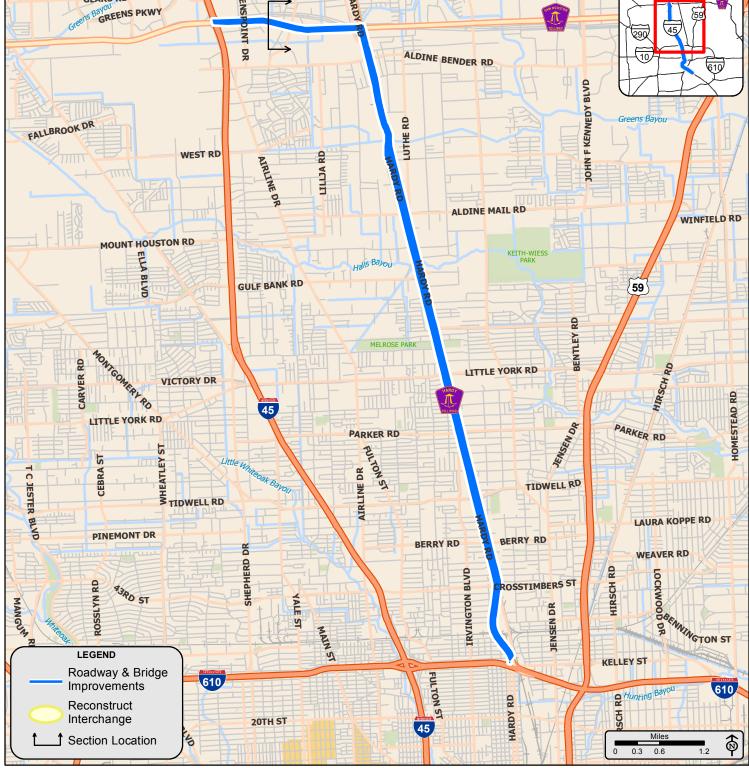
ESTIMATED COST (CONSTRUCTION & DESIGN): GEARS RD GREENS PKWY ALDINE BENDER RD

## **EXISTING TYPICAL SECTION - BELTWAY 8**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**







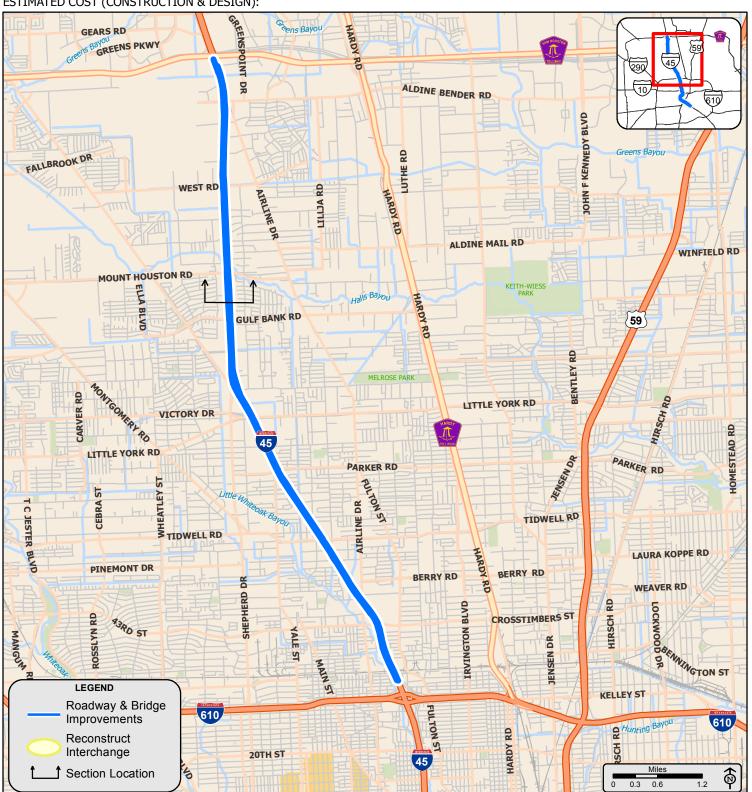




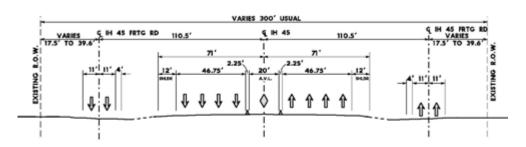
#### **SEGMENT 1**

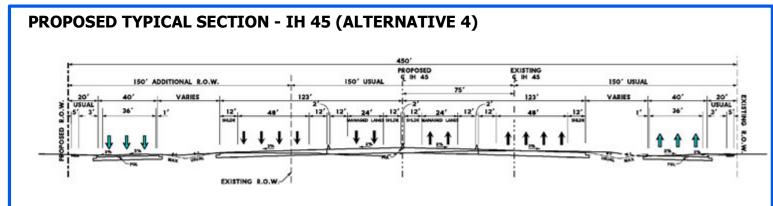
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - IH 45**









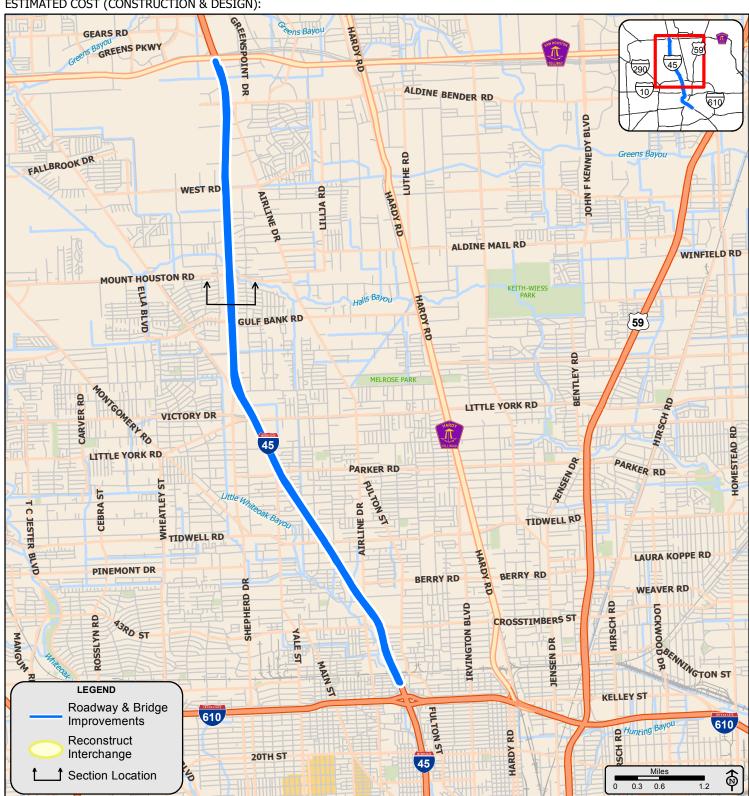




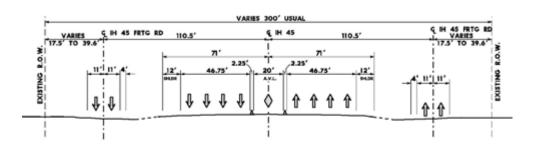
#### **SEGMENT 1**

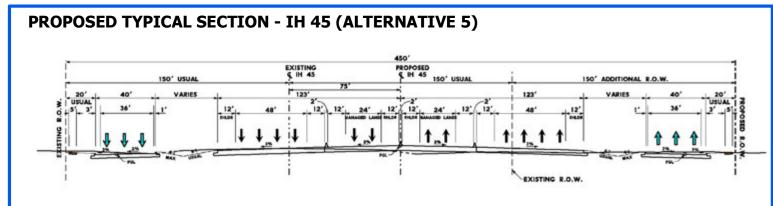
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - IH 45**









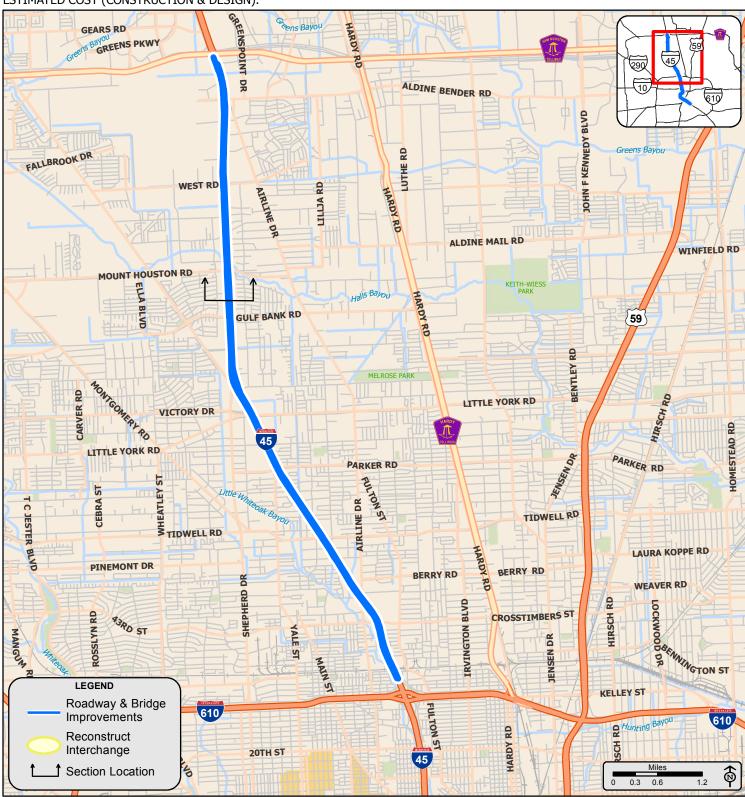




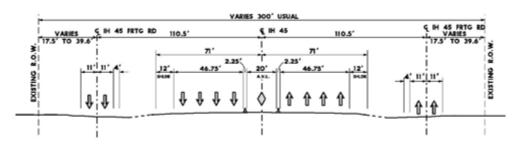
#### **SEGMENT 1**

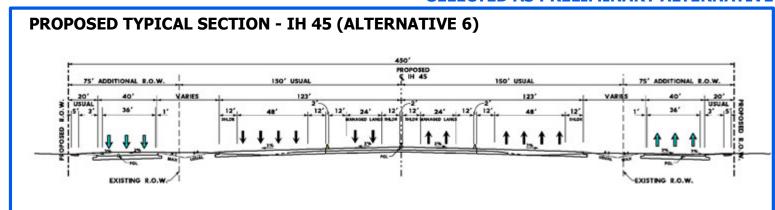
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - IH 45**









