

HARRISON AVE EXTENSION LAND USE AND TRANSPORTATION STUDY

FOR



NEW ORLEANS REGIONAL PLANNING COMMISSION
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VECTURA



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1.0 EXECUTIVE SUMMARY

Principal Engineering, with Vectura Consulting Services and Elos Environmental, was retained to perform a Land Use and Transportation study for the potential extension of Harrison Ave from LA 59 to LA 36, in Abita Springs, LA. This transportation link has long been contemplated, and is shown in the 2017 St. Tammany Parish Major Streets Plan, as a component of the improved east-west corridors needed for effective movement of the Parish traffic. Planning, mapping, traffic engineering, civil engineering, and environmental expertise were brought to bear on the proposed extension; the results of which are detailed in the report.

Key findings, results, and recommendations are as follows:

1. The Harrison Ave extension must be considered hand-in-glove with major improvement of the intersection at LA 59. The intersection must be constructed first, or simultaneously with the roadway. Intersection of Harrison Ave extension and LA 36 may be initially constructed as a stop condition.
2. Base Year: 2017
Implementation Year: 2024
Design Year: 2044
3. Two primary alternatives may be considered: “Build” and “No-Build”. Beyond failure to fulfill the purpose and need, “No-Build” results in significantly longer design year delays than “Build”, among all legs of:
 - a. Harrison Ave @ LA 59
 - b. LA 59 @ LA 36See Tables 6 and 8 (Harrison Ave @ LA 59); and Tables 16 and 18 (LA 59 @ LA 36) in the Vectura Consulting Report, included as Attachment 2.
4. The Harrison Ave @ LA 59 intersection deteriorates to failure by the 2024 implementation year without intersection improvement, under “Build” and “No-Build”. Two alternatives for intersection improvement, signal and roundabout, were developed; the roundabout yielding best operation in both implementation and design year.
5. The LA 59 @ LA 36 intersection, presently a one-lane roundabout in the center of Abita Springs, deteriorates to failure by the 2024 implementation year under “No-Build”. Delays in the 2044 design year under “Build” exceed standards, but are greatly reduced from those predicted under the “No-Build” alternative.
6. A two-lane section of Harrison Ave extension has been selected as adequate for design year volumes. An alignment was selected based on existing rights-of-way, and avoidance of potential environmental impact.



7. The two-lane segment of LA 59 between Harrison Ave and LA 36 exhibits benefit from the “Build” condition in the design year, especially the PM peak. V/C ratio of 0.95 results from “No-Build”, vs. a 0.60 from “Build”.
8. Anticipated project costs (2018 dollars), including construction, engineering design, construction engineering, testing, survey, right-of-way acquisition, environmental permitting, and mitigation; may be budgeted as follows:
 - a. Harrison Ave @ LA 59 Intersection: \$ 3,100,000
 - b. Harrison Ave extension Roadway: \$ 5,200,000
9. Recommended actions toward project implementation are as follows:
 - a. Intersection: Determine eligibility for Federal funding programs based on safety and operation of roundabout, performing additional engineering as necessary. Gather local matching funds.
 - b. Roadway: Proceed assuming 100% local funding. Prepare environmental document for use in permitting, and advance survey & engineering sufficiently to refine costs and confirm right-of-way. Hold at this stage until environmental permitting and funding advances.



2.0 STUDY PURPOSE AND BACKGROUND

2.1 Purpose and Need:

The purpose of the project is to increase capacity within the Harrison Ave / LA59 / LA36 roadway network in Abita Springs (primary), and increase safety at the Harrison Ave @ LA59 intersection (secondary).

The need for the project is demonstrated by long delays and high volumes on LA59, by failure of the Harrison Ave @ LA 59 intersection within six years, and failure of the LA59 @ LA36 intersection within six years, without the proposed project. Further, the need is recognized by St. Tammany Parish, evidenced by inclusion of the Harrison Ave Extension in the Parish Master Street Plan. Last, crash data indicates that roundabout geometry for the Harrison Ave @ LA59 intersection justifies that portion of the project on a safety basis alone.

2.2 Framework: In cooperation with St. Tammany Parish and the Town of Abita Springs, the New Orleans Regional Planning Commission scoped and procured this Study in support of the stated project Purpose and Need, in federal fiscal year 2018. This Study will develop the basis for planning, design, and environmental permitting of the Harrison Ave extension. The Study sequential technical tasks: Existing and Proposed Land Use, Traffic Analysis, and Conceptual Development and Evaluation; respectively accomplish the following: form the basis for future trip generation and distribution, recommend roadway configuration for future traffic volumes, and develop geometry and cost based on traffic analysis, physical conditions, and other constraints.

Through the Study performance, a Project Management Committee (PMC) consisting of stakeholders (St. Tammany Parish, NORPC, Town of Abita Springs, LADOTD Dist. 62) guided development of the Study through feedback on proposed methodology and on specific products.

2.3 Setting

The Town of Abita Springs, 2016 population 2,529, is located in the geographic center of St. Tammany Parish, at the intersection of three State Routes: LA 59, LA 36, and LA 435. It is at the northeast perimeter of the developed West St. Tammany Covington-Mandeville-Madisonville area. To the north is rural residential land use, while to the east and southeast are large tracts of timber land. The Study Area is shown below in **Figure 1**. Existing transportation features within the Study Area include:

- Harrison Avenue
- LA 59
- LA 36
- Harrison/LA 59 Intersection (ex. signal)

- LA 59/LA 36 Intersection (ex. roundabout)
- Tammany Trace (non-vehicular, not studied)

