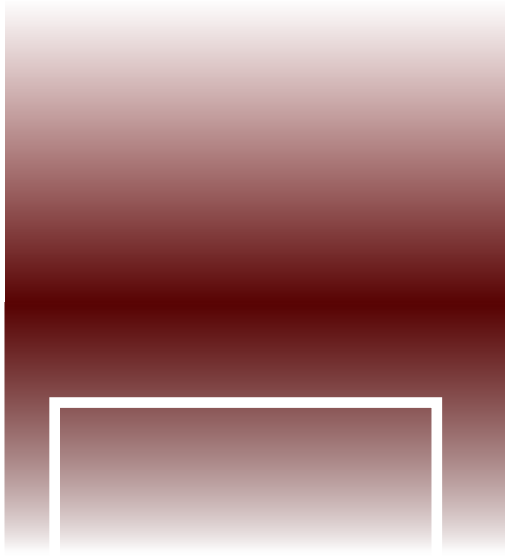




Stage 0 Feasibility Study and Environmental Inventory  
Interstate 12 LA 447 (Walker Road) to I-59  
Livingston, Tangipahoa, & St. Tammany Parishes  
State Project No. H.005154, Legacy No. 700-90-0019  
May 2012

# VOLKERT



VOLKERT

State Project No. H.005154

**STAGE 0**

**FEASIBILITY STUDY AND ENVIRONMENTAL INVENTORY**

Livingston, Tangipahoa, & St. Tammany Parishes

**INTERSTATE 12 – LA 447 (Walker Road) TO I-59**

Legacy No. 700-90-0019

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## EXECUTIVE SUMMARY

I-12 is a major alternative link for through traffic on the I-10 Corridor in the southern U.S. It extends 85 miles between I-10 in Baton Rouge and I-10 in Slidell. It is 23 miles shorter than the I-10 route through New Orleans and is a heavily used shortcut for through traffic in both directions. I-12 is part of the National I-10 Freight Corridor as well as a Corridor of the Future, and a significant portion of through traffic consists of freight trucks.

The subject of this study is potential widening of I-12 from 2 lanes in each direction to 3 lanes in each direction between Walker and Slidell and to determine the best option of inside or outside widening (or a combination of the two). The total length of the study area is approximately 70 miles from Walker Road to I-59 and was originally constructed between 1968 and 1976. As of 2011, the ages of various structures are between 35 and 43 years. The I-12 roadway consists of 4 lanes divided by a 64-foot wide median with wider median exceptions in three locations. It includes 32 pairs of mainline I-12 bridges (not counting box culverts) and 21 underpasses. The 18 interchanges (not counting I-59) consist of 7 overpasses and 11 underpasses. 11 projects were in various stages of planning, study, design, and construction at the time of this report. The western portion of I-12 is used for weekday commuter traffic between Livingston Parish and Baton Rouge. The portion of I-12 between Madisonville and Mandeville are used for weekday commuter access to and from U.S. 190 and ultimately the Lake Pontchartrain Causeway. I-12 is also an evacuation route for southeast Louisiana.

Transportation improvements are required on I-12 to address the following needs: Capacity and Level of Service (LOS), existing and projected safety issues, Connectivity, and Emergency evacuation. The "2008 I-12 Safety Assessment" report addresses the study area and states that a few segments exhibit some potential for accident reduction with improvements

Pavement modifications have been completed since the late 1980's. Because of these modifications the elevation of the current roadway is higher than the original roadway, thus causing the vertical clearance at all I-12 underpasses to be reduced.

Existing freeway conditions on I-12 range from LOS A to LOS D,. LOS D conditions occur during peak hours between Airport Road/Northshore Boulevard (Exit 80) and U.S. Highway 11 (Exit 83). Existing conditions during peak hours at all other freeway sections are LOS C or better.

The heaviest traffic volumes occur in St. Tammany Parish between Pinnacle Parkway (Exit 60) and I-10/I-59 at Slidell. Based on the Roadway Capacity Analysis, the 2032 Build Widening Alternative is recommended to improve safety and to address increased traffic demands for the entire study area. By widening I-12 throughout the study area two portions of mainline I-12 are recommended for prioritized consideration of adding capacity. These are LA 21 (Madisonville /Covington Exit 59) to the Bayou Vincent Bridge and LA 1249 (Pumpkin Center/Baptist Exit 35) to I-55 (Exit 38)

## **INITIAL CONCEPT**

The concept of inside widening with a typical 64-foot median consists of filling the median ditch, completely paving the median, and separating traffic with a cast-in-place concrete barrier.

Insufficient vertical clearance over the existing roadway is an issue at most of the bridges over I-12. The lowering of the I-12 roadway is the categorical alternative for addressing vertical clearance issues, but will potentially create some drainage issues that must be addressed in the design.

## **Livingston Parish**

Widening evaluated in this study begins on the western side of the Walker Road Interchange, at the transition from 6 lanes to 4 lanes. Inside widening of 7 mainline I-12 bridges at “zero cost” to the widening estimate is an overwhelming cost advantage unique to Livingston Parish, since these bridges will be widened on the outside. The foreslopes in Livingston Parish are relatively steep (4:1 max.) The 2008 I-12 Safety Assessment indicates that a number of crashes between the Satsuma-Collyell and Frost-Livingston Interchanges resulted in vehicles running off the road and striking a tree. Safety performance at that segment was rated LOS-III. The Safety Assessment specifically recommends slope flattening on both sides of I-12 between the Frost-Livingston and Holden Interchanges. Continuous inside widening along with outside slope flattening and additional clearing within the right-of-way at selected locations is recommended in Livingston Parish.

## **Tangipahoa Parish**

Weigh stations are located between Pumpkin Center Road and Happywoods Road, and weigh-in-motion scales are located approximately 0.6 mile in advance of each weigh station. The scale houses are located approximately 50 feet from the existing shoulder. Outside widening in that area will reduce horizontal clearance by 14 feet.



The interchange at I-12 and I-55 is a diamond-cloverleaf configuration. Weaving occurs at each highway in each direction. Weaving is generally undesirable, but the combination of weaving and high traffic peak hour volumes is a potential safety issue at this interchange. The conceptual layout eliminates loop ramps in the NW and SE quadrants, and eliminates all weaving at the interchange.

Inside widening is recommended throughout Tangipahoa Parish, with the following design exceptions: 10 foot shoulders between the Natalbany River to I-55 and the existing vertical clearance at LA 445. Roadway reconstruction would also be needed at Firetower road and LA 1085 to provide sufficient vertical clearance.

### **St. Tammany Parish**

For the section of I-12 between the interchanges at LA 21 and U.S. 190, the 2008 I-12 Safety Assessment states, "Frequency of crashes on this segment is slightly above average (low range of LOSS-III) and severity below average (LOSS-II)...These problems are congestion related and can be addressed by widening..."That statement appears to coincide with the higher peak hour traffic volumes on I-12 westward of LA 21. Inside widening is recommended throughout St. Tammany Parish.

### **NEW AND MODIFIED INTERCHANGES**

Potential benefits of two new interchanges (LA 1085 and Dixie Ranch Road) were evaluated as part of the traffic study. A new interchange at LA 1085 will not meet the minimum spacing requirement of EDSM I.4.3.2. but can, however, meet the other minimum criteria. If DOTD allows an exception to the minimum spacing requirement between interchanges, then an Interchange Justification Study should be prepared for LA 1085. However Dixie Ranch Road is not a public arterial or collector route. Without public access and the additional network connectivity included in the MTP, a new interchange at Dixie Ranch Road will not provide additional benefits.

The proposed modifications to the I-55 Interchange are recommended for prioritized consideration in a Stage 1 study. The proposed modifications are not designed to improve the operating conditions, but are designed to improve safety by eliminating weaving maneuvers at the interchange.

Acquisition of property for additional right-of-way will be necessary for the modifications to the I-12/I-55 Interchange and construction of any new interchanges. Most of the additional property required for the modifications at I-12/I-55 is undeveloped. If DOTD plans to construct the modifications to the I-12/I-55 Interchange or any new interchanges in the future, opportunities to acquire any

of the necessary additional property at this time or in the near future should be carefully evaluated.

### **OFF-RAMP IMPROVEMENTS**

The Traffic Study identifies improvements at 11 different I-12 off-ramp termini to reduce queue overflows and to improve intersection capacity. Off-ramp improvements will be beneficial with and without I-12 widening, and may be implemented independently of I-12 widening.

### **POTENTIAL ENVIRONMENTAL IMPACTS**

A preliminary environmental review was conducted to identify any “show-stopping” constraints that could influence the feasibility, timing, and cost of the proposed project. The Cultural Resources investigation established the Area of Potential Effect (APE) of widening I-12 as one mile on either side of the highway. I-12 crosses 5 streams protected by the Louisiana Scenic Rivers Act and 11 streams that were identified by the U.S. Army Corps of Engineers as navigable.

FHWA Traffic Noise Model (TNM) was utilized to determine if noise walls would be acoustically feasible. Based on the analysis, none of the potential noise walls would be considered feasible under the current DOTD Highway Traffic Noise Policy.

Potential wetlands along the project corridor were identified by various means to identify approximate wetland limits. Inside widening will have a significantly smaller impact on wetlands than an outside widening option. Inside widening will disturb approximately 17 acres of wetlands in comparison to disturbing approximately 360 acres of wetland area with outside widening.

The environmental documentation did not reveal any sensitive community issues or “show stopping” constraints related to widening I-12 from 4 lanes to 6 lanes. However, some factors will require a more detailed evaluation during a Stage 1 Planning and Environmental Analysis.

### **PRELIMINARY SCOPE AND COST ESTIMATE**

Outside widening, based upon factors such as the projects already under construction in the corridor and the amount of service roads and business which lie just outside of the I-12 right-of-way, make the outside widening option significantly more expensive than inside widening.



## **Roadway**

Roadway cost estimates are presented for inside widening only, as outside widening of the corridor was ruled out determined to be unfeasible. The cost estimates include off-ramp improvements, which may be constructed independent of I-12 widening. The cost estimate includes engineering, real estate acquisition, wetlands mitigation, and construction of modifications to the I-55 interchange, but it does not include any costs associated with other proposed interchanges. The roadway estimates also include a final wearing course of Open Graded Friction Course Asphaltic Concrete across the entire final roadway width. This was added to provide improved roadway safety during wet weather.

## **Bridges**

Estimated unit prices for most of the bridge items are based on weighted unit prices available on the DOTD website. The 7 pairs of bridges in Livingston Parish that are being widened with separate funding are not included in the cost estimate. As a result of some discussions with DOTD, the cost estimate incorporates some categorical aspects of widening I-12 bridges.

- All 5 pairs of concrete slab span bridges (not including any of the slab span bridges in Livingston Parish) will be replaced.
- All bridge rails on both sides (even if widened to only one side) will be replaced with concrete barrier rails.
- On all bridges with prestressed concrete girders, the outside girder (on the side to be widened) will be replaced with an intermediate girder.

All bridges to be replaced are estimated with additional width to accommodate temporary barriers for maintenance of traffic during construction. All outside battered piles (on the side to be widened) are assumed to be cut off, and the size of the new adjacent pile is increased to accommodate loads resulting from the increased pile spacing.