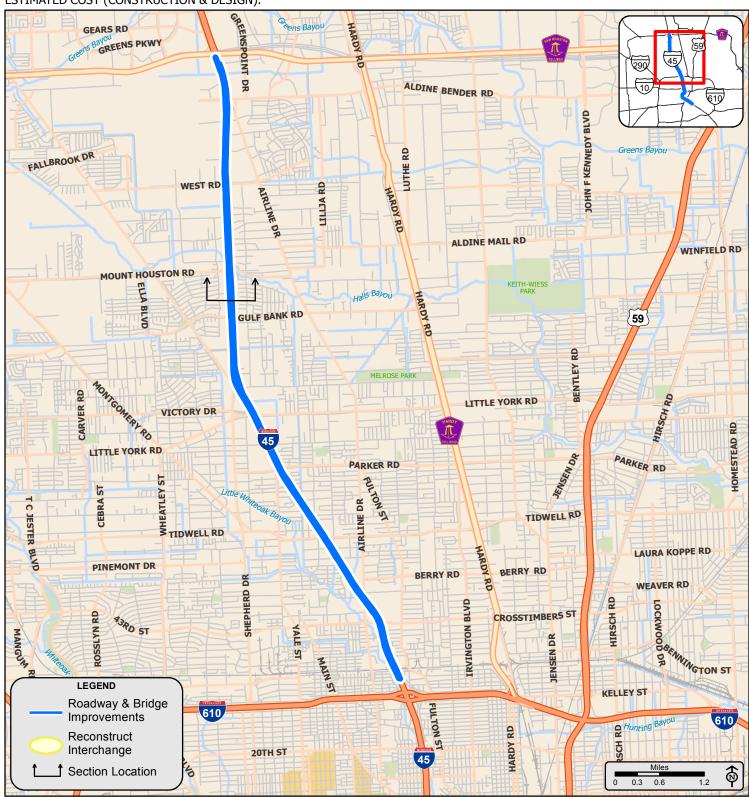




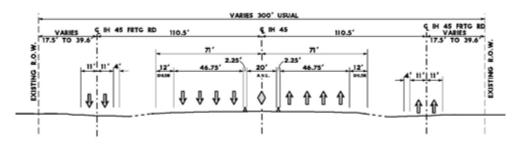
#### **SEGMENT 1**

LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

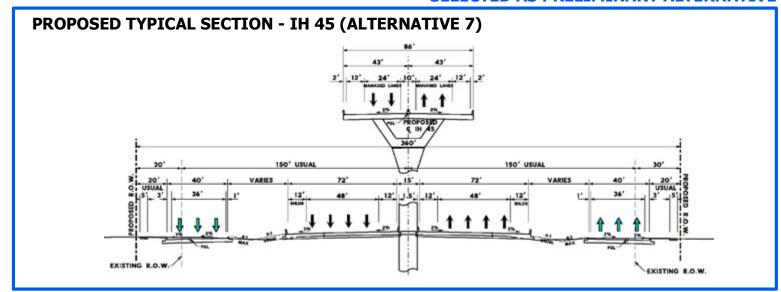
ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**







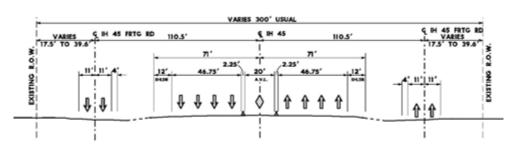


#### **SEGMENT 1**

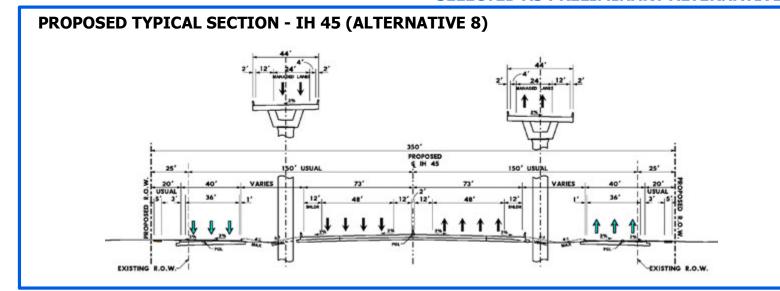
LIMITS: BELTWAY 8 TO IH 610 LENGTH: 9.75 MILES

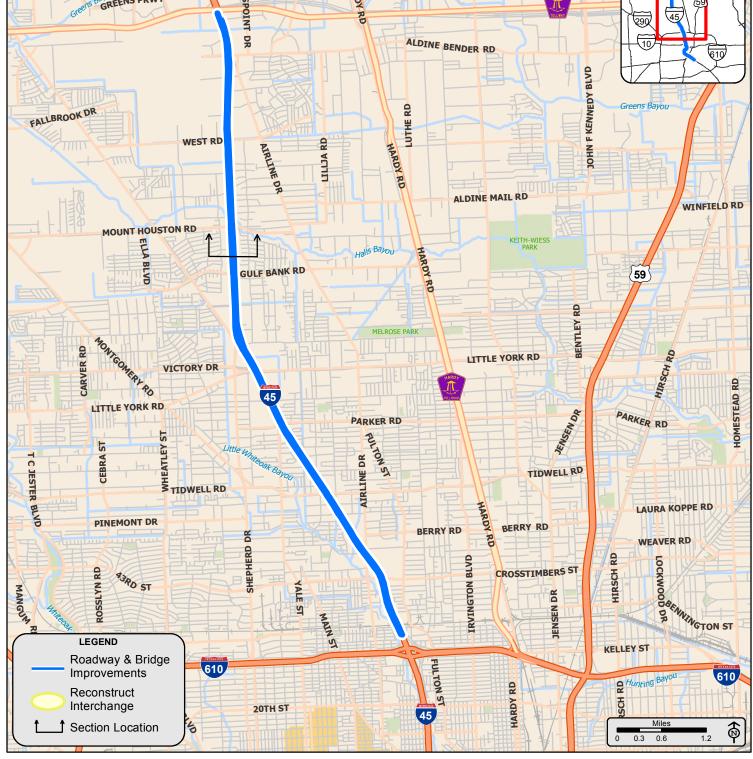
ESTIMATED COST (CONSTRUCTION & DESIGN): GEARS RD GREENS PKWY ALDINE BENDER RD FALLBROOK DR WEST RD ALDINE MAIL RD

#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

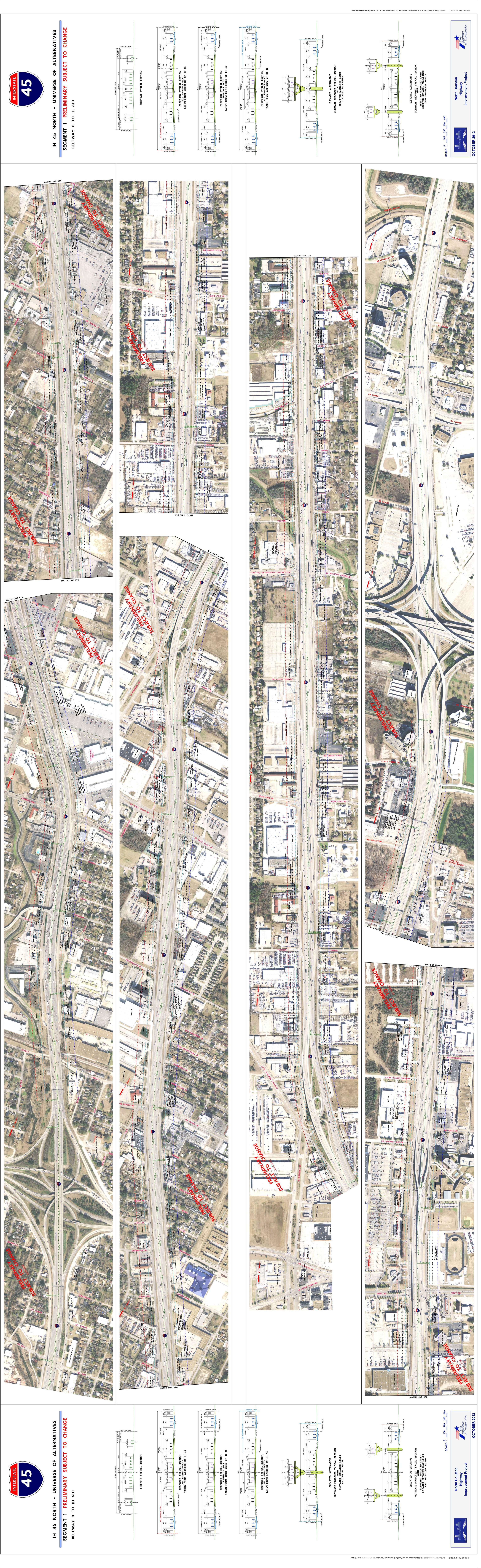












O

HARDY TOLL RD: FROM BELTWAY 8 TO IH 10 BELTWAY 8: FROM IH 45 TO HARDY TOLL RD PRELIMINARY IH 45 N SEGMENT

VARIES 80' TO 100'

RAILROAD R.O.W. 80' USUAL

G RR

WEST HARDY
SHLDR

WEST HARDY

WEST HA EXISTING HARDY TOLL RD TYPICAL SECTION FROM NORTH OF CROSSTIMBERS TO NORTH OF BERRY RD  EXISTING HARDY TOLL RD TYPICAL SECTION SOUTH OF TIDWELL TO NORTH OF GULF BANK RD

