Beckett Bridge

Project Development & Environment (PD&E) Study

from Chesapeake Drive *to* Forest Avenue

Tarpon Springs, Pinellas County, FL

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Noise Study Report

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EXECUTIVE SUMMARY

Pinellas County, in coordination with the Florida Department of Transportation (FDOT) District Seven and the Federal Highway Administration (FHWA), is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to remove, rehabilitate, or replace the existing Beckett Bridge in Tarpon Springs, Pinellas County, Florida.

The objectives of this Noise Study Report (NSR) are to identify noise sensitive sites adjacent to the project corridor, to evaluate future traffic noise levels at the sites with and without the proposed improvements, and, if necessary, to evaluate the need for and effectiveness of noise abatement measures. Additional objectives include the consideration of construction noise and the identification of noise impact "contours" adjacent to the corridor.

The analysis was performed following FDOT procedures that comply with Title 23 Code of Federal Regulations (CFR), Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. The evaluation used methodologies established by the FDOT and documented in the PD&E Manual, Part 2, Chapter 17 (May 2011). The prediction of traffic noise levels with and without the roadway improvements was performed using the FHWA's Traffic Noise Model (TNM-Version 2.5).

Of the 27 evaluated noise sensitive sites, 26 are residential and one is a public meeting room (Tarpon Springs Yacht Club).

The existing (2012) traffic noise levels are predicted to range from 54.6 to 63.2 decibels on the "A" weighted scale (dB(A)), which are traffic noise levels that would not approach, meet, or exceed the Noise Abatement Criteria (NAC) at any of the evaluated noise sensitive sites. In the future without the proposed improvements (no-build), traffic noise levels were predicted to range from 55.8 to 64.4 dB(A), which are also levels that would not approach, meet, or exceed the NAC at any of the evaluated sites. In the future with the proposed improvements (build), traffic noise levels were predicted to range from 56.9 to 64.7 dB(A), which are also levels that would not approach, meet, or exceed the NAC at any of the evaluated sites. Additionally, when compared to the existing condition, traffic noise levels with the improvements are not predicted to increase more than 2.8 dB(A). As such, the project would not substantially increase traffic noise (i.e., an increase in traffic noise of 15 dB(A) or more).

Since future traffic noise levels with the proposed improvements are not predicted to approach, meet, or exceed the NAC at any of the noise sensitive sites or substantially increase, noise abatement measures were not considered. As such, there is no commitment to further consider noise abatement measures during the design phase of the project. There is a commitment however to perform a land use review during the project's design phase to

ensure that all noise sensitive sites that received a building permit prior to the project's Date of Public Knowledge (i.e., the date the environmental documentation is approved) have been evaluated. Notably, there was no construction or posted permits observed within the project limits during a land use survey that was performed on November 13, 2012.

Construction of the proposed roadway improvements would result in temporary construction-related noise and vibration. Pinellas County will likely employ the *FDOT Standard Specifications for Road and Bridge Construction*. Implementing these specifications will minimize or eliminate this noise and/or vibration. Should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

Land uses such as residential, offices, and parks are considered incompatible with highway noise levels exceeding the NAC. In order to reduce the possibility of new noise-related impacts, noise level contours were developed for the future improved roadway facility (see Section 6 of this NSR). These noise contours delineate the distance from the improved roadway's edge-of-travel lane to where 56, 66, and 71 dB(A) (the FDOT's NAC for Activity Categories A, B/C, and E, respectively) is expected to occur in the year 2038 with the proposed improvements. Local officials will be provided a copy of the Final NSR to promote compatibility between land development and Beckett Bridge.

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1.0 INTRODUCTION

Pinellas County, in coordination with the Florida Department of Transportation (FDOT) District Seven, and the Federal Highway Administration (FHWA) is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to remove, rehabilitate, or replace the existing Beckett Bridge (Bridge no. 154000) in Tarpon Springs, Pinellas County, Florida. The existing bridge was originally constructed in 1924 as a timber structure with a steel movable span. The fixed timber approach spans were replaced with concrete approach spans in 1956. The bridge has been determined to be eligible for listing in the National Register of Historic Places (NRHP). Eligibility is based on the bridge's contribution to early development of the area and because it is one of a few known, pre-1965, highway single-leaf rolling-lift bascule bridges remaining in Florida. Since 1956, major repairs were performed in 1979, 1998, and in 2011. Major rehabilitation or replacement of the bridge is needed to keep the bridge open and operating efficiently.

The project limits extend along Riverside Drive from Chesapeake Drive across Whitcomb Bayou to Forest Avenue, a distance of approximately 0.3 mile (see Figure 1, Project Location). The existing two-lane bridge connects areas west and north of the Bayou to downtown Tarpon Springs. The bridge is also located on a popular route for access to Fred Howard Park, a Pinellas County park located approximately 3.1 miles west on the Gulf of Mexico. Riverside Drive/North Spring Boulevard is an extension of Tarpon Avenue, which is a designated evacuation route. Beckett Bridge provides access to major north/south arterials including Alternate US 19 and US 19 for coastal residents during hurricane evacuation. The bridge also provides access for emergency vehicles, including police, ambulance, and fire. Alternate routes (that do not require crossing of the Beckett Bridge) are available for travel to and from the areas mentioned above, and for emergency response.

Beckett Bridge is owned and operated by Pinellas County. A bridge tender is only present when required to open the drawbridge for a vessel, there are no full-time bridge tenders. US Coast Guard drawbridge opening regulation (33CFR117.341) states that "The draw of the Beckett Bridge, mile 0.5, at Tarpon Springs, Florida shall open on signal if at least two hours' notice is given." Whitcomb Bayou connects to the Gulf of Mexico via the Anclote River to the north.

This Noise Study Report (NSR) presents the assumptions, data, procedures, and results of the traffic noise study that was conducted to evaluate the proposed improvements to Beckett Bridge. The objectives of the NSR are:

- To identify noise sensitive sites adjacent to the Beckett Bridge project corridor,
- To evaluate future traffic noise levels at the sites with and without the improvements, and
- To evaluate the need for, and effectiveness of, noise abatement measures.

Additional objectives include the evaluation of construction noise and vibration impacts and the identification of noise impact "contours" adjacent to the project corridor.

1.1 Project Need

The bridge is considered functionally obsolete. This designation is based primarily on the substandard clear roadway width of only 20 feet and substandard roadway safety features. The existing typical section consists of one, 10-foot wide travel lane in each direction and 2-foot 2-inch-wide sidewalks separated by a curb on both sides of the bridge (see Figure 2 – Existing Bridge Typical Section).