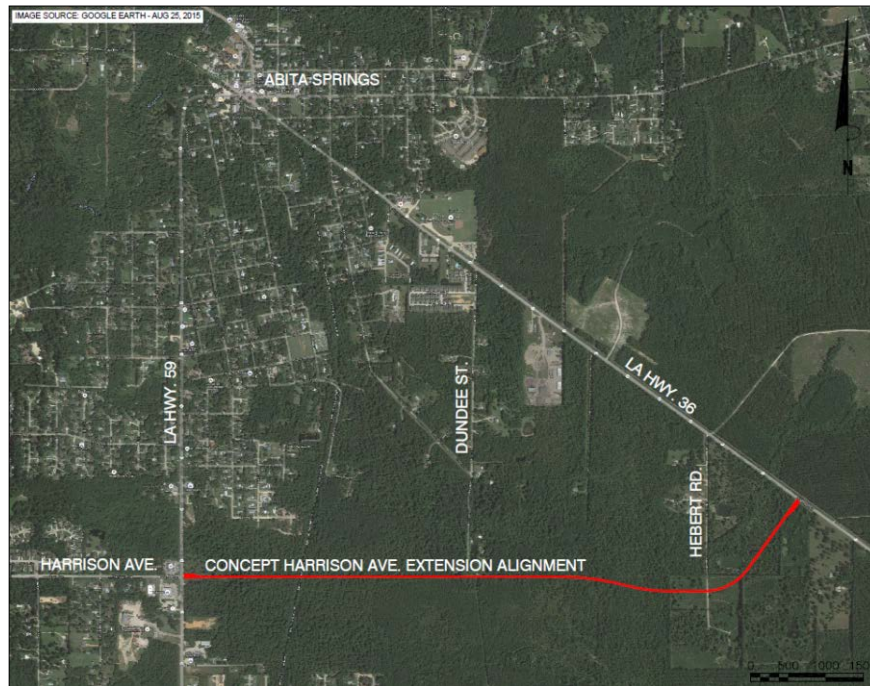


Figure 1 – Study Area

The preferred alignment traverses a wide undeveloped land area, with known jurisdictional wetlands and watercourses. These environmental factors weigh heavily on project development. In the future design stage, environmental impacts must be considered when choosing final roadway and drainage features. Additionally, the extension of Harrison Ave must be considered and accomplished concurrent with intersection improvement at LA 59 & Harrison Ave.

3.0 EXISTING AND PROPOSED LAND USE

3.1 Task Purpose: Establishing existing and proposed land use is critical to maximize trip generation forecast accuracy for traffic analysis. To that end, Parish and Town zoning maps and regulations, topography, mapped floodplains, past wetland delineations, and major planned developments were synthesized into an integrated working map. Using this map as a tool, the reasonable extent of economically likely future development (hence future trip generation) in undeveloped land area was predicted within each of the zoning classifications.

3.2 Methodology

1. Zoning. Using hand-drawn zoning maps from the Town, and a GIS layer from the Parish, an integrated electronic drawing of the Study area zoning was created, and rectified to a scaled street grid.
2. Major Committed Developments. One major development is planned, Abita Meadows, located near the Harrison Ave Extension intersection with LA 36. This residential development has been incorporated into the traffic generation.
3. Topography and Floodplain. Using open-source LIDAR topography, and colorized visual representation map of elevation was created to quickly reveal topography. Onto this map, the 1% exceedance flood elevations (100-yr Base Flood Elevations, or BFE) were annotated, as mapped by the FEMA Flood Insurance Study of St. Tammany Parish. See **Figure 2**.

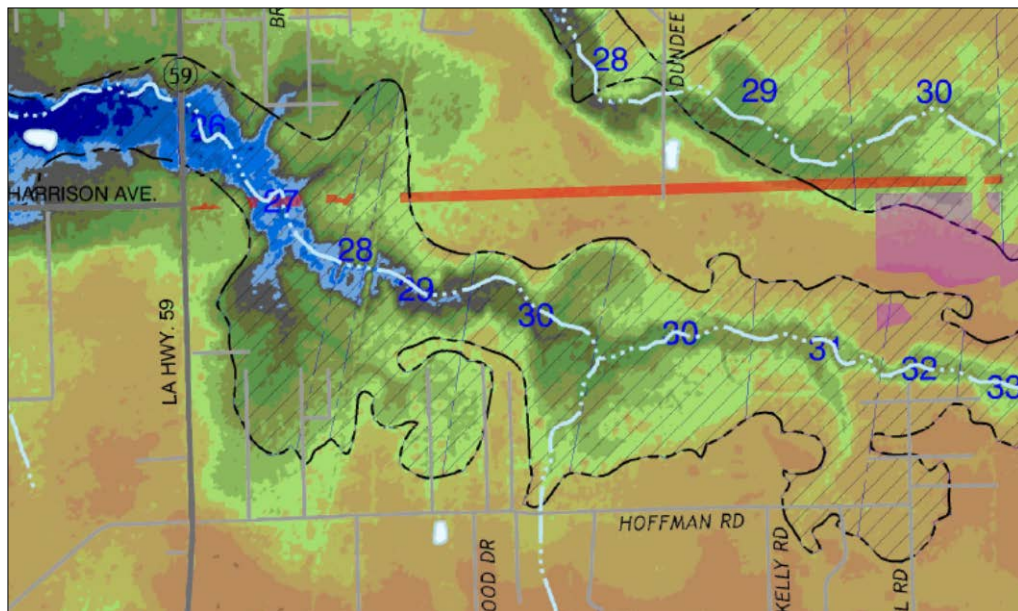


Figure 2 – Clip from Project Area Demonstrating Topography in Color Relief, with 100-yr Floodplain and Past JDs Superimposed

4. Cross Section Interpretation. Through the waterways and floodplains within the study area, representative cross section locations were chosen and sectioned to plot channel and floodplain cross sectional shape. The BFE was plotted on each section. Town development regulation prohibits deposition of fill material within the 100-yr floodplain, with certain minor exception; thereby limiting intensity of use within the floodplain. Absent an economic analysis, it was assumed that development is economically feasible to elevations as low as 1 ft. below BFE (where structures are built up above BFE, but parking lots are subject to inundation). The 1ft “offset” was plotted on the sections, and used to establish a threshold for limits of future development. Where topography intersects and falls below the “offset”, the

land area is considered economically unlikely to develop; “un-developable” for the purposes of trip generation in this Study. See **Figure 3**.