## **Wetland Mitigation**

The estimated cost of wetland mitigation is based on compensatory mitigation through the purchase of credits in mitigation banks equivalent to \$50,000 per acre of disturbed wetlands. Wetlands potentially impacted by inside widening are limited to stream crossings and the two areas with wide medians. There is a total of 35 acres of Wetlands, 17 acres for Inside Widening and 18 acres for the I-55 Interchange Improvements

## **Existing Utilities**

Generally, inside and outside widening evaluated in this study will have a relatively minor impact on utility relocations. Removal and replacement of light poles in the median at four locations will be necessary for inside widening. Responsibility for

the cost of relocation of utilities within the right-of-way should be determined on a case-by-case basis. The estimated cost is based on removing and reinstalling the fiber optic cables in new conduits.

### **PRIORITY OF CONSTRUCTION**

Based on the anticipated decline in LOS during peak hours in each direction, the overall priority of 14 separate construction projects is generally in the order of St. Tammany, Tangipahoa, and Livingston.

### **CONCLUSION AND RECOMMENDATIONS**

The following safety improvements may reduce the number of crashes in select areas in the corridor:

- Peak Period ramp metering
- Dynamic message signs to provide advance warning of incidents or traffic delays
- Tree clearing beyond the clear zone or cable rail installation
- A study of pavement surface drainage
- Local law enforcement investigation and enforcement in regards to illegal drug use
- Reflectors on bridge rails and improvements for bridges with substandard shoulders
- Slope flattening or cable rail installation
- Median Barriers
- Deer crossing warning signs and public information and education

The following I-12 corridor improvements are recommended to improve safety and address increased traffic demands and are recommended to move forward in the LADOTD process:

- 2032 Build Widening Alternative (inside widening)
- 2032 I-12 at I-55 Build Interchange, with or without the Build Widening
- 2032 I-12 at LA 1085 Build Interchange with or without Build Widening
- 2032 I-12 at Dixie Ranch Road Build Interchange, with or without the Build Widening

The following are recommended for prioritized consideration in the Stage 1 study:

- Build Widening Alternative (inside widening) for I-12 between LA 21 and the Vincent Bayou Bridge (US 11) that section not currently under design or construction

- Build Widening Alternative for I-12 between LA 1249 and I-55
- I-12 at I-55 Build Interchange Improvements
- I-12 off ramp improvements, as follows
  - I-12 Eastbound at LA 447
  - I-12 Westbound at LA 43
  - I-12 Westbound at US 51
  - I-12 Eastbound at LA 3158
  - I-12 Westbound at LA 3158
  - I-12 Westbound at LA 1077
  - I-12 Westbound at LA 21
  - I-12 Eastbound at LA 59
  - I-12 Eastbound at Airport Road/Northshore Blvd.
  - I-12 Westbound at Airport Road/Northshore Blvd.
  - I-12 Westbound at US 11

## **I-12 Stage 0 Feasibility Study**

### **INTRODUCTION AND BACKGROUND**

The subject of this study is potential widening of I-12 from 2 lanes in each direction to 3 lanes in each direction between Walker and Slidell. The total length of the study area is approximately 70 miles from Walker Road to I-59. Louisiana DOTD authorized Volkert, Inc. along with two subconsultants to prepare this report. Urban Systems Associates, Inc. performed the Traffic Study including data acquisition, traffic forecasting, and traffic analyses. Earth Search, Inc. performed archeological and historical research of sites and properties along the entire length of the project corridor.

In preparation of this report Volkert relied upon copies of record drawings made from microfilm. Many of the drawings are difficult to read, particularly those with aerial photography. The original drawings were intended for reproduction by diazo printing, and do not reproduce well with photography. Many of the drawings were also distorted because the horizontal scale is compressed and the vertical scale is not. However, those were the best available copies and the general features of the roadway design are legible. The original mainline I-12 drawings are in the following list of projects.

#### LIVINGSTON PARISH

- 454-02-05 WALKER – SATSUMA
- 454-02-08 SATSUMA – LIVINGSTON
- 454-02-09 LIVINGSTON – HOLDEN
- 454-02-06 HOLDEN – NATALBANY RIVER

#### TANGIPAHOA PARISH

- 454-03-03 NATALBANY RIVER – OLD U.S 51
- 452-02-34 PONCHATOU LA – NATALBANY HIGHWAY (I-55/I-12)
- 454-03-01 OLD U.S.51 – SISTERS ROAD
- 454-03-05 SISTERS ROAD – HANO HIGHWAY
- 454-03-06 HANO HIGHWAY – LA 1077

#### ST. TAMMANY PARISH

- 454-04-01 HANO HIGHWAY – LA 1077
- 454-04-06 LA 1077 – U.S. 190
- 454-04-02 U.S. 190 – LA 434
- 454-04-07 LA 434 INTERCHANGE
- 454-04-08 LA 434 – RIFLE RANGE ROAD
- 454-04-09 RIFLE RANGE ROAD – ROBERTS ROAD
- 454-04-03 ROBERTS ROAD – WEST PEARL RIVER
- 454-04-80 AIRPORT ROAD – I-10

Volkert produced new drawings for this report utilizing 2010 aerial photography from the USDA National Agricultural Imagery Program acquired with a precision aerial mapping camera at a nominal scale of 1:40,000 on color positive film. The product is Digital Ortho Quarter Quads (DOQQ) with 1-meter Ground Sample Distance ortho imagery rectified to a horizontal accuracy within  $\pm 5$  meters of reference. Volkert utilized LIDAR data available from Atlas: The Louisiana Statewide GIS, maintained by the CADGIS Research Laboratory at LSU.

During this study Volkert reviewed a copy of a report by DiExSys, LLC dated March 18, 2008 and titled "Development of Louisiana Specific Safety Knowledge Base for Rural 4-Lane Interstates and Safety Assessment of Interstate 12" (hereinafter referred to as the "2008 I-12 Safety Assessment"). That report addresses a 67.5-mile portion of I-12 between Juban Road and Airport Road (in Slidell). An excerpt from the Executive Summary states,

"The frequency and severity of crashes of most segments on I-12 within study limits are better than average as predicted by the Safety Performance Function (SPF). A few segments however, do exhibit some potential for accident reduction. Most of the segments are performing in the LOSS-II category with some in the low range of LOSS-III."

Level of Service of Safety (LOSS) characterizes the safety of a freeway segment in reference to its expected performance.

- LOSS I – indicates low potential for accident reduction
- LOSS II – indicates better than expected safety performance
- LOSS III – indicates less than expected safety performance
- LOSS IV – indicates high potential for accident reduction

At the time of the report, three segments were performing in the LOSS-III category.

- Between Satsuma-Collyell and Frost-Livingston (2.5 miles)
- Between U.S. 51 Business Route (BR) and LA 3158 Airport Road (2.1 miles)
- Between LA 21 and U.S. 190 (3.2 miles)

DOTD identified the functional classification for the portions of each I-12 control section within the limits of this feasibility study.

#### CONTROL SECTION 454-02 LIVINGSTON PARISH

LM 4.48 – LM 9.15	URBAN Principal Arterial - Interstate
LM 9.15 – LM 25.82	RURAL Principal Arterial – Interstate

#### CONTROL SECTION 454-03 TANGIPAHOA PARISH

LM 0.00 – LM 0.69	RURAL Principal Arterial - Interstate
LM 0.69 – LM 9.63	URBAN Principal Arterial - Interstate
LM 9.63 – LM 18.79	RURAL Principal Arterial - Interstate

#### CONTROL SECTION 454-04 ST. TAMMANY PARISH TO I-59

LM 0.00 – LM 3.88	RURAL Principal Arterial - Interstate
LM 3.88 – LM 33.51	URBAN Principal Arterial - Interstate

The adjacent portion of I-10 between I-59 and the Mississippi State Line is part of I-10 Control Section 450-18.

The portion of I-12 within the study area was originally constructed between 1968 and 1976. As of 2011, the ages of various structures are between 35 and 43 years. The original pavement between Walker and Hammond (U.S. 51 BR) consisted of Portland cement concrete; the original pavement between Hammond and Slidell (Robert Road) consisted of asphaltic concrete; and the original pavement between Robert Road and I-59 consisted of Portland cement concrete. Underdrains were added to the Portland cement concrete sections later in separate projects. Subsequent pavement modifications (cold plane & overlay, rubbleize & overlay, break, seat & overlay, removal and replacement) have been completed since the late 1980's. Consequently the elevation of the current roadway is higher than the original roadway, and the vertical clearance at all I-12 underpasses has been reduced.

Original pavement cross slope was either 1.5 percent or 2.0 percent, and the reconstructed cross slope is 2.5 percent except at mainline I-12 bridges. The original bridges have not been modified, and there is a transition between fully reconstructed pavement and the ends of each bridge within the study area. (The width of the original Natalbany River Bridge was subsequently increased from 28 feet to 40 feet, but the original cross slope was maintained.) Reconstruction in Livingston Parish added approximately 11 inches to the elevation of the pavement at the inside lanes. In order to maintain at least 16 feet of vertical clearance at underpasses, there is a transition between fully reconstructed pavement and a 4-inch asphalt overlay at each underpass in Livingston Parish. Additional embankment placed adjacent to the reconstructed pavement increased foreslopes to 4:1 in Livingston Parish. The original roadway from the Livingston-Tangipahoa Parish Line to U.S. 51 Business Route was replaced with 13-inch Portland cement concrete and a subsequent ¾-inch Novachip overlay. Weigh-in-Motion systems including scales in advance of each Weigh Station were installed with the new pavement. The original asphaltic concrete roadway between U.S. 51 Business Route and Robert Road was modified in two separate cold plane and overlay projects that added a combined total of 5-1/2 inches to the roadway elevation.



The I-12 roadway within the study area consists of 4 lanes divided by a 64-foot wide median with exceptions in three locations. The median width varies between 64 feet and 97 feet between LA 441 and LA 43 for about 900 feet in the vicinity of Ferrara Fire Apparatus. The median width varies between 64 feet and 200 feet over 4.3 miles of roadway at the Tangipahoa-St. Tammany Parish line, between Firetower Road and LA 1085. The median width varies between 64 feet and 265 feet over 1.4 miles of roadway between Covington (U.S. 190) and Abita Springs (LA 59). The portion of I-12 within the study area includes 32 pairs of mainline I-12 bridges (not counting box culverts) and 21 underpasses. The 18 interchanges (not counting I-59) consist of 7 overpasses and 11 underpasses. Several projects described in the following paragraphs were in various stages of planning, study, design, and construction at the time of this report.

I-12 Widening west of Walker – (S.P. No. 454-02-0074) Detailed design of inside widening between Juban Road and the western side of the Walker Interchange is in progress at DOTD District 62. The proposed inside widening will result in six 12-foot lanes separated by a median barrier. Inside shoulders will be 16.5 feet wide. Outside shoulders will be increased from 10 feet wide to 12 feet wide by incorporating 2 feet of the existing outside lanes into the shoulders.

Walker Road Interchange – (S.P. No. 700-99-0440) A Stage 0 Study of the Walker Road Interchange by Shread-Kuyrkendall & Associates was completed in 2011. The study addresses feasibility of widening Walker Road South, including bridges over I-12, from 2 lanes to 4 lanes, with related modifications to the interchange.

I-12 Bridges in Livingston Parish – (S.P. No. 454-02-0076) In conjunction with replacement of bridge approach slabs, DOTD plans to design inside widening for bridges at 7 locations in Livingston Parish. The bridges at Hog Branch and Natalbany River are the only mainline I-12 bridges in Livingston Parish not included in this project.