Minimum required lane and shoulder widths prescribed by the American Association of State Highway and Transportation Officials (AASHTO) are not met. The sidewalks on the bridge are narrow and do not meet current accessibility requirements established by the Americans with Disabilities Act (ADA). The bridge railings do not meet current standards for pedestrian safety or geometric and crash testing safety standards for vehicles. Approach guardrail and transitions and end treatments also do not meet current safety standards.

According to recent (07/31/12) FDOT inspection reports, the existing bridge has an overall Structure Inventory and Appraisal Sufficiency Rating of 44.9 out of 100. (Sufficiency ratings are a method of evaluating highway bridges by calculating a numeric value between 0 and 100, indicative of bridge sufficiency to remain in service). Although the bridge is not considered Structurally Deficient, the bridge has a substandard load carrying capacity requiring weight restrictions. The bridge is currently posted for legal loads limited to 2-ton Single Unit Trucks and 15-ton Combination Trucks.

There are no official USCG navigational clearance guidelines for this waterway at this location. The existing vertical clearance at the fenders is six feet. The tip of the bascule leaf overhangs the fender with the leaf fully raised, limiting the clearance for a portion of the channel between the fenders. Based on inspection of the bridge machinery, it is likely that unlimited vertical clearance was provided for the entire width of the channel when the bridge was originally constructed. The existing horizontal clearance between the fenders is 25 feet.

Figure 1. Project Location Map

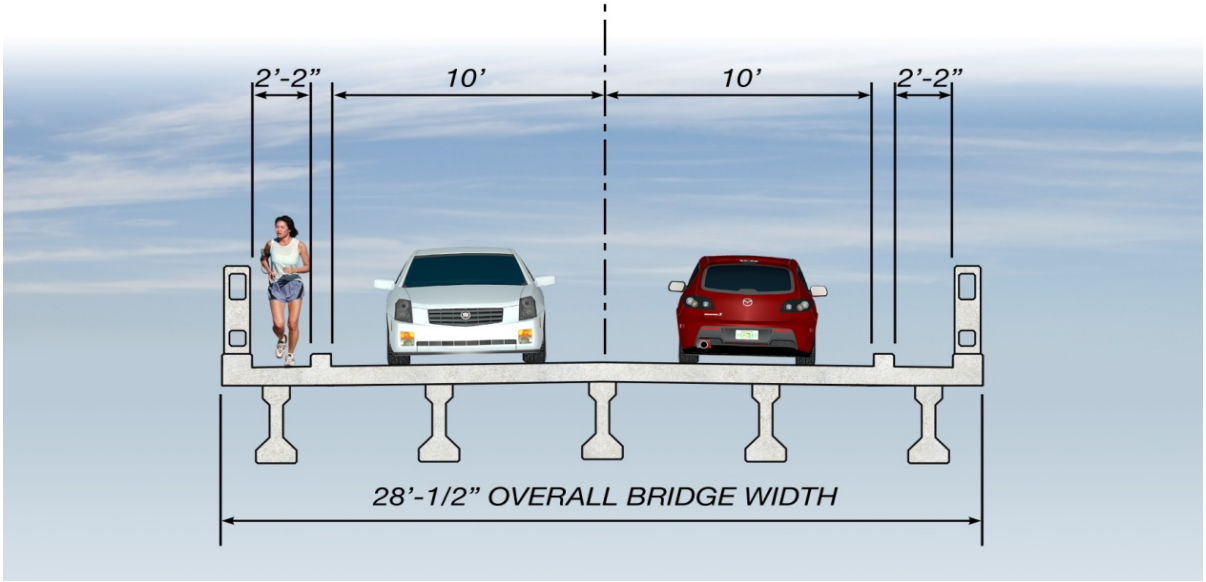

Figure 2. Existing Bridge Typical Section

1.1.1 ETDM Evaluation

The FDOT's Efficient Transportation Decision Making (ETDM) process provides agencies and the public access to project planning information, as well as potentially affected environmental resources through use of the internet via the Environmental Screening Tool (EST). The tool facilitates interaction among transportation planners, regulatory agencies, and affected communities to provide input on projects prior to the PD&E phase. Review of the proposed transportation improvement by agency representatives provides the Department with early input concerning potential impacts to the environment and community. Key features of the ETDM process include:

- Early agency and community involvement
- Early identification of avoidance and mitigation strategies access to comprehensive data in standardized formats
- Reviews and studies focused on key issues
- Maximized use of technology for coordination, project scoping and communication

This project was evaluated through the FDOT's ETDM process and was assigned ETDM project number 13040. Agency comments and a more detailed "Purpose and Need Statement" are available in the ETDM Programming Summary Report, published on June 1, 2011. The issues discussed in the Report will also be addressed in the Preliminary Engineering Report which will be published separately for this project.

2.0 ALTERNATIVES CONSIDERED

The following alternatives are under consideration.

- No-build – maintain existing bridge (until it must be closed)
- No-build - remove existing bridge (includes alternate routing of traffic)
- No-build - rehabilitation of the existing bridge
- Build - replace with a new movable bridge
- Build - replace with a new fixed bridge

The first "no-build" alternative includes only routine maintenance to keep the bridge open to traffic until safety issues would require it to be closed. Evaluation of future improvements would occur at a later date. The "no-build with removal of the existing bridge" would result in routine maintenance in the near future with the intent to demolish the bridge when it is no longer safe for traffic (with no plans to replace it with a new bridge). All bridge replacement ("build") alternatives considered will be constructed in approximately the same location as the existing bridge to minimize impacts. Descriptions of the rehabilitation and build alternatives are provided in the Preliminary Engineering Report (PER).

Although all bridge replacement alternatives considered will be constructed in approximately the same location (on the same horizontal alignment) as the existing bridge, the bridge replacement alternatives would result in a change to the vertical alignment of the roadway pavement elevation of at least two feet. Because this vertical change is considered to be substantial with respect to traffic noise, the project was subject to a traffic noise study.

As a result of a detailed comparative analysis of alternatives, which considered environmental, physical, cultural and socio-economic impacts, public input, local government coordination, state and federal agency coordination, engineering issues, project costs, and the need for a safe efficient transportation facility, *Replacement of the Existing Bridge with a new Movable Bridge* was selected as the Recommended Alternative. This alternative has minimal environmental impacts, minimal impacts to the surrounding community, and adequately meets the transportation need. No additional right-of-way is required for construction of a new movable bridge on approximately the same alignment as the existing bridge.