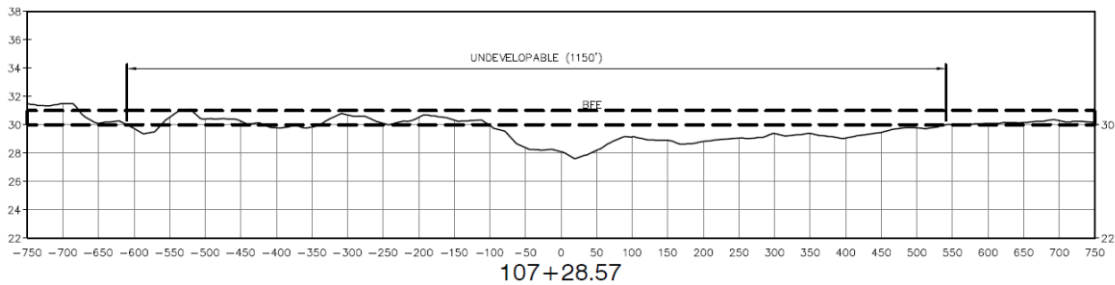


Figure 3 – Typical Channel Cross Section with BFE and Offset Annotated

5. **Result Mapping.** The “un-developable” land area was mapped from the individual cross section determinations, connected in map view by topographic contour. The outline of these areas were overlaid on the integrated zoning drawing, from which land area subject to future development, and land area excluded from future development was measured. See **Figure 4**.

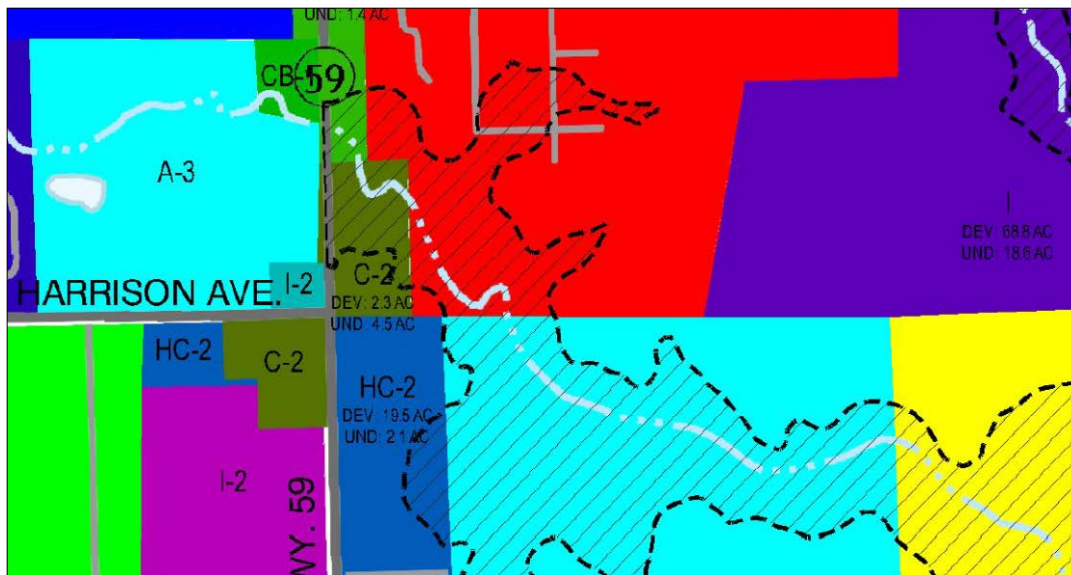


Figure 4 – Clip from Result Drawing, Annotating Developable/Undevelopable Land Area by Zoning

3.3 Results, Interpretation & Exhibits: The “un-developable” land areas mapped by the Study generally correlate with, but are less expansive than the 100-yr floodplain. The full graphic drawing set is included as **Attachment 1**. In the final drawing, acreage of developable/undevelopable area in each zone is annotated for use in the traffic analysis. In **Table 1**, each drawing from the Land Use set is listed and the significance explained.



Sheet No. & Title	Sheet Significance
3.1 – Study Area Zoning	Depiction of the zoning boundaries within the Town of Abita Springs and adjacent St. Tammany Parish areas. The development density regulations in each zone will be used as a basis for trip generation in the Traffic Analysis.
3.2 – Topography, Floodplain, and Delineation Collation	For the purpose of this study, it is necessary to parse which portion of the Town and Parish areas are economically feasible for development, and what portions are unlikely to prove economically feasible (“undevelopable”). The attributes of topography, 100-year floodplain, and past delineations of jurisdictional wetlands are superimposed on this drawing. Topography is depicted in color relief. The floodplain is denoted in diagonal shading, and the elevation of floodplain surface annotated in blue numbers along the streams.
3.3, 3.4, 3.5 – Watercourse Cross Sections	Watercourse cross section topography is plotted at selected locations, and labeled by watercourse station. As described in the narrative, the floodplain surface elevation (BFE) effective at each cross section, and an offset below the floodplain are plotted, to determine the limits of areas not likely to be economically developable, and therefore not likely to contribute to trip generation.
3.6 – Undevelopable Area with Cross Sections	From the points determined on each cross section, and using topography as a guide to establish bounds between cross sections, the limits of “un-developable” areas were plotted. This drawing shows simply the cross section locations and resulting plot.
3.7 – Undevelopable Area vs. Topography	The “un-developable” area limit is depicted on color-relief topography, revealing the correlation between topographic elevation and this study’s anticipated ultimate development limits, and how the limit was traced.
3.8 – Undevelopable Area vs. Zoning	For purposes of Traffic Analysis, this drawing is the final product of the Land Use task. Where a region of zoning is split between area anticipated to develop, and those not anticipated to develop, the fraction, in acres, of each classification is noted on the zone. Where a zone is not split, the entire zone is assumed as anticipated to develop according to the land use regulations of either Town or Parish.
3.9 – Undevelopable Area vs. Parcel Boundaries	For purposes of alignment selection, the existing land parcels within the proposed corridor were superimposed on the “un-developable” limits. The limit was used as guide to low topography subject to inundation, and avoidance of the “un-developable” region was considered likely to reduce impact to jurisdictional wetland and floodplain hydrology.