- Dumplin Creek
- Middle Colyell Creek
- Hornsby Creek
- Colyell Creek
- Tickfaw River
- Big Branch
- Blood River

These bridge projects are funded independently from this Stage 0 Study, so for the purpose of this report the costs of widening these bridges to the inside are considered to be zero in comparison to outside widening.

Roundabouts at U.S. 51 Business – (S.P. No. 454-03-0067) Design of three roundabouts at U.S. 51 BR is in progress. Two of the roundabouts are located at the ramp intersections on either side of I-12, and a third roundabout is at the intersection of Club Deluxe Road.

Lighting at LA 3158 Airport Road – (S.P. No. 454-03-0069) Installation of high mast and low mast lighting fixtures at the LA 3158 Airport Road Interchange was completed in 2011.

Cable Barriers in Tangipahoa Parish – (S.P. No. 454-03-0073) Installation of cable barriers in the I-12 median in Tangipahoa Parish was completed in 2011.

LA 1088 Interchange – (S.P. No. 454-04-0038) Construction of an additional bridge over I-12 and a diamond interchange at the existing LA 1088 underpass was completed in 2011.

LA 21 Interchange – (S.P. No. 454-04-0082) Construction of ramp widening, additional turning lanes at LA 21, and other improvements at the existing interchange was completed in 2011.

Airport Road-Northshore Boulevard Interchange – (S.P. No. 736-52-0062) A Stage 0 Study of the Airport Road-Northshore Boulevard Interchange by Buchart-Horn was completed in 2011. The study addresses feasibility of reconstructing the existing diamond interchange with a single point urban interchange.

I-12 Widening at Slidell – (S.P. No. 454-04-0080) Construction of inside widening between Donya Drive and I-59 is in progress. This project includes widening eastbound exit ramp and extending the westbound exit ramp at Airport Road-Northshore Boulevard. DOTD is currently reviewing design of inside widening between Airport Road-Northshore Boulevard and Donya Drive. Inside widening between Bayou Vincent and I-59 is included in the 2032 No Build scenario.

Noise Barrier at Slidell – (S.P. No. 454-04-0070) Replacement of the original noise barrier on the southern side of I-12 between U.S. 11 and Robert Road was completed in 2011.

## **PURPOSE AND NEED**

I-12 is a major alternative link for through traffic on the I-10 Corridor in the southern U.S. I-12 extends 85 miles between I-10 in Baton Rouge and I-10 in Slidell. It is 23 miles shorter than the I-10 route through New Orleans and is a heavily used shortcut for through traffic in both directions. I-12 is part of the

National I-10 Freight Corridor as well as a Corridor of the Future, and a significant portion of through traffic includes freight trucks. The western portion of I-12 is used for weekday commuter traffic between Livingston Parish and Baton Rouge. The portion of I-12 between Madisonville and Mandeville are used for weekday commuter access to and from U.S. 190 and ultimately the Lake Pontchartrain Causeway. I-12 is also an evacuation route for southeast Louisiana. The purpose of the proposed project is to improve transportation facilities on approximately 70 miles of I-12 extending from the LA 447 (Walker Road South) Interchange eastward to the I-10/I-59 Interchange at Slidell. Transportation improvements are required on I-12 to address the following needs.

- Capacity and Level of Service (LOS)
- Existing and projected safety issues
- Connectivity
- Emergency evacuation

All of the needs identified are not present throughout the entire corridor. The needs of one segment are not necessarily the needs of another segment, and all needs are not present in every segment of the corridor.

### **CAPACITY AND LOS**

Freeway segment operations can be qualified by LOS which ranges from LOS A, at which free-flow operations and free-flow speeds prevail on the freeway, to LOS F, at which breakdown in vehicular flow occurs. Existing freeway conditions on I-12 range from LOS A to LOS D, at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. LOS D conditions occur during peak hours between Airport Road/Northshore Boulevard (Exit 80) and U.S. Highway 11 (Exit 83). Existing conditions during peak hours at all other freeway sections are LOS A, LOS B, or LOS C.

The 2010 Average Daily Traffic (ADT) volumes along the I-12 study corridor range from 38,800 vehicles per day (east of LA 3158 Airport Road, Exit 42) to 70,800 vehicles per day (east of U.S. Highway 190, Exit 63). The heaviest traffic volumes occur in St. Tammany Parish between Pinnacle Parkway (Exit 60) and I-10/I-59 at Slidell. According to the Statewide Transportation Plan, truck traffic in Louisiana is projected to increase by 105 percent by the end of 2030. That percentage does not directly apply to any particular highway, but some increase in truck traffic on I-12 is consequential to a statewide increase. Through truck traffic on the I-12 portion of the I-10 Freight Corridor is projected to increase considerably by 2032.

The results of the Existing Conditions Analysis identify LOS during AM and PM Peak Hours in each direction. Peak Hour traffic conditions were forecast for the 2032 No

Build Conditions and for the 2032 Build Widening Alternative. Based on the Roadway Capacity Analysis, the 2032 Build Widening Alternative is recommended to improve safety and to address increased traffic demands for the entire study area. The need for improvements in capacity is demonstrated by the LOS for 2032 No Build. Two portions of mainline I-12 are recommended for prioritized consideration of adding capacity.

1. LA 21 (Madisonville/Covington Exit 59) – Bayou Vincent Bridge
2. LA 1249 (Pumpkin Center/Baptist Exit 35) – I 55 (Exit 38)

## **INITIAL CONCEPT**

The concept of inside widening with a typical 64-foot median consists of filling the median ditch, completely paving the median, and separating traffic with a cast-in-place concrete barrier. Inside widening at the 200-foot medians consists of extending the roadway and shoulder into the median and utilizing the remaining natural vegetation to separate the traffic. The existing outside shoulders will remain in place wherever inside widening is recommended, and a portion of the existing roadway will be incorporated into the outside shoulder in order to achieve the 12-foot width. This concept is a specific advantage at I-12 underpasses with concrete barriers at the edge of the existing 10-foot shoulder.

The concept of outside widening consists of extending the roadway, shoulder, and foreslope toward the R/W line. For the purpose of this report, the length of roadway necessary for a horizontal transition from 3 lanes with inside widening to 3 lanes with outside widening (and vice versa) is estimated at one mile.

The cross slope at mainline I-12 bridges is either 1.5 percent or 2.0 percent. Unless it is determined from accident history that the cross slope is the cause of safety issues, the cross slope of widened portions will be designed to match the existing cross slope. If the existing cross slope is a safety issue, then the bridge deck will either be replaced or rehabilitated to provide 2.5 percent cross slope. At the time of this report, safety issues related to 1.5 percent or 2.0 percent cross slopes on I-12 bridges were not identified. The concept of widening bridges in this study includes matching the existing cross slope.

Bridges over I-12 are significant disadvantages to each widening concept. A bridge over I-12 in a location of outside widening must be replaced with longer spans to accommodate additional lanes and wider shoulders. Insufficient vertical clearance over the existing roadway is an issue at most of the bridges over I-12. The original vertical clearance was reduced as a consequence of each reconstruction and overlay project, and the minimum vertical clearance at many I-12 underpasses is already

insufficient according to current DOTD design standards for interstate highways, i.e. 16'-6" (minimum).

The typical finished section for inside widening will reduce vertical clearance at the edge of the new inside travel lane by 9 inches. Based on actual measurements made during this study, the minimum vertical clearance after inside widening will typically be less than 15'-6", with a few exceptions between 16' and 15'-9". Alternatives for providing sufficient vertical clearance in a location of inside widening consist of lowering the I-12 roadway or replacing the bridge over I-12. Lowering the I-12 roadway is the categorical alternative for addressing vertical clearance issues. A length of roadway equal to the width of the bridge plus 500 LF on either side of the underpass will be reconstructed as necessary to provide 16'-6" minimum clearance over I-12 in every location. Lowering the I-12 roadway at underpasses will create some drainage issues that must be addressed in the design.

Existing sag vertical curves will remain where only widening the roadway is recommended. Increasing the length of sag curves may be considered during detailed design. The existing horizontal curves were compared to current design standards in the *DOTD Roadway Design Manual* (2009) and *A Policy on Geometric Design of Highways and Streets* (2004) published by AASHTO. Both references recommend minimum length  $L=1000-(100 \Delta)$  for curves with small deflection angles (less than  $5^\circ$ ) in order to avoid an undesirable appearance of a kink in the roadway. Only one horizontal curve ( $\Delta=01^\circ24'42"$ ,  $L=564.47'$ ) located at the U.S. Highway 11 interchange fails to meet that criterion. At the time of this study, construction of inside widening at that location was in progress. Both references recommend minimum length  $L=15V$  for rural roadways. ( $L=1050'$  Minimum) Two curves with deflection angles greater than  $5^\circ$  fail to meet that criterion. ( $\Delta=05^\circ08'34"$ ,  $L=1028.57'$ ) For aesthetic reasons, AASHTO recommends a desirable minimum length  $L=30V$  for high-speed, controlled-access facilities that use flat curvature. ( $L=2100'$  Minimum) In addition to the two curves previously described, one curve with a deflection angle greater than  $5^\circ$  fails to meet that criterion. ( $\Delta=08^\circ32'31"$ ,  $L=1708.38'$ )

### **Livingston Parish**

During this study, DOTD designed inside widening for approximately 3 miles of I-12 between the interchanges at Juban Road and Walker Road. Widening evaluated in this study begins on the western side of the Walker Road Interchange, at the transition from 6 lanes to 4 lanes. Inside widening of 7 mainline I-12 bridges at "zero cost" to the widening estimate is an overwhelming cost advantage unique to Livingston Parish. In the following table, "NO" indicates zero cost to the respective widening estimate.

MAINLINE I-12 BRIDGE	INSIDE	OUTSIDE
Widen Dumplin Creek Bridge	NO	YES
Widen Middle Colyell Creek Bridge	NO	YES
Widen Hornsby Creek Bridge	NO	YES
Widen Colyell Creek Bridge	NO	YES
Widen Hog Branch Bridge	YES	YES
Widen Tickfaw River Bridge	NO	YES
Widen Big Branch Bridge	NO	YES
Widen Blood River Bridge	NO	YES
Widen Natalbany River Bridge	YES	YES

The bridges at Hog Branch and Tickfaw River are only 28 feet wide, consisting of two 12-foot lanes with 2-foot shoulders. With either inside and outside widening, these two bridges must be widened on both sides in order to provide three 12-foot lanes with 12-foot shoulders. The 2008 I-12 Safety Analysis specifically recommends improvements to the Tickfaw River Bridge in order to alleviate bridge rail crashes.

Reduction of minimum vertical clearance is an issue at all 6 bridges over I-12 in Livingston Parish.

- Walker – Port Vincent Interchange (16'-2" – 9" = 15'-5")
- Satsuma – Colyell Interchange (16'-½" – 9" = 15'-3½")
- Frost – Livingston Interchange (16'-1½" – 9" = 15'-4½")
- Red Oak Road (16'-9" – 9" = 16'-0")
- Holden Interchange (16'-2" – 9" = 15'-5")
- Albany – Springfield Interchange (16'-3" – 9" = 15'-6")

Widening the Walker Road bridge over I-12 from 2 lanes to 4 lanes is a high priority desire for residents of Livingston Parish, and that concept is evaluated in a separate Stage 0 Study. It is likely that the issue of minimum vertical clearance over I-12 will be addressed with future modifications to the Walker Road Interchange. However, if the timing of potential modifications to the Walker Road Interchange is not compatible with widening I-12, then the issue of vertical clearance at the Walker Road bridge should be addressed with roadway reconstruction as part of the widening project.