Mitigation for demolition of the existing bridge will be required by the State Historic Preservation Officer and the FHWA. This alternative will be presented at a public hearing and require approval by FHWA. The No-build Alternative will remain a viable alternative until a final decision is made regarding the project following the public hearing process.

2.1 Movable Bridge Alternative

The proposed movable span will provide 7.8 feet of vertical clearance at the fenders (in the closed position) and 25 feet of horizontal clearance between fenders for vessels traveling on the waterway. Unlimited vertical clearance will be provided in the open position. The maximum proposed grade is five percent, which meets ADA requirements. The total length of the proposed movable span bridge is 360 feet. The movable span is proposed to be a single leaf bascule span, a less common type of movable span in Florida but more economical for spanning Whitcomb Bayou.

Roadway reconstruction is limited to the bridge approaches. The bridge and roadway will return to existing grade at Pampas Avenue on the east side and east of Chesapeake Drive on the west side. Access to residential property driveways along Riverside Drive will still be accessible. Resurfacing (only) is proposed between Forest and Pampas Avenues.

The proposed roadway profile would be approximately two feet higher than the existing roadway at the west end of the bridge (Begin Bridge Station 135+95 as shown on concept plans), and approximately four feet higher at the east end of the bridge ("End Bridge" Station 139+55).

The proposed improvements can be constructed within the existing right-of-way; purchase of additional right-of-way is not required. A new movable bridge as proposed may qualify for a Noticed General Permit from the Southwest Florida Water Management District (SWFWMD). A Noticed General Permit would not require treatment of stormwater runoff from the bridge. If treatment of stormwater is required by the SWFWMD, it is anticipated that compensatory, offsite treatment will be acceptable. Accordingly, acquisition of additional right-of-way is not anticipated to address water quality concerns. The proposed bridge typical section for the Movable Bridge Alternative has a total out-to-out width of 47.2 feet as shown in Figure 3. The typical section includes two, 11-foot wide travel lanes with 5.5-foot shoulders that can function as undesignated bicycle lanes. Sidewalks, 6 feet wide, are proposed on both sides of the bridge.

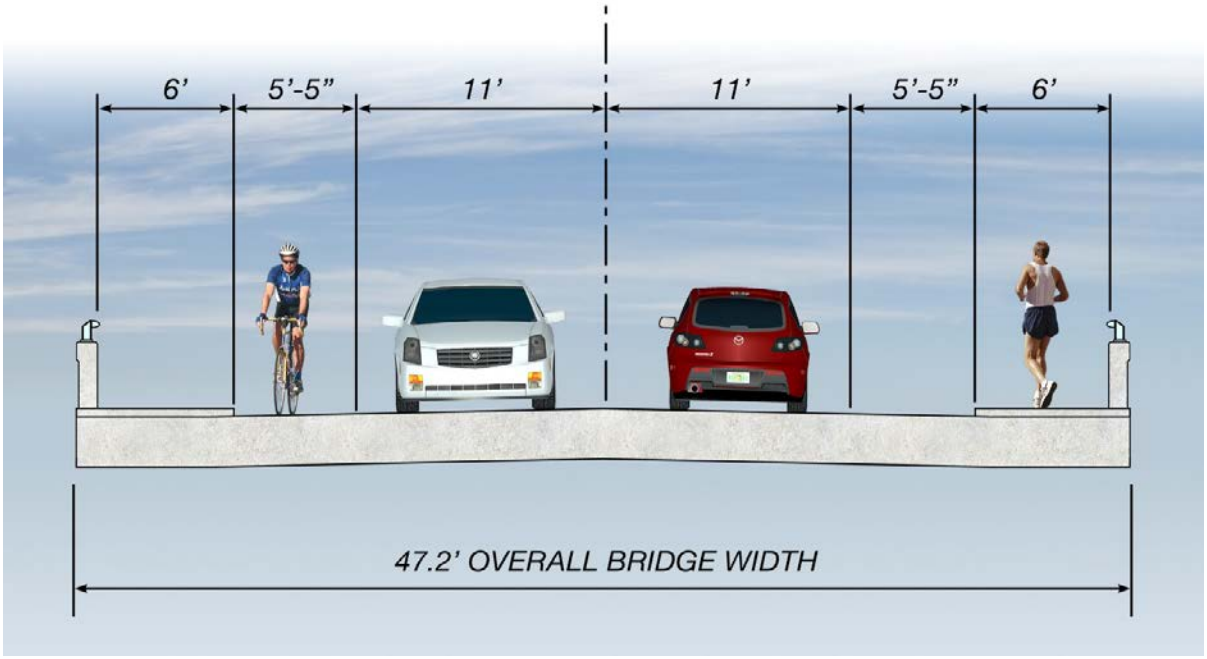

Figure 3. Proposed Movable Bridge Typical Section

Proposed Roadway Sections

The proposed roadway section for the Movable Bridge Alternative west of the bridge consists of two ten-foot wide through lanes, one in each direction, and 5.5-foot wide outside shoulders that can function as undesignated bicycle lanes. Because of the limited right-of-way, a six-foot wide sidewalk is proposed only on the north side of the roadway. No sidewalks are proposed on the south side of the roadway, adjacent to the Bayshore Mobile Home Park (MHP). East of the bridge, the roadway section consists of two 11-foot wide through lanes, one in each direction, and 5.5-foot wide outside shoulders that can function as undesignated bicycle lanes. Six-foot wide sidewalks are proposed on both sides of the roadway. Figures 4 and 5 illustrate the proposed roadway sections for the west and east sides of the bridge, respectively.