Table 1 – Land Use Task Drawing Explanation

3.4 Limitations: Jurisdictional wetlands were not rigorously field delineated in the land use analysis. Past jurisdictional determinations in the vicinity of the preferred alignment did not correlate well to mapped topographic contour, or to topographic slope. While extent of jurisdictional wetland and required mitigation may have significant effect on the economic calculation of future land developers, comprehensive investigation to determine jurisdictional status (which may change



over time) of undeveloped land areas in the study area is beyond the resources of this effort.

4.0 TRAFFIC ANALYSIS

Traffic analysis was completed by Vectura Consulting Services, LLC under subcontract to Principal Engineering. The complete Vectura report is included as **Attachment 2**. Following, key sections of the Vectura report are reproduced:

Purpose

The purpose of this traffic study is to provide the traffic operational analysis for the proposed Harrison Avenue extension and the two Harrison Avenue intersections at LA 59 and at LA 36. In addition, the study examines the impact that the extension would have on the existing roundabout on LA 59 at LA 36.

The study includes developing forecast traffic volumes for Implementation Year 2024 and Design Year 2044 based on expected growth consistent with local zoning and comprehensive planning efforts as well as the Regional Planning Commission Travel Demand Model growth rates.

The analyses for this study were performed for the AM and PM peak periods for the following conditions:

- Existing Base Year 2017
- Implementation Year 2024 No Build
- Implementation Year 2024 Build
- Design Year 2044 No Build
- Design Year 2044 Build

The analyses considered a roundabout alternative for the two Harrison Avenue intersections at LA 59 and at LA 36 as well as stop control and a traffic signal where applicable.

Methodology

The traffic study includes the following elements:

- Collected seven-day 24-hour machine count traffic volumes with vehicle classification provided in **Appendix A**
- Developed Existing Base Year 2017 peak hour (AM and PM) traffic volumes based on turning movement counts provided in **Appendix B**
- Performed Speed Study with radar gun as per EDSM VI.1.1.5 for the two Harrison Avenue intersections at LA 59 and at LA 36 provided in **Appendix B**
- Estimated future traffic volumes and distribution for undeveloped land in the study area based on proposed zoning, Institute of Transportation Engineers (ITE) Trip Generation Manual, and Regional Planning Commission Travel Demand Model trends



- *Developed future intersection peak hour (AM and PM) traffic volumes for the following scenarios based on the forecast methodology outlined in **Appendix B***
 - *Implementation Year 2024 No Build*
 - *Implementation Year 2024 Build*
 - *Design Year 2044 No Build*
 - *Design Year 2044 Build*
- *Determined three-year crash history as per EDSM VI.1.1.5 for the two Harrison Avenue intersections at LA 59 and at LA 36 provided in **Appendix C***
- *Determined Level of Service (LOS), delay, volume to capacity (v/c) ratio and 95th percentile queues of Existing, No Build and Build study intersections using SIDRA Intersection version 7 software. Analyses are provided in **Appendix D***

Future Traffic Volumes

Since the latest Abita Springs Land Use Plan was not reflected in the Regional Planning Commission Transportation Demand Model, future traffic volumes were based on the following formula and three traffic volume sources:

$$\begin{array}{ccccccc}
 {}^1 & + & {}^2 & + & {}^3 & = & \\
 \text{EXISTING} & & \text{BACKGROUND} & & \text{PROPOSED LAND USE} & & \text{FUTURE} \\
 \text{TRAFFIC} & & \text{TRAFFIC} & & \text{TRAFFIC} & & \text{TRAFFIC} \\
 \text{VOLUMES} & & \text{VOLUMES} & & \text{VOLUMES} & & \text{VOLUMES}
 \end{array}$$

*¹ Existing Traffic Volumes are based on existing peak hour traffic volumes collected in 2017 as shown in **Figure 2** of the report.*

² Background Traffic Volumes are based on a 0.7 percent growth rate for traffic passing through but generated outside the study area as based on the Regional Planning Commission Transportation Demand Model.

*³ Proposed Land Use Traffic Volumes are based on the traffic generated from anticipated property development in the study area based on the proposed land use shown in **Figure 4** and trip generation from property development shown in **Table 4**. Trip generation was the method used to develop forecast volumes based on information provided by DOTD District 62 at a meeting held on 10/19/17 This method was used by DOTD on a similar study in the area.*

The calculations used to develop the future traffic volumes are included in Appendix B of this report. Total trip generation volumes were calculated based on proposed land use and the ITE Trip Generation 9th Edition Manual. Due to the mixed land use, Internal capture was calculated for the PM Peak traffic based on the Trip Generation Handbook 2nd Edition Chapter 7 followed by the calculation of pass-by trips based on Chapter 10 of the ITE Trip Generation Handbook.