PROPOSED HARDY TOLL RD TYPICAL SECTION FROM NORTH OF CROSSTIMBERS TO NORTH OF BERRY

CENTERPOINT EASMENT 14', 60' USUAL RAILROAD R.O.W. 80' USUAL 85' MIN 14', 12' 12' 12' 14', 15' 24' 14', 15' 24' 14', 15' 24' 14', 15' 24' 14', 15' 24' 14', 15' 24' 14', 15' 2

ARIES - LO' 36' MIN | VARIES 93' MIN | SHLDR SHL

PROPOSED HARDY TOLL RD TYPICAL SECTION FROM SOUTH OF ALDINE BENDER RD TO BELTWAY EXISTING TYPICAL SECTIONS

\$300-310'-0"

R. Q. WVARI ES

3'-6"(USUAL)

1-42' 47-48' 8-0"

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1-42' 47-48' 8-0"

1-42' 4

2:17:23 PM 10/9/2012 H:/ProjDev/050003554\*IH 45N/Managed Lanes/Public Involvement/October 2012/Hardy\*Bw82610\*PM.dgn

**\Pi** 

**→** 

 $\Rightarrow$ 

North Houston Highway Improvement Project

OCTOBER 2012

**⊕** 

**( \( \pi \)** 

**\$** 

† † † †

 $\Rightarrow$ 

R.O.W.

36'-0" (USUM) 1.42' (4.14 8) 1.42' (

 $\Rightarrow$ 

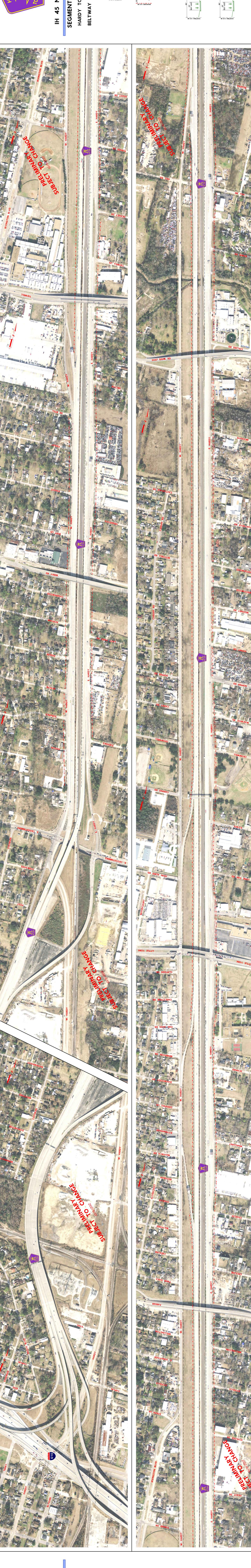
HARDY TOLL RD TYPICAL OF ALDINE BENDER RD TO

HARD HARD

EXISTING TYPICAL SECTION
BELTWAY 8

OCTOBER 2012

⇒⇒ 2:17:23 PM 10/9/2012 H:/ProjDev/050003554\*IH 45N/Managed Lanes/Public Involvement/October 2012/Hardy\*Bw82610\*PM.dgn



RD

HARDY

FROM IH

**∞** 

0

BELTWAY

FROM

RD:

0

**PRELIMINARY** 

О

165 36 MIN 165 24' 4.5' 24' 4.5' 8.4' 10' 8.5' 1

EXISTING HARDY TOLL RD TYPICAL SECTION FROM NORTH OF CROSSTIMBERS TO NORTH OF BERRY

EXISTING HARDY TOLL RD TYPICAL SECTION SOUTH OF TIDWELL TO NORTH OF GULF BANK

EXISTING R.O.W.

86.0.W. 36.

WEST HARDY

EXISTING R.O.W.

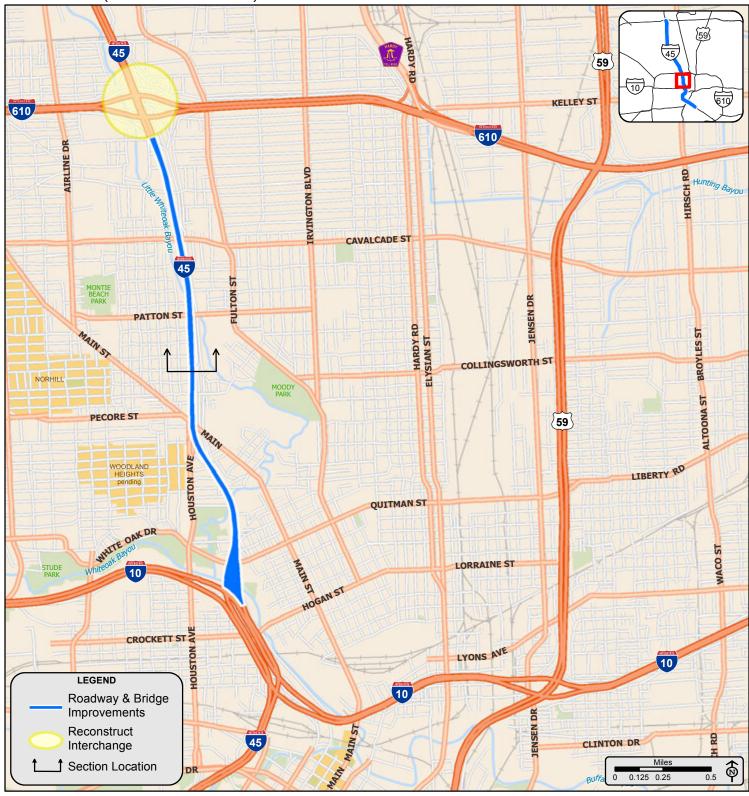
11. / 11. | SHLDR'SHLDR

XISTING R.O.W.

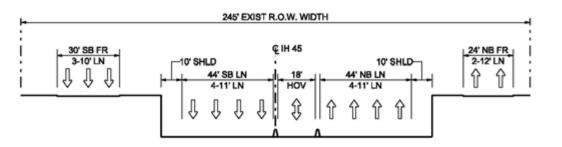
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

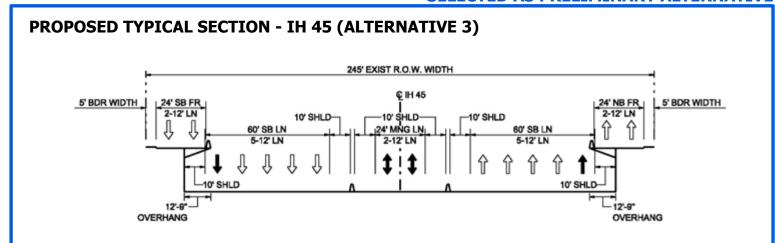
ESTIMATED COST (CONSTRUCTION & DESIGN):



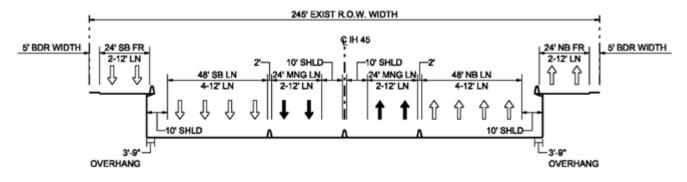
#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 4)**





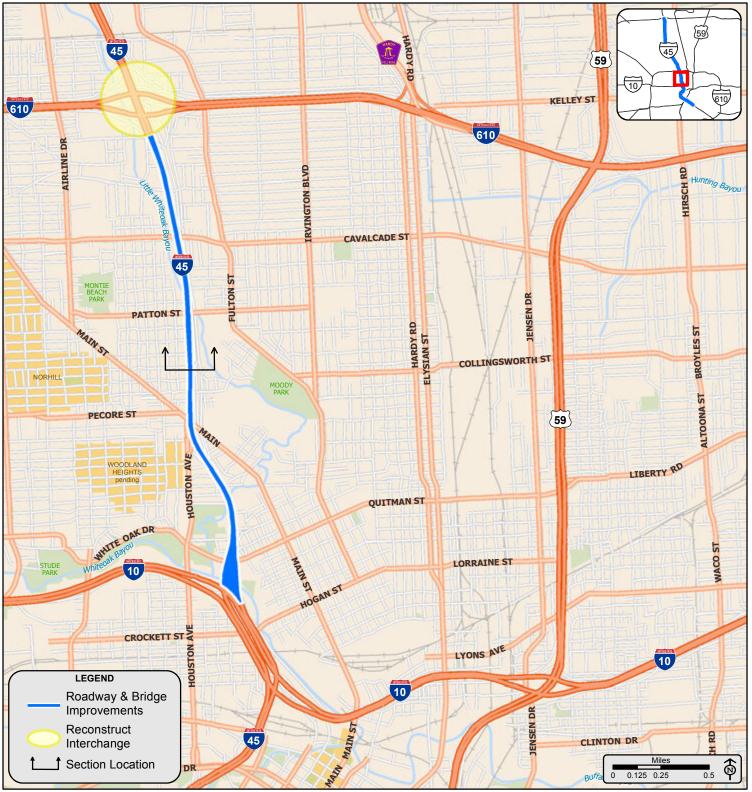




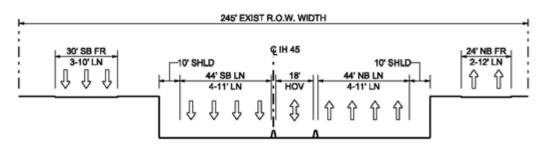
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

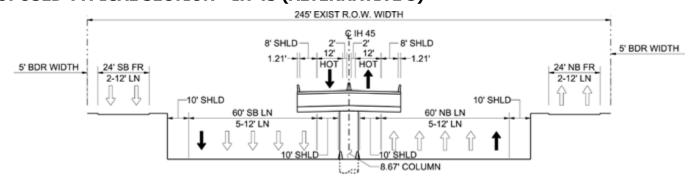
ESTIMATED COST (CONSTRUCTION & DESIGN):