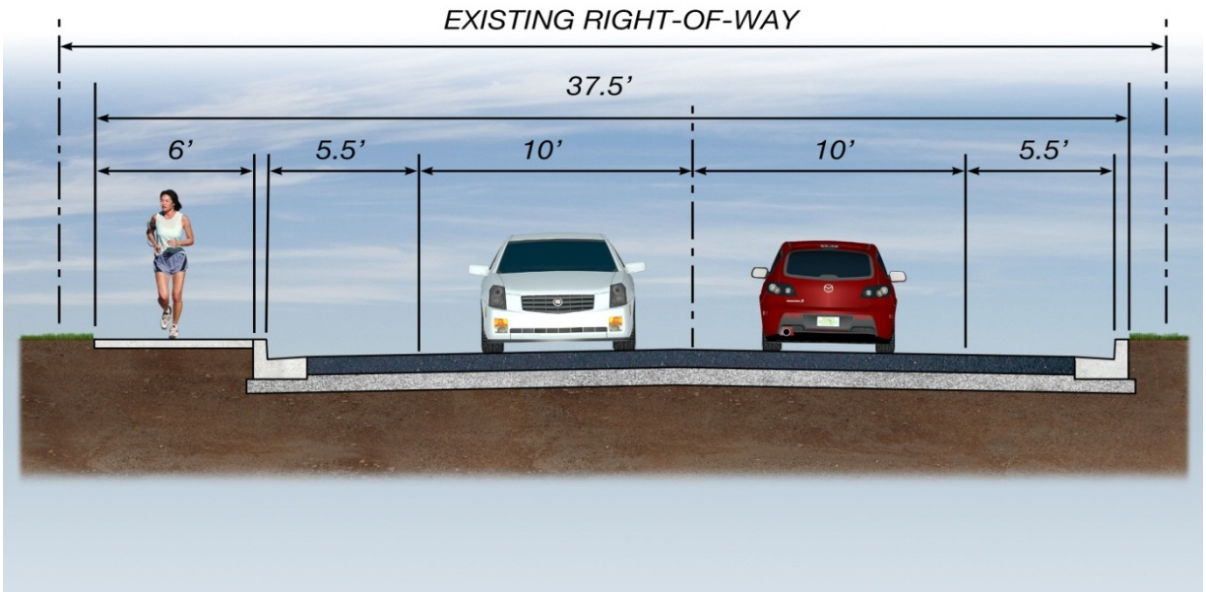

Figure 4. Proposed Roadway Section West of Proposed Movable Bridge

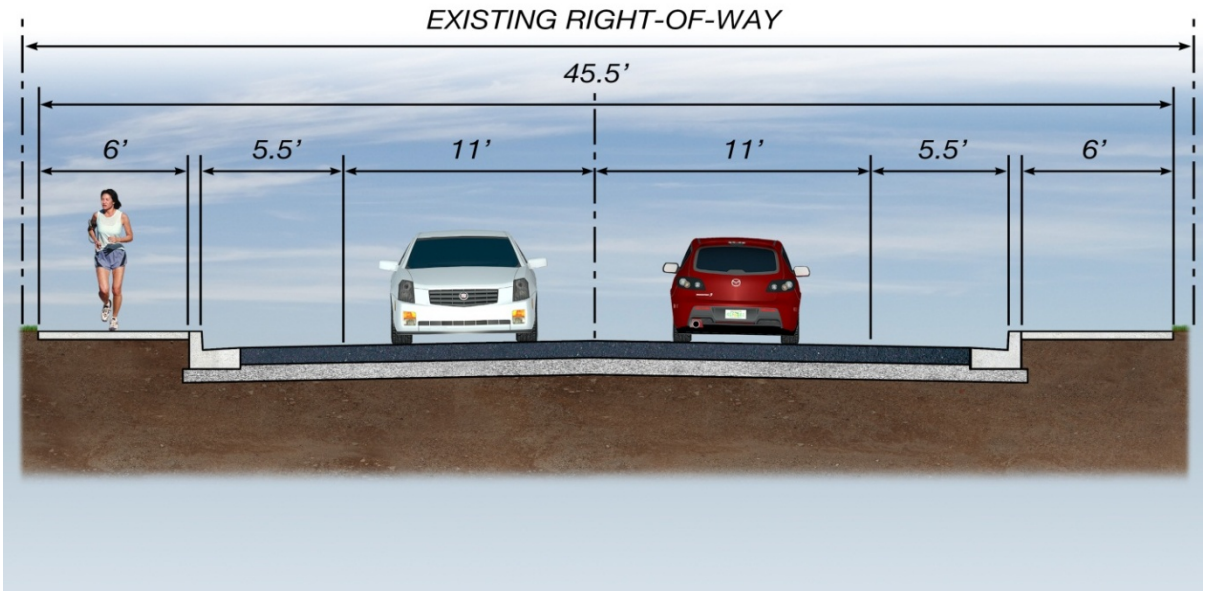

Figure 5. Proposed Roadway Section East of Proposed Movable Bridge

3.0 TRAFFIC NOISE ANALYSIS METHODOLOGY

3.1 Evaluation Process

This traffic noise analysis was prepared for the Recommended Alternative (*Replacement of the Existing Bridge with a new Movable Bridge*). This analysis was conducted in accordance with Title 23 Code of Federal Regulations (CFR) Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. The evaluation uses methodologies established by FDOT and documented in the PD&E Manual, Part 2, Chapter 17 (May 2011).

The predicted noise levels presented in this report are expressed in decibels on the "A"-weighted scale (dB(A)). This scale most closely approximates the response characteristics of the human ear to traffic noise. All noise levels are reported as one-hour equivalent levels (Leq(h)). Leq(h) values are equivalent steady-state sound levels containing the same acoustic energy as time-varying sound levels over a period of one hour.

3.2 Noise Model

The prediction of existing and future traffic noise levels with and without the bridge improvements was performed using the FHWA's computer model for highway traffic noise prediction and analysis – the Traffic Noise Model (TNM, Version 2.5). The TNM propagates sound energy, in one-third octave bands, between highways and nearby receptors taking the intervening ground's acoustical characteristics/topography and rows of buildings into account.

3.3 Traffic Data

Noise levels are low when traffic volumes are low (i.e., level-of-service (LOS) A or B) or when traffic is so congested that movement is slow (i.e., LOS D, E, or F). Generally, the maximum hourly noise level occurs between these two conditions. Therefore, traffic volumes used in the Beckett Bridge analysis reflect either the design LOS C volumes or the demand volumes (if forecast demand levels meet the LOS A or B criteria), whichever is less. The existing (2012), future no-build (2038), and future build (design year of 2038) traffic data are presented in Table 1 and Appendix B. As noted in Table 1, existing and future posted speed limits were assumed in TNM for vehicle speeds.

Table 1. Traffic Data for Noise Analysis

Segment	Scenario	Average Daily Traffic		Hourly Traffic						Posted Speed (mph)
				Peak Direction			Off-Peak Direction			
		LOS C[2]	Demand[2]	Cars	MT	HT	Cars	MT	HT	
Riverside Drive from Chesapeake Drive to Forest Avenue[1]	Existing	11,100	***7,700***	428	1	0	300	3	0	30
	No-Build	11,100	***9,700***	535	5	0	378	4	0	30
	Build	11,100	***9,700***	535	5	0	378	4	0	30

[1] Peak-Hour Factor (K) = 9.5%, Directional Factor (D) = 58.6%, Medium Trucks (MT) = 1.0%, and Heavy Truck (HT) = 0.0%.