After the development of the future traffic volumes, the traffic was then distributed on the street network in the study area. The forecast traffic distribution for No Build conditions was based on existing traffic patterns on the existing street network. The same total approach volumes entering and exiting the study area street network were



used for both the No Build and Build conditions. This is based on the assumption that the approved land use will be developed irrespective of the Harrison Road extension project. The Build condition refers to the proposed roadway “Harrison Avenue extension”. Under the Build conditions, approach volumes were rerouted to use Harrison Avenue Extension.

Conclusions and Recommendations

The purpose of this traffic study was to provide the traffic operational analysis for the proposed Harrison Avenue extension and the two Harrison Avenue intersections at LA 59 and at LA 36. Additionally, the study examined the impact that the extension would have on the existing roundabout on LA 59 at LA 36. The study resulted in the following conclusions:

Harrison Avenue Extension

- *The results of HCS analyses indicated that a two-lane cross-section road would provide a LOS B or better in the Design Year.*

LA 59 at LA 36 (Existing Roundabout)

- *The construction of the Harrison Avenue extension will improve the Level of Service from an F to a C in the year 2024 during the PM Peak at this intersection.*
- *The Harrison Avenue extension is estimated to decrease the average stopped delay from 114.1 seconds to 81.6 seconds in the year 2044 AM peak hour, while the average stopped delay will decrease from 291.5 seconds to 178.6 seconds in the year 2044 PM peak hour. Even though the proposed Harrison Avenue extension will improve operations for year 2024, this intersection may require capacity improvements by year 2044 to operate at a LOS D or better.*

Harrison Avenue at LA 59

- *Traffic analyses indicated that this intersection currently operates at an overall LOS D. As volumes grow over time, the overall intersection is forecasted to operate at a LOS F in the year 2024.*
- *32 crashes were reported at this intersection from January 1, 2014 to December 31, 2016.*
- *The existing intersection of Harrison Avenue and LA 59 is currently classified as an “abnormal” intersection.*
- *Per the LADOTD EDSM VI.1.1.5, 13 crashes as reported from 2014-2016 are correctable (seven right-angle and six left-turn).*
- *With the extension of Harrison Avenue to LA 36, this intersection performed the best in terms of LOS and average stopped delay with the roundabout alternate for the year 2044.*

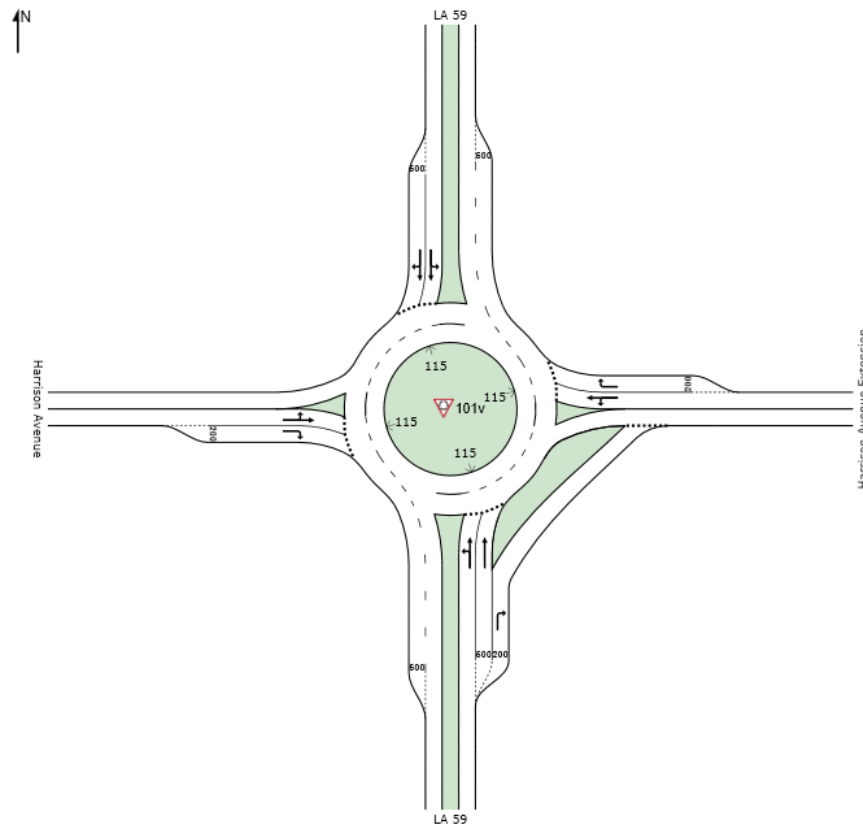
Harrison Avenue at LA 36

- *This proposed intersection will operate at a LOS C or better with the two-way stop control (TWSC) alternate for the year 2024. However, as volume increase over time, the TWSC alternate operated at a LOS F for year 2044.*

- The traffic signal alternate operated at a LOS C or better, while the roundabout operated at a LOS A for all approaches for the year 2044.

The study resulted in the following recommendations:

- Harrison Avenue extension is recommended to be a two-lane cross-section road.
- A roundabout is recommended at the intersection of LA 59 at Harrison Avenue. The recommended geometry includes the following approach lane configuration (as shown in **Figure 9**):
 - Northbound: One shared left-turn / through lane, one through lane and dedicated right-turn lane;
 - Westbound: One shared left-turn / through lane and dedicated right-turn lane;
 - Southbound: One shared left-turn / through lane and one shared through / right-turn lane and;
 - Eastbound: One shared left-turn / through lane and dedicated right-turn lane.



Vectura Report Figure 9 – Recommended Configuration for LA 59 at Harrison Ave. Extension



5.0 CONCEPTUAL DEVELOPMENT AND EVALUATION

5.1 Alignment, Intersections, Connectivity: The extension of Harrison Ave from LA 59 to LA 36 has long been contemplated by local officials, for the purposes repeated in this Study. A “common sense” alignment has been long assumed, as extension of the existing tangent section of Harrison Ave due eastward, curving northeast near LA 36 to intersect squarely.