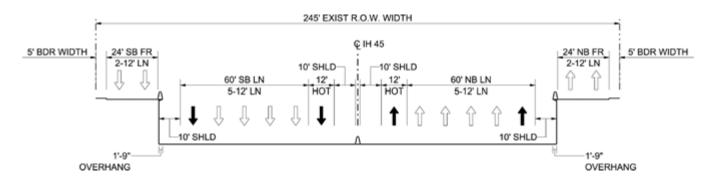
#### **EXISTING TYPICAL SECTION - IH 45**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 5)**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 6)**





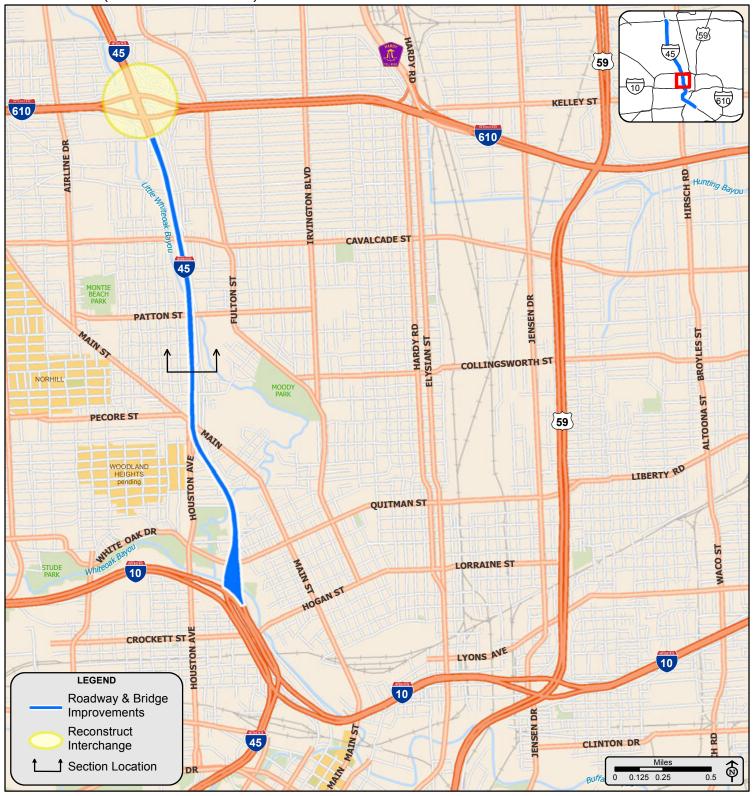




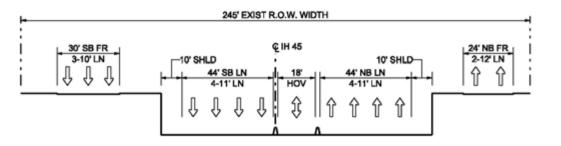
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

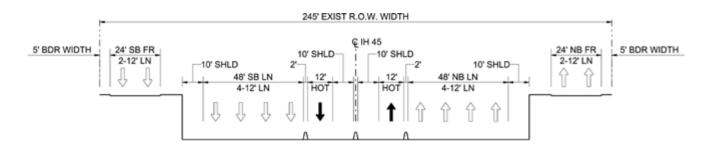
ESTIMATED COST (CONSTRUCTION & DESIGN):



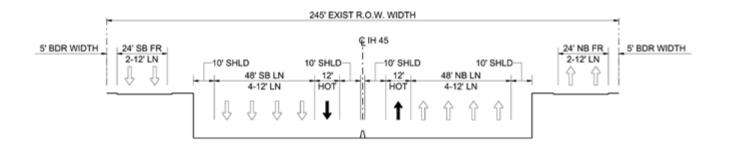
#### **EXISTING TYPICAL SECTION - IH 45**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 7)**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 8)**





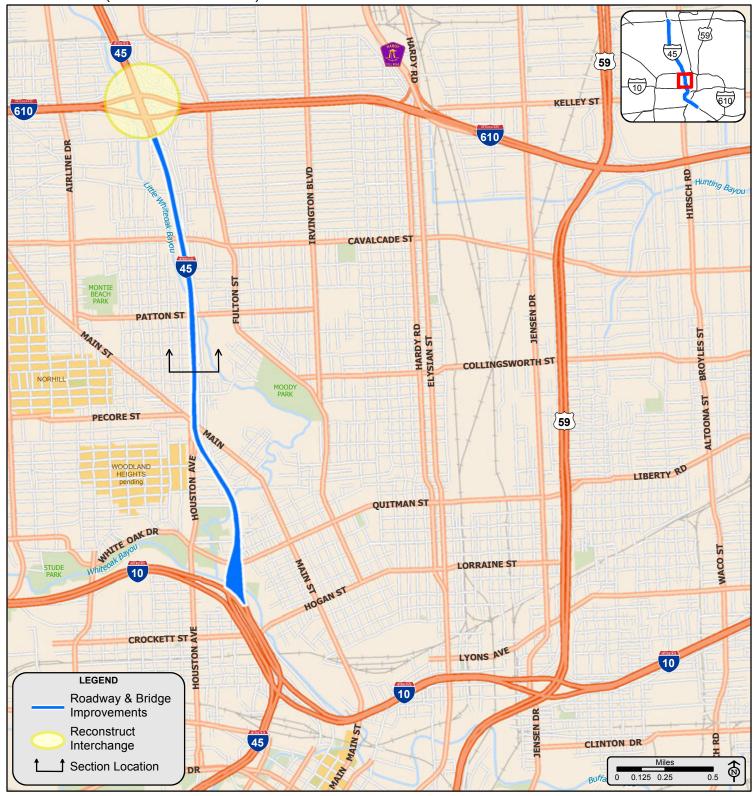




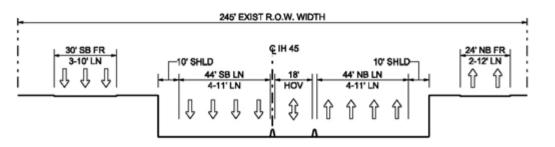
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

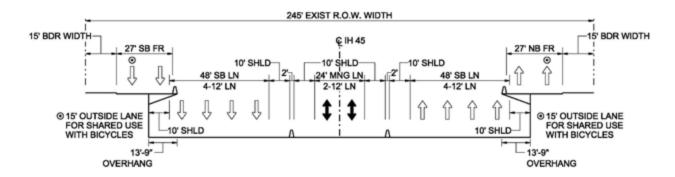
ESTIMATED COST (CONSTRUCTION & DESIGN):



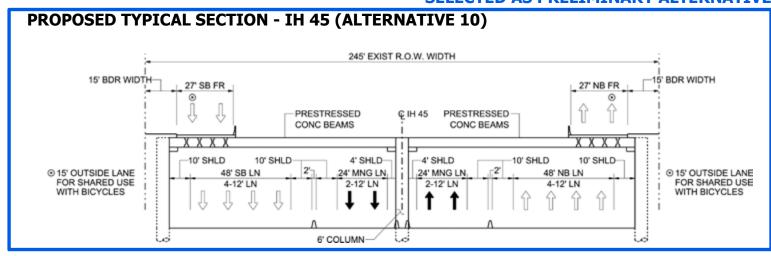
#### **EXISTING TYPICAL SECTION - IH 45**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 9)**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**





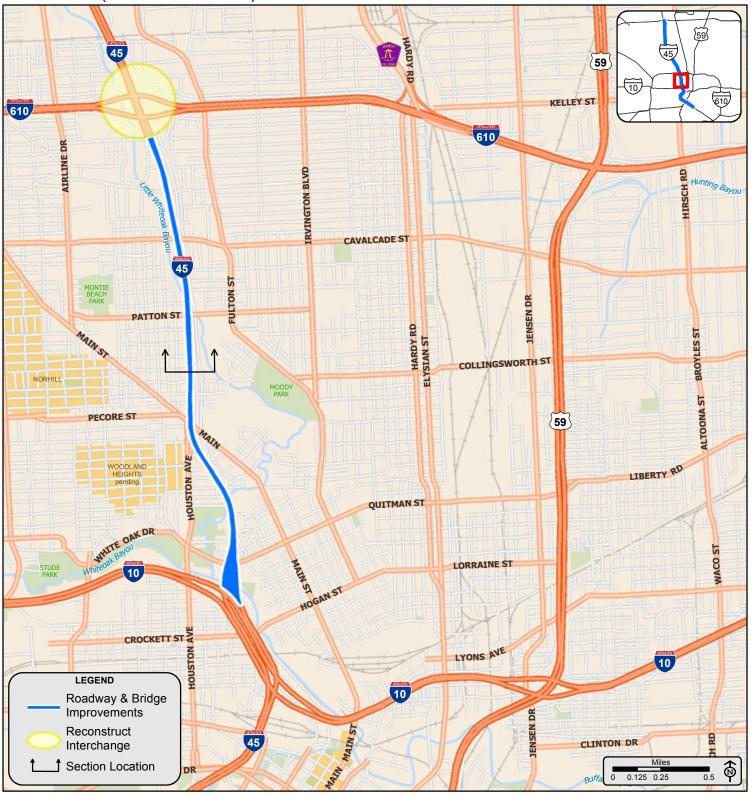




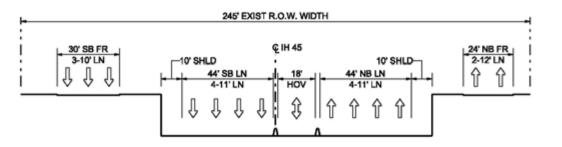
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