[2] The Average Daily Traffic used in the analysis is indicated by bold and italic text.

Source: URS, Corp., 2012.

4.0 NOISE ANALYSIS

4.1 Noise Sensitive Sites

Noise sensitive sites, and the receptors (i.e., locations of predicted traffic noise levels) at these sites, are properties/locations where frequent human use occurs. To evaluate traffic noise at these sites/receptors, the FHWA established Noise Abatement Criteria (NAC). As shown in Table 2, the criteria vary according to a properties' activity category (i.e., the type of activity that occurs on a property). For comparative purposes, the typical noise levels of a few common indoor and outdoor activities are provided in Table 3.

When predicted traffic noise levels "approach" or exceed the FHWA NAC, or when predicted future noise levels increase substantially from existing levels, the FHWA requires that noise abatement measures be considered. FDOT defines the word "approach" to mean within one dB(A) of the NAC. Additionally, the FDOT criteria states that a substantial increase in traffic noise occurs if traffic noise levels are predicted to increase 15 dB(A) or more above existing conditions as a direct result of a transportation improvement project.

Within the project limits there are 27 noise sensitive sites that have the potential to be impacted by traffic noise with the proposed improvements. The 27 sites are comprised of 26 residences and one public meeting room (Tarpon Springs Yacht Club). The land use review, during which these noise sensitive sites were identified, was conducted on November 13, 2012.

Table 2. FHWA/FDOT Noise Abatement Criteria [Leq(h) expressed in dB(A)]

Activity Category	Description of Activity Category	Activity Leq(h)[1]	
		FHWA	FDOT
A	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.	57 (Exterior)	56 (Exterior)
B[2]	Residential	67 (Exterior)	66 (Exterior)
C[2]	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.	67 (Exterior)	66 (Exterior)
D	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.	52 (Interior)	51 (Interior)
E[2]	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.	72 (Exterior)	71 (Exterior)
F	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.	--	--
G	Undeveloped lands that are not permitted.	--	--

[1] The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[2] Includes undeveloped lands permitted for this activity category.

Source: CFR, Title 23, Part 772.

The locations of the receptors for each noise sensitive site are illustrated on the project aerials in Appendix A. The residences were evaluated as Activity Category "B" and the public meeting room was evaluated as Activity Category "C". For these properties, abatement measures were considered if predicted exterior traffic noise levels were 66 dB(A) or greater. Additionally, noise abatement was considered if traffic noise levels were predicted to increase 15 dB(A) or more from existing levels.

4.2 Measured Noise Levels

As previously stated, existing and future noise levels with and without the proposed improvements were modeled using the TNM. To verify the accuracy of the predictions, the computer model was validated using measured noise levels adjacent to the project corridor.

Table 3. Typical Noise Levels

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area daytime		
Gas lawnmower at 100 feet	**70**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**60**	
		Large business office
Quiet urban daytime	**50**	Dishwasher in next room
Quiet urban nighttime	**40**	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: California Dept. of Transportation Technical Noise Supplement, Sep. 2013, Page 2-20.

Traffic data including motor vehicle volumes, vehicle mix, vehicle speeds, and meteorological conditions were recorded during each measurement period.

The field measurements were conducted in accordance with the FHWA's *Measurement of Highway-Related Noise*. The measurements were obtained using a Larson Davis LxT Type II integrating sound level meter (SLM). The SLM was calibrated before and after the measurement periods with a Larson Davis CAL200 calibrator.

The recorded traffic data were used as input for the TNM to determine if, given the topography and actual site conditions of the area, the computer model could "re-create" the measured levels with the existing roadway. Following FDOT guidelines, a noise prediction model is considered within the accepted level of accuracy if the measured and predicted noise levels are within a tolerance standard of three dB(A).

Table 4 presents the field measurements and the validation results. As shown, the ability of the model to predict noise levels within the FDOT limits of plus or minus three dB(A) for the project was confirmed. Documentation in support of the validation is provided in Appendix C.

Table 4. Validation Data

Location	Measurement Period	Modeled	Measured	Difference
Northwest corner of the Riverside Drive/Pampas Avenue Intersection	1	55.1	56.9	1.8
	2	56.9	58.8	1.9
	3	55.5	57.1	1.6

4.3 Results of the Noise Analysis

Table 5 presents the results of the traffic noise analysis for the Recommended Alternative. As shown, the existing (2012) traffic noise levels are predicted to range from 54.6 to 63.2 dB(A), which are traffic noise levels that would not approach, meet, or exceed the NAC at any of the 27 noise sensitive sites. In the future without the proposed improvements (no-build), traffic noise levels were predicted to range from 55.8 to 64.4 dB(A), which are levels that also would not approach, meet, or exceed the NAC. In the future with the proposed improvements (build), traffic noise levels were predicted to range from 56.9 to 64.7 dB(A), which are levels that also would not approach, meet, or exceed the NAC. Also, when compared to the existing condition, traffic noise levels are not predicted to increase more than 2.8 dB(A) above existing conditions at any of the evaluated noise sensitive sites. As such, the project would not substantially increase traffic noise.

5.0 EVALUATION OF ABATEMENT ALTERNATIVES

Since future traffic noise levels with the proposed improvements were not predicted to approach, meet, or exceed the NAC at any of the 27 evaluated noise sensitive sites or substantially increase traffic noise at any of the sites, noise abatement measures do not have to be considered. As such, there is no commitment regarding further consideration of noise abatement measures during the design phase of the project. However, a land use review will be performed during the design phase to ensure that all noise sensitive sites that receive a building permit prior to the project's Date of Public Knowledge are evaluated. Notably, there was no construction or posted building permits observed within the project limits during the land use survey that was performed on November 13, 2012.