The two major intersections, at limits of the Harrison Ave Extension, are with LA 59 and LA 36. The alignment intersects Hebert Rd at a point used only for access to undeveloped property. No other intersections would result from the extension.

Several small streets, including Dundee St. could establish connectivity from the north. The traffic analysis assumes eventual connection as the land area develops. From the south, stream crossings make unlikely the organic connection of orthogonal roadways; and connectivity as part of the project does not support the purpose and need. In section 5.5, Line and Grade, adjustments to this alignment that establish a preferred alignment are discussed.

5.2 Environmental & Regulatory Considerations: Elos Environmental, LLC consulted throughout Conceptual Development, and provided environmental guidance context to the process. Per Elos advice, in the spirit of the National Environmental Policy Act of 1970 (NEPA), the project must employ the least environmentally disruptive alternative possible that satisfies the need. This requirement is satisfied through evaluation of alternatives; in this case considering alignment selection, roadway cross section development, and restrictions during construction.

Project advancement will benefit greatly from an integrated environmental assessment document, addressing the major environmental factors likely to be examined by the various permitting agencies. The document would form the basis for permit applications prepared with a consistent project intent, in a unified way. Factors would likely include the following:

1. **Jurisdictional Wetlands.** Given the likelihood of jurisdictional wetlands on any alignment through the undeveloped land area, necessity for a Section 404 Clean Water Act permit is almost certain. Demonstrating the a low probability of secondary impact to jurisdictional wetlands will greatly decrease the cost of any mitigation burden.
2. **Hydrology.** Minimizing hydrologic impact by maintaining hydrologic characteristic across the drainage basins may be accomplished by providing periodic cross culverts in savanna reaches to allow surface water to flow through the roadway embankment, and by minimizing disruption of floodplain volumes or flows.

3. Endangered Species and Habitat. A biological assessment will seek to determine the presence/absence of endangered species known to be in the geographic area; and the presence/absence of critical habitats defined by Louisiana Dept. of Fish & Wildlife, or the US Fish & Wildlife Service.
4. Cultural Resources & Miscellaneous. While not as likely in this area to be of significant importance, the range of impact to other resources and features must be considered.

Elos Environmental has completed the Stage 0 Environmental Checklist for the extension of Harrison Avenue, summarizing an investigation suitable for feasibility-level environmental planning. This document is included as **Attachment 3**.

5.3 Hydrology: From LIDAR topography, the drainage basin limits and characteristics of Coon Branch was estimated for the purpose of hydraulically sizing the roadway crossing, as shown in **Figure 5**. The 1060-acre basin peak flow was estimated using a LADOTD computer program using the Soil Conservation Service (SCS) method, yielding 681 cfs 50-year peak runoff at the assumed Harrison Ave extension crossing. Six-60” diameter cross culverts proved adequate to convey the flow with acceptable head loss between head- and tail-water. Calculations are included as **Attachment 4**.

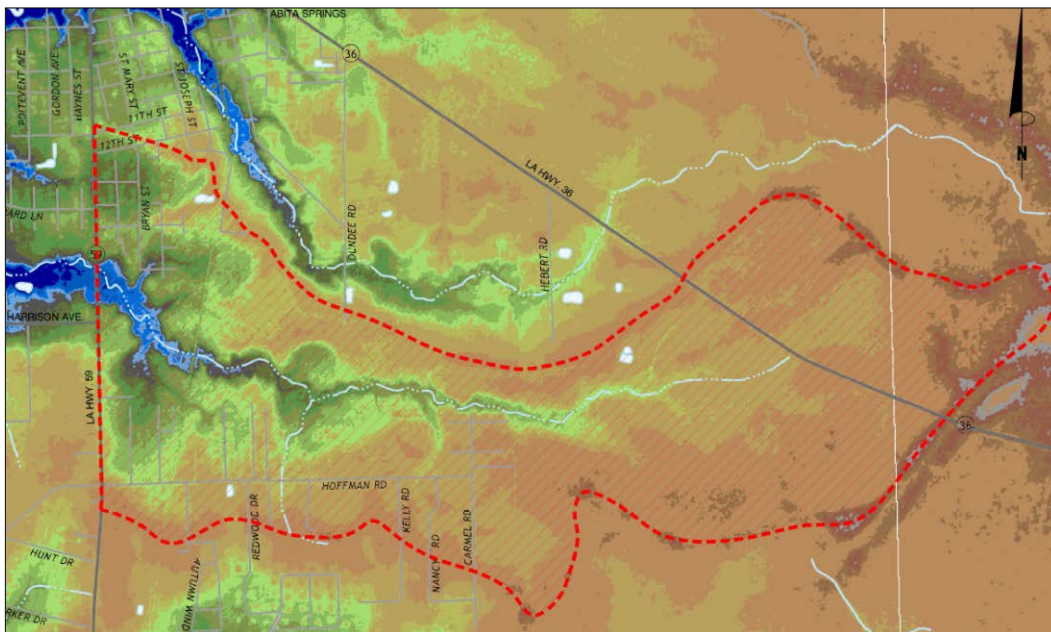


Figure 5 – Coon Branch Drainage Basin East of LA 59

5.4 Line and Grade: Preferred roadway alignment, profile, intersections, and major features are shown on the typical section and plan/profile drawings in **Attachment 5**. Below, the major components are annotated, to provide basis for the design decisions.

1. Tangent Roadway Section. Beginning with the 2-lane roadway section recommended in the traffic analysis by Vectura, a proposed roadway

geometry was developed that would hold down construction costs, while providing safe roadway and roadside environments. Key features include 12 ft lanes, 2 ft shoulders, 4:1 embankment foreslope, and detached bike lane. This section is modified Rural Collector, with posted speed of 45 MPH. See *Figure 6*.