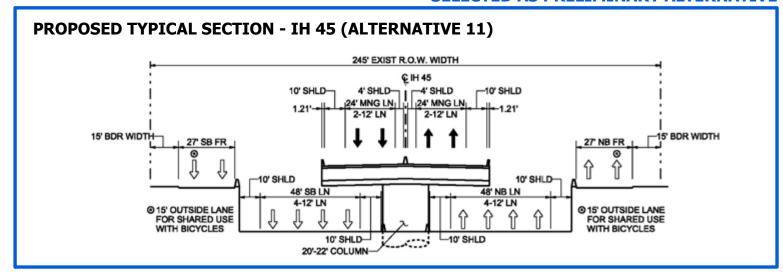
ESTIMATED COST (CONSTRUCTION & DESIGN):



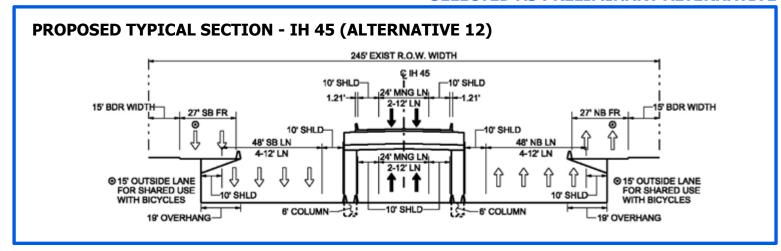
#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**





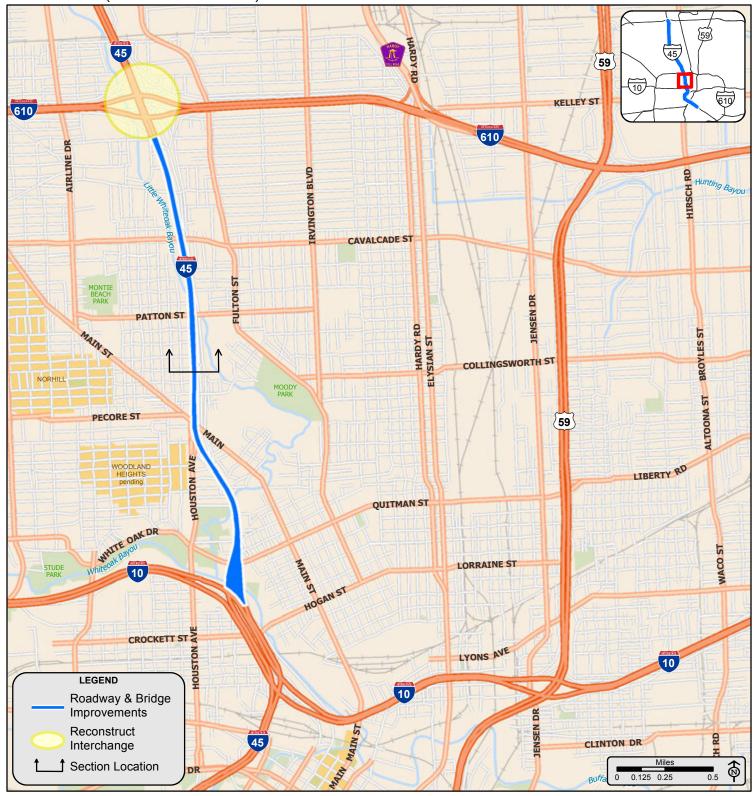




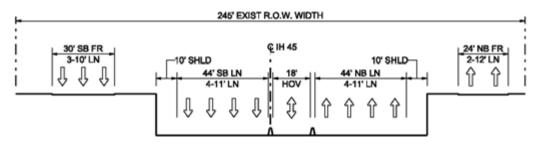
#### **SEGMENT 2**

LIMITS: IH 610 TO IH 10 LENGTH: 2.75 MILES

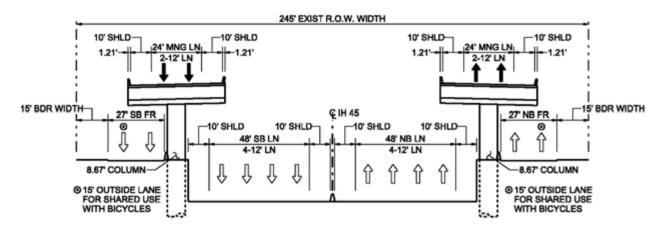
ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **EXISTING TYPICAL SECTION - IH 45**



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 13)**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

# PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 14) 245 EXIST R.O.W. WIDTH 10' SHLD 44' SB LN 4-11' LN BOY MIN. DEPTH 24' MNG LN 24' NB FR 2-12' LN 60' MIN. DEPTH 54.5' DIAMETER TUNNEL





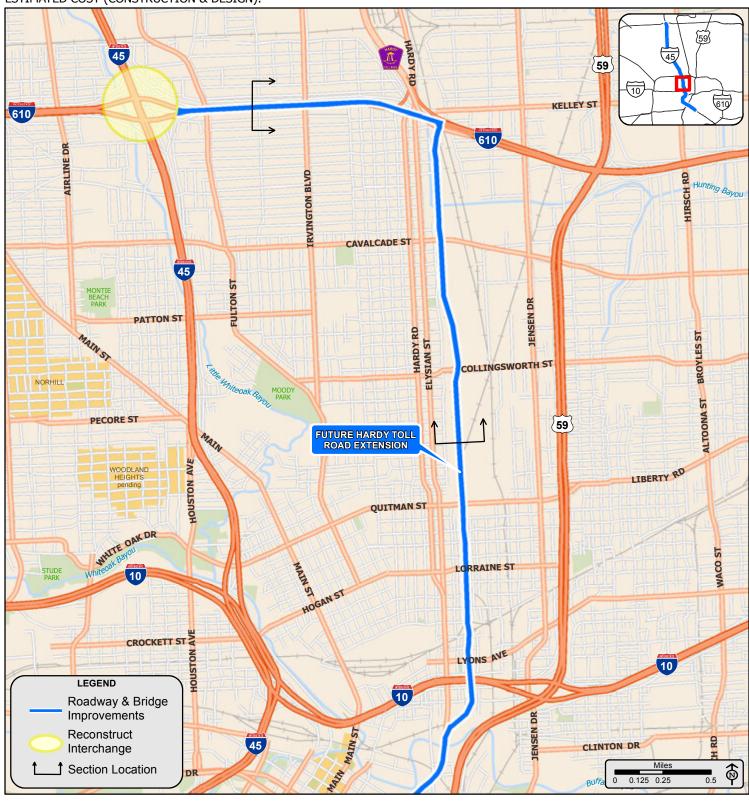




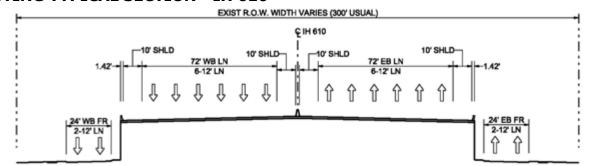
#### **SEGMENT 2**

LIMITS: IH 610 FROM IH 45 TO HARDY TOLL ROAD AND HARDY TOLL ROAD FROM IH 610 TO IH 10 LENGTH: 4.5 MILES

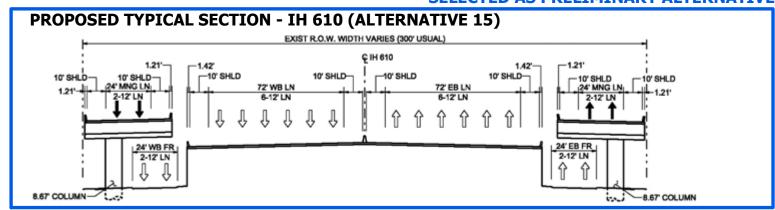
ESTIMATED COST (CONSTRUCTION & DESIGN):



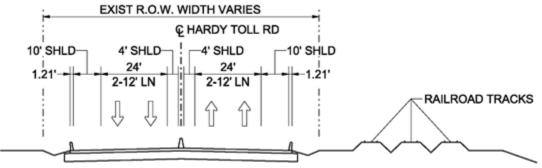
#### **EXISTING TYPICAL SECTION - IH 610**



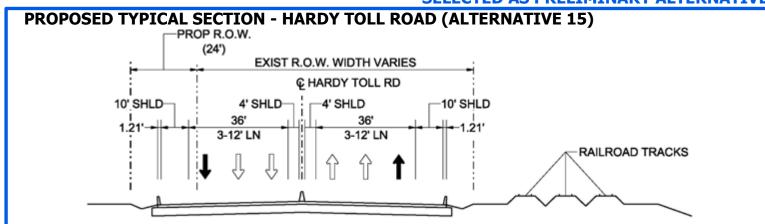
#### **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **EXISTING TYPICAL SECTION - HARDY TOLL ROAD**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**