As previously described in this report, the foreslopes in Livingston Parish are relatively steep (4:1 max.) The edge of clearing in Livingston Parish is inside the control-of-access fence. The 2008 I-12 Safety Assessment indicates that a number of crashes between the Satsuma-Colyell and Frost-Livingston Interchanges resulted in vehicles running off the road and striking a tree. Safety performance at that



segment was rated LOSS-III. The Safety Assessment specifically recommends slope flattening on both sides of I-12 between the Frost-Livingston and Holden Interchanges, even though that segment was rated LOSS-II. Inside widening can be accomplished without disturbing the outside foreslope. Continuous inside widening along with outside slope flattening and additional clearing within the right-of-way at selected locations is recommended in Livingston Parish. Approval of a design exception will be necessary for outside foreslopes steeper than 6:1 that are not selected for flattening.

Inside widening is recommended for the portion of I-12 between the end of inside widening at the western side of the Walker Road Interchange and the Livingston-Tangipahoa Parish Line at the Natalbany River.

### **Tangipahoa Parish**

Natalbany River to I-55 - The Natalbany River is the Livingston-Tangipahoa Parish line at I-12, and the distance between the eastern end of the Natalbany River Bridge and I-55 is 4 miles.

- |  |           |
|--|-----------|
| • Natalbany River to LA 1249 Interchange | 0.9 mile  |
| • LA 1249 to Happywoods Road Underpass   | 2.5 miles |
| • Happywoods Road to I-55 Interchange    | 0.6 mile  |

Pavement in this area is unique to the 70-mile study area. Approximately 3.5 miles of pavement between the Natalbany River Bridge and I-55 has Portland cement concrete roadway and shoulders, with a ¾-inch Novachip overlay on the roadway. Weigh stations are located between Pumpkin Center Road and Happywoods Road, and weigh-in-motion scales are located approximately 0.6 mile in advance of each weigh station. The scale houses are located approximately 50 feet from the existing shoulder. A CCTV camera pole (south side), a storage building (north side), sewage lift stations (both sides), and high mast lights (both sides) are located closer to the shoulder. Outside widening in that area will reduce horizontal clearance by 14 feet. Acceleration lanes and deceleration lanes extend approximately ¼ mile beyond the gores at each weigh station. A portion of each deceleration lane is used for a queue of trucks waiting for access to the static scales, and occasionally the queue extends to the end of the deceleration lane. The disadvantages of outside widening in this area include the costs of replacing weigh-in-motion scales, replacing acceleration lanes, replacing deceleration lanes, replacing 10-foot concrete shoulders, and reduced horizontal clearance at the scale houses. The outside portion of the right-of-way between Pumpkin Center Road and Happywoods Road should be reserved for future improvements related to the weigh stations.

The PrePass system allows participating transponder-equipped commercial vehicles to bypass the weigh station and continue traveling at highway speed. The PrePass system includes weigh-in-motion scales used to screen vehicles that are close to the weight limit, and divert those vehicles to the static scale for a more accurate measurement. Trucks must travel in the outside lane to cross the weigh-in-motion scales. A loop detector in the inside lane adjacent to the scale is designed to indicate large vehicles that bypass the scale. Other components of the PrePass system include CCTV cameras and instrumentation to detect vehicles over a designated height. Inside widening is the only alternative to widen this section of I-12 and preserve the existing weigh-in-motion scales. In addition, the existing centerline of the outside lane in each direction must be maintained.

In order to maintain the existing centerline and provide a 12-foot outside shoulder in this area, the 10-foot concrete shoulder can be extended by installing reinforcement in the edge of the pavement and joining 2 feet of concrete pavement adjacent to the existing shoulder. An alternative is allowing 10-foot outside shoulders to remain in this area. A design exception is recommended for 10-foot outside shoulders on approximately 3.5 miles of concrete pavement between the eastern ends of the Natalbany River bridges and I-55. The western ramps at the I-55 Interchange are convenient locations to transition back to 12-foot shoulders.

Existing minimum vertical clearance at Pumpkin Center Road (15'-7") and Happywoods Road (15'-7½") is already insufficient without further reduction as a result of inside widening. Reconstruction of the concrete roadway at the Pumpkin Center Road underpass and the Happywoods Road underpass will be necessary. Inside widening with a design exception for 10-foot shoulders is recommended for the portion of I-12 between the Natalbany River and I-55.

Interchange at I-12 and I-55 - The interchange at I-12 and I-55 is a diamond-cloverleaf configuration between Happywoods Road and South Morrison Boulevard. Weaving occurs at each highway in each direction. Weaving is generally undesirable, but the combination of weaving and high traffic peak hour volumes is a potential safety issue at this interchange. The conceptual layout eliminates loop ramps in the NW and SE quadrants, and consequently eliminates all weaving at the interchange. The proximity of the South Morrison Boulevard Bridge over I-12 and the Club Deluxe Road Bridge over I-55 constrains the length of acceleration lanes and deceleration lanes at the ramp between I-55 NBL and I-12 EBL. The South Morrison Boulevard Bridge also constrains the length of the deceleration lane from I-12 WBL to I-55 NBL. An alternative to replacing that 4-lane bridge includes construction of retaining walls at the abutments and removing the sloped embankment to accommodate acceleration and deceleration lanes on the outside of the existing bents. Consequently, acceleration and deceleration lanes designed

according to DOTD Standard Plan SC-01 can be constructed beneath the existing bridge. The insufficient minimum vertical clearance at South Morrison Boulevard (16'-1") can be increased by reconstructing a portion of I-12. The Club Deluxe Road Bridge consists of 2 lanes without shoulders, and replacement of that 2-lane bridge over I-55 in order to accommodate acceleration and deceleration lanes is recommended.

The advantages of inside widening at the I-55 Interchange include maintaining the existing minimum vertical clearance over I-55, reducing the spans of new ramps constructed over I-12, preserving the ramps from I-55 to I-12 EBL and I-12 WBL, and enabling an alternative to replacement of the South Morrison Road Bridge. Even if the I-55 Interchange modifications are not constructed simultaneously with widening I-12, inside widening is recommended at the I-55 Interchange.

South Morrison Boulevard to Range Road - The distance between South Morrison Boulevard and Range Road is approximately 2.7 miles.

- South Morrison Blvd. to U.S. 51 BR 2.2 miles
- U.S. 51 BR to Canadian National Railroad 0.2 mile
- Canadian National Railroad to Range Road 0.3 mile

The interchange at U.S. 51 Business Route has two separate pairs of bridges: U.S. 51 and Canadian National (CN) Railroad. The minimum vertical clearance over U.S. 51 Business Route at the I-12 overpass is 16'-1½" which does not meet the current DOTD Minimum Design Guidelines for Arterial Roads (16'-6"). In order to raise the U.S. 51 BR overpass, the adjacent CN Railroad overpass must be raised concurrently and the entire interchange will have to be reconstructed. A design exception for the existing vertical clearance at U.S. 51 BR is recommended. The bridges can be widened to the inside without reducing the current vertical clearance.

The adjacent CN Railroad bridges have variable width because of the ramps on the eastern side of U.S. 51 BR. Widening the I-12 bridges to the outside (using same depth girders) will reduce minimum vertical clearance over the railroad to less than 23 feet, which is insufficient according to CN Railroad standards. The I-12 bridges can be widened to the inside without reducing the current vertical clearance. Existing minimum vertical clearance at the Range Road underpass (16'-2½") is already insufficient without further reduction as a result of inside widening. Reconstruction of the roadway at the Range Road underpass will be necessary.

The 2008 I-12 Safety Assessment indicates that the segment between U.S. 51 BR and Airport Road is rated LOSS-III. Crashes in that segment under dark-unlighted conditions were identified, though not directly attributed to lack of lighting.

However, 4 high mast lighting fixtures were subsequently installed in the I-12 median in the vicinity of U.S. 51 BR. Installation of 2 high mast lighting fixtures and 13 pedestal mounted light fixtures at the LA 3158 Airport Road Interchange was completed in 2011. The lighting conditions in the segment between U.S. 51 BR and Airport Road identified in the 2008 I-12 Safety Assessment have been improved.

Based on the recommended design exception for minimum vertical clearance at U.S. 51 BR, the cost advantages of inside widening between South Morrison Boulevard and Range Road include widening I-12 without modifying the U.S. 51 BR Interchange, widening 2 pairs of bridges without replacement, and reconstruction of roadway at the Range Road underpass without replacing the bridge. Inside widening is recommended for the portion of I-12 between South Morrison Boulevard and Range Road.

Range Road to LA 445 (Robert) – The distance between Range Road and LA 445 at the Robert Interchange is approximately 6.8 miles.

- Range Road Underpass to LA 3158 Interchange 2.0 miles
- LA 3158 Interchange to Sontheimer Road Underpass 2.5 miles
- Sontheimer Road Underpass to LA 445 Interchange 2.3 miles

The minimum vertical clearance over LA 3158 Airport Road at the I-12 overpass is 15'-2" which does not meet the current DOTD Minimum Design Guidelines for Arterial Roads (16'-6"). Widening the I-12 bridges to the outside (using same depth girders) will reduce minimum vertical clearance to less than 15 feet, which is not recommended. The I-12 bridges can be widened to the inside without reducing the current vertical clearance over Airport Road. A design exception for the existing vertical clearance at Airport Road is recommended.

Existing minimum vertical clearance at the Sontheimer Road underpass (15'-11¾") is already insufficient without further reduction as a result of inside widening. Reconstruction of the roadway at the Sontheimer Road underpass will be necessary. A disadvantage of outside widening at the Sontheimer Road underpass is replacement of the Sontheimer Road bridge with extended length. Approximately one mile of Thibodeaux Road serves as a frontage road on the southern side of I-12 in the vicinity of Sontheimer Road. Another disadvantage of outside widening in that area is reduction of the unpaved area between the roadways, which will affect the grading of the drainage ditch and the location of the fence.

The configuration of Robert Interchange is unique in comparison to other interchanges within the limits of this study. It consists of a half-diamond with 2 cloverleaves, all on the eastern side of LA 445. The minimum vertical clearance

over LA 445 at the I-12 overpass is 16'-2" which does not meet the current DOTD Minimum Design Guidelines for Arterial Roads (16'-6"). Widening the I-12 bridges to the outside (using same depth girders) will reduce minimum vertical clearance to 15'-5", which is not recommended. The I-12 bridges can be widened to the inside without reducing the current vertical clearance over LA 445. A design exception for the existing vertical clearance at LA 445 is recommended.

I-12 can be widened to the inside without replacing the LA 445 bridge over I-12 or modifying the interchange and without replacing the Sontheimer Road bridge. Inside widening is recommended for the portion of I-12 between Range Road and the LA 445 Robert Interchange.

LA 445 (Robert) to LA 1077 (Madisonville-Goodbee) – The distance between the interchanges at LA 445 and LA 21 is approximately 10 miles, with more than 5 miles in Tangipahoa Parish and less than 5 miles in St. Tammany Parish. That section of I-12 is unique because it includes a wide median over a length of approximately 4.3 miles, and because it includes 10 miles of roadway with only 2 underpasses: Firetower Road and LA 1085. Most of the adjacent property between LA 445 and LA 1085 is wooded and unimproved. The feasibility of both inside and outside widening was evaluated within that section.