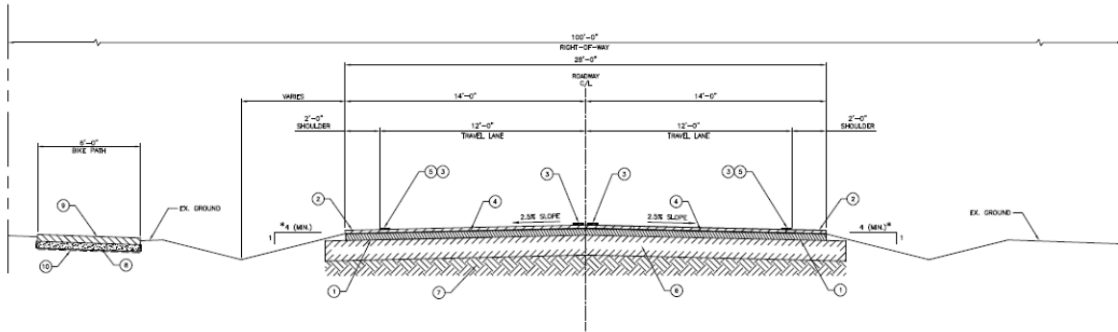


Figure 6 – Typical 2-lane Harrison Ave Extension Roadway Section

2. Tangent Alignment. The “common sense” due east alignment was superimposed on drawings of existing rights-of-way, topography, floodplain, existing development, and private property boundaries. Analysis of the alignment against the mapped background features yields: Maintain plotted alignment from LA 59 eastward to the Tammany Trace, within existing right of way. East of the Tammany Trace, an existing 20 ft right-of-way is subsumed by the required 100 ft Harrison Ave. Continue due east, making an offset south with reverse curves, as avoidance of the N. tributary to the Abita River floodplain. Near LA 36, curve northeast to intersect squarely with LA 36. See *Figure 7*.

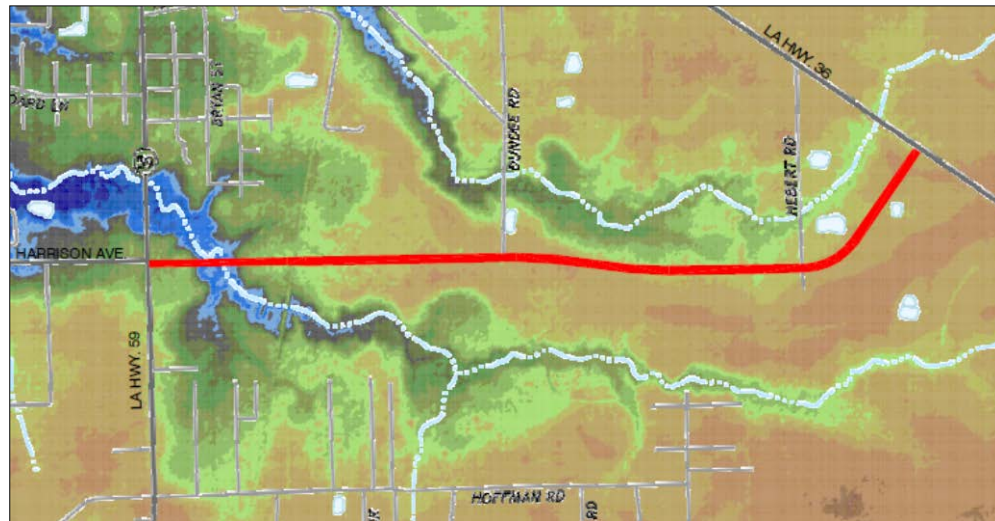


Figure 7 – Preferred Alignment Shown on Topography

3. Roadway Profile. From a LIDAR digital elevation model, the existing ground surface profile along the preferred alignment was plotted. The Harrison Ave extension finished pavement centerline was established approximately 2 ft above existing grade (excepting the Coon Branch crossing), aiming to maintain the roadway as passable during rain events, and allow cross culverts at existing grade, to preserve the land area hydrology. Resulting grades and vertical curvature are slight, almost imperceptible to the vehicle driver.
4. LA 59 Intersection: Using the recommended intersection configuration provided by Vectura, the LADOTD Roadway Design Manual requirements, and general modern roundabout design practice, concept geometry was developed for this major-minor intersection; and is provided on the plan/profile drawings. This roundabout concept is shown in **Figure 8**.



Figure 8 – Proposed Roundabout Geometry, Harrison Ave @ LA59, “Build” Condition

5. LA 36 Intersection: From Vectura, the design life of a two-way stop condition (TWSC) intersection has a design life of 12 years from implementation. This least-cost option is the selected alternative, and is reflected on the plan/profile drawings. While a roundabout geometry results in the best level of service at design year, an intersection improvement at LA 36 is warranted as urgently as LA 59, and resources are better focused on the Harrison Ave Extension and LA 59 intersection (which fails performance criteria at design year, and so must be improved).



6. **Existing Utilities:** From LA One Call markings, visual evidence, and direct correspondence with all known utility owners in the region, a drawing of existing utilities was prepared and included in the drawing set. Of note, the existing sanitary pumping station located at the southeast corner of the LA59 and Harrison Ave intersection must be relocated to construct the roundabout intersection improvement, regardless of “build” or “no-build” determination on the Harrison Ave Extension.