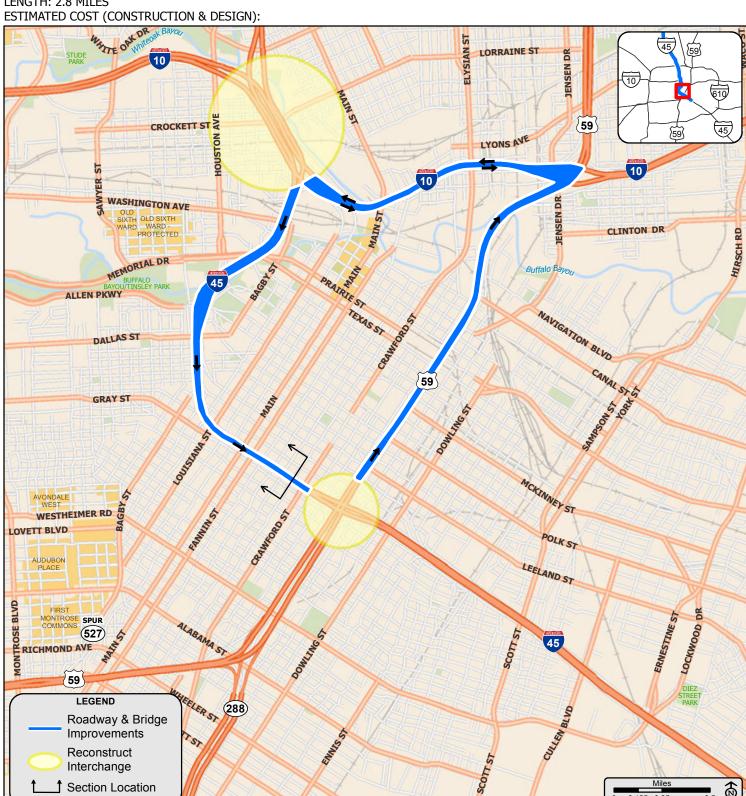




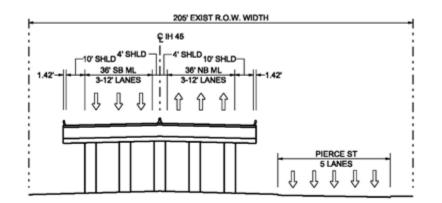


#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

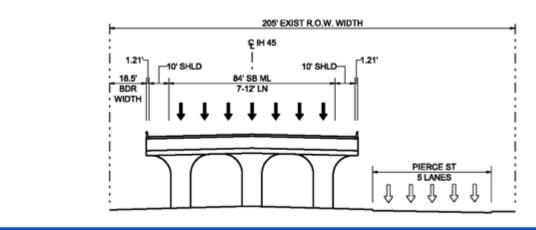


#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 3)**



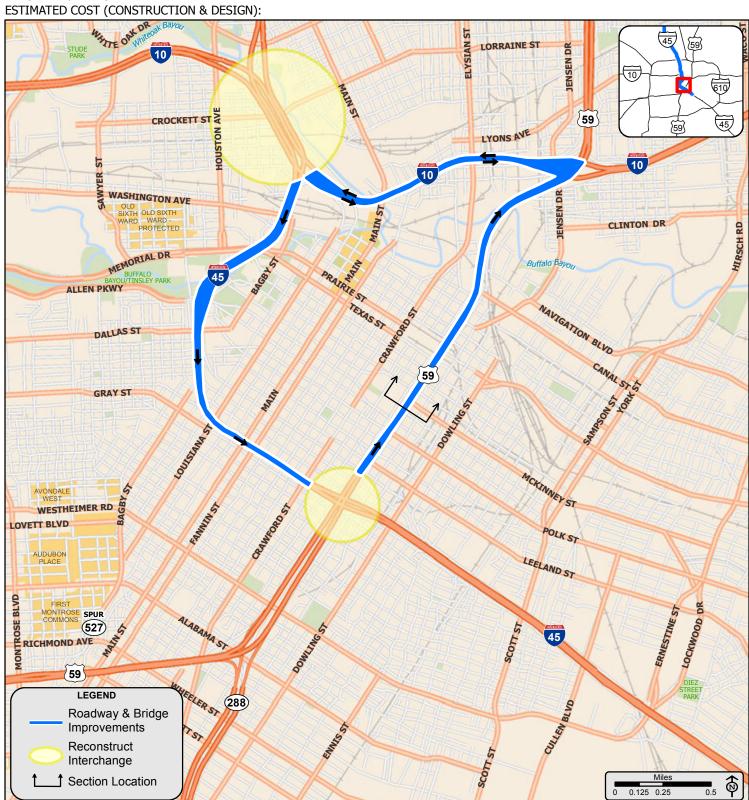




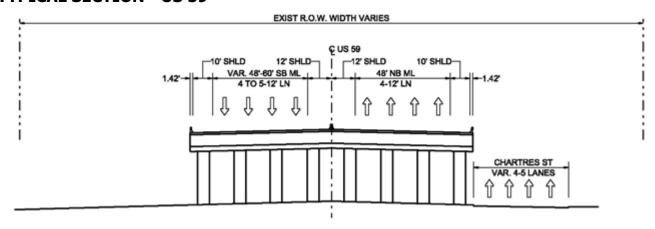


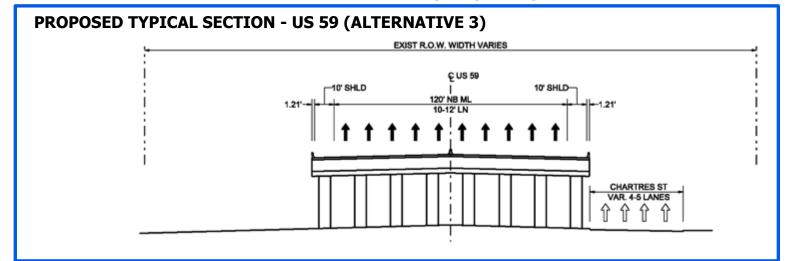
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES



#### **EXISTING TYPICAL SECTION - US 59**









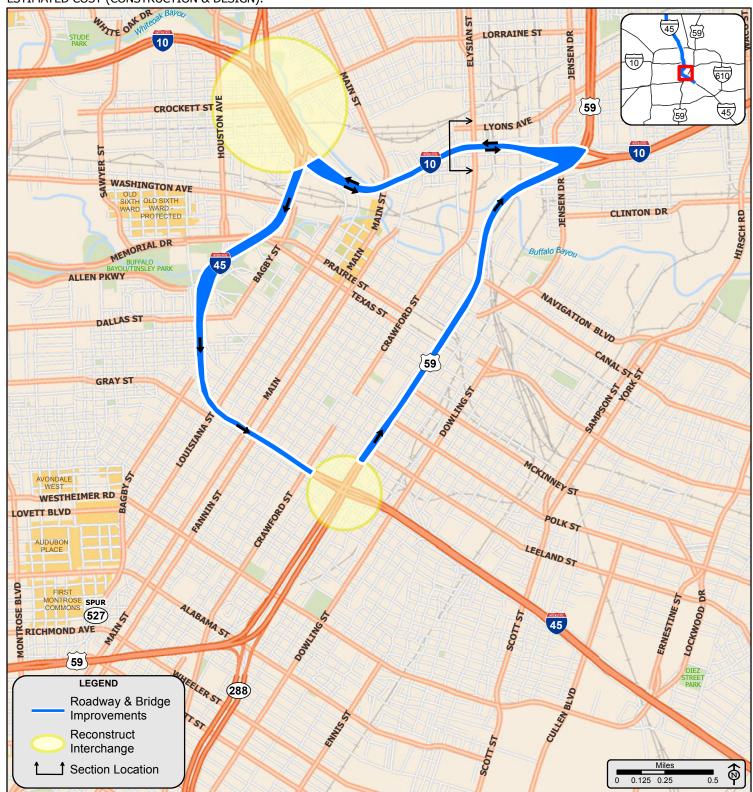




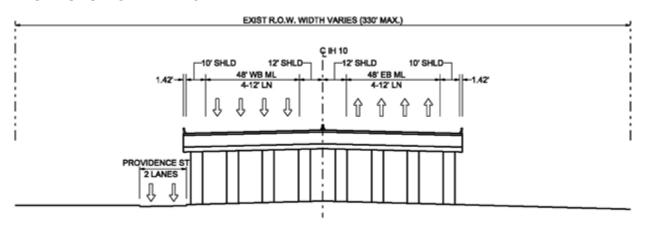
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):

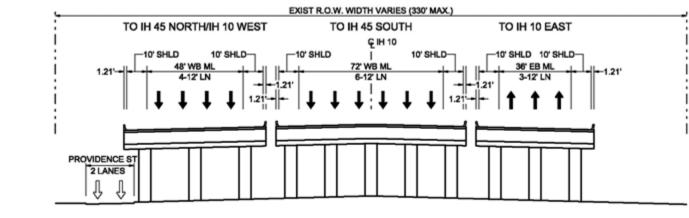


#### **EXISTING TYPICAL SECTION - IH 10**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

## **PROPOSED TYPICAL SECTION - IH 10 (ALTERNATIVE 3)**





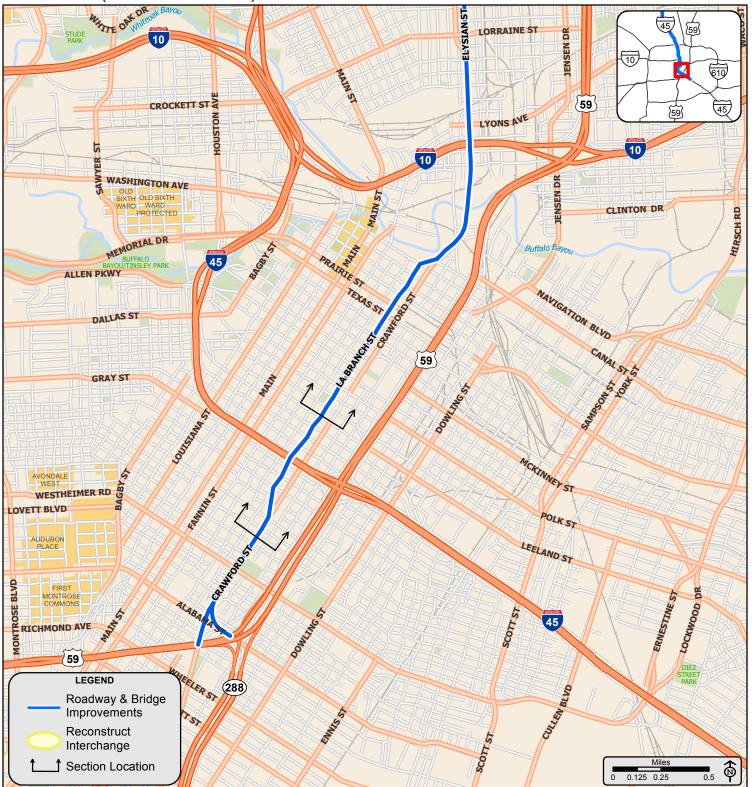




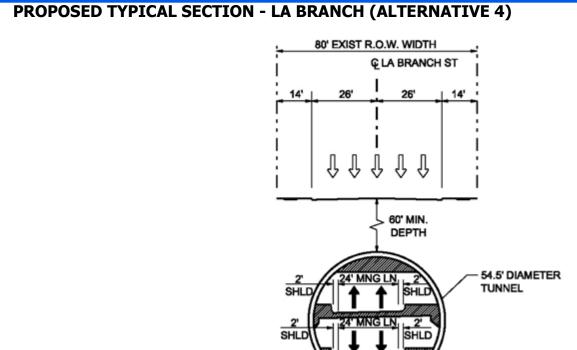
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