- LA 445 Interchange to Firetower Road Underpass 3.3 miles
- Firetower Road Underpass to LA 1085 Underpass 5.2 miles
- LA 1085 Underpass to LA 1077 Interchange 1.5 miles

A benefit of outside widening is preservation of most of the natural vegetation in the wide median. The natural vegetation has aesthetic value, and serves as a barrier to prevent vehicles from crossing the median. The existing roadway elevation in that area is slightly above the surrounding terrain, so there are no relatively high embankments or back slopes. Outside widening can be accomplished within the existing right-of-way. A transition from inside widening to outside widening may begin at the ramps on the eastern side of the LA 445 Interchange, with outside lanes terminated as the eastbound acceleration lane and the westbound deceleration lane. The 4-foot inside shoulders will be widened to 12-foot shoulders, but alteration of the appearance of the natural area as a result of additional clearing will be relatively insignificant. Extension of drainage structures and replacement of the Firetower Road bridge (2-lane perpendicular crossing) with longer spans to accommodate additional outside lanes will be necessary.

Inside widening at the 64-foot median is typical, with a concrete median barrier. Where the existing median transitions from 64 feet to 200 feet, the concrete median barrier can be eliminated, and a grass median will continue the transition to a 148-foot median where a portion of the natural vegetation will remain undisturbed. A similar transition in reverse order will occur at the eastern end of the wide median and the typical 64-foot median with a concrete barrier can continue to the LA 1077 Interchange. Even though there are wetland areas within the median and outside the median, the primary cost advantage of inside widening in this area is avoiding disturbance of more wetland areas outside the median. Inside widening will disturb approximately 12.8 acres of wetlands in comparison to disturbing almost 5 times more wetland area (approximately 62 acres) with outside widening.

Existing minimum vertical clearance at the Firetower Road underpass (16'-1½") is already insufficient without further reduction as a result of inside widening. Reconstruction of the I-12 roadway at the underpass will be necessary to provide sufficient clearance.

LA 1085 is a 2-lane bridge crossing over I-12 at a skew (near 45°), which requires longer spans than a perpendicular crossing. Future construction of an interchange at LA 1085 is a possibility to be considered with widening I-12 in that area. Outside widening will require concurrent replacement of the 2-lane bridge with a longer bridge. Existing minimum vertical clearance at the LA 1085 underpass (16'-7") is sufficient, but will be reduced to approximately 15'-10" as a result of inside widening. Reconstruction of the I-12 roadway at the underpass will be necessary to provide sufficient clearance with inside widening.

Existing minimum vertical clearance at the LA 1077 underpass (15'-11¼") is already insufficient without further reduction as a result of inside widening. Observations of this bridge in June 2011 revealed some structural deficiencies including a sagging deck at one location, transverse cracks in the bottom of the deck at several locations, and some missing haunch over one of the steel girders. Replacement of the LA 1077 bridge over I-12 is recommended regardless of the insufficient clearance. Reconstruction of the I-12 roadway at the underpass will be necessary to provide sufficient vertical clearance.

Consideration of outside widening in this area should be limited to the 8.5-mile section between the LA 445 Interchange and the LA 1085 underpass in order to avoid bridge replacement at the LA 1085 underpass. However, unless there is a preference for outside widening in this area, inside widening is recommended from the LA 1085 underpass through the LA 1077 Interchange. Inside widening includes



roadway reconstruction to provide sufficient vertical clearance at Firetower Road and at LA 1085.

### **St. Tammany Parish**

LA 1077 (Madisonville-Goodbee) to U.S. 190 (Mandeville-Covington) – Recommendations for the portion of I-12 between the Tangipahoa-St. Tammany Parish line and the LA 1077 Interchange are described in previous paragraphs. Inside widening at the LA 1077 Interchange is recommended. The distance between interchanges at LA 1077 and U.S. 190 is approximately 5.8 miles.

- LA 1077 Interchange to LA 21 Interchange 2.0 miles
- LA 21 Interchange to Pinnacle Parkway Interchange 0.7 mile
- Pinnacle Parkway Interchange to U.S. 190 Interchange 3.1 miles

The existing peak hour traffic volumes in both directions between LA 21 and I-59 are noticeably higher than peak hour traffic volumes on I-12 in Livingston Parish, Tangipahoa Parish, and the portion of St. Tammany Parish west of LA 21.

For the section of I-12 between the interchanges at LA 21 and U.S. 190, the 2008 I-12 Safety Assessment states,

“Frequency of crashes on this segment is slightly above average (low range of LOSS-III) and severity below average (LOSS-II)...These problems are congestion related and can be addressed by widening...”

That statement appears to coincide with the higher peak hour traffic volumes on I-12 westward of LA 21. Two large, relatively new shopping centers are located at I-12 between LA 21 and the Tchefuncte River: Nord du Lac on the northern side and River Chase on the southern side. Access from I-12 to both shopping centers is available from either the LA 21 Interchange or the Pinnacle Parkway Interchange.

During this study, construction of improvements at the LA 21 Interchange was completed. Improvements include additional turning lanes at LA 21 and widening the entrance and exit ramps at I-12. The I-12 bridges over LA 21 were not modified as part of that project. Outside widening will reduce the current vertical clearance over LA 21 to less than 16 feet. The cost disadvantages of outside widening include raising the I-12 overpass and modifying the ramps. The I-12 bridges can be widened to the inside without reducing the current vertical clearance.

The Pinnacle Parkway-Brewster Road Interchange, completed in 2010, has a unique configuration utilizing the western end of the Tchefuncte River Bridge as an underpass for Pinnacle Parkway. The scenic overlook at the Tchefuncte River has been abandoned and is no longer open to public access. The western ends of the Tchefuncte River bridges have a variable width to accommodate the acceleration

and deceleration lanes at the interchange. A cost disadvantage of outside widening at the Tchefuncte River bridges would be the necessity of widening to 4 lanes at the western ends, along with a more complex, variable width structure. (A disadvantage of outside widening at any I-12 mainline bridge is the necessity to modify both sides of each bridge, in comparison to modifying only one side for inside widening.) There is a similar situation at the western ends of the bridges over U.S. 190, with a similar cost disadvantage associated with outside widening. Bridges over U.S. 190 can be widened to the inside without reducing the minimum vertical clearance at either the highway or the ramps. Inside widening is recommended for the portion of I-12 from the LA 1077 Interchange through the U.S. 190 Interchange.

U.S. 190 (Mandeville-Covington) to LA 1088 – The distance between interchanges at U.S. 190 and LA 1088 is approximately 5.2 miles.

- U.S. 190 Interchange to LA 59 Interchange 2.6 miles
- LA 59 Interchange to LA 1088 Interchange 2.6 miles

The section of I-12 between U.S. 190 and LA 59 includes approximately 1.4 miles of wide median. The width is continuously variable between 64 feet and approximately 265 feet (scaled). The portion with natural vegetation is approximately 3/4 mile long. Inside widening will reduce the length of median with natural vegetation to approximately 1/2 mile, and will potentially impact approximately one-half acre of wetlands. Outside widening between U.S. 190 and LA 59 will potentially impact approximately 5 acres of wetlands.

The minimum vertical clearances below I-12 at U.S. 190 and LA 59 do not meet the current DOTD Minimum Design Guidelines for Arterial Roads (16'-6"). Minimum clearances are 15'-8" at U.S. 190 and 15'-6½" at LA 59. In order to raise these overpasses as much as one foot, each interchange will have to be reconstructed. Design exceptions for the vertical clearances at U.S. 190 and LA 59 are recommended. The bridges can be widened to the inside without reducing the current vertical clearance.

During this study, construction of a new interchange at LA 1088 was completed. Prior to construction of the interchange, the existing LA 1088 roadway over I-12 consisted of a 2-lane bridge crossing at approximately 60 degrees. Construction of the new interchange included a separate, parallel 2-lane bridge to provide a total of 4 lanes. The new bridge has 16.5 feet minimum vertical clearance over I-12, but inside widening will reduce the minimum vertical clearance to less than 16 feet. Minimum vertical clearance at the old bridge is 16'-0½". Reconstruction of the roadway will be necessary to provide minimum vertical clearance over I-12.

The primary disadvantages to outside widening between U.S. 190 and LA 1088 are related to the cost of extending drainage structures, replacing bridges, reconstructing interchanges, and wetland mitigation. Depending on preference, a potential disadvantage of inside widening is a reduction of the amount of natural vegetation in the wide median. Inside widening is recommended from the U.S. 190 Interchange through the LA 1088 Interchange.

LA 1088 to LA 434 (Lacombe-St. Tammany) – The distance between interchanges at LA 1088 and LA 434 is approximately 5.7 miles.

- LA 1088 Interchange to Fish Hatchery Road Underpass 4.5 miles
- Fish Hatchery Road to LA 434 Interchange (Underpass) 1.2 miles

There are two drainage canals along the northern side of I-12 between LA 1088 and Fish Hatchery Road. From the vicinity of Log Cabin Road the canals drain eastward and westward with most of the length in drainage servitudes immediately adjacent to the I-12 right-of-way line. Outside widening will reduce the width of the natural buffer between the roadway and the canals. The bridges over I-12 at Fish Hatchery Road and the LA 434 Interchange must be completely replaced in order to extend the length and accommodate outside widening.

Existing minimum vertical clearance over I-12 at the Fish Hatchery Road underpass (16'-2") and the LA 434 underpass (15'-10") is already insufficient without further reduction as a result of inside widening. Inside widening will reduce the minimum vertical clearance at Fish Hatchery Road and LA 434 to approximately 15'-5" and 15'-1", respectively. If I-12 is widened to the inside, the minimum vertical clearance can be increased by reconstructing and lowering the I-12 roadway at each underpass. Inside widening is recommended between LA 1088 and LA 434.

LA 434 (Lacombe-St. Tammany) to North Shore Boulevard - The distance between interchanges at LA 434 and Airport Drive/North Shore Boulevard is approximately 6.3 miles.

- LA 434 to Dixie Ranch Road Underpass 4.3 miles
- Dixie Ranch Road to North Shore Boulevard Interchange 2.0 miles

Disadvantages of outside widening between LA 434 and North Shore Boulevard are extension of drainage structures and replacement of the Dixie Ranch Road Bridge. If approximately one mile of roadway is utilized for transition from inside to outside widening at either end, the remaining length available for full outside widening between LA 434 and Dixie Ranch Road is approximately 2.3 miles. Inside widening will reduce the minimum vertical clearance over I-12 at Dixie Ranch Road to less

than 16 feet, which can be increased by reconstructing and lowering the roadway at the underpass.

The Airport Drive/North Shore Boulevard Interchange includes a 3-lane bridge (2 southbound, 1 northbound) over I-12. Inside widening will reduce the minimum vertical clearance over I-12 to less than 16 feet. During this study, a separate Stage 0 Study of the Airport Drive/North Shore Boulevard Interchange addressed the feasibility of reconstructing the existing diamond interchange with a single point urban interchange. Depending on the timing of future design projects to either widen I-12 or reconstruct the interchange, minimum vertical clearance over I-12 should be addressed in the project that proceeds first. Because of potential replacement of the Airport Drive/North Shore Boulevard bridge over I-12, the cost of raising the bridge might be eliminated by the time that widening this portion of I-12 commences. However, if the timing of potential modifications to the Airport Drive/North Shore Boulevard Interchange is not compatible with widening I-12, then the issue of vertical clearance should be addressed with roadway reconstruction as part of the widening project. Inside widening is recommended between LA 434 and Airport Drive/North Shore Boulevard.