Table 5. Predicted Traffic Noise Levels

Site ID[1]	Activity Category	Description	Leq(h) (dB(A))				Approaches, Meets, or Exceeds the NAC?
			Existing (2012)	No-Build (2038)	Build (2038)	Increase from Existing[3]	
1	B	Residential	61.6	62.7	62.6	1.0	No
2	B	Residential	61.8	62.9	62.6	0.8	No
3a	B	Residential	59.5	60.7	60.9	1.4	No
3b	B	Residential	59.8	60.9	60.8	1.0	No
4	B	Residential	62.2	63.4	63.8	1.6	No
5	B	Residential	62.8	64.0	64.5	1.7	No
6	B	Residential	62.5	63.6	64.0	1.5	No
7	B	Residential	61.8	63.0	63.3	1.5	No
8	B	Residential	62.2	63.4	63.7	1.5	No
9	B	Residential	61.9	63.0	63.2	1.3	No
10	B	Residential	63.2	64.4	64.6	1.4	No
11	B	Residential	62.4	63.5	63.9	1.5	No
12	B	Residential	62.3	63.5	63.9	1.6	No
13	B	Residential	61.9	63.1	63.6	1.7	No
14	B	Residential	61.2	62.4	62.9	1.7	No
15	B	Residential	62.9	64.1	64.7	1.8	No
16	B	Residential	62.6	63.7	64.3	1.7	No
17	B	Residential	61.4	62.6	63.1	1.7	No
18a	B	Residential	59.9	61.1	60.8	0.9	No
18b	B	Residential	59.8	61.0	60.9	1.1	No
19	B	Residential	62.3	63.4	64.1	1.8	No
20	B	Residential	61.5	62.7	63.3	1.8	No
21a	B	Residential	61.1	62.3	62.2	1.1	No
21b	B	Residential	60.6	61.8	61.9	1.3	No
22	C	Public meeting room	55.6	56.8	58.4	2.8	No
23	B	Residential	58.6	59.7	60.4	1.8	No
24	B	Residential	57.8	59.0	59.5	1.7	No
25	B	Residential	54.6	55.8	56.9	2.3	No
26	B	Residential	58.6	59.8	60.1	1.5	No
27	B	Residential	61.1	62.2	62.4	1.3	No

[1] Site locations are presented on the Project Aerials in Appendix A of this report. The letters "a" and "b" denote first and second floor, respectively.

6.0 NOISE CONTOURS

Land uses such as residences, motels, schools, churches, recreational areas, and parks are considered incompatible with highway noise levels exceeding the NAC. In order to reduce the possibility of noise-related impacts, noise level contours were developed for the future improved roadway facility. These noise contours delineate the distance from the improved roadway's edge-of-travel lane to where 56, 66, and 71 dB(A) (the NAC for Activity Categories A, B/C, and E, respectively) is predicted to occur in the future (2038) with the

proposed improvements. Within the project limits, the contours extend to approximately the roadway's right-of-way (ROW) for land uses within Activity Category B, C, and E. The contours extend to approximately 90 feet from the roadway's edge-of-travel lane for land uses within Activity Category A. Local officials will be provided a copy of the Final NSR to promote compatibility between any future land development in this area and the project should it be completed.

7.0 CONSTRUCTION NOISE AND VIBRATION

Construction of the proposed roadway improvements would result in temporary construction-related noise and vibration. Pinellas County will likely employ the *FDOT Standard Specifications for Road and Bridge Construction*. Implementing these specifications will minimize or eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the Contractor, will investigate additional methods of controlling these impacts.

8.0 PUBLIC INVOLVEMENT

The Alternatives Public Workshop for this project was conducted on January 23, 2013 at the Tarpon Springs Yacht Club in Tarpon Springs, Florida, located adjacent to the Beckett Bridge. One hundred-twenty persons signed in at the meeting. The purpose of the meeting was to present the alternatives under evaluation and provide an opportunity for community input. A total of 71 individuals submitted comments. Of these, none pertained to traffic noise. A copy of the noise handouts provided at the public meeting is provided in Appendix D.

The Public Hearing for this project was conducted on February 26, 2014 also at the Tarpon Springs Yacht Club. One hundred persons signed in at the meeting. The purpose of the meeting was to provide the public with an opportunity to express their views on the location, conceptual plan, social, economic, and environmental effects of the proposed improvements. A total of 23 individuals submitted comments. Of these, one pertained to traffic noise from additional traffic and construction.

9.0 REFERENCES

Federal Highway Administration. U.S. Department of Transportation. July 13, 2010. Title 23 CFR, Part 772. *Procedures for Abatement of Highway Traffic Noise and Construction Noise.*

Federal Highway Administration. February 2004. *Traffic Noise Model, Version 2.5*.

Federal Highway Administration. December 2011. *Highway Traffic Noise: Analysis and Abatement Guidance*.

Federal Highway Administration. May 1996. *Measurement of Highway-Related Noise*. FHWA-PD-96-046.

Florida Department of Transportation. May 24, 2011. *Project Development and Environment Manual*, Part 2, Chapter 17 – Noise.

Florida Department of Transportation. July 1, 2013. *Plans Preparation Manual*, Volume 1, Chapter 32 – Sound Barriers.

Florida Department of Transportation. July 22, 2009. *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations*.

Florida Department of Transportation. 2014. *Standard Specifications for Road and Bridge Construction*.

California Department of Transportation. September 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*.

APPENDIX A – PROJECT AERIALS

PRELIMINARY
SUBJECT TO CHANGE

BEGIN PROJECT

CHESAPEAKE DR.

EXISTING
RIGHT OF WAY

PROP. SIDEWALK

1"=40'

MATCHLINE STA. 134+60.00

LEGEND

DENOTES DIRECTION OF TRAVEL

DENOTES NOISE SENSITIVE SITE/RECEPTOR

ECDriver
500 N. WESTSHORE BOULEVARD
SUITE 500
TAMPA, FL 33609
CERT. OF AUTHORIZATION #3838

Pinellas County

BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO: PID 2161
FDOT FPN: 424385-1-28-01

DATE

LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE CONCEPT PLANS

SHEET NO. 1

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PRELIMINARY
SUBJECT TO CHANGE

1"=40'

EXISTING RIGHT OF WAY

BEGIN BRIDGE
STA 135+95

PROP. SIDEWALK

SUBMERGED LANDS EASEMENT

END BRIDGE
STA 139+55

MATCHLINE STA. 134+60.00

MATCHLINE STA. 140+20.00

135 136 137 138 139 140

18 19 20 21

EXISTING RIGHT OF WAY

SUBMERGED LANDS EASEMENT

WHITCOMB BAYOU

PROP. SIDEWALK

LEGEND

DENOTES DIRECTION OF TRAVEL

DENOTES NOISE SENSITIVE SITE/RECEPTOR

EC Driver & Associates
500 N. WESTSHORE BOULEVARD
SUITE 500
TAMPA, FL 33609
CERT. OF AUTHORIZATION #3838

Pinellas County

BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO: PID 2161
FDOT FPN: 424385-1-28-01

DATE

LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE CONCEPT PLANS

SHEET NO. 2

PRELIMINARY
SUBJECT TO CHANGE

PAMPAS AVE.