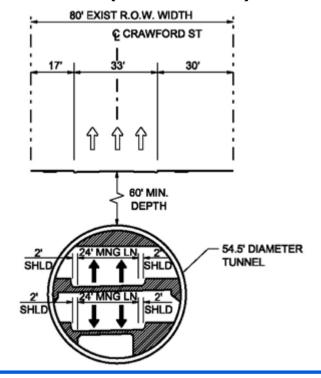
ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **PROPOSED TYPICAL SECTION - CRAWFORD (ALTERNATIVE 4)**









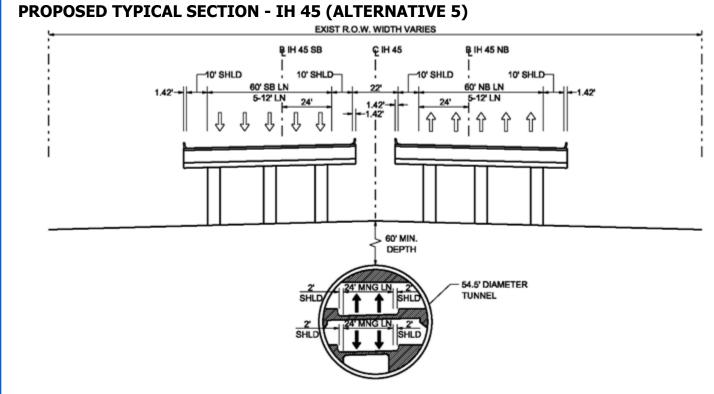
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

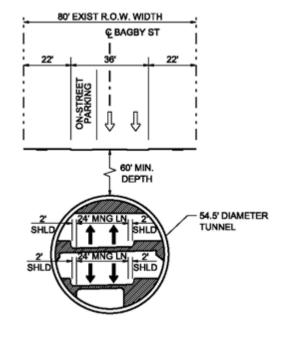
ESTIMATED COST (CONSTRUCTION & DESIGN):



#### **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **PROPOSED TYPICAL SECTION - BAGBY (ALTERNATIVE 5)**





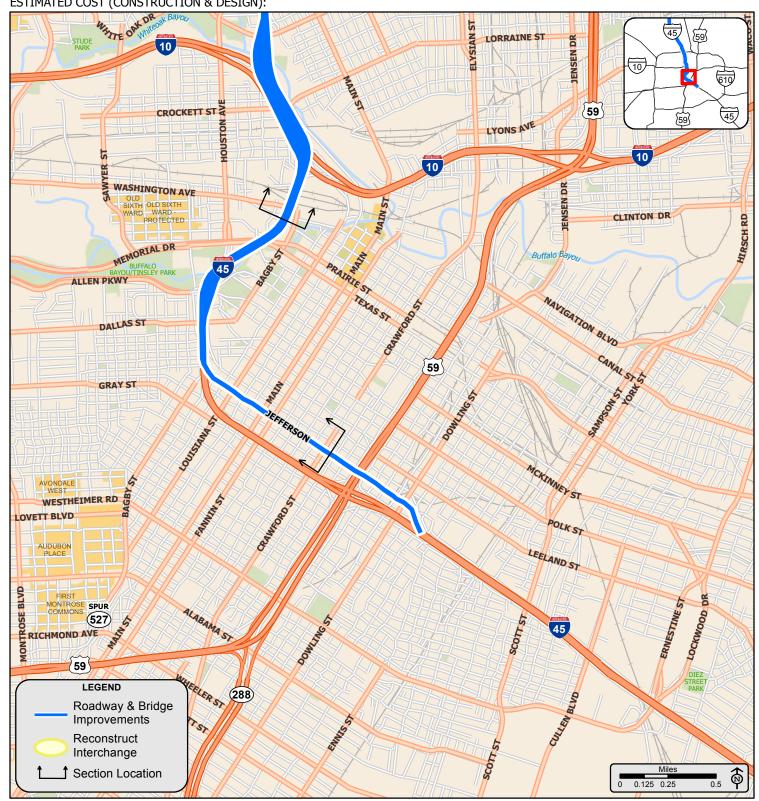




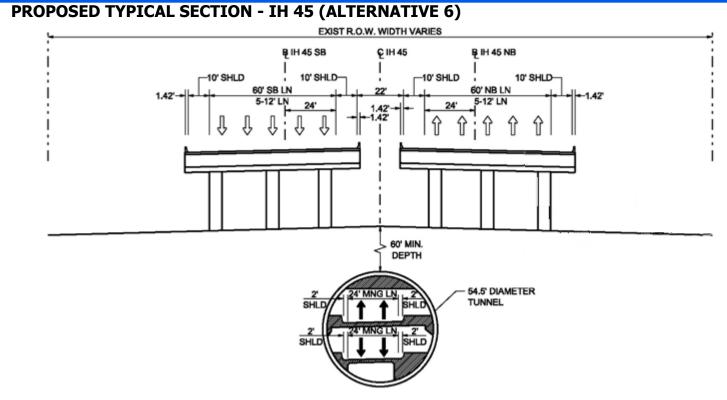
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

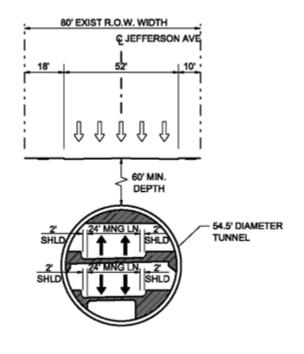
ESTIMATED COST (CONSTRUCTION & DESIGN):



## **SELECTED AS PRELIMINARY ALTERNATIVE**



#### **PROPOSED TYPICAL SECTION - JEFFERSON (ALTERNATIVE 6)**







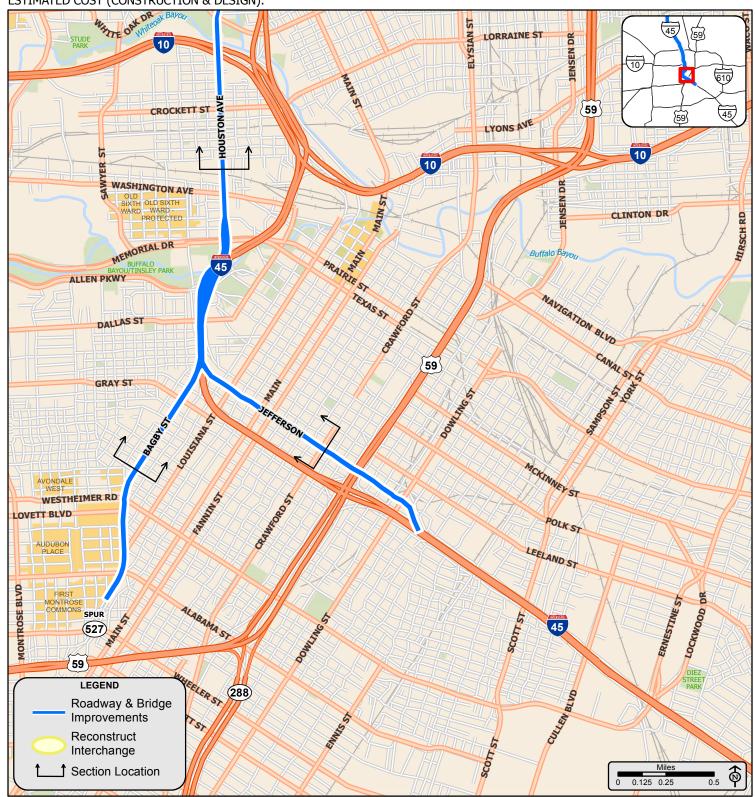




#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

ESTIMATED COST (CONSTRUCTION & DESIGN):



# **SELECTED AS PRELIMINARY ALTERNATIVE** PROPOSED TYPICAL PROPOSED TYPICAL **SECTION - JEFFERSON (ALTERNATIVE 7) SECTION - HOUSTON (ALTERNATIVE 7)** 100' EXIST R.O.W. WIDTH 80' EXIST R.O.W. WIDTH € HOUSTON AVE © JEFFERSON AVE 35' 60° MIN. 60' MIN. DEPTH 54.5' DIAMETER 54.5' DIAMETER TUNNEL **PROPOSED TYPICAL SECTION - BAGBY (ALTERNATIVE 7)** 80' EXIST R.O.W. WIDTH **G BAGBY ST** 60' MIN. 54.5' DIAMETER