Airport Drive/North Shore Boulevard to I-59 – The distance between the interchange at Airport Drive/North Shore Boulevard and the I-12 bridges over I-59 southbound to I-10 is approximately 5 miles.

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| • North Shore Boulevard to Donya Street        | 2.4 miles |
| • Donya Street to U.S. 11 Interchange          | 0.8 mile  |
| • U.S. 11 Interchange to Robert Road Underpass | 1.4 miles |
| • Robert Road Underpass to I-59                | 0.4 mile  |

During this study, construction of inside widening between the Donya Street overpasses and I-59 was in progress. That construction project includes widening exit ramps from I-12 in both directions to Airport Drive/North Shore Boulevard. Discussions with DOTD revealed a desire to proceed with detailed design and construction of inside widening between Donya Street and Airport Drive/North Shore Boulevard at that time, but also a lack of funding to do so. Inside widening is recommended between Airport Drive/North Shore Boulevard and I-59. The estimated cost is only for the portion of I-12 between Airport Drive/North Shore Boulevard and the Donya Street overpass, including widening the I-12 bridges over Donya Street and the abandoned railroad.

## NEW AND MODIFIED INTERCHANGES

Potential benefits of two new interchanges were evaluated as part of the traffic study. The St. Tammany 2011-2040 Metropolitan Transportation Plan (MTP) prepared by the New Orleans Regional Planning Commission identifies new interchanges and other improvements at LA 1085 and Dixie Ranch Road.

EDSM I.4.3.2 New Interchange Requests specifies 5 minimum criteria.

- Minimum spacing
- Must connect to public arterial or collector routes
- Must provide all 8 traffic movements
- Must be part of a metropolitan or statewide transportation plan
- Must be designed in accordance with DOTD directions and AASHTO standards

The minimum spacing criteria between interchanges are

- 1 Mile            Urban Areas
- 2 Miles           One in Urban Area and One in Rural Area
- 3 Miles           Rural Areas

LA 1085 crosses over I-12 with a 2-lane bridge. The MTP identifies a future interchange and a service road along the southern side of I-12 between LA 1085 and Seymour Myers Road at the LA 1077 Interchange. Most of the existing land development in the vicinity of LA 1085 and I-12 is on the northern side of I-12.

The length of I-12 between LA 1085 and LA 1077 is 1.38 miles. According to the DOTD classification of I-12 in St. Tammany, LA 1085 is located in a Rural Area and LA 1077 is located in an Urban Area.

- LM 2.90        LA 1085 (Rural)
- LM 3.88        Rural/Urban Separation
- LM 4.28        LA 1077 (Urban)

Consequently, a new interchange at LA 1085 will not meet the minimum spacing requirement of EDSM I.4.3.2. A new interchange at that location can, however, meet the other minimum criteria. If DOTD allows an exception to the minimum spacing requirement between interchanges, then an Interchange Justification Study should be prepared for LA 1085.

Access to the section of Dixie Ranch Road at I-12 is restricted to members of Dixie Ranch Wildlife Management Ltd. Locked gates at Richards Road on the northern side of I-12 and Pappy Road on the southern side of I-12 preclude public access. The portion of Dixie Ranch Road visible from the gate at Richards Road has a gravel surface. Future improvements identified in the MTP are an interchange, a service road between LA 434 and Airport Road, and an extension of Dixie Ranch Road along the northern side of I-12 to Airport Road. The length of I-12 between Dixie Ranch Road and Airport Road/Northshore Boulevard is 2.03 miles. According to the DOTD

classification of I-12 in St. Tammany, both interchanges are located in an Urban Area.

- LM 25.53 Dixie Ranch Road (Urban)
- LM 27.56 Airport Road/Northshore Blvd. (Urban)

Therefore a new interchange at Dixie Ranch Road will meet the minimum spacing requirement of EDSM I.4.3.2. However Dixie Ranch Road is not a public arterial or collector route. Without public access and the additional network connectivity included in the MTP, a new interchange at Dixie Ranch Road will not provide additional benefits. An Interchange Justification Study will be necessary to demonstrate the benefits of a new interchange at Dixie Ranch Road.

The proposed modifications to the I-55 Interchange are recommended for prioritized consideration in a Stage 1 study. The proposed modifications are not designed to improve the operating conditions, but are designed to improve safety by eliminating weaving maneuvers at the interchange. Preparation of an Interchange Modification Report will be necessary.

New interchanges and major modifications to existing interchanges require study and evaluation. An Interchange Justification Study and an Interchange Modification Report should address 3 different documents.

- EDSM No. 1.4.3.2 – New Interchange Requests
- DOTD Policy for Evaluating New Access to Controlled Access Facilities
- FHWA Policy on Changes in Access to the Interstate System

These documents can be found on the DOTD website.

- At DOTD HOME select "Doing Business with DOTD"
- Select DROPDOWN MENU ITEM "Acquiring Access to Highways"
- At Traffic Engineering select TAB "Access Connections"

Acquisition of property for additional right-of-way will be necessary for the modifications to the I-12/I-55 Interchange and construction of any new interchanges. Most of the additional property required for the modifications at I-12/I-55 is undeveloped. However, one commercial relocation, partial acquisition of one residential tract and some private property with soccer fields would be necessary if all necessary property were acquired at this time. An estimated total acquisition of 68 acres from 10 different property owners has been identified. The estimated cost of additional property is \$2.3 Million.

Acquisition of the necessary property for construction of a new interchange at LA 1085 at this time would require relocation of a cell tower (Crown Castle International) and one residence (12190 Savannah Road). Most of the other necessary acquisitions are portions of larger, undeveloped tracts. A 17.56-acre



tract and a 44-acre tract are currently advertised for sale. Based on aerial photography, the property in the immediate vicinity of I-12 at Dixie Ranch Road appears to be undeveloped and leased for hunting at this time. If DOTD plans to construct the modifications to the I-12/I-55 Interchange or any new interchanges in the future, opportunities to acquire any of the necessary additional property at this time or in the near future should be carefully evaluated.

## **OFF-RAMP IMPROVEMENTS**

The Traffic Study identifies improvements at 11 different I-12 off-ramps to reduce queue overflows and to improve intersection capacity. Off-ramp improvements will be beneficial with and without I-12 widening, and may be implemented independently of I-12 widening. The recommended improvements are briefly summarized herein.

**I-12 EB at LA 447 (Walker-Port Vincent Exit 15)** - Provide additional ramp storage and/or improvements identified in a separate Stage 0 Study of the Walker Road Interchange.

**I-12 WB at LA 43 (Albany-Springfield Exit 32)** – Provide additional ramp storage and/or westbound dual left turn lanes.

**I-12 WB at U.S. 51 Business Route (Hammond-Ponchatoula Exit 40)** – Provide additional ramp storage and/or a westbound right turn bypass lane.

**I-12 EB at LA 3158 (Airport Road Exit 42)** – Provide additional ramp storage and/or modify the eastbound approach.

**I-12 WB at LA 3158 (Airport Road Exit 42)** – Provide additional westbound right turn lane storage.

**I-12 WB at LA 1077 (Madisonville-Goodbee Exit 57)** – Provide additional ramp storage and/or modify the westbound approach.

**I-12 WB at LA 21 (Madisonville-Covington Exit 59)** – Provide additional ramp storage and/or an additional westbound right turn lane and retime the signal.

**I-12 EB at LA 59 (Mandeville-Abita Springs Exit 65)** – Provide additional ramp storage and/or an additional eastbound right turn lane and retime the signal.

**I-12 EB at Airport Road-Northshore Blvd. Exit 80** – Provide additional ramp storage and/or improvements identified in two separate Stage 0 Studies of this interchange. (Widening this ramp was under construction at the time of this study.)

**I-12 WB at Airport Road-Northshore Blvd. Exit 80** – Provide additional ramp storage and/or improvements identified in two separate Stage 0 Studies of this interchange. (Extending this ramp was under construction at the time of this study.)

**I-12 WB at U.S. Highway 11 (Pearl River-Slidell Exit 83)** – Provide additional ramp storage and/or an additional eastbound left turn lane and retime the signal. Provide a westbound right turn lane to improve intersection capacity.

### **POTENTIAL ENVIRONMENTAL IMPACTS**

A preliminary environmental review was conducted to identify any “show-stopping” constraints that could influence the feasibility, timing, and cost of the proposed project. The preliminary environmental review involved researching and evaluating the environmental resources identified in the *Stage 0 Environmental Checklist*.

The Cultural Resources investigation established the Area of Potential Effect (APE) of widening I-12 as one mile on either side of the highway. Sources of historical research include the Louisiana Division of Archaeology, the Office of Historic Preservation, and standing structures records at the Louisiana State Library. The reconnaissance architectural surveys identified approximately 176 buildings older than 50 years within the APE. Two sites listed on the National Register of Historic Places (NHRP) are St. Margaret’s Church near Albany and the Carter House near Hammond. Five additional sites within the APE were identified as potentially eligible for listing on the NHRP. Results of the research were utilized to develop a probability model for encountering archaeological sites within the APE.

I-12 crosses over the Tammany Trace Rail Trail near the LA 59 Mandeville-Abita Springs Interchange (Exit 65). Impacts to that Section 4(f) resource will need to be addressed during Stage 1. Modifications to the I-55 Interchange may impact some soccer fields, but they are not considered to be Section 4(f) resources because the property is privately owned.

I-12 crosses 5 streams protected by the Louisiana Scenic Rivers Act and 11 streams that were identified by the U.S. Army Corps of Engineers as navigable.

Volkert conducted windshield surveys along every accessible roadway adjacent to I-12 and reviewed 2010 aerial photography in order to complete certain portions of the Stage 0 Environmental Checklist. Nearby cemeteries, churches, schools, public facilities, community wells, public recreation areas, landfills, manufacturing facilities, and dry cleaners were observed and noted during the surveys. Addresses of each nearby gasoline station were recorded. Inquiries were made in person at

each nearby hotel and motel for the number of rooms on the ground floor, to be used in noise modeling.

FHWA Traffic Noise Model (TNM) was utilized to determine if noise walls would be acoustically feasible. Locations with the highest number of noise receptors close to sections of I-12 with the highest traffic volumes were selected for analysis. The DOTD 2011 Noise Barrier Wall costs per square foot were utilized to estimate total costs. Based on the analysis, none of the potential noise walls would be considered feasible under the current DOTD Highway Traffic Noise Policy.

Potential wetlands along the project corridor were identified by reviewing the USFWS National Wetlands Inventory, hydric soils maps, 2010 aerial photography, and then conducting field surveys to identify approximate wetland limits. A determination of jurisdictional wetland limits and subsequent avoidance and minimization of wetland impacts will be necessary during future planning and design phases.

The environmental documentation did not reveal any sensitive community issues or “show stopping” constraints related to widening I-12 from 4 lanes to 6 lanes. However, the proximity of NRHP properties and widening bridges across scenic streams, navigable waters, and Tammany Trace will require more detailed evaluation during a Stage 1 Planning and Environmental Analysis.

### **PRELIMINARY SCOPE AND COST ESTIMATE**

Outside widening, based upon factors such as the projects already under construction in the corridor and the amount of service roads and business which lie just outside of the I-12 right-of-way, make the outside widening option significantly more expensive than inside widening. During a progress meeting on August 2, 2011 DOTD agreed that cost information and exhibits will be developed for inside widening, and general information will be presented to demonstrate that outside widening is more expensive.