BEGIN RESURFACING

EXISTING
RIGHT OF WAY

PROP. SIDEWALK

PROP. SIDEWALK

EXISTING
RIGHT OF WAY

VENETIAN CT.

22

23

24

25

140

141

142

143

144

145

MATCHLINE STA. 140+20.00

MATCHLINE STA. 145+80.00

LEGEND

- DENOTES DIRECTION OF TRAVEL
- DENOTES NOISE SENSITIVE SITE/RECEPTOR
- DENOTES VALIDATION LOCATION

ECDriver & ASSOCIATES
500 N. WESTSHORE BOULEVARD
SUITE 500
TAMPA, FL 33609
CERT. OF AUTHORIZATION #3838

Pinellas County

BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO: PID 2161
FDOT FPN: 424385-1-28-01

DATE

LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE CONCEPT PLANS

SHEET NO. 3

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PRELIMINARY
SUBJECT TO CHANGE

ECDriver & ASSOCIATES
500 N. WESTSHORE BOULEVARD
SUITE 500
TAMPA, FL 33609
CERT. OF AUTHORIZATION #3838

Pinellas County

BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO: PID 2161
FDOT FPN: 424385-1-28-01

DATE

LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE CONCEPT PLANS

SHEET NO. 4

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APPENDIX B – TRAFFIC DATA

DISTRICT 7 PD&E
TRAFFIC DATA FOR NOISE STUDIES

Project: Beckett Bridge PD&E Study

Date: 7/11/2012 (rev)

County Project Number(s): PID 2161

Prepared By: URS Corporation

FDOT Financial Project ID: 424385-1-28-01

Federal Aid Number(s):

Segment Description: Riverside Drive from Chesapeake Drive to Forest Avenue (0.3 miles)

(Data sheets are to be filled out for every segment having a change in traffic parameters such as volumes, posted speeds, typical section, etc.)

NOTE: Modeled ADT is the LOS(C) volume referenced in the FDOT LOS tables or demand, whichever is less.

Existing Facility		No-Build[1] (Design Year)		Build[2] (Design Year)	
Lanes:	2	Lanes:	0	Lanes:	2
Year:	2012	Year:	2038	Year:	2038
ADT: LOS (C)	11,100	ADT: LOS (C)	0	ADT: LOS (C)	11,100
Demand	7,700	Demand	0	Demand	9,700
Posted Spd:	30 mph	Posted Spd:	0 mph	Posted Spd:	30 mph
	48 kmh		0 kmh		48 kmh
K=	9.5 %	K=	0.0 %	K=	9.5 %
D=	58.6 %	D=	0.0 %	D=	58.6 %
T=	4.0 % for 24 hrs.	T=	0.0 % for 24 hrs.	T=	4.0 % for 24 hrs.
T=	2.0 % Design hr	T=	0.0 % Design hr	T=	2.0 % Design hr
1.0	% Medium Trucks DHV	0.0	% Medium Trucks DHV	1.0	% Medium Trucks DHV
0.0	% Heavy Trucks DHV	0.0	% Heavy Trucks DHV	0.0	% Heavy Trucks DHV
0.0	% Buses DHV	0.0	% Buses DHV	0.0	% Buses DHV
0.0	% Motorcycles DHV	0.0	% Motorcycles DHV	0.0	% Motorcycles DHV

[1] No-Build condition reflects Scenario 2 (no bridge connection across Whitcomb Bayou) in the Design Traffic Technical Memorandum. The no-build condition with the existing bridge in place reflects the build condition.
[2] Build condition reflects Scenario 1 (two-lane bridge connects Riverside Drive with Spring Boulevard across Whitcomb Bayou) in the Design Traffic Technical Memorandum.

APPENDIX C – VALIDATION DOCUMENTATION

NOISE MEASUREMENT DATA SHEET

Measurements Taken By: Wayne Amer and Linsey Del Grosso Date: 11/13/12
Time Study Started: 1359 Time Study Ended: 1432
Project Identification:
Financial Project ID: 424385-1-28-01 County Project ID: PID 2161
Project Location: Beckett Bridge from Chesapeake Drive to Forest Avenue
Tarpon Springs, Pinellas County, FL

Site Identification: Pampas Avenue and Riverside Drive

Weather Conditions:
Sky: Clear ____ Partly Cloudy ____ Cloudy X Other ____
Temperature 77.5 F Wind Speed 3.0 mph Wind Direction N Humidity 68%
Equipment:
Sound Level Meter:
Type: Larson Davis LxT Serial Number(s): 1843
Did you check the battery? Yes X No ____
Calibration Readings: Start 114.2 End 113.9
Response Settings: Fast ____ Slow X
Weighting: A X Other ____
Calibrator:
Type: Larson Davis CAL 200 Serial Number: 5592
Did you check the battery? Yes X No ____

TRAFFIC DATA

Roadway Identification	Riverside Drive Eastbound		Riverside Drive Westbound	
Vehicle Type	Volume	Speed (mph)	Volume	Speed (mph)
Autos	55-60-37	21-21-21	38-67-49	22-22-23
Medium Trucks	0-0-0	0-0-0	0-0-0	0-0-0
Heavy Trucks	0-0-0	0-0-0	0-0-0	0-0-0
Buses	0-0-0	0-0-0	0-0-0	0-0-0
Motorcycles	0-0-0	0-0-0	0-0-0	0-0-0
Duration	10 minute runs × 3		10 minute runs × 3	