5.5 Recommended Phasing: The project to extend Harrison Ave consists of two major elements: the two-lane Harrison Ave roadway, and the intersection with LA 59. From the Vectura analysis, intersection improvement in the no-build condition is required at year 2024 to maintain acceptable level of service. If the intersection and roadway are not constructed simultaneously, the intersection must be constructed first; and therefore, defines the critical path. Parallel project development effort is recommended on each component as follows:

1. **Harrison Ave @ LA 59 Intersection Project Development.** Perform preliminary geometric design of the roundabout to confirm right-of-way and utility relocation requirements. Refine anticipated construction costs, and right-of-way costs. The results of the Vectura traffic analysis and the developed geometry suggest that the project may be eligible for either a Safety or Urban Systems project through the LADOTD. (Note that the documented crash reduction with roundabout geometry may compete favorably on a safety basis.) If eligible, Federal Funds could be used, with some portion of local match. In the collation of costs, and 80/20 Federal/Local split has been used as basis for calculation. The required matching amount may vary.
2. **Harrison Ave Extension Roadway Project Development.** Prepare an environmental document, including the appurtenant investigations and tasks, for use as basis of permit applications to regulatory agencies. Perform topographic survey, 30% engineering design, and geotechnical investigation to confirm alignment, establish right-of-way requirements, and refine construction cost opinion. Prepare and submit permit applications. Seek 100% local funding for the roadway, between Town, Parish, and other potential participants.

The roundabout intersection project must be closely coordinated with the Harrison Ave extension roadway project element. The intersection may be constructed alone, but both intersection and roadway must be developed in full knowledge of the other’s influence, on engineering and regulatory bases.

5.6 Project Costs & Funding: Potential eligibility for Federal funds with local match under Safety or Urban Systems programs is used as a cost collation basis for the intersection, while 100% local funds are assumed for the roadway segment.



In **Table 2**, the items of cost, separated by element according to the narrative in section 5.5, have been collated and tabulated. A cash demand for local funds has been projected by year. Detailed construction costs are included as **Attachment 6**. The total project cost, including intersection and roadway, is estimated at approximately \$8.3M. Budget figures for each element are recommended to be rounded up to the next even \$100,000.

Element: Harrison Ave Extension Roadway		Est. Total	Yearly Local Expenditure		
			Year 1	Year 2	Year 3+
Roadway Construction Opinion		\$ 3,884,000.00			\$3,884,000.00
Boundary Survey, Alignment, and R/W Fees (assumes R/W is donated)					
Surveyor		\$ 25,000.00		\$25,000.00	
Real Estate Attorney		\$ 25,000.00	\$10,000.00	\$15,000.00	
Engineer		\$ 15,000.00	\$10,000.00	\$5,000.00	
Environmental Assessment & Permitting Fees					
Environmental Scientist		\$ 55,000.00	\$20,000.00	\$35,000.00	
Engineer		\$ 30,000.00	\$10,000.00	\$20,000.00	
Topographic Survey Fee		\$ 90,000.00	\$90,000.00		
Geotechnical Engineering Fee		\$ 20,000.00	\$20,000.00		
Engineering Fee (Design and Contract Documents)		\$ 180,000.00	\$45,000.00	\$135,000.00	
Construction Administration, Resident Inspection, and Record Drawings		\$ 175,000.00			\$175,000.00
Materials Testing		\$ 20,000.00			\$20,000.00
Wetland Mitigation	15 Acres \$40,000 /acre	\$ 600,000.00			\$600,000.00
Element Subtotals		\$ 5,119,000.00	\$205,000.00	\$235,000.00	\$4,679,000.00
Element: Harrison Ave @ LA 59 Intersection					
(Potentially Eligible for Adoption by Federal Cost Sharing Program)					
		Est. Total	Yearly Local Expenditure		
			Year 1	Year 2	Year 3+
Intersection Construction Opinion (80% Federal, 20% Local)		\$ 2,355,000.00			\$471,000.00
Stage 0 & Intersection Report		\$ 20,000.00	\$20,000.00		
Boundary Survey and R/W (R/W must be purchased)					
Surveyor		\$ 5,000.00		\$5,000.00	
Real Estate Attorney		\$ 10,000.00		\$10,000.00	
R/W Purchase		\$ 350,000.00			\$350,000.00
Environmental Assessment & Permitting Fees					
Environmental Scientist		\$ 10,000.00		\$10,000.00	
Engineer		\$ 5,000.00		\$5,000.00	
Topographic Survey Fee		\$ 20,000.00	\$20,000.00		
Geotechnical Engineering Fee		\$ 8,000.00	\$8,000.00		
Engineering Fee (Design and Contract Documents)		\$ 135,000.00	\$45,000.00	\$90,000.00	
Construction Administration, Resident Inspection, and Record Drawings (80/20)		\$ 120,000.00			\$20,000.00
Materials Testing (80/20)		\$ 10,000.00			\$2,000.00
Element Subtotals		\$ 3,048,000.00	\$ 93,000.00	\$120,000.00	\$ 843,000.00

Table 2 – Collation of Costs



CONCLUSION:

In order to dramatically reduce vehicle delays at all movements of the existing LA36 @ LA59 roundabout in the center of Abita Springs; and in order to prevent the LA 59 segment between Harrison Ave and LA36 from exceeding capacity at design year; the Harrison Ave Extension “Build” condition is recommended.

Under the “Build” condition, intersection improvement at LA 59 and Harrison is required, which after analysis is recommended to be of roundabout geometry, on both capacity and safety criteria, vs. conventional signal improvements. Even under “No-Build”, the intersection improvement at LA 59 and Harrison Ave is required.

Last, the intersection of Harrison Ave Extension and LA 36 is recommended to be constructed as two-way stop condition. The design year traffic forecast warrants signal or roundabout intersection; however, background traffic volumes are low, and the two-way stop functions for an estimated 12 years beyond implementation. The failing movement at conclusion of the 12-year design life is on Harrison Ave Extension stop, a less critical roadway than LA36 or LA59.

Total estimated budget, including all costs and funding sources, is \$8.3M.