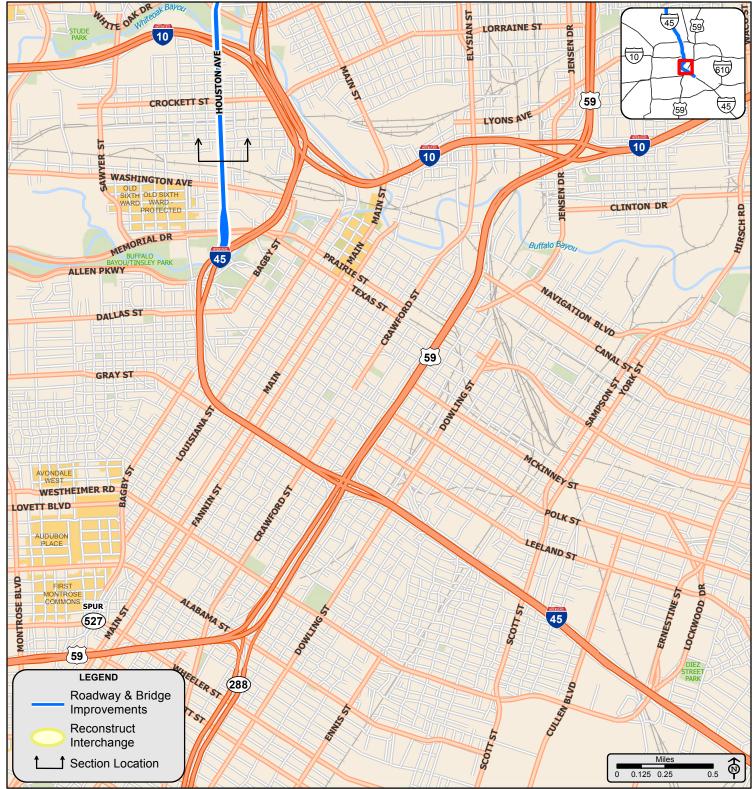




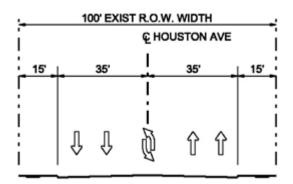
#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

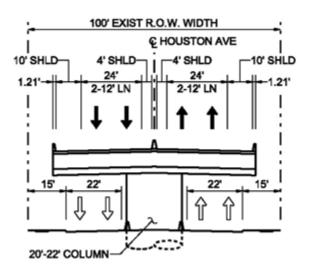
ESTIMATED COST (CONSTRUCTION & DESIGN):



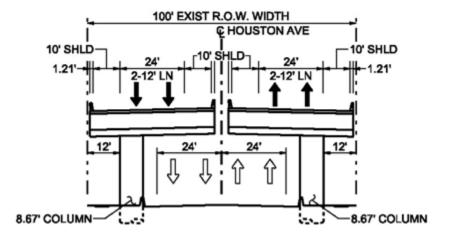
## **EXISTING TYPICAL SECTION - HOUSTON**



# PROPOSED TYPICAL SECTION - HOUSTON (ALTERNATIVE 8A)



# PROPOSED TYPICAL SECTION - HOUSTON (ALTERNATIVE 8B)



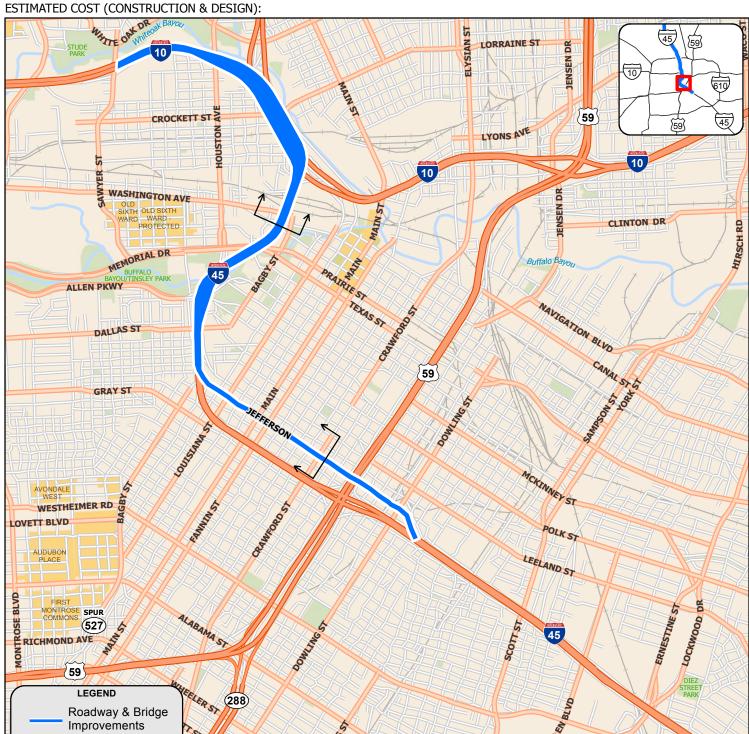




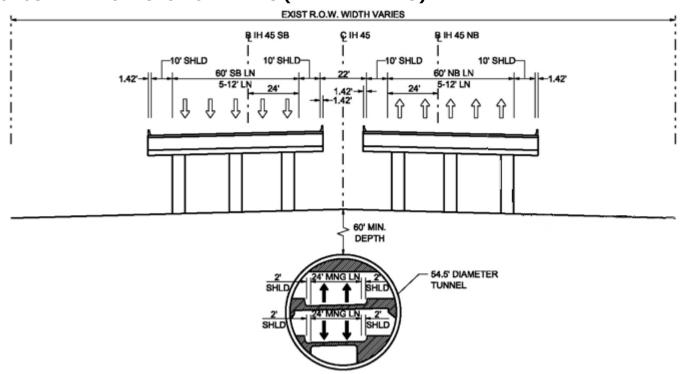


#### **SEGMENT 3**

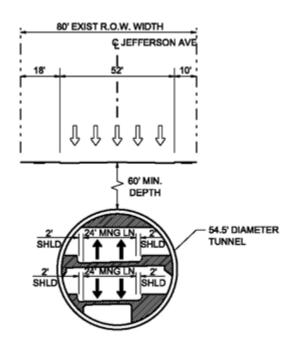
LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES



#### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 9)**



#### **PROPOSED TYPICAL SECTION - JEFFERSON (ALTERNATIVE 9)**



**IH 45 NORTH HOUSTON HIGHWAY IMPROVEMENT PROJECT** 







Reconstruct
Interchange

Section Location

#### **SEGMENT 3**

LIMITS: IH 10 TO IH 45/US 59 INTERCHANGE LENGTH: 2.8 MILES

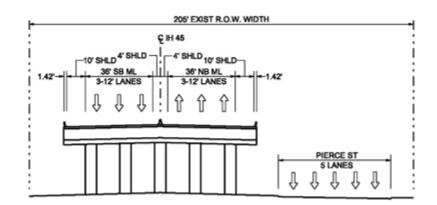
ESTIMATED COST (CONSTRUCTION & DESIGN):

STUDE PARK

CROCKETT ST & CONSTRUCTION & DESIGN):

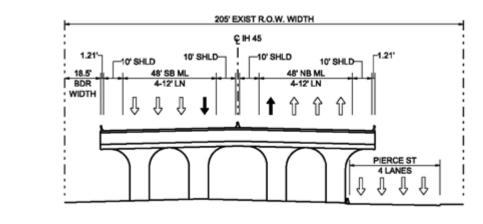
CROCKETT ST & CONSTRUCTION & DESIGN):

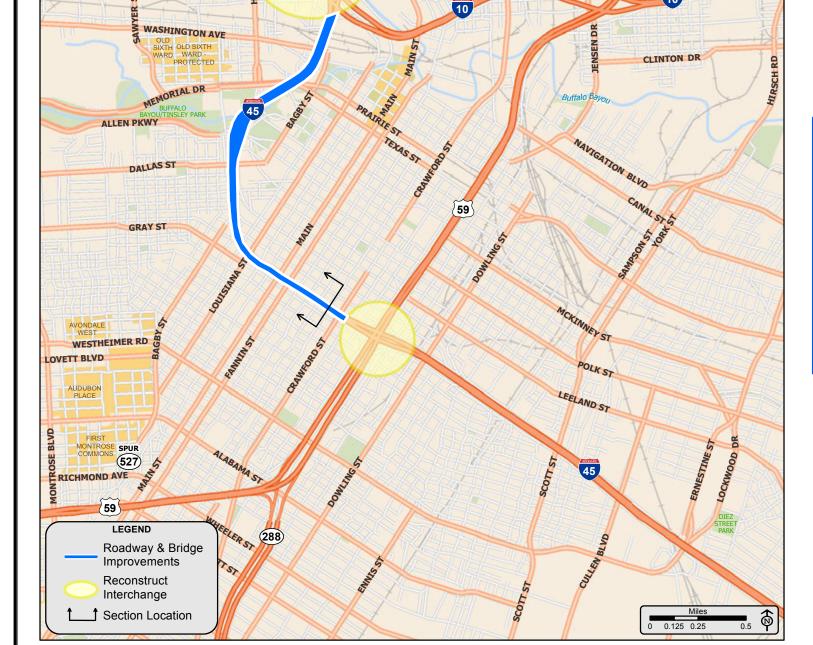
#### **EXISTING TYPICAL SECTION - IH 45**



#### **SELECTED AS PRELIMINARY ALTERNATIVE**

### **PROPOSED TYPICAL SECTION - IH 45 (ALTERNATIVE 10)**













North Houston Highway Improvement Project

BEACHTON ST

GROVE CT

GREGG ST

OCTOBER 2012

North Houston Highway Improvement Project

ALTERNATIVE 13

30' SB FR 3-10' LN

OCTOBER 2012

#ŁIFE#



ALTERNATIVES LOOP О IH 610 TO IF UNIVERSE **EXISTING** NORTH **9** 0

ALTERNATIVES

OF

UNIVERSE

NORTH

**9** 0

SEGMENT

4 24' SB FR 60' SB LN 10' SHLD 60' SB LN 5-12' LN 60' SB LN 60' SB

ALTERNATIVE 3

60'NB LN
5-12'LN
10'SHLD
60'NB LN
10'SHID

10' SHLD

24' SB FR

2-12' LN

60' SB LN

10' SHLD

5-12' LN

10' SHLD

8' SHLD 2' E' II 4' 12' | 8' SHLD | 12' II 12' | 12' II 12' | 12' II 12'

ALTERNATIVE

ALTERNATIVE 6

24' SB FR 2-12' LN () () ()

10 SHLD 10 SHL

ALTERNATIVE 7

ALTERNATIVE 11

ALTERNATIVE 10

ALTERNATIVE

BDR WIDTH

O 15' OUTSIDE LANE
FOR SHARED USE
WITH BICYCLES

A13-9"

A1 TER

ALTERNATIVES SEGMENT