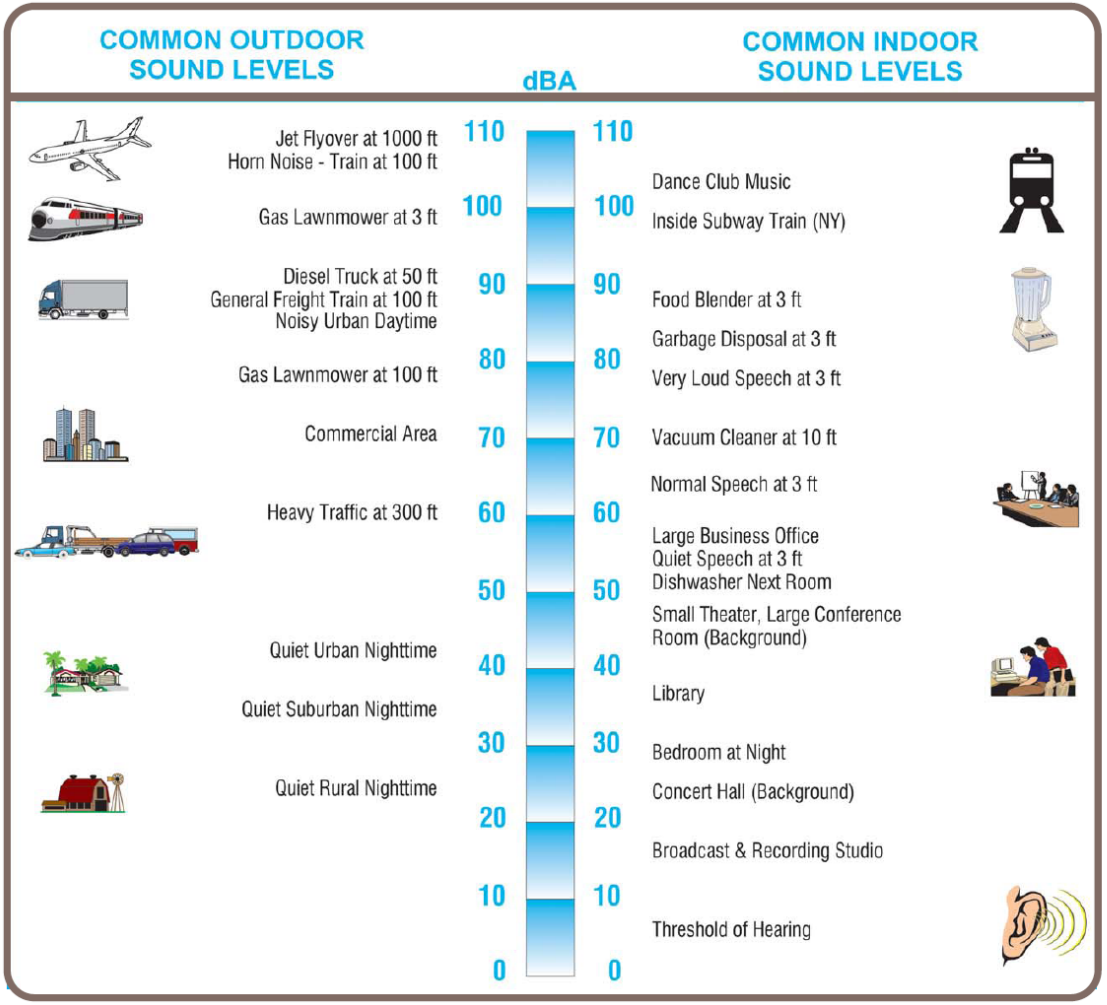
RESULTS [dB(A)]

L_{EQ} 56.9-58.8-57.1 Lmax 65.3-70.2-68.2

Background Noise: Birds, leaves rustling
Major Sources: Traffic on Riverside Drive
Unusual Events: Sparse/intermittent, low speed traffic during all three runs. Flyover and car parked next to noise meter during second run.

KB Environmental Sciences

APPENDIX D – PUBLIC INVOLVEMENT INFORMATION



TRAFFIC NOISE EVALUATION PROCESS

Traffic noise impact evaluations are performed using methodology approved by the Federal Highway Administration (FHWA). Roadway projects evaluated for traffic noise impacts include the following:

- Construction of a roadway on new location;
- Physical alteration of an existing roadway which substantially alters either horizontal or vertical alignment; or
- Physical alteration of an existing roadway that increases the number of through traffic lanes.

Key steps in the evaluation process include:

Step 1: Identification of Noise Sensitive Sites

Noise sensitive sites are defined as any property (owner occupied, rented or leased) where frequent human use occurs and where a lowered noise level would be of benefit. Typical noise sensitive sites include residences, schools, churches and recreational areas.

Step 2: Determination of Traffic Noise Impacts

Future traffic noise levels that may be attributed to the proposed project are determined and compared to the FHWA noise abatement criteria. For this project, noise sensitive sites predicted to experience noise levels that reach or exceed 66 dBA (decibels), or experience an increase of 15 dBA greater than existing noise levels, require abatement consideration.

Step 3: Consideration of Noise Abatement Measures

In Florida, noise abatement, or reduction measures usually consist of noise barriers. Barriers can be made of numerous materials, but normally, a concrete wall is constructed on public right-of-way between the proposed roadway improvements and the noise sensitive sites.

An evaluation of these noise reduction measures addresses the feasibility and reasonableness of providing noise abatement. To be considered feasible, the abatement measure must provide at least a 5 dBA reduction to an affected noise sensitive site. Engineering constraints are also reviewed for fatal flaws that will not allow an abatement measure to be implemented.

The evaluation of reasonableness is guided by the Department's responsibility to use prudent judgement when considering the expenditure of public funds. After determining the amount of noise reduction and cost, criteria such as desires of the community and public officials, land use stability, antiquity, predicted noise level increases, aesthetics, and number of benefited sites, are used when evaluating reasonableness.

Step 4: Commitments to Abatement Measures

Upon completion of the noise impact evaluation, the methodology and results are documented in the project's Noise Study Report. If an abatement measure is determined to be potentially feasible and reasonable, the Department makes a commitment to further evaluate the measure during the Design phase of the project.

TRAFFIC NOISE EVALUATION SCHEDULE

Traffic noise is addressed during three project phases; Project Development and Environment (PD&E), Design, and Construction. The following describes how noise is addressed during each of these phases.

PD&E Phase

The noise evaluation process is initiated during the PD&E phase and includes a preliminary analysis of the roadway alternatives developed for the project and presented at the Public Information Workshop. After the Public Information Workshop, a preferred Build Alternative is selected and a detailed noise analysis is performed on this alternative. This analysis includes an evaluation of noise abatement measures with results presented at the Public Hearing.

Design Phase

During the Design phase of a project, the detailed roadway plans are developed, right-of-way requirements are determined and the right-of-way acquisition process begins. When the roadway plans are approximately 60 percent complete, the engineering details are sufficient to allow for a detailed assessment of abatement measures determined to be potentially feasible and reasonable during the PD&E phase. Following public coordination, all feasible and reasonable measures are then incorporated in the final design plans.

Construction Phase

Feasible and reasonable abatement measures would be included as part of the construction project.

Noise Barriers