The most significant overall disadvantage of outside widening is the consequence of replacing bridges at 21 underpasses. In addition to the direct cost of demolition of existing bridges and construction of bridges with longer spans, the additional costs include reconstructing roadway transitions to the ends of each bridge, temporary closure of roadways over I-12, temporary closure of I-12 to avoid setting girders over traffic, temporary detour roads and traffic control devices. Outside widening at each of the 18 interchanges will require some roadway reconstruction at entrance and exit ramps. Another overall disadvantage of outside widening is the cost of extending drainage structures, which includes demolition and replacement of headwalls.

Even though there are wetland areas within the median and outside the median, another significant cost disadvantage of outside widening is disturbance of more wetland areas outside the median. Inside widening will disturb approximately 16.9 acres of wetlands in comparison to disturbing approximately 360 acres of wetland area with outside widening.

Additional disadvantages of outside widening in specific areas are identified within the preceding discussion of Concept Development and Evaluation in this report. A long-term, cost-saving benefit of inside widening is elimination of maintenance of the median cable barriers in Tangipahoa and St. Tammany Parishes.

## **Roadway**

Roadway cost estimates are presented for inside widening only, as outside widening of the corridor was ruled out as discussed above. Estimated unit prices for most of the roadway items are based on an average of the 5 bids received for State Project No. 454-04-0080 Airport Road – I-10. That project, let for bids on October 13, 2010, includes widening I-12 between the Donya Street bridges and I-59 in progress during this study. Estimated costs for some items not included in that project were based on weighted unit prices available on the DOTD website.

The cost estimates include off-ramp improvements, which may be constructed independent of I-12 widening. The cost estimate includes engineering, real estate acquisition, wetlands mitigation, and construction of modifications to the I-55 interchange, but it does not include any costs associated with other proposed interchanges. The cost estimate includes overhead signs for all crossings with ADT greater than 20,000 and ground-mounted signs for all other crossings.

The roadway estimates also include a final wearing course of Open Graded Friction Course Asphaltic Concrete across the entire final roadway width. This was added to provide improved roadway safety during wet weather.

## **Bridges**

Inside widening of the bridges are estimated utilizing unit prices for most of the bridge items are based on weighted unit prices available on the DOTD website. The 7 pairs of bridges in Livingston Parish to be widened with separate funding are not included in the cost estimate. As a result of some discussions with DOTD, the cost estimate incorporates some categorical aspects of widening I-12 bridges.

- All 5 pairs of concrete slab span bridges (not including any of the slab span bridges in Livingston Parish) will be replaced.

- All bridge rails on both sides (even if widened to only one side) will be replaced with concrete barrier rails.
- On all bridges with prestressed concrete girders, the outside girder (on the side to be widened) will be replaced with an intermediate girder.

All bridges to be replaced are estimated with additional width to accommodate temporary barriers for maintenance of traffic during construction. This additional width is unnecessary for widening. All outside battered piles (on the side to be widened) are assumed to be cut off, and the size of the new adjacent pile is increased to accommodate loads resulting from the increased pile spacing.

### **Wetland Mitigation**

The estimated cost of wetland mitigation is based on compensatory mitigation through the purchase of credits in mitigation banks equivalent to \$50,000 per acre of disturbed wetlands.

Wetlands potentially impacted by inside widening are limited to stream crossings and the two areas with wide medians. Wetlands potentially impacted by I-55 Interchange improvements are identical for inside and outside widening.

12.8 acres	Wide Median between Firetower Road and LA 1085
0.5 acres	Wide Median between U.S. 190 (Exit 63) and LA 59 (Exit 65)
3.6 acres	Combined Total Stream Crossings
18 acres	I-55 Interchange Improvements

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34.9 acres    Total Wetlands, Inside Widening and I-55 Interchange Improvements

Outside widening could potentially impact a total of 360 acres of wetlands consisting of 140 acres along the northern side of I-12 and 220 acres along the southern side of I-12. These 360 acres do not include 18 acres at the I-55 Interchange. In comparison to the estimated cost of wetland mitigation for inside widening, the additional cost for outside widening is more than \$17.1 million.

### **Existing Utilities**

Research of existing subsurface utilities within the potential limits of impact was conducted in accordance with the ASCE "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data." All utilities depicted on drawings for this study are based on Quality Level D data. Locations of various interstate petroleum product pipelines are marked, and clearings provide visible evidence of those pipeline alignments in most locations. Except for marked petroleum product pipelines, most of the subsurface utility locations shown on the drawings are based on descriptions provided via telephone conversations. Because of the size of the overall study area, record drawings were typically not provided by the respective

utility companies. Volkert attempted to verify locations of various subsurface utilities based on visible features such as valve boxes, lift stations, fire hydrants, cell towers, clearings, apparent easements, etc.

Markers indicate locations of various communication cables (copper and fiber optic), but they are better suited for indication of underground cables in isolated areas. The overall alignments of communication cables shown on the drawings are based on conversations with various representatives of each company. Information on all locations of a single utility along the I-12 corridor is not necessarily available from a single source. For example, the sources of information on locations of AT&T/Bellsouth utilities within the study area are eight separate Wire Centers. AT&T/Bellsouth markers indicate the telephone number for Louisiana One Call. Even though contacting Louisiana One Call is effective in marking actual locations of underground utilities in a specific location, it is not effective in gathering information on general locations of underground utilities along the I-12 corridor. Identifying all utility companies that might own subsurface utilities within the I-12 right-of-way and at interchanges was a significant challenge, which could not be accomplished without the invaluable assistance of Mr. Horace Sharp of the DOTD District 62 Office. The following list consists of companies and municipalities with utilities in the I-12 right-of-way. The list does not include companies and municipalities who confirmed that they do not own utilities within the I-12 right-of-way.

#### **PETROLEUM PIPELINES**

- Enterprise Products
- Shell Pipeline Corp.
- Denbury Offshore, LLC
- Williams
- Gulf South Pipeline
- Southern Natural Gas
- Tri-States Pipeline, LLC
- Collins Pipeline Co.

#### **REGIONAL GAS SERVICE**

- ATMOS Energy

#### **COMMUNICATION CABLES (AERIAL & SUBSURFACE)**

- Qwest/Century Link
- MCI/Verizon
- Sprint
- AT&T/Bellsouth/South Central Bell
- Southern Light



- EATEL
- DOTD/DETEL
- HELP, Inc. (PrePass)

### **ROADWAY LIGHTING**

- DOTD

### **LOCAL WATER, SEWER, & GAS UTILITIES**

- Town of Walker – Water, Gas
- Town of Albany – Water
- City of Hammond – Sewer
- City of Madisonville – Gas
- Tangipahoa Water District – Water
- Tammany Utilities (formerly SELA Water & Sewer Co.)
- Utilities, Inc. – Water, Sewer
- City of Slidell – Water, Sewer, Gas

Generally, inside and outside widening evaluated in this study will have a relatively minor impact on utility relocations. One of the potentially significant subsurface utilities within the study area is a fiber optic cable duct bank along the southern side of I-12 between the U.S. 51 BR Interchange at Hammond and I-59 at Slidell. Three separate companies (Qwest/Century Link, MCI/Verizon, and Sprint) own fiber optic cables in that duct bank. Those cables were installed on an “emergency” basis to provide a substitute for fiber optic cables between Hammond and New Orleans that were damaged as a result of Hurricane Katrina. Those cables were installed within the cleared area of the I-12 right-of-way, and both depth and horizontal alignment vary. If any locations of those cables coincide with locations of outside widening with ditch excavation, relocation of isolated sections of the cables might be necessary. Even though the cost of relocating those cables is significant, DOTD would not be responsible for those costs. Those cables will not be affected by inside widening.

Removal and replacement of light poles in the median at four locations will be necessary for inside widening.

- Walker – Port Vincent Interchange
- Weigh Stations near Happywoods Road
- U.S. 51 BR Interchange
- LA 3158 Airport Road Interchange

The new light pole foundations will be integral with the concrete median barrier. That work will be accomplished by the roadway contractor, and the cost is included

in the estimated widening construction cost. At the Walker-Port Vincent interchange, only the light poles on the eastern side of LA 447 are included in the estimate. Removal and replacement of the light poles on the western side of LA 447 are included in State Project No. 454-02-0074 which is inside widening between LA 1026 and La 447.

DOTD owns some subsurface utilities within the I-12 right-of-way. Some of the fiber optic cables in the Qwest/Century Link duct bank (previously known as the Enron duct bank) along the northern right-of-way line are dedicated to DOTD. Those cables separate from the Qwest/Century Link cables at the western side of the I-55 Interchange and continue northward along I-55 to the DOTD District 62 Office. DOTD owns some CCTV cameras and Dynamic Message Signs associated with ITS. The subsurface cables associated with CCTV cameras generally run from each device to a nearby junction with the adjacent duct bank. Dynamic Message Signs each have a local power supply and wireless communications. DOTD owns some electronic devices and subsurface cables associated with the weigh-in-motion scales between Pumpkin Center Road and I-55. Some other electronic devices and subsurface cables in the vicinity of the weigh-in-motion scales are associated with the PrePass system operated by Heavy Vehicle Electronic License Plate (HELP, Inc.).

Responsibility for the cost of relocation of utilities within the right-of-way should be determined on a case-by-case basis. Responsibility for the cost of relocation of utilities outside the right-of-way will probably belong to DOTD, although no impacts to utilities outside the I-12 right-of-way are anticipated. Utility relocation costs anticipated for DOTD as a result of proposed widening include some of the devices and subsurface cables associated with the weigh-in-motion systems. Relocation costs associated with PrePass system components are assumed to be the responsibility of HELP, Inc.

Other utility relocation costs anticipated for DOTD as a result of inside widening include conduits and cables in the median that are associated with ITS components. Relocation of those cables in four separate locations prior to roadway construction is anticipated. The estimated cost is based on removing and reinstalling the fiber optic cables in new conduits.

## **PRIORITY OF CONSTRUCTION**

### **I-12 Mainline and Interchanges**

The 2032 Build Widening Alternative is recommended for the entire length of the project. Inside widening is also recommended for the entire length of the project. Construction of inside widening between the Donya Street overpasses and I-59, in

progress during this Stage 0 Study, implements the 2032 Build Widening Alternative in that 2.7-mile section. Based on the anticipated decline in LOS during peak hours in each direction, the overall priority of 14 separate construction projects is generally in the order of St. Tammany, Tangipahoa, and Livingston.

### **St. Tammany Parish**

The Traffic Study identifies the 23.7-mile section between LA 21 (Madisonville-Covington Exit 59) and Bayou Vincent as the highest priority. The original western limit of construction at Bayou Vincent was extended to the Donya Street overpasses. As of August 2, 2011 DOTD was reviewing design for the portion of I-12 between Airport Road and the end of widening at the Donya Street overpasses. Based on pending construction of that section, it is not included in this sequence. The remaining 21-mile section can be divided into 4 separate projects.

1 – Airport Road to LA 434 – 6 miles including reconstruction at Dixie Ranch Road and widening the Bayou Liberty Bridges. Simultaneous modifications to the Airport Road-Northshore Boulevard interchange are not anticipated. Justification of a new interchange at Dixie Ranch Road is not anticipated by that time.

2 - LA 434 to LA 1088 – 6 miles including reconstruction at 2 underpasses (Fish Hatchery Road and LA 434) and widening the Bayou Lacombe Bridges.

3 – LA 1088 to U.S. 190 – 5 miles including reconstruction at LA 1088 and widening the bridges at U.S. 190, Ponchatolawa Creek, Tammany Trace, and LA 59. Simultaneous construction of eastbound off-ramp improvements at LA 59 might be considered.

4 - U.S. 190 to LA 21 – 4 miles including widening the 1409-foot Tchefuncte River Bridges.

### **Tangipahoa Parish**

The Traffic Study identifies the section between LA 1249 (Baptist-Pumpkin Center Exit 35) and I-55 (Jackson-New Orleans Exit 38) as the second highest priority. That section of I-12 is unique because of the weigh stations and the concrete pavement between the Natalbany River Bridge and I-55. The eastern end of the Natalbany River Bridge is within one mile of LA 1249, and the entire length of the concrete pavement should be included in the same project. Modifications to the I-55 Interchange, recommended as the third highest priority, should be scheduled with widening I-12. That section can be divided into two separate projects.

5 - Natalbany River Bridge through the Happywoods Road underpass – 3.5 miles of concrete pavement, including reconstruction at 2 underpasses.

6 - I-55 Interchange Improvements – 1.2 miles between the eastern end of concrete pavement and the eastern end of the proposed ramp tapers.

With the exception of the section between the Natalbany River and I-55, discontinuous construction of widening in a “checkerboard” manner is not recommended. Continuous widening in adjacent sections will reduce the number of temporary transitions from 2 lanes to 3 lanes in each direction. Construction of the 2032 Build Widening Alternative highest priorities and the I-55 Interchange improvements will result in 6 lanes over 26 miles in St. Tammany Parish between LA 21 and I-59, and 6 lanes over 4.7 miles in Tangipahoa Parish from the Livingston Parish line to a point approximately 1,000 feet eastward of South Morrison Boulevard. Construction of projects in the following order will result in completion of the 2032 Build Widening Alternative over the entire length of the project.

7 - I-55 Eastern Ramps to LA 3158 (Airport Road Exit 42) – 3.8 miles including widening 3 bridges (U.S. 51 BR, CN Railroad, Ponchatoula Creek) and reconstruction at the Range Road underpass. Simultaneous construction of off-ramp improvements at U.S. 51 Business Route and Airport Road might be considered.

### **St. Tammany Parish**

8 - LA 21 (Madisonville-Covington Exit 59) to LA 1085 Interchange (Future Exit 56) – 4 miles including reconstruction at 2 underpasses (LA 1085 and LA 1077) and widening the overpasses at LA 21. These limits are based on future construction of a new interchange at LA 1085. Simultaneous construction of off-ramp improvements at LA 21 and LA 1077 might be considered. Simultaneous replacement of the LA 1077 overpass bridge might also be considered.

### **St. Tammany Parish to Tangipahoa Parish**

9 - LA 1085 to LA 445 (Robert Exit 47) – 7.9 miles including widening 2 bridges (Bedico Creek and East Bedico Creek) and reconstruction at the Firetower Road underpass.

### **Tangipahoa Parish**

10 - LA 3158 (Airport Road Exit 42) to LA 445 (Robert Exit 47) – 5 miles including widening 4 bridges (Selsers Creek, Tangipahoa Relief East, Tangipahoa Relief West,

Tangipahoa River) and reconstruction at 2 underpasses (Sontheimer Road and LA 445).

### **Livingston Parish**

At this stage of the sequence, the 2032 Build Widening Alternative will be in place on I-12 throughout Tangipahoa and St. Tammany Parishes, as well as on 7.5 miles of I-12 west of LA 447 (Walker Road Exit 15) in Livingston Parish and the portion of I-12 in East Baton Rouge Parish. Widening 7 of the I-12 bridges in Livingston Parish in separate projects is anticipated to be complete, and improvements to the LA 447 Interchange might be in place. These are some benefits of scheduling 18 miles of widening in Livingston Parish at this stage of the sequence. Based on the anticipated decline in LOS during peak hours in each direction, the overall priority of construction in Livingston Parish is scheduled in sequence from east to west.

11 – Natalbany River Bridge to Big Branch Bridge – 5.7 miles including widening Natalbany River Bridges and reconstruction at 2 underpasses (LA 43 and LA 441). Previous completion of widening Blood River and Big Branch Bridges is anticipated at that time. Simultaneous construction of improvements to the westbound off-ramp at LA 43 might be considered.

12 – Big Branch Bridge to LA 63 (Frost-Livingston Exit 22) – 5.5 miles including widening Hog Branch Bridges and reconstruction at the Red Oak Road underpass. Previous completion of widening Tickfaw River Bridges is anticipated at that time.

13 - LA 63 (Frost-Livingston Exit 22) through Satsuma-Collyell Exit 19 – 3 miles including reconstruction at 2 underpasses (LA 63 and Satsuma Road). Previous completion of widening Collyell Creek and Hornsby Creek Bridges is anticipated at that time.

14 - Satsuma-Collyell Exit 19 through LA 447 (Walker-Port Vincent Exit 15) – 4 miles to eastern end of previously widened I-12 including reconstruction at South Walker Road underpass if necessary at that time. If not already completed, simultaneous construction of interchange modifications might be considered. Previous completion of widening Middle Collyell Creek and Dumplin Creek Bridges is anticipated at that time.

### **I-12 off Ramp Improvements**

The following improvements were identified (See Appendix B Traffic Study report for additional analysis) to reduce the queue overflows at the off ramps and to improve intersection capacity in the No Build and Build Widening conditions:

### **I-12 eastbound at LA 447**

Approximately 205 feet (2032 No Build and 2032 Build Widening) of spillover is expected from the shared left/through lane. Provide additional ramp storage and/or provide the following improvements suggested by Urban Systems, Inc. in the interchange Stage 0 study (June 2011):

- The modified diamond interchange alternative or the partial cloverleaf interchange alternative.
- Widen LA 447 from two lanes to four lanes south of the I-12 interchange.
- Widen LA 447 from four lanes to five north of the I-12 interchange, with three lanes northbound.
- Improve traffic signal timing at signalized intersections.
- A three-lane northbound bridge and a two-lane southbound bridge over I-12 between the eastbound and westbound ramps.
- Dual left turn lanes to the entry ramps and from the exit ramps.
- Dual right turn lanes from the exit ramps.

### **I-12 westbound at LA 43**

Approximately 3,205 feet (2032 No Build and 2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or westbound dual left turn lanes (this will require widening LA 43 to include two southbound lanes) with signalization, or convert the intersection to a roundabout.

### **I-12 westbound at US 51 Business**

Approximately 1,750 feet (2032 No Build) or 3,750 feet (2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or a westbound right turn bypass lane. Provide a southbound right turn lane to improve intersection capacity.

### **I-12 eastbound at LA 3158**

Approximately 1,235 feet (2032 No Build) or 1,710 feet (2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or modify the eastbound approach to include a left turn lane, shared left/through lane, and a right turn lane (this will require widening LA 3158 to include two northbound lanes) and signalize the intersection, or convert the intersection to a roundabout.

### **I-12 westbound at LA 3158**

Approximately 225 feet (2032 No Build) or 950 feet (2032 Build Widening) of spillover is expected. Provide additional westbound right turn lane storage.



### **I-12 westbound at LA 1077**

Approximately 290 feet (2032 No Build) or 1,440 feet (2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or modify the westbound approach to include a left turn lane, a shared left/through lane, and dual right turn lanes (this will require widening LA 1077 to include one additional northbound lane and one additional southbound lane) and retime the signal.

### **I-12 westbound at LA 21**

Approximately 2,530 feet (2032 No Build) or 3,830 feet (2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or an additional westbound right turn lane and retime the signal.

### **I-12 eastbound at LA 59**

Approximately 1,450 feet (2032 No Build) or 2,100 feet (2032 Build Widening) of spillover is expected. Provide additional ramp storage and/or an additional eastbound right turn lane and retime the signal.

### **I-12 eastbound at Airport Road/Northshore Boulevard**

Approximately 785 (2032 No Build and 2032 Build Widening) of spillover is expected. Provide additional ramp storage or provide the interchange improvements suggested by Burk-Kleinpeter, Inc. (December 2007) or by Buchart Horn, Inc. (January 2011).

The following improvements were suggested by the Burk-Kleinpeter, Inc. interchange Stage 0 study (December 2007):

- A new six-lane bridge over I-12 between the I-12 ramps.
- Dedicated southbound and northbound right turn lanes to the westbound and eastbound I-12 on ramps, respectively.
- Dual left turn lanes on Airport Road/Northshore Boulevard and on ramp sections to receive the dual left and right turns.
- Dual left turn lanes on Airport Road/Northshore Boulevard and on ramp sections to receive the dual left turns.
- Dual left turn off ramp sections.

### **I-12 westbound at Airport Road/Northshore Boulevard**

Approximately 4,830 feet (2032 No Build and 2032 Build Widening) of spillover is expected. Provide additional ramp storage, the interchange improvements suggested by the Burk- Kleinpeter, Inc. interchange Stage 0 study (December

2007), or the single point urban interchange improvements suggested by the Buchart Horn, Inc. interchange Stage 0 study (January 2011).

### **I-12 westbound at US 11**

Approximately 235 feet (2032 No Build) of spillover is expected. Provide additional ramp storage and/or provide an additional eastbound left turn lane and retime the signal. Provide a westbound right turn lane to improve intersection capacity.

### **I-12 at Pinnacle Parkway**

The detectors at the I-12 at Pinnacle Parkway ramp intersections should be checked to ensure they are working properly, to minimize the number of vehicles proceeding through the intersection despite the red light indication. Additionally, roadway signs are recommended to indicate lane usage or how to re-enter I-12 from Pinnacle Parkway.

## **CONCLUSION AND RECOMMENDATIONS**

The following safety improvements may reduce the number of crashes in select areas in the corridor:

- Peak Period ramp metering
- Dynamic message signs to provide advance warning of incidents or traffic delays
- Tree clearing beyond the clear zone or cable rail installation
- A study of pavement surface drainage
- Local law enforcement investigation and enforcement in regards to illegal drug use
- Reflectors on bridge rails and improvements for bridges with substandard shoulders
- Slope flattening or cable rail installation
- Median Barriers
- Deer crossing warning signs and public information and education

The following I-12 corridor improvements are recommended to improve safety and address increased traffic demands and are recommended to move forward in the LADOTD process:

- 2032 Build Widening Alternative (inside widening)
- 2032 I-12 at I-55 Build Interchange, with or without the Build Widening
- 2032 I-12 at LA 1085 Build Interchange with or without Build Widening

- 2032 I-12 at Dixie Ranch Road Build Interchange, with or without the Build Widening

The following are recommended for prioritized consideration in the Stage 1 study:

- Build Widening Alternative (inside widening) for I-12 between LA 21 and the Vincent Bayou Bridge (US 11) that section not currently under design or construction
- Build Widening Alternative for I-12 between LA 1249 and I-55
- I-12 at I-55 Build Interchange Improvements
- I-12 off ramp improvements, as follows
  - I-12 Eastbound at LA 447
  - I-12 Westbound at LA 43
  - I-12 Westbound at US 51
  - I-12 Eastbound at LA 3158
  - I-12 Westbound at LA 3158
  - I-12 Westbound at LA 1077
  - I-12 Westbound at LA 21
  - I-12 Eastbound at LA 59
  - I-12 Eastbound at Airport Road/Northshore Blvd.
  - I-12 Westbound at Airport Road/Northshore Blvd.
  - I-12 Westbound at US 11